

ORAL HISTORY INTERVIEWS

KENNETH F. VERNON

APRIL 1995
HAYWARD, CALIFORNIA



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Interviews Conducted by:
Brit Allan Storey
Senior Historian
Bureau of Reclamation



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| Born in Spokane, Washington | 1 |
| Family homesteaded in North Dakota in the 1880s | 1 |
| Related to Brigadier General John Fraine and jurist George Fraine both of North Dakota | 1 |
| Family moves to Spokane in 1909 | 1 |
| “I was born October 16, 1910, at home, the last of seven children.” | 2 |
| Father retired in 1923 and moved the family to Elverta, California, outside Sacramento | 2 |
| Attended Harkness Junior High School in Sacramento | 3 |
| “I knew that I wanted to be an engineer. . .” | 3 |
| Rode the interurban train to high school | 3 |
| Stayed out of college for one year and worked | 4 |
| Father ran a poultry operation on his farm | 4 |
| Enrolled in Sacramento Junior College in September 1928 | 4 |
| Sophomore year took the civil service exams for the state highway department | 5 |
| Worked for the state highway department in the Santa Cruz Mountains for two years | 5 |
| Saved money to go back to college | 5 |
| Became aware of efforts to protect old growth redwoods | 5 |
| Worked on location of highway from Richmond, California to the Carquinas Strait Bridge | 6 |
| Worked on locating highway Hayward to Livermore | 6 |

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| Worked locating the highway from Livermore over Altamont Pass to Tracey | 6 |
| Surveyed the relocation of Route 17 between Los Gatos and Santa Cruz | 6 |
| In 1932 enrolled in University of California - Berkeley and majored in irrigation engineering, transportation, and buildings | 7 |
| Took courses outside engineering | 7 |
| Summer of 1933 worked on highway construction | 8 |
| Later in the summer of 1933 worked on the approaches to the San Francisco-Oakland Bay Bridge | 8 |
| Attended college while working on the bridge | 8 |
| Looked at running the Southern Pacific across the bay on the bridge | 8 |
| The two transportation systems in the East Bay | 8 |
| “my wife used to take a streetcar. . . from Berkeley. . . down to . . . catch one of the Key System boat trains, . . . then take a streetcar to her office . . .” | 9 |
| “I was correcting papers for two professors . . . as well as working 16 hours a week in the Bay Bridge, as well as taking 22 hours of course work” | 9 |
| Christmas holiday worked for the survey crew full-time on the bridge | 9 |
| school | 11 |
| Bank in which he had saved his money from working in 1932-3 closed its doors . . | 12 |
| “So I was without a nickel, without a penny, even a penny. . . .” | 12 |
| Advanced money by Charles Scheidel | 12 |
| I graduated in May of 1934 at the top of my class. | 13 |
| After graduation went to work for the highway department | 13 |
| They were widening the streets in San Francisco | 14 |
| Moving emergency earthquake fire hydrants in San Francisco was an interesting problem | 14 |
| During his last semester took a graduate course under Professor Bernard A. Etcheverry | 15 |
| Etcheverry focused on structures and organization and his associate, Sidney T. Harding, on farm irrigation | 16 |
| “So I had asked Professor Etcheverry, after graduation, could he give me a good word with the Bureau of Reclamation” | 16 |
| Offered job with Reclamation | 16 |
| Problems with Arizona over Davis Dam result in change in assignment for first Reclamation job | 17 |
| Marries Helen Garlinghouse | 17 |
| Reported to the canals division under McBirney | 18 |
| Worked with Howard Curtis and Arthur “Bud” Reeves | 18 |
| In Denver soon roomed with Brooks Morris in a boardinghouse hotel | 18 |
| Married on December 29, 1934 | 18 |
| Became involved with Hinman School of Music (later the Lamont School of Music) and performed in operas at Cheesman Park | 19 |
| Wally Schneider and Loyce Johnson of the Canals Division also participated | 20 |

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| “In other words, I had other interests than besides just engineering. . . .” | 20 |
| Worked on several interesting projects in the canals division | 20 |
| Oldest son born in 1936 | 20 |
| Because of Etcheverry’s class, followed the development of the Central Valley Project | 21 |
| Offered job on the Colorado-Big Thompson Project by Mills Bunger | 21 |
| “I was anxious to get back to California if I could. . . .” | 21 |
| Went on vacation and approached Walker Young about a transfer to the Central Valley Project | 22 |
| Offered job on the Delta Division by Walker Young | 23 |
| Reported to Oscar T. Boden in Antioch, California | 23 |
| Worked on the Central Valley Project 1936-1944 | 24 |
| Overview of canals of Central Valley Project | 24 |
| Pumping plants on the Contra Costa Canal were located to increase irrigable acreage | 25 |
| Contra Costa Canal designed to deliver water to Antioch | 26 |
| Did cost estimating and preliminary structure design | 26 |
| Worked with Barney Bellport | 26 |
| Canals in the boggy areas were designed to float | 27 |
| Excavation of the Contra Costa Canal in the initial boggy sections | 27 |
| Canal trimming and lining after the first pumping plant on the Contra Costa Canal | 28 |
| Curing compounds for concrete were just coming into use | 29 |
| The problem with black asphaltic-hydrocarbon compounds | 29 |
| We experimented with a white compound | 30 |
| The canal trimmer | 30 |
| “at that time, the Bureau had its own master mechanic and master electrician, and we did not employ contractors to install the machinery in the [pump] building. . . .” | 32 |
| Problems in installing pumping plant equipment because of a nearby railroad | 32 |
| “The Bureau wanted things done correctly. . . .” | 33 |
| Assigned to review a new estimate for the Contra Costa Canal | 33 |
| Error in review of Boden’s estimate | 34 |
| “And so, I learned you don’t take <i>anything</i> for granted. . . .” | 35 |
| World War II affects the project | 35 |
| Accident at Port Chicago during World War II | 36 |
| Operated the partially completed Contra Costa Canal to provide water to war industries | 36 |
| Deferred during World War II because involved in water supply | 36 |
| In 1943 began study of distribution systems to irrigated acreages | 37 |
| Small acreages presented special policy issues | 37 |
| The distribution system was to be concrete pipe | 37 |

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| Work on the Delta-Mendota Canal | 37 |
| George Imrie supervised construction on the Delta-Mendota | 37 |
| Did structure design on Delta-Mendota Canal | 37 |
| Studying the Delta Cross Channel | 38 |
| The advantages of building a canal to deliver fresh Sacramento River water to the Delta-Mendota Canal | 38 |
| Ed Heinnemann suggests Vernon move to the Washington, D.C., office | 40 |
| Salary in 1942-1943 | 41 |
| Brief overview of the organization of the Central Valley Project | 41 |
| Relationship of Sacramento to Denver | 41 |
| “I would come up with a preliminary design. We would send in detailed topography [and] . . . our thoughts on the subject, give them a sketch design, and they could do with it as they pleased, and did. Then . . . we'd have to tailor it to fit conditions. . .” | 42 |
| In the field we would tailor the structure to suit the field conditions. | 43 |
| Worked on figuring what payments should be made on contracts | 43 |
| Worked on preliminary cost estimates | 43 |
| How money is committed to construction | 44 |
| Relationship of Denver and the regions to the construction process | 44 |
| Transferred to Washington, D.C. | 45 |
| In December of 1943 became Engineering Assistant in the Commissioner’s Office | 45 |
| Worked for Louis Douglass | 45 |
| Worked on priorities at the War Production Board on the Tripartite Agreement . . . | 45 |
| Worked on getting generation unit N8 at Hoover in operation | 46 |
| N8 was to provide power to the aircraft industry in southern California | 46 |
| Transferred a generating unit from Shasta to Grand Coulee | 46 |
| Coulee provided power to the Hanford Engineer Works | 46 |
| Secretary Harold Ickes liked the idea of regional authorities like TVA | 47 |
| There were many advocates for regional river basin authorities | 48 |
| The Tripartite Agreement was designed to counteract the tendency to regional authorities | 48 |
| Quadripartite Agreement | 49 |
| In the Quadripartite Agreement “We kept our backs covered because we'd never know when you'd get a stab in the back from one of the other agencies.” | 49 |
| Harry Bashore became the Commissioner | 49 |
| Commissioner Bashore liked to use him for special tasks | 49 |
| FIARBC established as a formal arrangement expanding the Quadripartite Agreement | 50 |
| Missouri Basin Interagency Committee established | 50 |
| These interagency committees were designed to counteract regional authorities . . . | 51 |
| John Dixon is brought in to be Engineering Assistant to the Commissioner and to run the | |

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| activities of FIARBC | 51 |
| Involved in the hydrologic studies related to the treaty with Mexico of 1944 | 52 |
| Flood Control Act of 1944 and the Pick-Sloan Missouri Basin Program | 53 |
| “... you're going to be delegated as Acting Commissioner.” (laughter) And then he said, “Your instruction is not to do a damn thing.” | 54 |
| Secretary Harold Ickes loved the preposition <i>that</i> | 54 |
| Initial authorization of the Pick-Sloan Missouri Basin Program | 55 |
| Development of regions at Reclamation | 55 |
| The regions were created partially to forestall creation of regional development authorities like the TVA | 56 |
| Originally there were six regions | 57 |
| Creation of a seventh region for Reclamation | 57 |
| A Gunnison-Arkansas diversion was considered in Colorado | 58 |
| Region VII headquartered in Denver | 59 |
| Personnel established in Region VII | 59 |
| Transferred to Billings as second regional director in Region VI | 59 |
| Issues related to Garrison Reservoir | 60 |
| Disagreement between Reclamation and Corps raised issues | 61 |
| President Harry S. Truman appeared to favor a Missouri River Authority | 61 |
| The “old line” agencies created FIARBC to show the agencies could coordinate their work | 62 |
| The <i>St. Louis Post Dispatch</i> was pushing a Missouri Valley Authority | 62 |
| Planning for the Missouri River Basin involved bringing American servicemen home to jobs | 62 |
| Eleven initial projects were selected for the Missouri Basin | 62 |
| Served as secretary of the planning meeting for the Missouri Basin | 63 |
| Asked to set up Office of Progress Control | 63 |
| Became Acting Progress Control Officer and began to design a staff and office ... | 63 |
| Arranges for Oliver Folsom to leave the Army and work in his office | 64 |
| Began to use a critical path method in tracking Reclamation work | 65 |
| Legal reviews were a bottleneck | 66 |
| Time required for award of contracts was reduced from six months to thirty days | 66 |
| The legal division wasn't used to working with deadlines | 66 |
| The office focused on identifying those things which were holding up projects ... | 67 |
| In 1946 Commissioner held a comprehensive planning meeting with the Secretary of the Interior | 67 |
| Bill Warne assigned Vernon the job of organizing the Missouri River Basin Project | 67 |
| Bill Warne never had a problem | 68 |
| “I used to say to my economic staff, “I could lay you guys end to end, you couldn't reach from here to a conclusion.” | 69 |

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| “It all aimed at a comprehensive program which could be fed into a valley authority. It was all moving in that direction.” | 69 |
| Asked the Bureau of Mines to do a study of coal resources in the Missouri River Basin | 69 |
| “I was handed the job of coming up with an Interior program financed through Reclamation.” | 70 |
| Approached National Park Service about doing recreation development | 70 |
| Worked on a study to see whether Central Arizona Project water could be diverted in the Grand Canyon in order to avoid the pumping required if it was removed lower on the Colorado River | 71 |
| Approaches USGS about participating in the activity | 71 |
| Approached USGS about improved mapping and hydrologic surveys | 72 |
| Problems working with the Fish and Wildlife Service | 73 |
| Decided to use fish hatcheries to deal with some of the issues related to dams in the Missouri River Basin | 73 |
| Suggested replacement areas for upland game also | 73 |
| “I came up with the idea of the Interior Missouri River Basin Committee” | 74 |
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| Sent to Billings in January of 1947 by Commissioner Mike Straus | 75 |
| Wife’s reaction to the move to Billings | 75 |
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| Sent Vernon as assistant regional director to overlap three months with the retiring regional director | 77 |
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| Begins to plan how to organize the region in Billings | 77 |
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| Wanted a strong Planning Division and a strong Operation and Maintenance Division | 80 |
| Setting up the Federal Missouri River Basin Interagency Committee | 83 |
| Approached the Bureau of Indian Affairs | 84 |
| Reclamation’s appropriation bill had a separate section for the PSMBP | 85 |
| Acting Chief Progress Control Officer while still in Washington, D.C. | 85 |
| No-year money in Reclamation | 85 |
| Mike Straus as Commissioner of Reclamation | 86 |
| Commissioner Straus knew Harold Ickes in the Chicago newspaper business | 86 |
| Commissioner Straus had to deal with Central Valley land owners who wished to ignore the 160-acre limitation | 87 |
| In Region VI the agricultural colleges had determined that an operating entity was about 480 acres | 87 |

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| “I’d asked him to consider some relaxation of the 160-acre limitation, because we found that 160 acres, in general, was inadequate in the northern Plains States.” . . . | 88 |
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| Cody District Office established | 97 |
| Yellowstone District Office established | 97 |
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| North Dakota office established in Bismarck | 98 |
| Sheyenne River problems | 98 |
| South Dakota office established at Huron | 99 |
| Fall of 1947 felt his organization was in good shape | 100 |
| Charles Anderson, Regional Engineer | 101 |
| Tom Judah was the Planning Engineer | 101 |
| John Walker was Power Manager | 101 |
| Stan MacAsland was likely to take a job to study diversion of Columbia River and northern California water into California’ Central Valley | 102 |
| Senator Clair Engle supported MacAsland’s studies | 103 |
| Charlie Heinz becomes District Engineer in Great Falls | 104 |
| Charlie Heinz becomes District Manager in Cody, Wyoming | 104 |
| Ollie Johnson was the acting O&M Manager | 105 |
| Ed Landerholm made Director of Operation and Maintenance | 105 |
| Bill Rawlings made Assistant Regional Director | 105 |
| Flood during the summer of 1947 | 106 |
| General Lewis Pick, Chief of the Corps of Engineers, tasked with finding a solution to | |

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| Reclamation also received flood control money, and the Commissioner wanted fast results | 107 |
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| W. Glenn Sloan moved to chair Interior’s Missouri Basin Committee and Interior representative on the Federal Missouri Basin Interagency Committee | 123 |
| W. Glenn Sloan had great vision and a silver tongue, but did not like detail work | 123 |
| Vernon wanted detailed preconstruction planning done for projects | 124 |
| Howard Watt installed as Personnel Officer | 126 |
| Removed the husband of the Republican county chairwoman from the regional personnel office | 126 |
| Began a heavy recruitment program | 126 |
| In 1946 the regional program was \$6,000,000 | 127 |
| In 1950 the regional program was \$50,000,000 | 127 |
| Had provided support to the USGS that proved very helpful | 127 |
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| Devoted most attention to field operations and contacts outside Reclamation | 165 |
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| Was going to be assigned to the High Aswan Dam project | 165 |
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| Arrived in Baghdad for service on November 2, 1954 | 262 |
| Met in Baghdad by the people with whom he would work | 265 |
| Flew to Iraq in propeller planes | 265 |
| Joined the Development Board which was different than the United States Operation Mission (USOM) staff | 266 |
| Worked for the Iraqi Ministry of Development within some limitations because was still employed by the State Department | 266 |
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**STATEMENT OF DONATION
OF ORAL HISTORY INTERVIEWS OF
KENNETH F. VERNON**

1. In accordance with the provisions of Chapter 21 of Title 44, United States Code, and subject to the terms, conditions, and restrictions set forth in this instrument, I, Kenneth F. Vernon, (hereinafter referred to as "the Donor"), of Fullerton, California, do hereby give, donate, and convey to the National Archives and Records Administration (hereinafter referred to as "the National Archives"), acting for and on behalf of the United States of America, all of my rights and title to, and interest in the information and responses (hereinafter referred to as "the Donated Materials") provided during the interviews conducted during the period April 23-28, 1995, at my home, and prepared for deposit with the National Archives and Records Administration in the following format: cassette tapes and transcripts. This donation includes, but is not limited to, all copyright interests I now possess in the Donated Materials.
2. Title to the Donated Materials remains with the Donor until acceptance of the Donated Materials by the Archivist of the United States. The Archivist shall accept by signing below.
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Date: Apr 24, 1995

Signed: Kenneth F. Vernon
Kenneth F. Vernon

INTERVIEWER: _____
Brit Allan Storey

Having determined that the materials donated above by Kenneth F. Vernon are appropriate for preservation as evidence of the United States Government's organization, functions, policies, decisions, procedures, and transactions, and considering it to be in the public interest to accept these materials for deposit with the National Archives and Records Administration, I accept this gift on behalf of the United States of America, subject to the terms, conditions, and restrictions set forth in the above instrument.

Date: _____

Signed: _____
Archivist of the United States



Portrait: Kenneth F. Vernon
New Regional Director in Billings, 1947

Brief Chronology of Career and Life
Kenneth F. Vernon

1910, October 16 – Born in Spokane

1923 – Father retired and moved north of Sacramento, California

1928, January – Graduated from high school.

1928, September – Entered Sacramento Junior College.

1930 – Graduated Sacramento Junior College.

1930-1932 – Worked for California highway department.

1932 – Enrolled at University of California - Berkeley.

1933 – Works highway construction and approaches to San Francisco-Oakland Bay Bridge.

1933 – Continued to work on Bay Bridge and attend Berkeley – including night shift time.

1934, May – Graduated from Berkeley.

1934 -- Worked briefly for California highway department.

1934 – Went to the Bureau of Reclamation in Denver in canals.

1936 – Transferred to Reclamation's Antioch office on the Central Valley Project for more canal work.

1943, December – To Washington, D.C., office as engineering assistant to the Commissioner to work on war time priorities of Reclamation.

1947 – To Billings as assistant regional director for a few months and then regional director.

1953, Fall – Told we was to no longer be regional director, but special assistant to the new regional director.

1954 – Left region and transferred to the International Cooperation Administration to work in Baghdad in the First Technical Section of the Iraqi government.

1959, July – transferred to Karachi, Pakistan, to work in the American Mission supporting water

development.

1962, March – Transferred to Washington, D.C., as Chief Engineer of the Near East South Asia Bureau.

1965 – Becomes Director of Engineering for the Agency for International Development.

1971, May 31 – Retired with 37 years of Federal service.

2000, April 20 – Died in California where he retired.



Department of the Interior
Missouri Basin Coordination Committee

Don Huff, assistant to W. Glenn Sloan; Harry Beckman, USGS; Bud Molahan, Bureau of Reclamation management; Avery Batson, regional director, Lower Missouri Region (Region VII), Bureau of Reclamation; W. Glenn Sloan, chairman; **Kenneth F. Vernon**; Paul Zimmer, Bureau of Mines; Mos Mosbaugh, Fish and Wildlife Service; Russell McKown, National Park Service; Paul Fietinger, Bureau of Indian Affairs



4-15-46

To Ken Vernon:
who has been doing a series of hard jobs well
William E. Warne

Portrait: William E. Warne
Assistant Commissioner
Bureau of Reclamation
About 1946



Ph
W
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Assistant Commissioner
Bureau of Reclamation
About 1947

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Introduction

In 1988 Reclamation hired Brit Allan Storey as the bureau's senior historian to create a history program and work in the cultural resources management program of the bureau. While headquartered in Denver, the history program was developed as a bureauwide program.

Over the years, the history program has developed, and one component of Reclamation's history program is oral history. 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); and, 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 activity, and questions, comments, and suggestions may be addressed to the senior historian:

Brit Allan Storey, Ph.D.
Senior Historian
Land Resources Office (84-53000)
Office of Program and Policy Services
Bureau of Reclamation
P. O. Box 25007
Denver, Colorado 80225-0007
(303) 445-2918
FAX: (720) 544-0639
e-mail: bstorey@do.usbr.gov

For more information on Reclamation: www.usbr.gov

For more information on Reclamation's history program: www.usbr.gov/history

For more information Reclamation's projects: www.usbr.gov/dataweb

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Oral History Transcript
Kenneth F. Vernon

Storey: This is Brit Allan Storey, senior historian at the Bureau of Reclamation, interviewing Kenneth F. Vernon, a former regional director of the Bureau of Reclamation, on April 24, 1995, at his home in Fullerton, California, in the afternoon. This is tape one.

Mr. Vernon, could you tell me where you were born and raised and educated and how you ended up at the Bureau of Reclamation, please?

Vernon: Well, I was born in Spokane, Washington, October 16, 1910. I was the last; I was the seventh child to my parents, John Albert Vernon and Annie Catherine Fraine Vernon. All of my brothers and sisters were born in the state of North Dakota, where my family had homesteaded in the 1880s, and my father broke sod with a team of oxen, but later became a store owner and then was a member of the state legislature.

**Born in Spokane,
Washington**

**Family homesteaded in
North Dakota in the
1880s**

My mother had two uncles in North Dakota who became rather well known. One was a Colonel John Fraine, who commanded the North Dakota National Guard in World War I, and retired as a brigadier general and was active in veterans' affairs. And another was a noted jurist in North Dakota, my Uncle George Fraine. So when I in later years went to North Dakota, I used their names as entrées to many of the leading people in North Dakota, but we'll get into that later.

**Related to Brigadier
General John Fraine and
jurist George Fraine
both of North Dakota**

As I said, my father went from North Dakota to Seattle in 1909, thinking that he might relocate in Seattle, but on his way back to North Dakota, he stopped at Spokane and liked the place, so he wrote my mother and said, "Start

**Family moves to
Spokane in 1909**

packing, because we're going to move to Spokane. I'll be home and help you move, and we'll move the family to Spokane."

My mother was a very active woman. She said, "You stay where you are. I'll pack the family up and the kids, and meet you in Spokane. I'm tired of North Dakota winters." (Laughter) So they moved to Spokane in 1909 and located at 1517 East Ninth Avenue in Spokane.

I was born October 16, 1910, at home, the last of seven children. I had three brothers and three sisters. Two of my sisters died while I was relatively young, so I don't have too much recollection of them, but my three brothers and my third sister lived to much longer lives. Incidentally, I just visited my 94-year-old sister in Sacramento [California]¹ last month.

I went to school at the Grant School in Spokane, the grammar school, which was the first through eighth grade at that time. Then my father retired in 1923 and took up some land in California just outside of Sacramento, and in 1923 we moved temporarily to Elverta, California, just outside of Sacramento. After being there through the winter, in which we built a garage on the farm to stay in while we built other buildings, we went back to Spokane in March of 1924 and I entered Lewis and Clark High School and did a few months as a freshman at Lewis and Clark High School. My family closed up its business affairs in Spokane in the summer of 1924, and we moved permanently to Elverta, California, just outside of Sacramento.

During the winter of 1923-24, when we were temporarily in California, I enrolled and finished up my grammar school education at the Washington Grammar School in Sacramento, living with my brother and his family just across

"I was born October 16, 1910, at home, the last of seven children."

Father retired in 1923 and moved the family to Elverta, California, outside Sacramento

the street from the school, and going back to the farm each weekend, helping my father build buildings.

After relocating in the summer of 1924, permanently, I enrolled in the Harkness Junior High School in Sacramento. This was an old wooden building that had been used many years and all of the stairs had deep grooves in the wooden steps. I imagine that school had been there, oh, from 1880s, 1890s. It was a fire trap, a wooden fire trap.

At any rate, I knew that I wanted to be an engineer, so I enrolled in a pre-college course emphasizing math, science, also starting with mechanical drawing and artwork, because I felt that the ability to utilize visual aids would be an important element in my later engineering life. An interesting facet to going to school in Sacramento from the farm was that we lived two miles away from a railroad station, where I would walk every day and take an interurban train into Sacramento, then a streetcar to the high school.

After the first semester at the Harkness Junior High, the authorities closed that school because a new high school had been built, a new main high school had been built, and we moved over to the previous main high school, which then became the Sutter Junior High. So I did one semester at the Sutter Junior High and moved over to the main high school in the winter of 1924. I continued my pre-engineering education in Sacramento High School and graduated in January of 1928.

In my senior year, I also concentrated on public speaking and debating, as well as continuing studying elements of artwork, visual aids, while concentrating on science, math, and

**Attended Harkness
Junior High School in
Sacramento**

**“I knew that I wanted to
be an engineer. . .”**

**Rode the interurban
train to high school**

other studies which would prepare me for an engineering career.

Jesus, where's this coming from?
(Laughter)

Storey: It's just fine. Don't worry about it.

Vernon: After graduating from the high school in January of 1928, I decided to stay out of school until fall and then enter the Sacramento Junior College, so during that spring and summer, I did a number of odd jobs, working both for farmers, helping my father on his farm, and working for a farmer who did dryland farming during the summer in his wheat operations.

Stayed out of college for one year and worked

Storey: His name?

Vernon: Incidentally, I neglected to say that in helping my father build the buildings on the farm, he built many buildings to conduct a chicken operation, both eggs, poultry, and broilers. Also we had a lot of irrigated farming, and that's where I learned how to handle a number-two round-point shovel in the hot summer months, irrigating for orchard, alfalfa, and vineyard.

Father ran a poultry operation on his farm

I enrolled in the junior high school, Sacramento Junior High [Sacramento Junior College], in September of 1928, and took the usual pre-engineering course with major in civil engineering.

Enrolled in Sacramento Junior College in September 1928

Storey: I thought you graduated in '28.

Vernon: No, I graduated from junior high [college] in 1930. I graduated from high school in January of 1928. I stayed out of school for eight months, working, and then enrolled in the junior college.

Storey: In '28?

Vernon: In 1928.

Storey: And you graduated there in '30?

Vernon: In 1930.

Storey: Okay.

Vernon: I went two years to the junior college. I also got involved in both the debating societies and helped establish the Associated Engineers Club and became its first president, as well as became the vice president of my sophomore class.

During the last half of the sophomore year, I began taking civil service examinations for the state highway. I passed one fifth [ranked] in the state and was offered a job for the state highway before the semester ended, so I decided not to take that and finish up the year at school. Shortly after finishing the sophomore year, I received an offer from the state highway for a job on a mountain construction highway contract out of San Francisco in the Santa Cruz Mountains. I worked for the state highway for two years, because this being in the depths of the Depression, and my father was struggling with his farming operations, I figured I would have to work for a couple of years, save every nickel I could, and then go back to the university to finish my education.

Sophomore year took the civil service exams for the state highway department

Worked for the state highway department in the Santa Cruz Mountains for two years

Saved money to go back to college

Storey: So that would have been '30 to '32.

Vernon: '30 to '32. In the highway construction job, we worked on a mountain construction project that was located near the Big Basin, and this was where I first became aware of conservation of timber resources, because we were in some old-growth redwood. One of the professors from Stanford University, a Professor Wing, was, I believe, one of the early members of the Sierra

Became aware of efforts to protect old growth redwoods

Society. At least he was very strong in protecting the old-growth redwoods.

It was interesting that a lot of this territory had been logged off earlier and had regrown over a lot of it, but there was still some old growth. I can remember one intersection that we had to design, which was in the middle of an old growth [area], and Professor Wing had us out there measuring each tree to figure out how we could get that intersection in that location and save as many trees as possible, which was an interesting thing. That was a interesting thing.

I worked on that job for about – well, from June of 1930 to October of 1931. Then after the close of that job, our party became what was known as a fly party, or a location party, and we began making surveys for new projects, one of which was to connect up from Richmond, California, to the Carquinas [Strait] Bridge, the relocation of the highway from Richmond, California, to the Carquinas Bridge, abandoning the old location. Another project was the relocation of the highway through the Dublin Canyon from Hayward to Livermore. Again we abandoned the old location and got a completely new location, and also the Altamont Pass, which was from Livermore over to Tracey, again abandoning the old locations and adopting new locations which gave the opportunity to expand to what has now become modern dual-carriage-way freeways. Incidentally, those locations still hold. We got enough room so they could be expanded. When we first went through there, they were four lanes, but they weren't divided, and then later they were able to divide and expand and expand, and they're still there.

Later we moved to Los Gatos, California, where we began the surveys for the relocation of Route 17 from Los Gatos to Santa Cruz. The old

Worked on location of highway from Richmond, California to the Carquinas Strait Bridge

Worked on locating highway Hayward to Livermore

Worked locating the highway from Livermore over Altamont Pass to Tracey

Surveyed the relocation of Route 17 between Los Gatos and Santa Cruz

location had been built in the Richardson administration in the 1920s, which had become grossly overloaded with weekend and holiday travelers so that a whole new location was required, which could later be expanded into a modern freeway. This was a very interesting exercise in modern highway location, upgrading to, what were then, very modern standards.

During that summer, the summer of 1932, I decided that I had saved up enough money by scrimping and saving, to re-enroll, or to enroll, in the University of California, which I did in August of 1932. I adopted three majors: irrigation engineering, because of my experience on an irrigated farm; transportation, because of my experience with the state highway; and structures, because I was interested in the design of buildings and bridges.

In 1932 enrolled in University of California - Berkeley and majored in irrigation engineering, transportation, and buildings

Storey: These were three majors *in* engineering?

Vernon: In engineering.

Storey: In civil engineering? And this was at Berkeley?

Vernon: Berkeley.

Storey: University of California at Berkeley.

Vernon: University at Berkeley, yes. Incidentally, I still wear it; my wife gave me that on my graduation, so I still wear it.

Storey: Your class ring.

Vernon: Yeah. As well as concentrating on engineering studies, I also went over into the College of Letters and Science and loaded up with a number of electives, subjects to broaden my overall education, and one of the most interesting that I found was historical geology, and [I] carried that

Took courses outside engineering

as a sort of a hobby throughout my life, studying the history of geologic formations and what has happened over time with various physical features in a landscape.

In the summer of 1933, I was able to get a job on a highway construction contract which I started out as a guy on the fill, patrolling the unloading of trucks, and later becoming shift foreman on the night shift, where I had charge of a earth-moving shovel, a number of bulldozers, trucks, and labor crews.

Later that summer, I was given the opportunity to rejoin the Division of Highways in San Francisco, working in the approaches division to the San Francisco-Oakland Bay Bridge. There I prepared maps and drawings, locating where the approaches might go. Because this was still in the depths of the Depression and money was scarce, I made an arrangement with my supervisor to work two afternoons a week and Saturdays and Sundays in the bridge while I was still attending the classes at university.

One of the interesting problems I worked on was the study of whether the Southern Pacific “red trains” could be routed across the bridge, but we found that they were so big that it was very difficult to get them off of the bridge on the East Bay side and feed into their existing system, so we concentrated then on utilizing the Key System,² which became the system of choice to travel from San Francisco across the bridge and distribute out through the East Bay side.

Storey: The Key System?

Vernon: K-E-Y. Key System. There were two transportation systems on the East Bay side. There was the SP, Southern Pacific “red trains,”

Summer of 1933 worked on highway construction

Later in the summer of 1933 worked on the approaches to the San Francisco-Oakland Bay Bridge

Attended college while working on the bridge

Looked at running the Southern Pacific across the bay on the bridge

The two transportation systems in the East Bay

and there was the Key system yellow cars. There was two ferry systems that went across the Bay, and the red trains went to the Southern Pacific mole on the East Bay side, and the Key System ran on a long mole out into the Bay, and its ferries to the San Francisco side.

The lady who later became my wife used to take a streetcar; she worked in San Francisco, she was the executive secretary in a publishing firm, and she would take a streetcar from Berkeley, where she lived, down to where she would catch one of the Key System boat trains, then take a ferry to San Francisco, then take a streetcar to her office location in San Francisco, all of which she could do within an hour. That's a record that the BART [Bay Area Rapid Transit] system has trouble matching today.

“my wife used to take a streetcar . . . from Berkeley . . . down to . . . catch one of the Key System boat trains, . . . then take a streetcar to her office . . .”

Storey: Uh-hmm.

Vernon: Also during that year, I was correcting papers for two professors in structural mechanics, strength of materials, etc., so I was reading papers from about 120 students, as well as working 16 hours a week in the Bay Bridge, as well as taking 22 hours of course work in the university. That's when I began wearing glasses. I traded my bed for a lantern. (Laughter) Oh, God, what a year.

“I was correcting papers for two professors . . . as well as working 16 hours a week in the Bay Bridge, as well as taking 22 hours of course work”

That Christmas holidays, I was able to get full-time work out on the survey crew working on the Bay, on the East Bay side, making soundings in the Bay to determine where the East Bay approach roads should go. What we were looking for was the bottom of the Bay was covered with about eight feet of mud and slime, then underneath that were layers of nearly pure sand, which could then provide a base to take the approach roads after dredging off the mud and slime.

Christmas holiday worked for the survey crew full-time on the bridge

There's a sidebar to this. We had a little scow about, oh, eight feet by sixteen feet, that had a well in the center, which we would drop a sounding device [through] and pull up cores to find out where the sand layer was and how deep it might be. One day we had decided we were through with taking soundings, so we brought the scow up to a wharf and tied up, and we were going to take the A-frame off the top of the scow because we would use the scow then just as a transport rather than as a working boat. We tied up to the wharf, and it was at low tide. The deck of the wharf was about eight feet above the level of the water. We tied up the boat, we thought, to the dolphins on the wharf, and I stayed in the boat, whereas the rest of the crew got up on top and were lifting the A-frame off the boat, and I was guiding it away from the wharf down below, 'til we got up to a point where I couldn't lift anymore and they couldn't pull anymore. So I said, "Wait a minute. I'll climb up the wharf and get up there with you and give you more pull." So as I was climbing up the facing on the wharf, I thought the chain around the dolphin was fastened, but to my horror, when I grabbed hold of it and pulled on it, I found out it wasn't, and I flopped over backwards into about six feet of water, mud, and slime up to my neck. (Laughter)

Storey: Oh, my! (Laughter)

Vernon: And part of that slime was the general sewerage outfall from Oakland and Berkeley. (Laughter) Oh, God, what a mess! And bad news travels fast. About two days later, the supervisor came out and said, "Hey, Vernon, I understood you went into the drink." And I said, "I probably will never live that down." (Laughter) Oh, dear.

Am I going into too much detail?

Storey: No, this is great. This is absolutely great.

-
- Vernon: Because it just keeps coming back. I have to think of where I am.
- Storey: That's fine. Let's just keep going.
- Vernon: After working out there all during Christmas vacation, I asked the supervisor – by this time, they had let the contract to begin dredging for the fills to make the approaches into the Bay spans. The plan was to dredge out the mud and slime down to the sand and discharge it some distance away from where the approach road would go. Also we were to dredge the sand from what was to become the turnaround for the Port of Oakland, which was adjacent, and the contract for the dredger had been let and moved to the site, had come down from Fort Peck, at that time was one of the largest dredgers in the world, the Fort Peck Dam up on the Missouri River, it had helped build the Fort Peck Dam up on the Missouri River. This was going to dredge twenty-four hours a day.

So I'd asked the supervisor could he arrange for me to do the night shift inspection on the dredger, figuring that I could get my studying done on the night shift, because there wouldn't be too much going on, and I might even get a nap or two in the process. But by this time, I had decided that by struggling and scrounging, I might be able to squeak through, and borrowing here and there, squeak through and get through in June. If I worked that night shift, I'd have to take possibly another year, and by that time I'd had it. I just felt that I just couldn't do it, so I went back and told my supervisor that I thanked him for making the effort to get me that job, but I said, "I just feel I shouldn't do it, can't do it, and I want to get through."

One of the elements I didn't mention earlier, back in the winter of '32-'33, was after

Asked to work the night shift full-time while going to school but then decided to push to finish school

Bank in which he had saved his money from

working for two years and saving up money to go back to the university, I had had an operation on my back over the Christmas holidays of 1932, and then I was still recuperating when in January of 1933 the bank in Sacramento that had all the funds for me and my family went closed. It missed the Bank Holiday by six weeks.

**working in 1932-3
closed its doors**

END OF SIDE 1, TAPE 1, APRIL 24, 1995.

BEGINNING OF SIDE 2, TAPE 1, APRIL 24, 1995.

Vernon: In the Christmas of '32, I had an operation on my back, and then I was still recuperating when in mid-January of 1933, my brother called me and said, "Kid, we're in trouble. The family's completely out of funds. The bank that contains all of our funds, including yours, has closed its doors."

I thought grim disaster stared me in the face, because I had cashed a check for \$10 the day before he called me, and I'd had a penny in my pocket which I'd given to a little girl, a little baby, at the boarding house where I was living, and I said, "Oh, my God. I've got to keep this \$10, because they're going to bounce that check and I'll have to make it good." So I was without a nickel, without a penny, even a penny.
(Laughter)

**"So I was without a
nickel, without a penny,
even a penny. . . ."**

I called my father. I said, "Listen. I used to work for a man named Charles, we called him "Chas," Scheidel." S-C-H-E-I-D-E-L. He was the dry farmer who I used to work for in the harvest field. I said, "Chas used to think I was a pretty good guy. Take my bank book over to him and show him that I have the funds in the bank, and maybe he'll loan me a couple of hundred bucks on the strength of my bank book, and we'll ultimately get some money out of it," which my father did, and Chas came through because he was in another bank, and he came

**Advanced money by
Charles Scheidel**

through with \$250. [I] also went to the university and got some money from them, so with that money I figured I would be able to get through 'til the summer, where I could get some work.

Then picking up now in the spring of 1934, after deciding to not take the night inspection job, but concentrating on the university work and getting through, I graduated in May of 1934 at the top of my class. I received two accolades at that time; one was a junior membership of the American Society of Civil Engineers, which was awarded to the outstanding engineering graduate at Berkeley. Incidentally, I became friends later with Brooks Morris, who was the same type of graduate from Stanford, and we roomed together when we joined the Bureau of Reclamation in the summer of 1934 in Denver, just by accident.

I graduated in May of 1934 at the top of my class. . . .

The second award was a membership in the Society of the Sigma Xi, S-I-G-M-A X-I, which, translated literally, means "the brotherhood of the search." Only two members of the Engineering College were awarded such memberships in the Sigma Xi; I was one of them and one of my colleagues was awarded the other one.

Also during the year I had become a member of the engineering society Tau Beta Pi, T-A-U B-E-T-A P-I, which was fundamentally the civil engineering fraternity at the university. It was a scholastic fraternity rather than a society fraternity.

After graduation, I went back to work for the Division of Highways out of San Francisco, at my old rank, working on the widening of the streets and approaches to the San Francisco-Oakland Bay Bridge.

After graduation went to work for the highway department

Storey: Had you quit working for them while you finished school?

Vernon: Yes, I quit after – when I told Paul that I just wanted to get through school.

Storey: Paul?

Vernon: Paul Harding, who was my supervisor in the Approaches Division of the Bay Bridge. I said, "I'm going to take a 'leave of absence' or a temporary resignation. As soon as I get through school, I'll want to come back." He said, "Okay, you can come back when you get through."

Storey: Okay.

Vernon: So I rejoined. They took me back, and they had this program going, the widening of the streets in San Francisco.

They were widening the streets in San Francisco

One of the interesting elements of that was we ran into the emergency earthquake fire system in San Francisco, which has its reservoirs up on Twin Peaks, and also the fire boats can tie into it at the Bay. Now, this fire system was very carefully guarded and highly restricted access, but we found that in widening the streets, we would have to set the hydrants back to – oh, I don't remember, ten or twelve feet, something like that, to give additional lanes to the streets. But we ran into trouble because nobody in San Francisco had the authority to let us move and shut that system off. I don't know. It may have even taken a special dispensation from the governor, I don't know what it took, but it took many, many meetings by the people in the Division of Highways to get authority to shut that system off, because these hydrants were located in a big block of concrete, because they were under such extreme pressure that the nozzle effect of just turning that water loose would just

Moving emergency earthquake fire hydrants in San Francisco was an interesting problem

blow them right out of the ground. So we ultimately got that authority, and they shut the system off so we could remove the old hydrants and install new hydrants. I've even got some pictures in my scrapbook of what we were doing there in San Francisco.

Storey: What were you earning when you first started for the highway department in the summer of '34?

Vernon: Oh, my. Oh, my. I started out in the summer of 1930 as a rear chainman at \$105 a month. I worked a year, taking examinations every chance I could get, and I passed. I neglected to mention that. During 1931, I took a structural engineering exam and passed. I took a senior engineering field aide exam and passed, ninth in the state, because I had a good background in surveying and construction surveying, inspection. But not having a degree, I couldn't qualify for an engineer rating, but I could become a senior engineer field aide for \$145 a month. So when I went back to work for the highway in San Francisco, I went back at my old rank of senior engineering field aide, which, of course, sort of rankled, because I felt now I had another string to my bow, and I thought I should become at least a junior engineer.

So the last semester at university, I had taken a graduate course under Professor Etcheverry,³ who was head of the Irrigation and Engineering Department, and had studied many of the [Bureau of] Reclamation plans for the Central Valley Project. Correction: it was the state plans at that time, it wasn't Reclamation. It was the state plans, the state water plan.

During his last semester took a graduate course under Professor Bernard A. Etcheverry

Storey: Upon which ultimately Reclamation built.

Vernon: Yes, but also studied many Reclamation plans, which this was a seminar course in which there

were only three of us and we met two afternoons a week with Professor Etcheverry, and it was very informal. I felt that I learned a great deal just being associated with the man and learning his background. Professor Etcheverry – E-T-C-H-E-V-E-R-R-Y.

Storey: Thank you.

Vernon: As a matter of fact, he had written three books which he used in his courses, which were bibles for anybody studying irrigation engineering, and also his associate professor was Sidney T. Harding. Etcheverry was more of the structures and organization man, and Harding was on farm irrigation, so I got an excellent background in both irrigation hydraulics, irrigation structures, and irrigation distribution on the farm, preparing the ground for irrigation practices.

So I had asked Professor Etcheverry, after graduation, could he give me a good word with the Bureau of Reclamation, so he wrote R.F. Walter, who was then the Chief Engineer, and also Walker R. Young, who was then Supervising Engineer of Hoover Dam, and telling them that here was a young man who had graduated, made a good record at the university, and, having worked, I was some senior to most graduates, so he put in a very good word for me.

As a result of his efforts, I received a letter from Reclamation in Denver; I forget whether it was R.F. Walter or Sinclair O. Harper, the assistant chief engineer, offering me an appointment as a junior engineer at Davis Dam. So I began making arrangements to stop my association with the Division of Highways and prepare to join up with the Bureau of Reclamation. This was the summer of 1934.

In the middle of this, I got a letter from

Etcheverry focused on structures and organization and his associate, Sidney T. Harding, on farm irrigation

“So I had asked Professor Etcheverry, after graduation, could he give me a good word with the Bureau of Reclamation . . .”

Offered job with Reclamation

Problems with Arizona

Denver saying that my appointment had been changed, that I was no longer going to Davis Dam, but I'd be assigned to Denver. It seems that there was an argument about the Colorado River with Arizona, and they had called out their navy and stopped construction on Davis Dam. Now, I may be a little haywire on this. I think it was Parker Dam,⁴ not Davis Dam, but Parker Dam, because that's where the Metropolitan Water District, I think, was taking off in its pipeline to the Metropolitan Water District. So I'm probably wrong, not Davis Dam, it was probably Parker Dam.

over Davis Dam result in change in assignment for first Reclamation job

Storey: But they did call out their state militia, I believe, at one point.

Vernon: Well, the state militia, and they got out some rowboats, and we always said they called out their navy. (Laughter) So things got into a hiatus there, but apparently Reclamation was interested in me, so they transferred me, made my appointment to Denver. So I made arrangements to stop my association with the Division of Highways and to appear in Denver, I think it was July 14, 1934.

In the meantime, my association with Helen Garlinghouse had become much more exciting and interesting, and we agreed that we ought to take life together after that. Excuse me. She's gone.

Marries Helen Garlinghouse

I proposed and she accepted, but I said that, "Look. I owe everybody in town. I've got to work a while. I owe the university. I've got to work a while to pay off these debts. Then we'll think about getting married, and let's aim for Christmastime of 1934." So I went to Denver. She agreed.

I went to Denver and was told that I was

Reported to the canals

to report to the canals division under Mr. [Harry R.] McBirney, and after reporting to the canals division, I worked for a few days with Howard Curtis, who then was working particularly on the All-American Canal designs, but then was later assigned over to Arthur "Bud" Reeves, who was working on a number of rehabilitation projects, who had charge of the work on a number of rehabilitation projects.

I first located at the YMCA when I got to Denver, and there I met a young man, Brooks Morris, whose father was – I can't think of his first name, but Mr. Morris, who was the chief engineer and general manager of the Pasadena Water Works. Brooks was also the award-winner at Stanford that I mentioned earlier, so we had a good deal in common. I said to him, "Look. I want to get married at Christmastime and I'm trying to save as much money as I can. I want to find a place to stay. Do you want to shack up with me and let's find a boardinghouse that we can room together just like we would at college, and I can save a bit of money and you can save a bit of money?" Well, Brooks agreed, so we found a place close to downtown, which was then a boardinghouse hotel, and we roomed together then all during that fall and up until Christmas.

By Christmastime, I figured I had enough leave saved up and enough money saved up to get back to California, and I'd also bought a car, so I drove back to California, arriving just before Christmas. California had instituted a three-day law, and because of the holidays, we were kind of stuck with a problem of scheduling. (Laughter) My then-to-be wife said, "I don't want to get married on Christmas, because if something happens to us along the way, I think too much of Christmas to have you spoil it for me." She was then declaring her independence.

division under McBirney

Worked with Howard Curtis and Arthur "Bud" Reeves

In Denver soon roomed with Brooks Morris in a boardinghouse hotel

Married on December 29, 1934

(Laughter)

At any rate, we married December 29th at her parents' home in Berkeley. Then we took a low flight back to Denver, traveling morning to night, late in the night, 60 miles an hour over bad roads, managed to get back to Denver to an apartment that I had rented, where we could land and then get really located after we had got settled. So we stayed in a one-room apartment for a month. We then located to a nice flat out near Cheesman Park in Denver. Incidentally, in 1993, I tried to find that place, but it was now a parking lot. (Laughter) But it was close to Cheesman Park. We used to walk over to Cheesman Park all the time.

Incidentally, that fall at Denver, while I was living there at the boardinghouse, I also got involved in the Hinman School of Music, which had an adult course there. The lady, Florence Lamont Hinman, ran a school for budding operatic students, and then she had an adult class which would provide background [music; the chorus]. She would give her prime students operatic roles and give the adults the spear-carrying roles, and so we put on several segments of operas during the spring and summer, in the summer out at Cheesman Park. You know that pergola that's out there? That was the stage, and then people sat on the grass out there, and we put on the operatic segments out there.

Became involved with Hinman School of Music (later the Lamont School of Music) and performed in operas at Cheesman Park

Storey: Where was the Lamont School of Music located then?

Vernon: It was down – I'm trying to recall. I used to walk down. It was about 8th Street, 8th or 9th, down there. You remember those big old houses that belonged to the mining moguls down there about 8th or 9th, Grant, Sherman, and Washington, whatever those streets are? So it was down in

there somewhere. It was a big old mansion-type thing.

Storey: A big red-stone mansion up there on Grant Street, I think.

Vernon: Well, one of those. I don't recall just exactly where it was now, but I know I used to walk down there in fifteen minutes, something like that. Also there were a couple of my buddies that worked in the canals division that, also, they were the ones that got me interested in this: Wally Schneider, who was a basso, and Loyce Johnson, who was a tenor, and he was trying to become one of her prime students, one of Mrs. Lamont Hinman's students.

Wally Schneider and Loyce Johnson of the Canals Division also participated

Incidentally, one of her prime students at the time I was there was – Janet Dickinson? Her last name was Dickinson. I don't recall whether her first name was Janet or something like that, and she became a star on NBC Radio in New York. She was a coloratura, a beautiful voice. So it was very nice to be associated with these people. In other words, I had other interests than besides just engineering.

“In other words, I had other interests than besides just engineering. . . .”

I worked on several interesting projects in the canals division there in the design. Since they knew that I had a good hydraulics background, I got to perform several interesting hydraulic studies. One particularly was on the All-American Canal. Another was on the Malheur siphon for the Owyhee Project, which was then quite remarkable for its size and length.

Worked on several interesting projects in the canals division

Then also my oldest son was born in Denver on January 18, 1936, at St. Luke's Hospital.

Oldest son born in 1936

During all this time, I was following what was happening in California in connection with

Because of Etcheverry's class, followed the development of the

the Central Valley Project, because I, during my senior year, in that graduate course had studied a lot about the state plan for the Central Valley Project. So I kept talking to Mr. McBirney, who was the head of the canals division, if it was happening, and when it would happen, and if it happened, would there be an opportunity to transfer out there. I'd had to pass up one opportunity to transfer back to the field because Mills Bunger, who was then the planning engineer for the Colorado Big Thompson transmountain diversion, was getting ready for preconstruction work, and he was setting up a headquarters at Grand Lake. Since I had done some work with him on the planning estimates for the Gila Project, he offered me the job of office engineer at Grand Lake. I said, "Well, let me go and see. I think my wife is now pregnant, and I've got to see what the facilities are at Grand Lake."

So one Sunday we drove over to Grand Lake and found it sky-high in snow, and very few facilities, and some distance from a hospital at that time, so I had to tell Mr. Bunger that I felt that I had to refuse his kind offer. So I kept in touch with Mr. McBirney about happenings on the Central Valley Project, because I was anxious to get back to California if I could.

He came back from one trip and said Mr. Young, who was a former Supervising Engineer of Hoover Dam, had now been set up as Supervising Engineer for the Central Valley Project, and his headquarters were going to be in Sacramento. One of the big problems of the Central Valley Project would be the water transfer facilities in the Delta, which would mainly be canals. Water was being sent down the Sacramento River, then would transfer through the Delta, up the San Joaquin River by means of conveyance canals, and then would

Central Valley Project

Offered job on the Colorado-Big Thompson Project by Mills Bunger

"I was anxious to get back to California if I could. . . ."

replace the water in the San Joaquin River, whereas water in the San Joaquin River behind Friant Dam would be sent south in the Friant-Kern canal; in other words, there would be a water exchange.

So I kept in touch with Mr. McBirney on developments going on out in California, telling him that I was very interested in getting out there if I possibly could. In late May, it sounded like things were happening out in the Central Valley Project, to get started, so I told Mr. McBirney I'd like to take some leave and take a vacation. I had enough leave to get out there, and would it be okay if I talked to Mr. Young about maybe getting transferred to the Central Valley Project. He said yes. He said, "I think they could use you out there."

So we went to my parents' farm outside of Sacramento, and then I went into Sacramento and talked to Mr. Young, trying to persuade him that the Central Valley Project would not be a success unless it had my services.

Went on vacation and approached Walker Young about a transfer to the Central Valley Project

He said, "What makes you think you're so hot, Vernon? I never saw you before until you walked through that door." (Laughter)

I said, "Well, that's your problem, Mr. Young." (Laughter) Fortunately, he took it okay. At any rate, I said, "I cleared it in Denver that if you request me, they'll release me to come to the Central Valley Project. I dearly would love to come. I've got my background here and all the rest of it."

So he agreed then, he would ask Denver for my transfer. So both my wife's family and my family were in California, so we were visiting around, and time was going on, time to go back to Denver. We were back out to the

ranch, and we'd already overstayed a day. We were throwing stuff in the suitcase. I said, "We're probably going to have to drive all night to get back to Denver in time for Monday morning," when some guy drove up yelling, "I've got a telegram for Kenneth Vernon! I've got a telegram for Kenneth Vernon!"

So we all rushed out of the house to see what this telegram for Kenneth Vernon was, and it was a telegram from Walker Young, saying that Denver had approved my transfer to the Delta Division of the Central Valley Project, that I should report there A-S-A-P – as soon as possible. So what a relief! (Laughter) What a relief.

Offered job on the Delta Division by Walker Young

So we then, instead of packing up to go to Denver, then we packed up and went down to Antioch, which was the headquarters of the Delta Division, where I reported in to a Mr. Oscar T. Boden, who was the division engineer of the Delta Division.

Reported to Oscar T. Boden in Antioch, California

How much do you want to go into the Delta division?

Storey: Please, keep going.

Vernon: We're still only in 1936. I don't know whether you're going to get out of here. You may have to – I'm leaving for Atlanta next week. (Laughter)

Storey: I may just have to buy more tapes, or come back.

Vernon: At any rate, God, where's this stuff coming from?

Storey: This is great. Don't worry about it. This *is exactly* what I want.

Vernon: I'm trying to weave in things that were going on at the same time around me.

Storey: This is beautiful. Don't worry about it.

Vernon: Incidentally, the other night, one of my neighbors, one of the consulting engineer firms that I did work with overseas, he said his sister's husband also worked for that from TAMS in New York, and she was going to be visiting, so he said, "Would you come up and visit with her?" Because she also knew the men that were in Baghdad with me and also in Pakistan. So I went up there, and a lot of this stuff came up, but this was basically in Baghdad and Pakistan when I was in the Foreign Service. But, you know, you get started, and, God, it just rolls on.

Well, at any rate, here we are.

Storey: This is great.

Vernon: Now I'm reporting to the Delta division. Let's see. I've got notes on the Delta division. We got through (a) Denver, 1934 to '36. Now we're in the Central Valley Project, '36, and I included up to 1944.

Worked on the Central Valley Project 1936-1944

The three basic elements of the Central Valley Project were the Contra Costa Canal, which was a canal which would pick up in the Delta area and deliver fresh water along the southern coast of the San – not San Pablo. I can't remember the name of the bay, the confluence of the Sacramento and the San Joaquin Rivers. The second element was the Delta Mendota Canal, which would pick up water which would come from the Sacramento River and discharge it by pumps into a canal which would deliver it to the Mendota pool, the upper/lower San Joaquin River. The state plan had presumed to build a series of low dams up the river, but Mr. Boden, being an excellent canal man, concluded that the thing to do was to pump the water in one step out of the Delta and into a canal which would keep

Overview of canals of Central Valley Project

the water, the Sacramento River water, the Delta water . . .

END SIDE 2, TAPE 1, INTERVIEW OF APRIL 24, 1995.

BEGIN SIDE 1, TAPE 2, INTERVIEW OF APRIL 24, 1995.

Storey: This is Tape two of an interview by Brit Storey with Kenneth F. Vernon on April the 24th, 1995.

Vernon: The Delta Cross Channel. We got to the Delta-Mendota Canal delivering water to the Mendota pool, which was a structure which delivered water to lands along the Lower San Joaquin River.

The third element was the Delta Cross Channel, which was to get the Sacramento River water across through the delta to the pumps for the Delta-Mendota Canal. I'll take these up separately.

The Contra Costa Canal began at the Rock Slough, a channel in one of the myriads of channels in the Sacramento-San Joaquin Delta, picked up water, and for four miles went through boggy terrain to a series of pumping stations which would deliver the water, raise the water, as I recall, about 120 feet.

The state plan had included a series of pumping of stations, but had spread them out [along] ~~over~~ the canal, so that a number of areas of irrigable land was lost in the process because it didn't gain enough elevation.

Mr. Boden's plan concentrated the four pumping stations near the headwaters of the canal, and then gained command of a good deal more land, and also made a better operating entity because the [pumping plant] operators were condensed into a relatively small geographic area.

Pumping plants on the Contra Costa Canal were located to increase irrigable acreage

Also because of his scheme, there was a tunnel of about a half-a-mile length to get away from the basic delta area and then gain this elevation so as to command additional lands, and pick up a reservoir for the city of Antioch water supply where we could deliver fresh water to [the city] ~~them~~ instead of [it] ~~them~~ having to pump out of the bay [during high salinity periods].

Contra Costa Canal designed to deliver water to Antioch

Storey: Now, had all this been decided by the time you got there?

Vernon: We were in the process of surveying. I was just going to take up what was going on when I got there.

Storey: Okay, excuse me.

Vernon: When I arrived on the Delta Division, it had been active for about six months, and the main activity at that time was topographic surveys, and also canal route location surveys, and cost estimating.

My assignment was fundamentally construction cost estimating, structure design, preliminary structure design. . . Well basically, at the beginning of it, canal quantity estimates, preliminary structure design, and cost estimating was my principal function because of my experience both in highway work and in the Denver office on structure design and canal structure design.

Did cost estimating and preliminary structure design

Mr. [Bernard (Barney) P.] Bellport,⁵ who was my associate at that time, was heading up the office work on the topographic surveys. He was a graduate mining engineer, and later became Chief Engineer of the Bureau of Reclamation, incidentally. And also, later days, he got very deeply involved in the property land surveys because we were involved in old Spanish grants. We also had some of the regular U.S.G.S. [U. S.

Worked with Barney Bellport

Geological Survey] cadastral surveys, but we also were involved in old Spanish grant properties, which was a whole different ball of wool.

We started construction of the canal in 1936 with the excavation of the four-mile section leading away from the delta area through the bog. And this was a very interesting construction, because we had a number of structures to build, and we literally built them on floating rafts. That is to say we over-excavated into the peat and muck, then laid down a heavy layer of gravel base many feet thick, upon which we erected the structures. So literally, these structures floated ~~with the~~ up and down [because] of the tide in the various water channels [caused the delta banks to go up and down].

Canals in the boggy areas were designed to float

Another interesting element was the method of excavation of this canal. The contractor used a Walking Monighan, M-O-N-I-G-H-A-N, Monighan, which was basically a drag-line, a power drag-line, sitting in a tub which had pontoons and a tub at a base. The pontoons were on walkers, on cams, so that by moving the cams, the pontoons would set down, then the cam would lift the tub off the ground and move it forward. Then the tub would sit down and relift the pontoons. A sketch will – you'll need a sketch.

Excavation of the Contra Costa Canal in the initial boggy sections

- Storey: I think I understand, though. They would be sitting on the pontoons, then it would be sitting on the tub, then on the pontoons.
- Vernon: Yeah.
- Storey: And unfortunately, we can't put a sketch into the tape. (laughter)

Vernon: I didn't know whether you'd get that or whoever, but here's the cab, the drag-line's out here. And then there's this kind of a track here, like that, and there's a cam in here. And then over here, down under here was a tub, like this, but also here on this cam was this pontoon arrangement which sat out here looking at it this way. Here was the tub down here, and here was the pontoons here, you see. They moved up and down, so as the pontoon settled on the ground, then this cam would come around and lift [the tub] this up like that. Then this would move forward or backwards. Backwards would move the cab forward. The pontoons would sit down again, I mean the tub would sit down again.

Storey: Yeah, and the pontoons would go up.

Vernon: The pontoons would lift up. So that's the way it worked. And it could work in that soft, mucky ground because it had low enough ground pressure.

Storey: Which canal?

Vernon: This was the Contra Costa Canal.

Storey: This was the canal to get to the pumping plants?

Vernon: Yes. This was the length of canal, about four miles, from the slough into the first pumping station. Then we let successive contracts. Then after the first pumping station, the canal was to be concrete-lined.

And one of the developments of that concrete lining was somebody invented a canal trimmer, a mechanical canal trimmer, to the desired section which ran along on rails, carefully controlled as to elevation, and then later, placed the concrete. There was a lining machine which placed the concrete in the desired

Canal trimming and lining after the first pumping plant on the Contra Costa Canal

sections at the desired thickness.

And the contractors used mobile transit trucks, used a central mixing station for their concrete. Brought the concrete to the ground location in transit mixers, dumped the concrete into hoppers which spread the concrete across the lining machine. And there was a vibrator in the lining machine which vibrated the concrete, consolidated it into the desired form and strength.

Incidentally, one of the other developments of that lining was at that time, curing compounds for concrete were just becoming available on the market. The Hunt process at that time was a black asphaltic compound. This was spread on by pressure sprays which sealed in the water. Up to that point, concrete [needed] **needs** to be cured in a damp environment to gain its strength.

Normally, we consider the twenty-four-hour strength, the seven-day strength, the twenty-eight-day strength – concrete by testing to see how it's developed its strength. But in order to that, because concrete dehydrates or hydrates, whichever is the proper term, there's a chemical reaction going on with the cement in the concrete that takes up the water. So if you don't keep it moist, in a moist environment, it becomes too dry and then never gains its true strength because concrete [can] **will** gain its strength in a completely submerged environment.

So the magic of these curing compounds was that being asphaltic or at least hydrocarbons, waxy, it sealed in the water that was in the cement mix, concrete mix. But the problem was with the black curing compound out in the sun – and California sun gets very warm – the temperature in the concrete could get up to 150

Curing compounds for concrete were just coming into use

The problem with black asphaltic-hydrocarbon compounds

degrees, which would destroy its strength because of expansion. You had a conflict going on in the concrete itself, expansion due to heat, contractions during hydration.

So somebody developed a white pigmented compound. We did a lot of testing with that white pigmented compound in '37 and '38, and as a result of that, it became widely utilized. The main thing that it did was reduce the curing temperature in the concrete, in the lining spread out in the sun because of the reflective power of this white pigmented curing compound. So this became widely used after that.

We experimented with a white compound

Storey: Now the canal trimmer? Was that invented by Reclamation?

Vernon: It wasn't invented by Reclamation, it was invented by somebody. It was utilized – I think we were about the first canal to utilize it because then it was widely used on the Columbia Basin Project in a much larger form. I've forgotten who the guy was that actually developed it, probably a number of people. A form of it was brought – one of the contractors brought it to the canal contract that he had, and then they worked on it, improved it, as they went along.

The canal trimmer

But it was a series of buckets. The canal had a section like this, and a rail was set up here on the sides of this little berm, and then this was very carefully controlled as to elevation. Then both the canal trimmer and the canal lining machine ran on these rails, and you had a level line, which there was a needle that ran along it so that it had levelers on it in case there was any differential in the rail, you could control the thickness.

So this was a ~~bucket~~, a continuous bucket

line, the canal trimmer. First the canal section was like this, but then because of the trimmer, this was rounded off to an arc, and then the buckets came down through here, chain buckets.

Storey: And just shaped the sides of the canals.

Vernon: Then this dropped into a hopper here and then there was another chute here and ran this out and deposited this trimming, because you run through with drag-lines first and got this down to maybe about six inches or so, a *rough* section. Then you could put the trimmer in and take off that last six inches, and came out with a smooth section. You then brought the lining machine in, and they placed a three-inch lining, concrete lining.

This was a continuous bucket line that ran like this and dumped over here, and then a hopper which then carried this off and deposited it out on the side. They could run trucks under it or whatever, wherever they wanted to put the material.

Storey: Now, was the canal full of water when it was being lined?

Vernon: No, no.

Storey: It was dry?

Vernon: It was dry. We hadn't built the pumping stations yet. So we got into several contracts on building the canal sections. Then by this time the pumping stations had been designed, and contracts were let for the construction of the pumping stations.

We ran into a very interesting problem with the number-one pumping station because it was just at the edge of the solid ground and the peat bog. We tried to locate it far enough back

into the solid ground so it would have a solid foundation, not a floating foundation, although the way we constructed it we also gave it that floating foundation on a very heavy level of gravel.

But this station was located less than a quarter of a mile from the main line on the Santa Fe Railroad. By this time it was wartime, and there was a very heavy load of traffic on the Santa Fe Railroad going in and out of the San Francisco Bay Area, particularly because of the ~~shipyard building~~, shipbuilding yards. They were located at Richmond. They were turning out a ship a day there.

And at that time, the Bureau had its own master mechanic and master electrician, and we did not employ contractors to install the machinery in the building. The contractor built the building, but then the machinery was installed by Bureau employees, headed by a master mechanic for the pumping machinery and a master electrician for the electrical machinery.

And I recall that in this first pumping station, it about drove the master mechanic crazy because he would true-up the – these were turbine pumps which the motor sat on a vertical staff and the impeller sat down in a well some distance below where it would lift the water up and out into an after bay at a higher elevation section of the canal. But he would get all of his equipment lined up, trued-up, and ready to cinch down, and he'd come back in the morning and find it was all out of true, particularly his vertical shafts. And this was driving him crazy because he was a – what's the term?

Storey: A perfectionist?

Vernon: Perfectionist, he was a perfectionist. And that's

“at that time, the Bureau had its own master mechanic and master electrician, and we did not employ contractors to install the machinery in the [pump] building. . .”

Problems in installing pumping plant equipment because of a nearby railroad

“The Bureau wanted

why the Bureau employed these guys directly. They weren't under the pressure of being a contractor's employee and set it in once and that was it. The Bureau wanted things done correctly.

things done correctly. . .
.”

So it about drove him crazy 'til he found out what the problem was, was during the night all these heavy loaded freight trains were going past this pumping station on their way into the shipyards in the Oakland area, and the vibration was knocking his equipment out of line. (laughter) So he finally decided that he had to develop some kind of a little elasticity in the setup, but there was nothing he could do about that. It was just going to be that way.

Storey: Was this the Tracy pumping plant?

Vernon: No, no, this was the Contra Costa Canal. But, you see, we learned a lot. But the Contra Costa Canal, actually the Contra Costa Canal was the testing ground for the later canals, even the city [unclear] water plant canal.

I recall, after we got well into the location of the canal throughout its length, about twenty-eight miles, Mr. Boden developed a new estimate, a revised estimate, for the canal. I helped develop a lot of the structure estimates. But Mr. Boden and the head office engineer, a Mr. Stubblefield, prepared the report. Mr. Bellport and I were given the task of reviewing the transcript, the typescript, of Mr. Boden's penciled report. He was a great guy to take a short pencil and write like mad for days at a time writing up his report. Then he would turn it over to the typist, and then Barney Bellport and I would have to review it and make sure that it was typed correctly.

Assigned to review a new estimate for the Contra Costa Canal

We got through the whole estimate and Mr. Boden – during our review, I shouldn't say

review – during our reading of the transcription, I noticed in the estimate for the canal lining that the weight of concrete that he was using was very light. And at that time, there was talk of lightweight concrete being used on the decking of the San Francisco-Oakland Bay Bridge. So we were all involved in this so-called lightweight aggregate, aggregate being the stone.

So I said to Barney, "Hey, the boss is going to use lightweight concrete in there. That's odd, really strange, but I guess he know's what he's doing. Stubb checked him on this, so I guess he knows what he's doing. We're only supposed to be reading this damn thing." (laughter)

Anyway, Mr. Boden took his estimate to Sacramento, and a couple of days later he came back. He was waiting for us in the office when we came in, and he was blowin' steam out of both ears. He said, "You so's-and-so's let me down?"

Error in review of Boden's estimate

And we said, "Well, how's that, Mr. Boden?"

And he said, "The first thing Sacramento caught me on was that I was way short on my aggregate for the canal lining."

And I said, "Well we caught that. Barney and I talked about it. We decided you were using lightweight aggregate."

Now just to explain, a cubic yard of concrete weighs about 3,500 pounds. It has about 3,000 pounds of aggregate in it, and about 400 pounds of cement and ~~ever~~ [just] so much water. And so what he had done was he had converted his cubic yard to a ton. And so he'd taken his tonnage of aggregate and hadn't converted it to 1.75 or 1.5 or whatever it should

have been. He'd forgotten his multiplier. And he said, "Sacramento just gave me what-for for the stupidity of my estimate."

And we said, "Geez, we'd talked about it, but Stubb had checked it. We thought you knew what you were doing, and you didn't tell us to check your numbers." (laughter)

And so ~~after~~, I learned you don't take *anything* for granted. If you've got a question, ask it. (laughter) That's a little sidelight on the Bureau of Reclamation. I'll come a little later to the relationship of Oscar Boden and Harry Bashore as Commissioner.

"And so, I learned you don't take *anything* for granted. . . ."

Oscar Boden was a goin' machine. He was a real tough taskmaster, but he was a wonderful guy to work for, and he was a good teacher. But one thing you learn, like I did, if you did it right, he'd go to bat for you. If you did it wrong, he'd really let you know.

Well at any rate, we finally got the canal about two-thirds of the way down past a place called Port Chicago. By this time, the war was on, and our construction activities were becoming very much slowed down. Since we had our pumping stations in now, we could operate this first segment of the canal down to past Port Chicago. Many industries were located along the south shore of the Suisun Bay. I remember earlier I said I couldn't remember the name – Suisun Bay. There was the fiberboard plant in Antioch. There were a couple of chemical plants in Pittsburgh, as well as a big steel, Columbia Steel Mill. There was a Shell chemical plant further on down. There was a John Mansfield plant which was making asbestos, which was being utilized in the ships, insulation in ships, piping. Then there was Port Chicago, which the Navy was using as a ship out

World War II affects the project

point for munitions.

Incidentally, during the war, there was a terrific explosion at Port Chicago. You'll find it in the archives. It blew windows out as far away as San Francisco. It cleaned out a whole battalion of men who were loading the ships. Something happened. I don't recall the details now.

Accident at Port Chicago during World War II

Also along the canal, at Pittsburgh, the Army had built a staging depot, Camp Stoneman, and then again later they built a replacement depot. I don't remember or recall the number of troops that were there at any one time, but many thousands.

So it was arranged that we would provide water. We could operate the canal, and we would provide water for all these war industries, as well as Antioch and Pittsburgh, the military camps, and then further down by Port Chicago was a municipal water service called California Water Service Company, which was supplying water to oil refineries in the Martinez area. I forget – there was an Associated refinery, Associated Oil Company, and a Shell refinery at Martinez, which they were supplying process water, not cooling water, process water. Then PG&E [Pacific Gas and Electric] came in and built a steam generation plant there which also used water.

Operated the partially completed Contra Costa Canal to provide water to war industries

So we were heavily involved in providing water in the Contra Costa Canal for the war industries. So for that reason, we all received deferments because we were involved with war industries, and did this during those early war years.

Deferred during World War II because involved in water supply

[Also in 1943, I began design studies of the distribution system to the lands served by that

In 1943 began study of distribution systems to

portion of the canal between pumping structures No. 1 and No. 3. This became a very complex problem because most of this land was subdivided and carved into 5 and 10 acre tracts with a few 20 and 40 acre ownerships. Crops were mainly orchard, grapes and small grain.

irrigated acreages

In projects serving unowned public lands the Bureau's policy was to deliver water to the high point of each 160 acre quarter section and let the farmer work out his internal distribution system. This policy proved to be unworkable here because of the numerous small ownerships.

Small acreages presented special policy issues

Also because of the light sandy loamy soils, this distribution system was going to be concrete pipes. Therefore, in agreement with the Irrigation District, the pipeline system would have a delivery point on each ownership, but not necessarily on the high point. It would be up to the farmer or owners to provide his own internal distribution system. Because of the slope of the ground away from the canal toward the Bay and its uneven topography, some sections of the pipeline would be under considerable hydraulic pressure, so that special designs of outlets would be required to prevent high pressure "spouting" of the outlets. Some of the pressure relief standpipes were going to be 20 to 30 feet tall.]

The distribution system was to be concrete pipe

Now I'll take up the Delta-Mendota Canal. Mr. Boden was also the [Division Engineer]. His division also included the surveys [and] planning for the Delta-Mendota Canal, and George Imrie, I-M-R-I-E, George Imrie was set up as the engineer in charge of the surveys for the Delta-Mendota Canal.

Work on the Delta-Mendota Canal

George Imrie supervised construction on the Delta-Mendota

I reviewed a lot of the structure designs for the Delta-Mendota Canal and cost estimates, still staying in Antioch because that was our headquarters, but I was not directly involved in

Did structure design on Delta-Mendota Canal

the field operations of the Delta-Mendota Canal.

Also we were studying the Delta Cross Channel. Our preferred solution was to take water out of the Sacramento River at a location near the town of Hood and conduct it through a completely separate channel through the delta area or around the delta area, and deliver it to the headwater of the Delta-Mendota Canal pumping station.⁶

There were a number of advantages in this. For one, it did not mix Sacramento River water with delta water. One of the studies that I conducted while I was at Antioch was a recordation of the encroachment of the salinity prism in the delta. And we knew that ~~during the fall years~~ when irrigation deliveries were high, [during] the summer and fall ~~years~~ [seasons], and the stream flows were low, the tidal prism carrying salt water would encroach into the delta area. And at times it would get so salty in the delta that the irrigators would have to stop their irrigation pumping because [of the] ~~it was~~ high-value of crops which had a low tolerance for salinity.

So our preferred solution was to conduct the water around the delta delivering water into various channels into the delta which could then be measured and maintained at a discrete flow so we knew where water was going.

The state, however, preferred to dump the Sacramento River water into the maze of the delta channels and let it find its way to the headwaters of the Delta-Mendota Canal. Our estimate for the Delta Cross Channel back in the late 1930s was \$4 million.

Studying the Delta Cross Channel

The advantages of building a canal to deliver fresh Sacramento River water to the Delta-Mendota Canal

END OF SIDE 1, TAPE 2. APRIL 24, 1995.
BEGINNING OF SIDE 2, TAPE 2. APRIL 24, 1995.

Storey: The Delta Cross Channel Canal.

Vernon: The Delta Cross Channel. The state plan was to just dump the water from the Sacramento River into the maze of delta channels, and let it find its way to the headwaters of the Delta-Mendota Canal.

Our preferred plan was to carry the water around the delta in a channel which could then deliver discrete quantities of water into the various channels of the delta, and we could control – we would have positive control over the encroachment of the salinity prism.

Storey: Is another name for this the Peripheral Canal?

Vernon: Yeah, the Peripheral Canal. It's the greatest mistake that was made in the project.

Storey: Not doing that?

Vernon: Not to have built it. ~~Not to have built it.~~ Because it introduced so damn many problems, and then Fish and Wildlife got into it because they – well let's see, we'll take it up in the proper order. I want to be careful. I don't want to accuse the state of things which aren't true, because I'm depending on my recollection.

At any rate, the state felt that our estimate of \$4 million was too expensive, and that their scheme could be done for much less cost and would be practical and would ameliorate the encroachment of the salinity prism, but had no real control over it. So the state plan was the one that was accepted, and a control structure at the headwaters delivering water out of the Sacramento River into a short channel into the delta maze.

I reviewed all the structure designs for

our estimate on the Delta Cross Channel, and felt fairly confident that what we were proposing was an adequate solution.

In the summer of 1942, a young man came to us from the Colorado River Dam in Texas, a chap by the name of Ed Heinnemann, H-E-I-N-N-E-M-A-N-N. Ed was a very personable chap, good engineer, and felt that he was not being utilized to his full extent in our operations in Delta Division, particularly because of the war. Apparently he had connections elsewhere, and he transferred into Washington during either late '42 or '43 – early '43.

Ed and I got along very well. He was in my group. In the fall of 1943, I got a personal letter from Ed saying that due to the new regionalization organization of the Bureau, his boss, Mr. Wesley Nelson, Engineering Assistant to the Commissioner, was moving to Amarillo as director of Region V.⁷ Since Mr. Nelson was taking most of his staff from Washington with him, Ed's slot in Washington would be open, and would I be interested.

Ed Heinnemann suggests Vernon move to the Washington, D.C., office

My wife and I discussed the situation. We were happy in California, but we felt also that there were problems during the wartime in California, and things would be a slow time, and perhaps a move to Washington would be very exhilarating.

So I wrote Ed back saying, well, “yeah, but I owed some allegiance to the people out here in California, and any such transfer would have to be obviously cleared through the Chief Engineer in Denver and Mr. Young and Mr. Boden.”

By this time I think I had arrived at the glorious rank of Associate Engineer P-3, and the

job in Washington would be a P-4 – Engineer P-4.

Storey: What kind of salary are we talking about? Do you remember?

Vernon: Well, yeah. P-3 was \$3,200. I'd gotten up to \$3,200. P-4 was \$3,800. A P-4 was a journeyman engineer. He was capable of doing everything. It's like a ~~captain~~ in the military, you're decorated as a field grade officer, a major. When you became a P-5, you now had a squad ~~or~~ ~~[in Reclamation]~~ a section. A P-6, you had a section, and a P-7, you had a division. So P-4 was a qualified engineer.

Salary in 1942-1943

Storey: So it would have been section, then branch, then division, even in those days?

Vernon: No, no. Well let's see, back in those days – no, back in those days, the Bureau was strictly Denver and Projects. The closest thing to regionalization was the way the Central Valley Project had been set up. Perhaps I should have discussed this in some detail, because it served me greatly in my later life.

Storey: I'd like that.

Vernon: Mr. Young was the Supervising Engineer in Sacramento, with a small staff. Then the divisions were the Shasta Division with Shasta Dam, the Delta Division with the transfer facilities, and the Friant Division with Friant Dam and the Friant-Kern Canal. Oscar Boden was also a consultant to relocation of the Friant-Kern Canal because he was the canals guy.

Brief overview of the organization of the Central Valley Project

At any rate, Denver insisted on having direct access to the division offices. Sacramento was our supervisors. They maintained program control, which is the closest way to describe it.

Relationship of Sacramento to Denver

They had the budgets, they kept the records, they kept the financial records, they divvied out the money between the divisions. And like the Cabots and the Lodges, Walker Young could speak to God, Mr. Walters, the Chief Engineer. (laughter)

At any rate, that worked very well. The only problem was, at times Sacramento would ~~get felt~~ [feel] left out, as I did sometimes with Denver when I became Regional Director. I'd get handed a package that Denver had cooked up, and then I had to finance it out of a clear sky. (laughter). So Sacramento kind of felt the same way. [Tape recorder turned off]

Storey: Denver and the regions and so on.

Vernon: We could deal directly with Denver. Whenever we would come up with a structure location, I would come up with a preliminary design. We would send in detailed topography at the structure sites. We'd send in our thoughts on the subject, give them a sketch design, and they could do with it as they pleased, and did. Then our problem was after we would get it back, we'd have to tailor it to fit conditions as they developed during the construction process. So I worked both the preliminary and the finalizing of the contract drawings, as adjustments to the contract or what we called the change orders during construction.

"I would come up with a preliminary design. We would send in detailed topography [and] . . . our thoughts on the subject, give them a sketch design, and they could do with it as they pleased, and did. Then . . . we'd have to tailor it to fit conditions. . ."

Storey: So it was all designed . . .

Vernon: In Denver. It was all designed in Denver.

Storey: Did they come out and look at the sites?

Vernon: No. No, we'd send them a detailed topography. Would you like a soft drink?

Storey: ~~No. That's what this is. Thank you.~~

Vernon: ~~I've got some in the refrigerator.~~

Storey: ~~Would you like something to drink?~~

Vernon: ~~No, no.~~

They would come up with their designs, and then always in the designs, particularly with relation to foundations, they would always have note "as directed in the field." In other words, as you opened up the site, you might have to adjust, like on bridge foundations, you might have to redesign the depth of the wall that would go down to the footing. That sort of thing. We never really tampered with the structure design itself, but basically tailored the structure to fit the foundation conditions as they showed up in the field. That was our function in the field.

In the field we would tailor the structure to suit the field conditions.

Then also we would come up with the contract pay quantities, and then would send the contract pay vouchers up to Sacramento to make the payments, the contract payments. And also with Denver, we had such a thing as was called an engineering work order, and before we would define a contract, we would come up with the limits of a canal section and what it included. Then we would work up a preliminary cost estimate which we'd send to Denver to get an engineering work order number. Then everything related to that contract would be related to that engineering work order. It was Engineering Work Order and Authority for Work. It's utilized in many forms in many engineering and construction organizations, but it's basically the way management controls things, the parceling out of the money and that sort of thing. You don't just get a pot full of money, you've got to account for it.

Worked on figuring what payments should be made on contracts

Worked on preliminary cost estimates

In the government system, you get an appropriation, then that's divvied out through various authorizations. Then the finance [office] sets up, you set up your accounts, then when you first decide you're going to do something, you make what's called an encumbrance. It means you're going to use this amount of money. You don't really tie it down, but you're kind of setting aside this amount of money to finance that operation. So you make an encumbrance. It's still fluid. Then when you [set up] ~~let~~ a contract – I can't recall the term. It escapes me for a minute, ~~the encumbrance~~. Then you actually make an [allocation]-~~assignment~~, you actually tie those funds to that activity, they are now tied to it. You've got to go through the whole process if you want to untie it.

How money is committed to construction

Then when you let a contract, then it's obligated. ~~Obligation~~.—When you set up a contract, then you obligate the funds for that contract. Then the last process is for them to make payment vouchers. So you've got the encumbrance, [allocation,] obligation, payment voucher.

Denver would get involved in the Engineering Work Order and Authority for Work. Sacramento was involved in the handling of the funds, the encumbrance, the obligation, funds on the payment, payment of obligations as contracts payments came due. So Sacramento was the management end of the field operations, but Denver insisted on having direct relationships with the field divisions. And it eliminated one step in a process, for Sacramento really didn't need to get involved in, except they needed to be kept involved in what the costs were going to be. Because as I found out when I was Regional Director when Denver handed me a couple of packages, I wished to hell I'd known [about them] it previously. (laughter)

Relationship of Denver and the regions to the construction process

So I got this letter talking about moving to Washington. The next thing I knew, out of a clear blue sky, comes a cable direct from the Commissioner's office, "Transfer Kenneth Vernon to Washington first available transportation."

**Transferred to
Washington, D.C.**

Boden comes out [of his office] away with this thing and says, "What the hell is this, Ken? What the hell have you done to me now?"

I says, "My God." So I told him, I said, "Listen, I had this letter from Ed. He said this is what was happening, and would I be interested. So I wrote back and said, well, yeah, sure I'm interested, but you've got to clear it through the routines. And I fully expected you to be asked would you release me." I said, "I didn't really have anything to talk about because I didn't know I was going to be asked." Well at any rate, he held that against me for a long time.

So I was sent into Washington then, in December of 1943, and assigned to the Engineering Assistant to the Commissioner's office. Mr. Nelson had then departed, and Ed Heinnemann and – oh, yes, we had another guy named Giles had departed for Amarillo, and a man named Louis Douglass, D-O-U-G-L-A-S-S – I always remember his name ended in a double-S, had come in from Denver to be the new Engineering Assistant Commissioner, and I was assigned to him to work with him as his assistant.

**In December of 1943
became Engineering
Assistant in the
Commissioner's Office**

**Worked for Louis
Douglass**

We had two primary assignments at the time. One was the processing of applications from Denver down to the War Production Board for priorities, and the other was working with what was then called the Tripartite Agreement, which was an agreement between the Corps of Engineers, the Civil Division of the Corps of

**Worked on priorities at
the War Production
Board on the Tripartite
Agreement**

Engineers, the Department of Agriculture. No, not the Department of Agriculture, but the Federal Power Commission, and Bureau of Reclamation, because this is a *whole* different story, a whole different can of worms.

And so we kept busy processing these applications from Denver. We were doing several things at Reclamation at the time. We were directly tied in with the war effort. There was Unit N8, Nevada Unit 8, at the Hoover Dam.

Worked on getting generation unit N8 at Hoover in operation

Storey: N8 would have been a generator?

Vernon: Yeah, the generator, N8, generator N8 at Hoover Dam. There was the movement of the Shasta generator, which was scheduled to go to Shasta, [but was sent] up to Grand Coulee Dam, because the Shasta generator ~~was available~~, was being manufactured, [and] ~~but~~ the Coulee generators wouldn't be available for some time. And N8 at Hoover was required for the aircraft industry in Southern California, so it had very *high* priority.

N8 was to provide power to the aircraft industry in southern California

Storey: Why would you move a generator to Grand Coulee for Southern California airplanes?

Vernon: No, I was just going to come up with what was involved in the transfer of Shasta unit to Coulee. There was the thing called the Hanford Engineer Works [close to Grand Coulee Dam]. We never knew what it was. All we knew was, if we walked down to the War Production Board with a paper that was labeled Hanford Engineer Works, they'd give you the place, anything you needed. "Take two of them, take three, take a lot."

Transferred a generating unit from Shasta to Grand Coulee

Coulee provided power to the Hanford Engineer Works

We later learned that it was the Hanford Diffusion Plant for the atomic energy, plutonium plant, but all we knew was the Hanford Engineer Works. [As] ~~and so~~ they needed the power for the processing of the plutonium, and [as] ~~so~~ that

was the only way they could get power in a hurry, was to take the unit from Shasta and move it to Grand Coulee instead. We had to revamp Grand Coulee to do it, but I've forgotten what the rating was then, but it gave them some immediate power there, then later the Grand Coulee unit started coming on in later stages. But the initial stage was to get power into the Hanford Engineer Works. [Tape recorder turned off]

Storey: About Hanford.

Vernon: Yes, we had talked about Hanford, and I said that as an Engineering Assistant to the Commissioner, we had two jobs. One, processing applications and chasing them through the War Production Board, and the other one was the association between the Corps of Engineers, the Civil Works Division of the Corps of Engineers, the Federal Power Commission, and the Bureau of Reclamation.

Now, this is a very complex subject, and some of this is speculation on my part, but Mr. [Harold L.] Ickes was Secretary of the Interior, and he was also the Head of the TVA, the Tennessee Valley Authority, although the management of the Tennessee Valley Authority was somewhere in Tennessee, but they worked or reported through Secretary Ickes.

Secretary Ickes favored the idea of regional authorities because he was pleased with the record that the TVA had made in developing the resources of the Tennessee Valley Authority. So he had established some divisions in the Department which were looking forward to the development of other valley authorities.

One of the elements of that would be the Bureau of Reclamation, the designing capacity,

Secretary Harold Ickes liked the idea of regional authorities like TVA

There were many advocates for regional

the engineering capacity of the Bureau of Reclamation. Also, the Roosevelt Administration, parts of it, was in favor of the development of regional authorities, so the budget bureau was mixed up in it. And also there was the *St. Louis Post Dispatch*. It was being very strong toward the Missouri Valley Authority, as well as other media people were promoting a Columbia Valley Authority, a Central Valley Authority, and Southwest Power Authority, and so on, and so on. So this was quite a movement going on.

Well now, it was my reaction that the old line-agencies weren't all that much in favor. They were less than enthusiastic about valley authorities. So the Corps of Engineers, the Bureau of Reclamation, and the Federal Power Commission sort of banded together and decided that they needed to set up some sort of a countervailing program which would try to accomplish nearly as much as, say, a valley authority would do.

Lou Douglass was the representative of the Commissioner of Reclamation at the meetings of the Tripartite Agreement, but he decided early on after just a few months that the Washington maelstrom was not his cup of tea. He liked to know what he was going to do today, tomorrow, and next week. But that hectic activity in Washington, you never knew what you were going to do in the next fifteen minutes. So he saw an opportunity to transfer as an Assistant Regional Director at Region III to Boulder City.

So it wasn't too long after I had arrived in Washington, had been formally transferred into Washington – first I was there on detail, then I went back to California, then I moved my family into Washington. And then not too long after I

river basin authorities

The Tripartite Agreement was designed to counteract the tendency to regional authorities

was formally transferred into Washington, Lou transferred to Boulder City and I became Acting Engineering Assistant to the Commissioner.

And during that time after that, the agencies decided they needed to bring in the Department of Agriculture and its various agencies. So that developed the Quadripartite Agreement, which contained the other three plus elements of the Department of Agriculture. And this met rather regularly, talking about coordination of programs, trying to eliminate duplication of effort. But also in the meantime, you always kept your powder dry. We kept our backs covered because we'd never know when you'd get a stab in the back from one of the other agencies. (laughter) In other words, there was a bit of competition going on, and each guy was trying to protect his turf.

Harry Bashore was then the Commissioner. John Page had died and Harry Bashore had become Commissioner, and he was the only man that Oscar Boden was afraid of. Harry Bashore had been the Project Engineer on the North Platte Project, had gone through all the trials and tribulations of the development of the North Platte Project, then he had been the Construction Engineer of the Seminoe Dam in Wyoming. And then he somehow became the Commissioner of Reclamation. He was a stern taskmaster, and he had a way about him that would challenge you very severely on any idea you proposed. Basically, he wanted to know how well you had thought it out, and he'd challenge you very severely.

I had worked under Oscar Boden, and this was old home week to me because after being chewed out about that damn estimate on the Contra Costa Canal, I wasn't really afraid of anybody after I had done my homework. So

Quadripartite Agreement

In the Quadripartite Agreement "We kept our backs covered because we'd never know when you'd get a stab in the back from one of the other agencies."

Harry Bashore became the Commissioner

Commissioner Bashore liked to use him for special tasks

Harry took a liking to me, and he used to call me in for all kinds of things. I got involved in all kinds of things that he would want done that – it was completely strange to me because I had been in Denver, yes, I had been in the Delta Division of the Central Valley Project, but I forgot that there was this whole world of Reclamation going on that I knew nothing about.

And people would come in to him with some kind of complaint about some damn project out in Podunk, and he'd call me up and say, "What's this all about, Vernon?"

"I don't know, Harry. I gotta find out."

So I'd beat the files to death trying to find out what was going on and what was the problem. And there was some real tough nuts in what then became Region I in the Snake River Valley, and there were some other ones I got involved in.

Well, at any rate, I used to represent Harry at this quadripartite meeting. Then the agencies decided what we needed was to do was formalize the arrangement, and so with the Bureau of the Budget's agreement, we set up what was called the FIARBC, Federal Inter-Agency River Basin Committee, [known colloquially and pronounced as "FIREBRICK"] ~~FIARBC~~. That met regularly. But that discussed the whole area. Then the FIARBC decided that since the Missouri Valley – I'm jumping ahead a little bit because there was the Flood Control Act of '44 and appropriations for the Missouri Valley, but later the FIARBC decided what we needed was a Missouri Basin Interagency Committee which would be composed of representatives of the four main departments plus five of the ten governors, and then [for] to balance out we brought in the Department of Commerce. So

FIARBC established as a formal arrangement expanding the Quadripartite Agreement

Missouri Basin Interagency Committee established

there were representatives of five Federal agencies and representatives of five governors, which was then the Missouri River Basin Inter-Agency Committee.

Storey: And the acronym for FIARBC is?

Vernon: Federal Inter-Agency River Basin Committee. I've got it here – F-I-A-R-B-C and IMBIAC. Then there also became an IMBAC, Interior Missouri Basin Inter-Agency Committee. (laughter) It's the whole damn structure here of the agencies, see, to counterbalance this move for the valley authorities. And what the Bureau of the Budget was doing was fomenting contests between the various agencies to create what appeared to be conflicts of interest and inefficiencies of operations, etc., anything you wanted to call it, which would ultimately [help] result in the establishment of the valley authority, which would then coalesce all this stuff and make it efficient, you see, just like the TVA.

These interagency committees were designed to counteract regional authorities

Well, all right, now getting back. After we set up FIARBC, the war was over, and there had been a gentleman down at the War Production Board named John Dixon, who was an ex-Corps of Engineers engineer in the Civil Works [Division], and apparently the Bureau thought a great deal [of] about him because they dealt with him on war projects. They brought him over then as Engineering Assistant to the Commissioner, and I dropped back to my position as his Assistant. So Dixon then took over, then, the activities with FIARBC, then also he was given the charge of designing a planning division, Branch of Project Planning in Washington, moving the Branch of Project Planning, which had been in Denver, into Washington. So I assisted him in setting up the organization for the Branch of Project Planning in Washington.

John Dixon is brought in to be Engineering Assistant to the Commissioner and to run the activities of FIARBC

So as that was going on, then, Bill Warne, who was the Assistant Commissioner that I reported to, called me in, said, "I've got a new job for you, Vernon."

And this was in '45. No, this was fall '44. It was during the consideration of Flood Control Act of '44.

Storey: Which authorized Pick-Sloan Missouri Basin Program.

Vernon: Yes, right, yes. And also, I mentioned there, I got involved to a degree in the –

END OF SIDE 2, TAPE 2. APRIL 24, 1995.

BEGINNING OF SIDE 1, TAPE 3. APRIL 24, 1995.

Storey: This is Brit Storey with Kenneth Vernon. This is Tape three, on April 24, 1995. Go ahead.

Vernon: I'm kind of overlapping here. There's several activities that were intermixed, and it's a little difficult to take them in continuity, but as well as the FIARBC thing and the Flood Control Act of '44, I was also involved with, to some degree, with the hydrologic studies that were involved with the treaty with Mexico, the 1944 treaty with Mexico. Particularly involved there was the question of whether the United States would agree to share water supply with Mexico.

Involved in the hydrologic studies related to the treaty with Mexico of 1944

Some of the studies were related to the quantity of water which might be delegated or designed to be received by Mexico, and what waters that might be under the Colorado River Compact in the United States, and the degree to which some of them might be return flows from some of the projects which might have some serious salinity problems. So these were rather complex studies that I was involved in, but Randy Ryder was the chief on that and did most

of the analysis and thought process. I merely mostly crunched numbers.

So we get up near the fall of 1944, I was still Acting Assistant Engineering Assistant to the Commissioner, and the Flood Control Act of 1944 was being considered by the Congress for authorization. Basically it was in the War Department's authorization bill, because [Major General Lewis A.] Pick [Corps of Engineers] had come up with a scheme for mainstream dams on the Missouri River and navigation and flood control on the Lower Missouri River south of Omaha.

Reclamation interests in the Upper Basin were concerned because they were afraid that dedication of this water for navigation channel in the lower river might foreclose irrigation development in the Upper Basin. Reclamation had put Glenn Sloan in planning irrigation activities in the Upper Basin above Omaha, including the Republican, the Platte, all the tributaries up through the Dakotas, the Yellowstone, and the Upper Missouri. He had come up with what became Senate Document #191, 98th Congress, 2nd Session, might have been 97th or 98th Congress, 2nd Session, which was introduced into the War Department's [authorization] appropriations bill as the O'Mahoney-Milliken⁸ Amendment which authorized the Reclamation plan for the conservation control and utilization of the water resources and land resources of the Missouri Basin.

This was under floor debate in the Senate about mid-November of 1944. I got a call from the Commissioner's office one day to come up, and Harry Bashore told me, he said, "Vernon, we've got all the brass around here are going to go out to Denver to a big meeting, and you're

**Flood Control Act of
1944 and the Pick-Sloan
Missouri Basin Program**

“ . . . you're going to be

going to be the senior engineer in the Commissioner's office and you're going to be delegated as Acting Commissioner." (laughter) And then he said, "Your instruction is not to do a damn thing." (laughter) Which deflated my ego to no end. Here I was a young engineer, Acting Commissioner of Reclamation. He said, "I cleared it with the Secretary and told the Secretary, the Secretary of the Interior, not to put any big load on you while this debate's going on, but to clear everything through Ken Cheadle, the Chief Counsel of Reclamation."

I'll always remember during the heat of the debate, a request came down from the Hill for a report from Reclamation on some particular item which Mr. Cheadle prepared and I transmitted up through the Secretary to the Senate committee. The next thing I knew – correction. I sent [it] up to the Secretary *to be transmitted* to the Senate committee, but the Secretary had a grammarian on his staff who reviewed everything for grammar which went before Mr. Ickes, and Mr. Ickes had a love affair with the preposition *that*. The more “thats” you could work into something, the better he liked it. And so Mr. Cheadle's memorandum bounced back from the Secretary's grammarian because it didn't have a particular “that” in there. So Cheadle delivered himself a hot memorandum back to the Secretary which had five or seven “thats” strung in a line. It was a jewel of composition. Let me see if I can put it together. "Because of that that ‘that’ that that man wanted, that almost lost the battle." (laughter)

Storey: "Because of that ‘that,’ that *that* that man wanted."

Vernon: "That that 'that' man –." (laughter) Cheadle was a student of the Harvard [U.S. Supreme Court] Justice--what was his name? [Felix] Frankfurter,

delegated as Acting Commissioner." (laughter) And then he said, "Your instruction is not to do a damn thing."

Secretary Harold Ickes loved the preposition *that*

he was a student of Frankfurter. Oh, he was a sharp attorney. My God, he was a jewel to work with.

Well, any rate, so we got that "that" in there, and it went on up. And then the authorization bill was passed which authorized the [initial] ~~additional~~ stages for Reclamation, authorized the initial stages of what became the Missouri River Basin Project for Reclamation=
~~Interior.~~

Initial authorization of the Pick-Sloan Missouri Basin Program

Right after that, in Denver, when the appropriation bill was passed, then the Commissioner held a big meeting in Denver with all the people from Region VI and also Region VII. I'll pick up how Region VII got developed; ~~but by that time Region Seven had been developed, which[.]~~ I think I should digress right now and drop back and develop how Region VII got developed.

Storey: Tell me how the regions got developed, to start. You were in Washington, right?

Vernon: Well, the whole thing got started, this is as far as my knowledge is concerned, again it goes back to the Roosevelt Administration and the desire to reproduce the equivalence of the Tennessee Valley Authority. Whether it was the National Planning Resources Board which the Roosevelt Administration had had before the war – I don't know whether you know about the National Resources Planning board – but there was Rexford Tugwell in the Department of Agriculture, the Dust Bowl, and God knows what else was going on just immediately before the war, and the TVA had made a real splash.

Development of regions at Reclamation

And so somewhere it was decided that maybe we should move toward some form of intermediate step of government between

The regions were created partially to forestall creation of regional development

Washington and states, and this would be this regional development authority, giving it [an] authority concept which would give it [corporate] powers to do things which might not be in the old-line governments, maybe the states wouldn't have it, but you could coalesce a lot of things into this regional authority then, which gave it a corporate body and law which let it do things. Like one guy said, do everything but declare war and coin money. (laughter)

At any rate, my knowledge [is sketchy]. I was still in the Central Valley Project [when] regionalization was developed, but we were only six regions, and it made not a great deal of difference to us out on the Central Valley Project, because basically, the Central Valley Project became Region II, with headquarters in Sacramento. I don't remember whether Walker Young, ~~he~~ was the first Regional Director of Region II,⁹ or whether he had moved into Denver and become Chief Engineer and someone else had become – I think someone else had been appointed Director of Region II, who was not a Reclamationist, but had knowledge and skills in areas other than specifically Reclamation. I don't know whether he was a journalist or an economist. I just don't recall. I don't even recall his name.

But it didn't make a great deal of difference to us in what became Region II, because fundamentally it was going to be operated the same as we'd been operating as the Central Valley Project.

Storey: I show Regional Director Charles Carey and then Richard Boke.

Vernon: Carey. Boke followed Carey. Carey was the first one, Carey was the guy. He had different skills, he came from a different field of endeavor,

but he apparently was a pretty good administrator because I didn't have any real [but I didn't have any real knowledge] – I left before he really got into it as I went to Washington.

The first step was, they set up six regions. Columbia Basin was Region I, with the Snake River. Region II was California with the Central Valley as the head, and then Southern California.

Originally there were six regions

Storey: Southern Oregon? Southern California?

Vernon: Did it include Southern Oregon? Klamath River?

Storey: Later it was Klamath. I don't know whether it was originally.

Vernon: I don't know what it was initially, and some of those details escape me. Then there was Region III, which was the Lower Colorado, and Region IV was the Upper Colorado. Region V was basically the Rio Grande, and Texas, New Mexico.

Storey: So that would have been Amarillo?

Vernon: Had headquarters in Amarillo, and that's where Wes Nelson went. Then Region VI included all of the tributaries of the Missouri River [including the Platte River] down to Omaha.

Storey: Out of Billings?

Vernon: Out of Billings. Then one day when I was still acting as Assistant Engineering Assistant to the Commissioner, Harry Bashore called me in and said – this is one of those odd jobs that I would get out of a clear blue sky. He said, "We're getting a lot of pressure from the politicians out there in Nebraska and Colorado. They think they ought to have a region of their own. So I'm

Creation of a seventh region for Reclamation

delegating you and another engineer named Cecil Jacobson to come up with what might be called a Region VII based on Denver."

So we studied the situation, and decided that the southern boundary ought to be something to do with the Arkansas River. There was a project being considered, the what was called the Gun-Ark, which was the Gunnison, Arkansas Trans-Basin Diversion. Waters from the Gunnison River would be trans-basin diverted through the Continental Divide and dumped into headwaters of the Arkansas River. So we felt that that ought to be included in the Colorado activity, but that as you went down the Arkansas River, you changed from basically arid territory to more rain-fed farming and drainage.

So we decided that we ought to divide the division between potential Region VII and Region V somewhere along the mid-range of the Arkansas River which would be below any [arid land] irrigation, but above the rice irrigation and drainage projects, flood control on the Lower Arkansas.

But we left the decision of specifically where that division should be to the powers-that-be, but we clearly decided that the Niobrara River, which ran along the boundary between Wyoming, Nebraska, and South Dakota, which was more associated with the sand hills of Nebraska, ought to be included in a potential Region VII. So then our recommendation or suggestion for Region VII was beginning with the Niobrara River on the north, including all of the Platte with its tributaries, and the upper reaches of the Arkansas. That would include the Republican River and also some of the tributaries down in Kansas. I don't recall all those things. I'm not that familiar, but the tributaries down in Kansas where there might be irrigation.

A Gunnison-Arkansas diversion was considered in Colorado

Storey: And that would include Colorado-Big Thompson?

Vernon: Yes, that would include the Colorado-Big Thompson, and the power distribution from the Big Thompson. It would divide all the things east of the Divide, which was adopted. And there was some debate whether they would make McCook, Nebraska, the headquarters or Denver the headquarters, but they finally decided to make Denver the headquarters, which introduced some problems, because there was an intermixture between Region VII activities and Denver [Office] activities. People were not very happy about it, but still, it seemed to work all right.

**Region VII
headquartered in Denver**

Mr. [Erdman B.] Debler, who had been the Chief Planning Engineer of the Bureau, was the first Regional Director of Region VII, but he was ready for retirement or thinking of retirement, let's say. And when we really got going in the Missouri Basin, it was decided in the fall of '46 that both Mr. Debler and Mr. [Harold D.] Comstock, who were Regional Directors of Denver and Billings, respectively, would retire, and that Avery Batson, who had been Debler's Assistant, would be Regional Director of Region VII, and I'd be transferred out to Billings as Regional Director of Region VI, but that's a whole different story which we'll get into in some detail.

**Personnel established in
Region VII**

**Transferred to Billings
as second regional
director in Region VI**

So now we're up to this meeting in Denver, going back to this meeting in Denver after the [Flood Control] Authorization Act [of 1944].

Storey: This is when you had been told that you were Acting Commissioner, but you weren't to do anything.

Vernon: Yeah, not to do anything. Then immediately after that, after the Commissioner got back to Washington, he decided now that the legislation had been passed, we now had authority to proceed with the conservation control and utilization of resources of the Missouri Basin.

He decided to have a big comprehensive program meeting in Denver, calling in all the people of authority from Denver and Region VI and Region VII. That's how I had to get into Region VII, because at that time Region VII had been established, you see.

Storey: Before we go on, this act was actually passed?

Vernon: In the fall of 1944.

Storey: So this was the compromise between the Corps of Engineers' plan?

Vernon: It was known colloquially as the Pick-Sloan Plan, because the Pick element was the Corps of Engineers plan, the mainstream dams for flood control and navigation, including a diversion from the Garrison Reservoir into Central North Dakota, which is whole new ball of wax we'll get into later.

And then the Sloan Plan was the development of irrigation and power in the Upper Basin, including a diversion to North Dakota from either Fort Peck or immediately below Fort Peck to irrigate lands along the Missouri River in Montana, and then introducing water into the northwestern corner of North Dakota.

So by design, now this is speculation on my part, and it has to be taken as speculation because I was on the receiving end, I don't know how it all happened, but I was on the receiving

**Issues related to
Garrison Reservoir**

end of it – but they developed this contest, and the "problem" of conflict between the old-line agencies of the question of diversion to North Dakota from Garrison or the question of diversion to North Dakota from below Fort Peck, and then to complicate the issue was at what level would the Garrison Reservoir be operated, whether it be 1,830 or 1,850, because at the 1,830 level it wouldn't affect the Buford-Trenton Project and lands around Williston [, North Dakota].

Storey: That's the elevation of the reservoir?

Vernon: Yes, the 1,830 elevation. But at 1,830 it wouldn't affect the lands of the Buford-Trenton Project at lands around Williston, but it would affect the efficiency and lift of the pumping station from the Garrison Reservoir over into lands of Central North Dakota.

So the Bureau was whip-sawed one way, maybe to the 1,830 level, and the Corps was promoting the 1,850 level, and this gave everybody a chance to really argue that these agencies can never get together, and this created a need for an authority to resolve all these conflicts, you understand.

Disagreement between Reclamation and Corps raised issues

Storey: A valley authority?

Vernon: A valley authority.

Storey: A Missouri Valley Authority?

Vernon: And the *Post Dispatch* really got onto that. By this time Harry Truman had become President because of the death of Franklin Roosevelt, and he was more or less in favor of a valley authority because he'd seen what had been happening in the Tennessee Valley, and he was well impressed with it. Ickes was the major-domo of the

President Harry S. Truman appeared to favor a Missouri River Authority

Tennessee Valley Authority, because it responded to him, and he responded to the President.

So there was quite a conflict going on there, and this was why the old-line agencies decided they had to come up with this FIARBC, to show that there could be coordination among the agencies. So, you see, this is all interwoven. The *St. Louis Post Dispatch*, which was a Pulitzer paper, was pumping valley authority for all they [had] got, and they assigned Dick Bonhoff as a reporter to follow all these activities. I've got his book *The Dammed Missouri Valley*, which he inscribed to me, [he] they called me a "dam powerful friend" because I was very involved in the power program. But we'll get into that later.

Storey: Now, why – in 1944, that was still wartime.

Vernon: Yes. One of the elements or objectives of taking this flood control program of 1944 up was post-war planning, and something to bring the boys home to, because it was known that the war was on its final stages and that we were going to have a great immigration of men again from the armed services. The President wanted to have plans ready to provide employment for the veterans. So there was quite a lot of post-war planning going on, and one of the deals was what could be done with these basin development plans, the Columbia Basin, the Missouri Basin, the Colorado Basin, the Rio Grande Basin. So these things were all boiling at this time, you see, in the post-war effort – the post-war planning effort, I should say.

So that was when I was called in, after the meeting in Denver, which I somehow got to be the secretary of that meeting and had to prepare all the reports coming out of it, and the main

The "old line" agencies created FIARBC to show the agencies could coordinate their work

The *St. Louis Post Dispatch* was pushing a Missouri Valley Authority

Planning for the Missouri River Basin involved bringing American servicemen home to jobs

Eleven initial projects were selected for the Missouri Basin

substance of that meeting was a naming of eleven projects which would be called the initial phase of the Missouri Basin Development Project. From that naming of those projects, then later we worked out an appropriation to go before the Congress so we could begin activities on that.

Served as secretary of the planning meeting for the Missouri Basin

As I say, I was the secretary of that meeting in Denver. Then after I had submitted all the reports and records of that meeting, one day, this was in the spring of 1945, I was called into Bill Warne's office. He says, "I've got a new job for you, Ken."

"Yeah, what's that?"

He says, "Well, we're going to set up an Office of Progress Control, and I want you to set it up."

And Harry Bashore said, "You mean to say we're making so [damn] much progress we've got to control it?" (laughter)

Asked to set up Office of Progress Control

Well at any rate, so I got to set up an Office of Progress Control, and this was with the help of the Bureau of the Budget, they were involved in this, and they wanted to use us as a way of getting control of the Civil Works Program of the Corps of Engineers which was nationwide, and they figured our effort would be small enough that they could tamper with it, fine-tune it, develop it as we went.

So I got promoted to be Acting Progress Control Officer. So the first thing we had to do was decide how we were going to control progress. So I designed an office and a staff, got it cleared through the Civil Service Commission, started recruiting, brought people in from the outside, brought people from Interior, in Reclamation, and fundamentally what we set up

Became Acting Progress Control Officer and began to design a staff and office

was a program section, a program and scheduling section, and an analysis section which recorded progress, a recording section. I utilized that all through the rest of my career because I found out how important it was to keep management informed as to what in the hell was going on, and what we were doing with the authorities we were given, and what administrative problems we were bumping up against that needed administrative attention.

So I got that office set up, and along that line, about June 1945, one of my old colleagues from the Central Valley Project, Mr. Oliver Folsom [showed up.] He had been, before the war, in a construction battalion, a reserve construction battalion, and he'd gotten picked up real early in [the] putting together [of] the armed services for the war. He wound up in North Africa, went up through the Italy campaign, and then he wound up in London in the planning for [Operation] Overlord, the invasion of Normandy.

But he had been brought back since the invasion had occurred, and so there was no need [for him]. They were disbanding that operation in London. He had been brought back into Washington, and was camped out in some cubbyhole in the Pentagon, and he came over [as] I was in the process of setting up this Office of Progress Control. So I said, "Ollie, can you get [an early] out[;] or do you want to get out of the military? Are they doing anything with you over there?"

And he said, "No, not really." He said, "I'm just marking time 'til my number comes up, then I'll be discharged."

So I said, "Want me to see if I can get you an early out? I think I can because we're deeply involved in post-war planning here, and the

Arranges for Oliver Folsom to leave the Army and work in his office

military would be very interested in that."

So I managed to get him out, and he came over, and I put him into that program in scheduling. We designed this system which – we wanted something that would attract people's attention. Fundamentally, we drew upon a few things which the military had developed during the war – the critical path method and the – I forgot what the other one was.

At any rate, you program linearly, you start out with an objective. Here's where you want to be. Then you feed backwards with all the things that you have to do and who's got to do them. And then you tie together all the things that interact as you go along. Then you work out a critical path. That's the critical path method. But this had never been done –

Began to use a critical path method in tracking Reclamation work

END OF SIDE 1, TAPE 3. APRIL 24, 1995.

BEGINNING OF SIDE 2, TAPE 3. APRIL 24, 1995.

Storey: You were saying that the critical path method had been used by the military, but not, evidently, in civilian applications.

Vernon: No, not in civilian activities because the military was, shall we say, sort of a cardboard image. It was one-dimensional, to create war, but they had to feed backwards into the logistical, clear back into the production of the munitions and manpower, and so on, and so on. But it was all to a single objective of war, making war, whereas resource development involves not only construction and planning activities, construction activities, but involves legal aspects, working with local governments, state governments, legal entities, and becomes a very complex issue. It becomes very intertwined, and you have to work your way through all of these things, and you find that one particular action in one of these

lines over here may be holding up a whole series of actions somewhere else because you can't move until this has been approved.

What we found out was our legal eagles were the smallest neck of the biggest bottle around. One of the early improvements we came up with was by focusing Denver's attention on the award of construction contracts. We reduced the time, or Denver reduced the time, of award of a contract from about six months to less than thirty days by utilization of the idea that the military had developed of the "Intent to Award" a contract.

After you had taken bids and [everything] seemed to be in order, you could issue a letter of intent which said, literally, provided all of the things in your bid come out okay, you can start organizing, arranging your financing, and we will award you the contract. So Denver then, over the strong objection of our legal department, started issuing letters of intent, and reducing the time to award a contract, and we got things under way in a hurry.

The one division of the organization we had the biggest trouble with, with getting them to program anything, was the legal division, because they weren't accustomed to working against a deadline. They'd take something and stick it under the bottom of the pile, and when it floated to the top, they'd stick it under the bottom of the pile again. The problems were not the construction contracts that were holding things up, [it was] ~~as well as the construction contracts,~~ ~~were~~ the entering into repayment contracts with irrigation districts because that was a long, intense, and difficult negotiation.

So we found that as we started programming this thing out, that many times the

Legal reviews were a bottleneck

Time required for award of contracts was reduced from six months to thirty days

The legal division wasn't used to working with deadlines

The office focused on identifying those things which were holding up

achievement of a repayment contract with an irrigation district just held up the whole damn program. So by programming all these activities out and focusing on the actions which were holding other subsequent actions up, and reporting to the Commissioner regularly what was holding up an action on a particular project, he could then focus his administrative power on getting things [done] ~~on law~~, and it worked out very well.

projects

So I set up not only the office in Washington, but I got set up [a] Progress Control Office in Denver, then in all the regions. So then in June 1946 or was it '45, '45, I held a – no it was '46.

Storey: '45, the war would have been still on.

Vernon: It must have been '46, because I was into the program, the progress control thing. I held a meeting, I called all the regional officers together, all the control officers together, and Denver. We met in Salt Lake City for about ten days, and worked out this overall approach of how we were going to do this thing, and got these guys started in their regions. No it was '45, because in '46, then we held the first comprehensive Commissioner's program meeting with the Secretary of the Interior.

In 1946 Commissioner held a comprehensive planning meeting with the Secretary of the Interior

So here I was in the midst of setting up this Office of Progress Control, and Bill Warne called me into his office one day in the spring of '45, and said, "Ken, I've got another new job for you." He said, "I'm handing you the Missouri River Basin Project. You've got to get this thing organized, and the Department wants an organized approach within the department. And what we're going to do is, we're going to finance their Missouri River Basin activities through the Reclamation appropriation. You've got to go to

Bill Warne assigned Vernon the job of organizing the Missouri River Basin Project

all the departments, all the agencies in the Department, and get them to develop a program which will support a coordinated Missouri River Basin Project." And that's why he gave me this little squib at the bottom. [Showing an autographed picture of Bill Warne.]

Storey: On the bottom of the picture.

Vernon: Yes.

Storey: "To Ken Vernon, who has been doing a series of hard jobs well." Dated April 16, 1946.

Vernon: And so what I did, I went to all these . . .

Storey: Now at that time he wasn't . .

Vernon: He was Assistant Commissioner . .

Storey: Of Reclamation.

Vernon: Of Reclamation. I reported directly to him. There was another Assistant Commissioner who had construction and power. Bill had planning and operation and maintenance and basically any economic studies, that sort of thing. He was a newspaperman, but he had a powerful mind, very analytical.

One thing I learned early on was never to go Mr. Warne and say, "Bill we've got a problem," because he'd rear back and say, "What the hell you mean 'we've' got a problem? You've got a problem. You come to me with suggestions and solutions. I'll decide what we're going to do, but you've got the problem." (laughter) I saw him rip one guy apart, just tore him into shreds, because he said to Mr. Warne, "Bill, we've got a problem." He was an economist. Of course, as a sidebar, I used to say to my economic staff, "I could lay you guys end to end, you couldn't reach

Bill Warne never had a problem

"I used to say to my economic staff, "I could lay you guys end to end, you couldn't reach from

from here to a conclusion." (laughter)

At any rate, he said, "You've got to come up with a coordinated program for the Department." It all aimed at a comprehensive program which could be fed into a valley authority. It was all moving in that direction. Of course, I was just on the periphery of it, you know, but it's still important in its elements.

So I went to all the departments, and some were really interested. For instance, the Missouri Basin includes a fantastic quantity of brown coal, and I had been involved in a seminar in which somehow or other I got assigned a study of the coal reserves in the Missouri Basin. So I went to the Bureau of Mines and said, "Look. We're putting this program together. We'd like you to undertake a study of the coal resources in the Missouri Basin. We know you're involved in a study of the [oil] coal shales."

Storey: Of the oil shales.

Vernon: Of the oil shales. "But here's another whole complete resource that you haven't really been doing much with is the lignite resources in the Missouri Basin. There's trillions of tons out there, and we need to know how they can be made useful." Incidentally, the railroads use it now, and they even talk about a slurry pipeline, and I don't know whether that was ever built or not, because these things all came up.

At any rate, so we got the Bureau of Mines to set up a laboratory at the – I don't whether it's the college or the agricultural college or the University of North Dakota at Fargo.¹⁰ So we financed through the Missouri Basin Project in Reclamation, financing for the coal [oil shales] laboratory in Fargo, and we also financed a supplement to their oil shale laboratory in the

here to a conclusion."

"It all aimed at a comprehensive program which could be fed into a valley authority. It was all moving in that direction."

Asked the Bureau of Mines to do a study of coal resources in the Missouri River Basin

University of Wyoming.

Storey: Explain to me why Reclamation would be interested in coal and oil shale reserves.

Vernon: Well, first off – and this is just speculation on my part – first off, up here somewhere, somebody is trying to put something together and get the framework of something which ultimately could become a comprehensive program in one entity.

Storey: Like the T-V-A?

Vernon: Yes.

Storey: Instead of having all these different agencies.

Vernon: Running around, knocking each other, falling over each other.

Storey: Okay. You were postulating that that's what was going on.

Vernon: Yes, I was postulating, but I didn't bother with that. My assignment was come up with a program in Interior. I was handed the job of coming up with an Interior program financed through Reclamation. The reason it was financed through Reclamation is because we had the muscle to get the money, Q-E-D.

“I was handed the job of coming up with an Interior program financed through Reclamation.”

Storey: QED is?

Vernon: *Quod erat demonstrandum* [from Euclidean Geometry]. It means that which is demonstrated, we could demonstrate we had the muscle. (laughter).

So I went to the National Park Service and said, "Look. We're going to be building all these reservoirs out there. Recreation has been a big thing in the TVA, but you guys got pushed

Approached National Park Service about doing recreation development

out of it because TVA took over fishing and recreational developments around reservoirs. What we'd like to do is have you come up with a program as we build these reservoirs, you coming up with developments, recreational developments that could be around the reservoirs."

I made a study, after I got to be Regional Director, I made a study of what happened in the Central Valley and introduced a lot of that into the Missouri Basin.

But they said, "Oh, yeah, yeah, that sounds pretty good." Because up to this point, the Park Service had been at odds with Reclamation because they always felt we wanted to destroy the Grand Canyon with this diversion from the Central Valley Project [for the Central Arizona Project]. One of the studies I'd worked on when I was in Washington, I think it was when I was in Washington, was could we divert from the Grand Canyon somewhere to the Central Arizona rather than taking out of somewhere down below and having to pump all that water up as the Central Arizona Project does now. We found it was feasible, but the Park Service, geez, they really shuddered to think that we were going to tamper with the Grand Canyon. So they always felt that we were their enemy, but here was a chance to introduce a whole new element in their program of recreation.

The one I almost bent my pick on was the Geological Survey. The Geological Survey was one of the older elements of the Interior Department. Fundamentally their activities were hydrology and cadastral surveys, and they had their program that they had been working on for years. They were perfectly happy with it. They felt that they'd been robbed of Reclamation, because initially Reclamation had been a part of

Worked on a study to see whether Central Arizona Project water could be diverted in the Grand Canyon in order to avoid the pumping required if it was removed lower on the Colorado River

Approaches USGS about participating in the activity

the Geological Survey, and Major Powell, who became the first Commissioner, he was in part of the Geological Survey and made his trip down through the Grand Canyon.

Storey: He was the first Commissioner of the U.S.G.S.

Vernon: Oh, was he of G.S.? Oh, I didn't realize that. I didn't know that.

Storey: I mean he was the first or the second one, I've forgotten the – but not of Reclamation.

Vernon: Oh, he wasn't? That's how he got into it. At any rate, they felt that somehow or other they'd been robbed of Reclamation because it had been a part of the G.S.

Storey: Yeah. That's very true.

Vernon: So I went up to them and I said, "Look. You guys have got a program that's nationwide. Now we're going to start an intensive program here in the Missouri Basin. First thing we need is an improvement of our hydrologic surveys, the detail surveys, so we can get a better handle on the water supplies that are available. In your program, you'll never get around to that, but we can finance an improved effort with that. Secondly, your mapping program. You're nationwide, and you'll get around to the nation ultimately, but now we need a stepped-up program within the Basin to give us the mapping resources that we need to further our activities."

**Approached USGS
about improved
mapping and hydrologic
surveys**

Well they finally bought it, but they struggled, but they finally bought it, and so they ultimately came up with emphasis on hydrology in the Basin and cadastral mapping.

I went to the Fish and Wildlife Service. Now, I'd had some run-in before with Fish and

**Problems working with
the Fish and Wildlife**

Wildlife Service when I was acting as Engineering Assistant to the Commissioner, and it related to the Central Valley Project, and also the anadromous fishes [salmon] of the Columbia River Basin. They were concerned because they felt that our dams were blocking off the headwaters of a lot of the streams which were used as spawning areas for fish. The first guy I was assigned with to work in the Fish and Wildlife Service was, he was a very strict gentleman of ichthyology, and he thought anything we thought of should be dead and buried immediately. I never could just get anywhere with him. Somehow we got the word through that we needed someone else to work with, and so they came up with another guy. I can't remember his name, but he was a jewel to work with.

Service

What we did was analyze the problems on these river basins, and concluded that if dams were going to go forward, perhaps what we needed to do was institute alternative methods of hatching fish. In other words, fish hatcheries. And also, in order to be able to finance that, we needed some new law which would give us the chance to ask for appropriations for Fish and Wildlife activities in our appropriation. So he and I came up with what we called the 1944 Treaty with Fish and Wildlife, and got some appropriation which gave *them* some authority and gave *us* some authority to take care of some of these problems with fish, fish and wildlife.

Decided to use fish hatcheries to deal with some of the issues related to dams in the Missouri River Basin

So I went to them and I said also not only that fish hatchery, but around these reservoirs, there's upland game. And what you need would be protection for – because we'll be destroying the lowlands for reservoirs, what we need is replacement areas of brush and other growth that will provide cover for small game and wildlife. So they bought that. And so on down through

Suggested replacement areas for upland game also

the line.

So I came up with the idea of the Interior Missouri River Basin Committee, and the first chairman of that was Mills Bunger. I'd worked with him earlier when I was in Denver, in the Canals Division, and he had come in with the planning report, I think it was on the Gila River Project, and I had worked with him on preparing his report for the Gila project. And also he was the guy that offered me the job of office engineer on the planning of the Colorado-Big Thom[pson Project in 1935].

“I came up with the idea of the Interior Missouri River Basin Committee”

At any rate, he was the first chairman of the Interior Missouri Basin Committee, and also was the representative on the Missouri Basin Inter-Agency Committee. So he represented all the agencies. He theoretically represented the Secretary. We gave him authority, or he got authority from the Secretary for his activities. And then he would call meetings to review the activities of the various agencies to make sure we were all in lockstep together, and so on and so. So it came out to be quite a group here. You can see the representatives of all the agencies there. [Showing a picture.]

Mills Bunger’s role in various Missouri Basin committees

Well, after about a year, it was determined that Mills wasn't the man for that job, and he got interested in the River Jordan, and transferred over into the Foreign Service or the, I guess – I don't know whether he did that through Interior or Reclamation or whether he transferred over to State, but he became a [U. S.] representative on the River Jordan and the difficulties between Israel and Jordan and Syria, in dividing up the waters of the River Jordan.

So it was decided in the fall of 1946, that Mr. Debler, the Regional Director of Region VII, Mr. Comstock, Regional Director of Region VI,

Glenn Sloan moves into some of the Missouri River Basin committees

should retire, and that Glenn Sloan, who had been Assistant Regional Director of Region VI, would be moved into the slot of the representative of the Secretary for the Interior Missouri Basin Committee and representative to the Missouri Basin Inter-Agency Committee with the other [five] ~~four~~ Federal agencies and the five governors. Avery Batson was appointed as Director of Region VII.

So I was sent to Billings in January of 1947. Incidentally, it was very interesting, one day Mike Straus, who was then Commissioner – he was a bear of a man, great guy to work with, you could wrestle with him and he never held it against you – he called me into his office one day, and said, "Ken, we're going to make some changes out in the Missouri Valley, and I'm not offering it to you, but *if I offered it to you*, the Regional Directorship of Region VI, would you take it? Would you be interested?"

Sent to Billings in January of 1947 by Commissioner Mike Straus

"God, Mike, I don't know, that's quite a package. I don't know that I'm ready for it. After all, these guys out there, they're all senior to me, I'd be jumped over a hell of a lot of numbers here, and I don't know whether I'd be accepted. I've got to think about that a little bit, do a little talking around."

So that evening when I went home, my wife said, "What's bugging you?"

"Oh," I said, "I had a long conversation with the Commissioner this afternoon."

She said, "When are we moving?" (laughter) *Déjà vu* all over again. Back in 1943 was when we left the Central Valley Project. So I told her what was up. She was always a good sport. She says, "Well, I opted for better or for worse. I don't know if this will be for better or

Wife's reaction to the move to Billings

for worse, after all, it's your career."

And we just got this place organized. We'd only been there three years. I said, "That's the problem. I just got this office organized, just got it going good, and I'd like to try to see it through to completion because I think I could go on from there, but *if* the Commissioner offers me that Regional Director's job, I don't see how in the hell I can refuse it.

She says, "I don't either, I don't see how you can."

I said, "I may stumble and break my pick, I don't know, but if he says 'yes,' I'm going to have to say 'yes.'"

So I went back to him, and I told him what I'd thought through, and I said, "If you offer it, Mike, I'm your man. I don't know how long I'll live, but I'm your man."

So next thing I knew, I was sent down to have an interview with the Secretary, who was then "Cap" Krug, Julius Krug, who had been the Chief Electrical Engineer of the Tennessee Valley Authority, then had moved into the War Production Board, and had been Head of the Office of War Utilities, which had to do with all the utilities involved in manufacturing during the war.

I'd had some contact with him, I think he at least knew my name as we would chase this stuff through the War Production Board from Reclamation because of the power aspects. So I sat down to have an interview with him. I had a very nice interview with him. He tried to get my ideas or thoughts on the subject of resource development. I have a very hazy recollection of that because I was so damn nervous. (laughter)

**Interview with Secretary
of the Interior Julius
Krug**

After all, you don't get to talk to the Secretary of the Interior very often. I mean, that's like talking to God. And so anyway, apparently I passed muster.

So the next thing I knew, Mike called me in and said, "Well, when can you go to Billings?"

This was right after Christmas 1946. So I had a number of things to wind up. They were going to send me out as Assistant Regional Director, Dick [Glenn] Sloan's place, and Comstock would stay on for three months, and then would retire. That would overlap getting me familiar with the area, so I could get familiar with what was going out there, get settled in.

So I [reported] moved out there in January – 15th [1947]. I think I reported on January 15, 1947. Now, I took with me George Pratt, who had been Chief Counsel of the National Labor Relations Board, but he had been also involved with the group at Kansas City – it's on the tip of my tongue. Harry Truman had been part of that organization. It'll come to me; the old computer will keep charging up here.

So I wanted to take George, because George had both the legal background, but he also had a good sense of organization. So I wanted him to come out as Assistant *to* the Regional Director, be a part of me. We took the train to go out there, and on the train I said, "Now, this is how I want to organize it, George. I want to adopt the pattern that we had on the Central Valley because I know it works. I want to make the regional office the headquarters, the administrative headquarters, but I want to move everybody I can as close to the scene of their work as justifies a person, and I want to do that through district offices just like we had on the Central Valley Project, divisional offices in the

Sent Vernon as assistant regional director to overlap three months with the retiring regional director

Took George Pratt to Billings with him

Begins to plan how to organize the region in Billings

Central Valley Project." But also we had outlying offices like the Delta-Mendota Canal, and the Delta Cross Channel, and so on. I said, "I want to adopt that kind of a pattern, and what I need to do, what I want you to do is define functions of a regional office and the functions of a district or project office. I want execution in the districts, but I want supervision in the regional office, and I've got a real problem because there's 350 people in Billings right now that are falling over each other, worrying about where that drill rig goes next, or whether that survey crew should be over somewhere else. Now, the regional office should be devoted to forward planning, and I want to get those people that are doing [the detailed] ~~that~~ work out in the districts or projects. In a sense, it's just [as] the Corps of Engineers has with their division offices and their district offices and their project offices." I said, "There's a pattern that's established."

And I had talked to Germaine Ellsworth, who was the organizational planner in Washington, and had scouted these ideas with him, so he'd given me some ideas on the subject. So that's our charter that we arrived at in Billings. And I think that's a good place to stop for today.

Storey: What you're saying to me is this had not been worked out even, though the regions had been in place two to three years. Is that right?

Vernon: I beg your pardon?

Storey: The regional organization was put in place in '44, early '45. So by the time you went there in '47, it had been in place two to three years.

Vernon: Exactly.

Storey: And the functional responsibilities of the offices hadn't been worked out, or was it that the area offices hadn't been established, or what?

Vernon: [That's right, it hadn't been done.] No, I was the one that did that, because this was what the Commissioner told me. He said, "Listen, Ken, what I want you to do is get this project off the ground. We've got the appropriation, the President wants work done, the Secretary wants work done."

The Commissioner's charge to Vernon

Yes, the regions had been established, but the problem was that the current regional directors had a long background in project history of Reclamation.

Storey: Before the foundation of the regions.

Vernon: Before the foundation of the regions. Mr. Debler had been the Planning Engineer in Denver, and Mr. Comstock had been the Project Superintendent down on the Riverton Project in Wyoming, and they didn't see the scope of the Missouri Basin activity. The Commissioner and the Secretary wanted new blood put in there, but in a way that could draw upon the experience of these men and their past history so that there would be an overlapping of new blood and the experience of the elder statesmen. (Storey: Okay. Good.)

Reorganization into regions was slowed by the new regional directors' long backgrounds in Reclamation

So my first activity, along with George Pratt, was to redefine the functions of the regional office and what would be set up as district offices and what would remain as project offices, because as I show here on page four of my summary statement, I show a listing of the projects which were already in existence, which were one, two, three, four, five six, there were about a dozen older projects which were already in existence which we had to service, as well as

this new Missouri Basin Project [Pick-Sloan Missouri Basin Program].

So what we wanted to do was to establish a strong Planning Division plus a strong Operation and Maintenance Division which would deal with the existing projects, and take on new projects as they would be constructed.

Wanted a strong Planning Division and a strong Operation and Maintenance Division

Storey: Good. Well, it's been going on three hours now.

Vernon: I think that's a good time to stop, because this gets into the creation of the district offices and what we did getting the Missouri Basin Project under way. That's a good place to stop.

Storey: In that case, I'd like to ask whether or not you're willing for the materials on these tapes and the resulting transcripts to be used by researchers inside and outside Reclamation.

Vernon: Certainly inside of Reclamation, I don't know where it could go outside. I don't think I said anything which—~~I tried to qualify~~— [would be detrimental to anyone.]

END SIDE 2, TAPE 3 – APRIL 24, 1995.

BEGINNING SIDE 1, TAPE 4. April 24, 1995.

Storey: This is tape four of an interview by Brit Storey with Kenneth F. Vernon on April 24, 1995. Go ahead.

Vernon: As I said, I have no objections to using this material inside the Bureau, because it deals with people that are well known within the Bureau. How far outside, I don't know what use it might be put. I've had to speculate, and I've tried to identify my speculations as to why certain things were occurring as orders were fed down to me and activities were assigned to me to be carried out, and I had to speculate the whys and the

wherefores as to what was going on at upper echelons of government, such as the Secretary of the Interior, the Bureau of the Budget, and the administration. So that has to be acknowledged and accepted as speculation on my part, and rationalizing why I was given certain tasks to perform.

Storey: Yes, and I think historians do that. That's what we're trying to do is to cross-reference everything and that sort of thing.

Vernon: Because there was a lot going on at that time which we can – actually, during the National Resources Planning Board during the thirties, Jack Dixon, whose name I mentioned as our Regional Planning Engineer, had started with the Corps of Engineers, and then he had been an engineer with the National Resources Planning Board. Then when it was disbanded, he got into the War Production Board. Then after the War Production Board disbanded, he was brought over into Reclamation as Head Planning Engineer in Washington. As he took over, then I was fed into these other operations, so that was kind of the pattern that was followed there.

So with those qualifications, yes, sure, it's a record. Bill Warne's been after me for years to write these things.

Storey: Good. Well, maybe we can prevent you having to write it all.

Vernon: Right.

Storey: Thank you.

Vernon: That's the reason I didn't want to sit down and do it.

Storey: Well, thank you very much.

END OF SIDE 1, TAPE 4. APRIL 24, 1995.

BEGIN SIDE 1, TAPE 1. APRIL 25, 1995.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Kenneth F. Vernon in his home in Fullerton, California, on the afternoon of April the 25th, 1995. This is tape one.

Mr. Vernon, I'd like to ask you a couple of name spellings to start with. Fraine, your relatives in Sacramento area, I believe it was.

Vernon: No, my name Fraine, is my middle name. That was my mother's family name. F-R-A-I-N-E.

Storey: And you had two uncles.

Vernon: And my two uncles, Colonel John Fraine of North Dakota, and my uncle George Fraine, who was a noted jurist in North Dakota.

Storey: And then Ken Cheadle?

Vernon: Cheadle was spelled--J. Kennard Cheadle, J. K-E-N-N-A-R-D C-H-E-A-D-L-E. Ken Cheadle.

Storey: Okay. And then before we going on and I start asking questions again, I'm wondering if there's anything that you thought of after our conversation yesterday that you'd like to add or talk more about?

Vernon: Yeah, there were a couple things that require a little clarification I kind of left hanging, and might clarify why certain things happen. I told you about meeting up with Brooks Morris when I reported into Denver, who was the son of Sam B. Morris, the Chief Engineer and General Manager of the Pasadena Water Works. I couldn't think of Senior Morris' full name. His name was Samuel B. Morris, M-O-R-R-I-S. It was through Brooks'

father's association with the then Chief Engineer and Manager of the Denver Water Works System, that we, both of us, received a, really cook's tour, of the Denver Water Works System, compliments of the Chief Engineer and General Manager. I don't recall his name.

But I learned at that time the seriousness of Denver's water supply problems during the drought in the mid-thirties, and why Denver was anxious to build the Cheesman Reservoir on one of the tributaries of the [South] Platte [River], and also look forward to the ultimate transmountain diversions of West Slope water onto the East Slope of the state of Colorado. That clarifies that.

Then when I was talking about the establishment of the Federal Interagency River Basin Committee, I said that George Beard of the Civil Works Division of the Corps of Engineers and Bob, Robert de Luccia, L-U-C-C-I-A, of the Federal Power Commission, and I were delegated to come up with a charter for such a committee, and then we were delegated to come up with the charter for the Missouri River Basin Interagency Committee. We suggested that the Department of Commerce be made a member of the committee because of their census and demographic studies and other economic data which would be essential in planning future developments of a broad area. And then we also concluded that those five interagency members should be matched by five governors drawing upon the committee of ten governors of the Missouri River Basin states. And we recommended that the Missouri Basin Governors Committee, I've forgotten its strict name, it may have been called the Missouri River Basin Commission or some such a name, select five governors from the ten states, and that they would match and collaborate with the five

**Setting up the Federal
Missouri River Basin
Interagency Committee**

interagency members.

I think the first selection of the Governors Committee was the Governor[s] of Montana, North Dakota, South Dakota, Nebraska, and one of the lower states, I can't remember if whether it was Kansas or Missouri, but I believe it was Kansas. Because Missouri felt they were only interested in navigation, primarily interested in navigation on the Mississippi River, so they felt they were not as deeply involved with the Missouri River, as, perhaps was Kansas.

Also when I was discussing the formation of the Interior Missouri River Basin Field Committee, I gave you the reasons, I gave you the basis of my discussions with the Geological Survey, the National Park Service, the Fish and Wildlife Service, and the Bureau of Mines, but I didn't discuss what approach I made to the Bureau of Indian Affairs and the Bureau of Land Management. The Bureau of Land Management was responsible for the management of all the public lands, of which there were tremendous quantity in the Missouri Basin drainage area, primarily devoted to grazing rights on public lands, and also on mineral development, ore resources. So that then is how I approached the agencies.

Then, also, I approached the Bureau of Indian Affairs on the basis that there were a great number of Indian reservations in the [Missouri River] Basin, and that Indian water rights would be involved, and that the Bureau of Indian Affairs was interested in developing water resources and land resources of the Indian reservations, and that we could tie in accelerated development of those resources through the coordinated Interior Missouri Basin Program. So that was how I approached each of the agencies, and all of them ultimately swung into line.

**Approached the Bureau
of Indian Affairs**

We instituted, then, a separate section of our appropriation bill which would finance these increased activities relating to the Missouri River Basin – development through the Reclamation appropriation. I think that clarifies the things I wanted to.

Reclamation's appropriation bill had a separate section for the PSMBP

Storey: Was that while you were still in Washington that we started—

Vernon: That was while I was still in Washington setting up the Missouri River Basin Program.

Storey: But did we start getting appropriations while you were still in Washington?

Vernon: Yeah. I should explain that I had been designated as the Acting Chief Progress Control Officer, delegated to set up this office and start establishing the various programs and budgets for the whole Reclamation program. One of my first reports to Mr. Bashore, the Commissioner, sometime during 1945, there was a supplemental appropriation bill being sent forward from the Department through the Congress to provide for an accelerated program to take care of the returning veterans. My first report to the Commissioner was, I warned him that we already had a big backlog of appropriations, and that we were nowhere near accomplishing that program, and I fully doubted, and he should be aware, that even if a supplemental appropriation would be granted, we probably wouldn't even get to spend it for a couple of years. He thanked me very much for that information, but the Department had decided that the supplemental appropriation would be sought, and it was granted.

Acting Chief Progress Control Officer while still in Washington, D.C.

Storey: So in those days we got to keep money?

Vernon: Yeah, though, see, though, there's another element. See, Reclamation had no-year money.

No-year money in Reclamation

Once it got it, it kept it. Now, when I was in the Foreign Service, in the Agency of International Development, we had to go through a torturous exercise every June. If you'll remember, I discussed this business of obligation, and you tied up money, but in the Foreign Service, in the Agency of International Development, every June we had to go through an exercise in what was called DEOB-REOB. We had to deobligate any money that wasn't spent, and then we had to immediately reobligate it for the new fiscal year—because our money only extended for each fiscal year, but we could carry over, if the agency was granted the authority, we could carry over any unexpended funds into the next year, but they literally were reappropriated. Therefore we had to deobligate them, and then reobligate them for the new fiscal year. So there was a difference in the foreign program, as opposed to the Reclamation program.

So that, I think, it covers some of the things that I wanted to clarify, and those can be, as you transcribe these notes, can be inserted at their proper places in the text.

Storey: Mike Straus selected you to be Regional Director, is that correct?

Vernon: That's correct.

Storey: What was Mike Straus like as a Commissioner?

Vernon: Mike was a very complex person. He was very active, very forthright, but he had a tremendous drive. He had been an Assistant Secretary. We'll start a little earlier. He had been associated with Secretary Ickes in Chicago, as a newspaperman, and had become familiar with Mr. Ickes, when Mr. Ickes was in Chicago. Incidentally, I read the biography of Mr. Ickes, and it's a fascinating book, and the life of a fascinating gentleman.

**Mike Straus as
Commissioner of
Reclamation**

**Commissioner Straus
knew Harold Ickes in the
Chicago newspaper
business**

Mike Straus had become familiar with Mr. Ickes, or vice versa, Ickes became familiar with Mike Straus, and so he brought Mike Straus in as an Assistant Secretary of Public Relations.

When Harry Bashore decided that he wanted to retire on the closing of the war, Mr. Straus was then appointed by the Secretary as Commissioner of Reclamation. I found him a very good man to work with. He was very forthright. You could talk directly to him. You didn't have to pull any punches. He didn't pull any punches, but you *could* work with him, and he would listen to you.

One thing that he was struggling with was the fight over the 160-acre limitation in California. [, because] The agricultural interests in the Central Valley area, ~~who~~ owned the land outright. Rather than the water being delivered to public lands, [it would be] ~~they were being~~ delivered to private lands, [that] ~~and they~~ were already in private ownership. The agricultural interests[, who held large ownerships,] wanted somehow to bend the application of the 160-acre limitation, which was a fundamental of Reclamation law, to be able to get the project water to more than 160 acres of each ownership.

There was a good deal of political pressure in the Congress being exerted by members of the Congress on the Secretary and Mr. Straus to somehow bend the law and permit that to happen. This came up at a later time in my experience when I was Regional Director in Region VI, because *there* we found out through certain agricultural studies and economic studies performed by the state agricultural colleges, which I will deal with in plenty of more detail later, that a land ownership, or the land, that an operating entity, was about 480 acres. [It took that amount to] ~~That would~~ support the farm

Commissioner Straus had to deal with Central Valley land owners who wished to ignore the 160-acre limitation

In Region VI the agricultural colleges had determined that an operating entity was about 480 acres

family and support the machinery that was required to meet the operations and economics of farm development.

~~But Mr. Straus felt that he could not — and so I'd asked him [Mr. Straus] to consider some relaxation of the 160-acre limitation, because we found that in 160 acres, in general, [was inadequate in the northern Plains States. we had in the northern states, Northern Plains states, We found that there was from 100 to 120 acres of Class Three and better irrigable lands in a 160-acre quarter section, which was inadequate then to support the farm family and pay water charges. So I had asked him somehow to consider going to the Congress and get some kind of a special dispensation of these economic factors, but he felt because of the stress and strain of the fight in California, that he could not give that problem any consideration for the Upper Plains states, which gave us a real difficult problem to solve.~~

“I'd asked him to consider some relaxation of the 160-acre limitation, because we found that 160 acres, in general, was inadequate in the northern Plains States.”

It was ameliorated, let us say, by examining what [were] ~~was~~ the operating entities. [We] found that ownerships were being devolved to both parents, each parent, and any heirs, which would then result in an ownership meeting the 160-acre limitation, but with an operating entity of 500 acres or more.

Just as a sidebar to this, to describe what kind of a gentleman Mr. Straus was, he was making a field inspection trip of Region VI, and at the time I was anxious to develop some small projects in North Dakota, and the Governor of North Dakota was with us on this tour. As we were flying around showing the Commissioner the potential projects, I was pressing him to relax his insistence that there be irrigation contracts, irrigation repayment contracts, signed, before any construction could begin. I tackled him

several times during the course of that inspection tour, and ~~the Governor~~, later the Governor of North Dakota, said to me privately, "I never saw anybody tackle his superior the way you did and get away with it."

And I said, "But I know Mr. Straus, and I know how he operates, and he wants you to come at him full bore, because the harder you come, the better he feels that you believe in it." But I was always very, very careful that when I was maybe a little bit out of line, I called him Mike – no, I called him Commissioner, Mr. Commissioner. But when I was really pressing him hard, informally, I called him Mike. (laughter) He loved it. Did that answer your question? Maybe you've got some particular questions you'd like to know.

Interacting with Commissioner Straus

Storey: No, not particularly.

Vernon: I should say also, Mr. Straus was strongly in favor of the development of the power program, and he was very supportive of my efforts to develop the power marketing program as I saw forthcoming from the mainstream dams, which had been delegated to Reclamation. So he was a very complex guy, and one of his principal assistants in Washington used to say, "God, we've got to protect Mike from his own anxieties, because if he sees a fight, he wants to get into it." (laughter) So this particular assistant's job was to run around with an oil can and smooth things over.

Storey: There was another person in Washington, I think before you left, named Lineweaver.

Vernon: (laughter) That's the guy I was referring to.

Storey: Tell me about Goodrich Lineweaver, if you would.

- Vernon: Lineweaver was a very genteel Kentucky gentleman. I loved Goodrich Lineweaver, I really did. He was a very fine gentleman. He was a very serious sort of a guy, and he took his responsibilities very seriously. His job was to build up the – basically he'd been assigned the task of building up O&M department, which fundamentally had its feet buried in the dirt of operating canal systems, but he seriously wanted to broaden that approach into considering more of the economic aspects of irrigation development and community development and irrigated lands. So he was given the responsibility to bring in and strengthen the whole economic effort.
- Storey: Was he effective?
- Vernon: Yeah, yeah. And I'll bring that up later as we get into my efforts on the Missouri Basin. That's how we got Floyd Dominy. Lineweaver brought Floyd Dominy in from the Department of Agriculture. First, Floyd had been a county agent out in Wyoming, as I recall, and then he'd been in the military, in the Navy, I believe, and then after the war, he showed up as an Assistant to Mr. Lineweaver in the O&M department in Washington. And we learned that Floyd was a real powerhouse.
- Storey: Last time you were traveling with your new assistant to go to Billings, and you were talking about wanting to set up district offices. I'd like to pursue that a little more. Had the regions not established any offices under them, other than construction offices?
- Vernon: That's what I wanted to get discussed in detail in our conversations today.
- Storey: Good. Well, let's get started on it, then.

Vernon: I've got a whole program that I wanted to get into. I wanted to pick up these other items, and then we'll get into that. Before I do that, I got to make a pit stop.

Storey: Okay. [Tape recorder turned off]

Vernon: Yesterday, our conversations were devoted, in the later session, to emphasis on the development of the Missouri River Basin Program and my thoughts about how we might set up the organization of the region, but I didn't discuss what had been going on in the region before the Missouri Basin Program was authorized and funded, because it was a fairly sizeable program at the time.

As a matter of fact, there were a number of projects which were very old Bureau of Reclamation projects. For example, in Wyoming, there was the Riverton, with the Midvale Irrigation District, and then the expansion of Division Two, and thinking of extending it on into the East Bench. There was the Shoshone out of Cody, which had the Willwood Division, which was a very well-run division, and then its problem-plagued Frannie Division. Then there was the expansion of the Shoshone Project, the Heart Mountain Division, and the Heart Mountain Power Plant.

Then in Montana, there was the Huntley Project just adjacent to Billings, which was, I believe, an old Carey Act project which antedated Reclamation, the Reclamation Act. Then there was the Lower Yellowstone Project, with headquarters at Sydney. There was the Buffalo Rapids Project, which was what we called a Wheeler-Case project, which was a combination of Reclamation and Soil Conservation Service approach to irrigation. The Bureau of Reclamation built the canal systems,

**Existing projects when
Vernon became regional
director**

Riverton Project

Shoshone Project

Heart Mountain Division

Huntley Project

**Lower Yellowstone
Project**

Buffalo Rapids Project

and then the Soil Conservation Service helped the farmers develop their on-farm water systems.

There was the Sun River Project in North Central Montana. There was the Milk River Project in, again, in North Central and Northeastern Montana. Then in North Dakota, there was the Buford-Trenton Project, which was another Wheeler-Case project, that was close to Williston. Then in South Dakota, there was the Belle Fourche Project on the Belle Fourche River, in extreme western North Dakota, just north of the Black Hills. So you could see there was already a fairly sizable program going on in the region.

Now, the problem as I saw it, as I approached how to organize the region, was to bring these older projects into, and get them associated with, this new approach to the much larger and expanding Missouri River Basin Project. But I must say that the problem was compounded because, being frank, I felt that regional management, senior management at the time, was more concerned about the conduct of the programs in these older projects and had not yet ~~been~~ fully [realized] ~~apprized~~ of the emphasis that the Department wanted to place on the expansion and effort into the Missouri River Basin.

Also on the Riverton and on the Shoshone Project, the Heart Mountain division of Shoshone, since these were older projects and had an ongoing program, new developments there were approaching completion to where we could institute a veteran settlement program on each of these two projects. This also involved the demolition of the Heart Mountain Relocation Center, Japanese relocation center, that had been built and populated during World War II, and we distributed portions of the buildings to the

Sun River Project

Buford-Trenton Project

Belle Fourche Project

**Heart Mountain
Relocation Center**

settlers, new settlers, as well as distributing lots of items which were present at the war relocation centers, such as beds and office equipment, not office equipment, but farming implements and so forth.

So there was a good-size program already going on in the region. This then required that somehow I bring these older projects into this *new* form of organization, because here they were, they had been accustomed to dealing directly with their center of their world, which had been the Denver office. They had suddenly been removed from the Denver office and had to now report through a regional office, and here was this guy coming out on the white horse, that now was going to remove them twice from Denver and once from the region and forcing them to go through a district office. So let us say that they approached the new organization with somewhat less than enthusiasm. (Chuckles)

Projects formerly reported to the Denver Office

However, the first thing I did after I got to Billings, I told Mr. Comstock what had been laid down before me as my charge, and that I hoped that he would see his way clear to make it easy for me, which he did.

Storey: Now, Comstock was—?

Vernon: He was then Regional Director. Harold Comstock was then the Regional Director. But his feet were anchored in Riverton Project. He'd been the Project Manager, Riverton, for lo these many years, and his feet were anchored in the construction of canal systems and the delivery of water to farms and settlement of farms, and he didn't really appreciate this broader effort of regional development.

Harold Comstock

There also had been established in Billings, besides the regional office, there had

William E. Rawlings

been a group set up which was a sort of a token toward the Missouri Basin Project. This was headed up by a man, William E. Rawlings, R-A-W-L-I-N-G-S, Bill Rawlings, who had been given a small economic staff and some land classifiers, and they were beginning land classification work on some of the new project areas that Mr. Sloan had included in his broad development plan for the Upper Missouri Basin.

So my approach to the problem of organization was to break down the number of people in Billings as to those who were doing project work and those who were doing regional work. But, unfortunately, what I found was that many of the people who should be doing regional work, such as advance planning and program planning, they were involved in such mundane things as where –

Splitting regional and project work

END OF SIDE 1, TAPE 1. APRIL 25, 1995.

BEGIN SIDE 2, TAPE 1. APRIL 25, 1995.

Storey: You found that people were doing the detailed work of the projects, then?

Vernon: That's right.

Storey: And trying to figure out where drill rigs should go?

Vernon: Yeah, they were worried where the hell to drill that damn next bore hole. And I said, "Wait a minute, this is not the way. What we've got to do here now is we got to segregate [these things] ~~this thing~~ out." And so we set up an entity we called MBPAS, Missouri Basin Project Activity Staff. And I brought Bill Rawlings into the [regional office] – by this time, I had become Regional Director. Mr. Comstock had retired. I'd done this planning and sorting out 'til – I think Mr. Comstock retired on April 1, and that's April

Missouri Basin Project Activity Staff established

1, 1947. And then I took over as Regional Director, and then I was free to begin my institution of the changes that I wanted to make.

So Mr. Pratt – incidentally, I've tried to recall Mr. Pratt's background, and I couldn't recall it completely, but I said he was from Kansas City, and he'd been involved in the clean-up of the Pendergast gang. That was the name I couldn't remember yesterday, the Pendergast gang. If you read President Truman's history, you'll find that he was very involved with the machinations of the Pendergast gang in Kansas City, which is a political power, that's the same as Mayor Daley in Chicago. But he had been a part of the effort to clean that gang up and get them out of there. So he had a terrific background in organization as well as being a sharp lawyer.

So I then brought Ralph Workinger out from Washington, whom I've become acquainted with while I was working in Washington, and was a part of Germaine Ellsworth's staff, who was the Organizational Assistant to the Commissioner, developing and promoting the regionalization of the Bureau. So I assigned Mr. Workinger the job of administering this MBPAS staff, Missouri Basin Project Activity Staff, and between the three of us, we sorted out those that were doing project work and those that should be doing strictly regional work, and we put the people who were doing project work into the MBPAS group, and then from there we decided who should go to where in the various district offices we were going to set up, on the basic principle that we would move each individual as close to the site of the work that he was performing as would justify a full-time person. That is to say, if there was a project that required a full-time person, we'd move him to that project, such as Riverton or Shoshone or somewhere else.

But if it didn't require a full-time person, we'd move that person into the district office, where he could then be available to a number of project areas, but the district offices were to do project work, that was their job, was to execute project work, both project planning, the operation and maintenance of the district projects, [and] the execution of the electrical power program and so on.

I also set up a unit called the Municipal Water Group, because I felt that municipal water would become an element of the development of the Missouri Basin as time went on. So we set up a separate section for that, but included in this MBPAS group 'til we decided just exactly where it should be located.

**Municipal Water Group
established**

Then I called together all of the project managers of existing projects and all of the gentlemen who I felt should become the new district managers, and we held a terrific program session to identify, or explain to them, this new organizational concept, and what their roles would be. I said to them, giving certain gentlemen area responsibilities on an ad-hoc basis, and I said, "Now, this is the objectives that I'm laying down for you. Mr. Sloan has some grandiose projects in his scheme, which will require a great deal of detailed project planning ~~ever~~ before they're ready for undertaking construction. So we must have a broad-planning effort to carry on, to ultimately develop those larger projects. But in the meantime, there must be a number of smaller entities that could be considered for intermediate development, let's say, which would give the effect of activity happening on development of the Basin, and satisfy the political elements, that are pushing the program, that activities and progress is actually being made.

So that Mr. Pratt and I had divided the region up into five major areas. First one was the Cody District Office, which would include the Riverton Project, the Shoshone Project, the Heart Mountain Project, the Boysen Dam, and a number of small developments which would happen on the Little Big Horn River – no, the Big Horn River, below Boysen Dam. I knew this was going to be a tough problem, because this involved *new* activities as well as melding in the older activities. And we tentatively decided that Mr Workinger, when we finally unraveled the MBPAS staff, we would put him in charge of the Cody office, even though he was not an engineer, but he was a good organizational man, and we felt that he would be successful in bringing the people together down there to work as a team.

**Cody District Office
established**

I established the Yellowstone District Office in Billings. I wasn't happy about doing that, because it put both a district office and a regional office in the same locale, but the only other alternative would have been to put it in Miles City, which made it rather isolated, and because we felt that the Yellowtail Dam was going to be one of the larger projects, and it was easier to manage it from Billings than it would be to manage it from Miles City. Also power planning was going to take place in the Yellowstone area, so that it seemed that Billings was the logical place to establish that office.

**Yellowstone District
Office established**

Then the Upper Missouri area was to cover the Upper Missouri River down to the upper waters of Fort Peck Reservoir, and extending into the headlands of the Upper Missouri area, including what was called the Three Forks area, where the three rivers that fed into what became the Missouri River. There would be Canyon Ferry Dam and power planning of, how to distribute power out of Canyon Ferry Dam. There would be the Lower Marias Project

**Upper Missouri District
Office established in
Great Falls**

on the Marias River, the Tiber Dam. There would be the Sun River Project, which was already an established project, and there would be the [old] Milk River Project, which had complications, because the waters arose in the Glacier Park, flowed northward into Canada, then swung around and reentered the United States, then in the irrigated areas, where below Havre, Montana, on the Lower Milk River before it entered into the Missouri River below Fort Peck. Complications there included an already existing compact between Canada and the United States on the Milk River under the jurisdiction of the International Joint Commission. Turn it off (whisper). [Tape recorder turned off]

Milk River Project had international complications

[Next I] established the North Dakota Bismarck area, which would include the – since it would include what Mr. Sloan called the Missouri-Souris Project area, the diversion from the Missouri River below Fort Peck, we included everything below Fort Peck in Montana on the Missouri River, including then the diversion into North Dakota, also the Jamestown River, up to and including the South Dakota line, and the Missouri-Souris River, which [began in] ~~flowed through Peyota [phonetic]~~, Canada, [entered the U.S.,] flowed through Minot[, North Dakota] and then back into Canada, which was destined to take the return flows from the proposed Missouri-Souris Project area.

North Dakota office established in Bismarck

And then there was also the Sheyenne River, which flowed eastward and emptied into the Red River of the north, which flowed out of North Dakota into Canada, which created some problems, international problems, with Canada. But there was a problem with the Sheyenne River, because the Corps had proposed a reservoir, a dam, on the Sheyenne at Bald Hill, which was farther down on the Sheyenne River, but Sloan had proposed a dam higher up on the

Sheyenne River problems

river, which would presumably control water that would be diverted from the Upper Missouri, from the Missouri River below Fort Peck and into the Missouri-Souris area, which then could be fed into the James River.

Storey: Excuse me. The Sheyenne River, the spelling?

Vernon: S-H-E-Y-E-N-N-E.

Storey: Yeah, I thought it was a little different.

Vernon: It's a little different. The Sheyenne River, yeah. Then we also established the Huron District, the South Dakota District, with headquarters at Huron, which would be involved with the planning of the diversion from the Oahe Reservoir, being built by the Corps of Engineers, into the James River. We also assigned to it the Angostura Dam and project [in the area of Hot Springs, South Dakota] ~~at Rapid City~~, which was one of the very early projects of the Missouri Basin activity. We also assigned responsibility to the Belle Fourche Project, which was north of the Black Hills, but was in South Dakota. And we also assigned some of the planning operations in the upper reaches of the Belle Fourche and the Cheyenne River in South Dakota, upon which the Angostura Dam was being built in [western South Dakota.] ~~eastern Wyoming~~. In other words, we took the basins of the rivers which flowed through South Dakota, even though they were in Wyoming, we included those into the Huron district's charter, if you follow me.

**South Dakota office
established at Huron**

So that was our general approach to the division of the region into discrete district areas. I understand my opposite number, Mr. [Avery A.] Batson, who became Regional Director in Region VII, was doing the equivalent thing in the Region VII area. But I'm not too familiar how that was developed, because I had my plate full

in Region VI.

One of the decisions we made early on was that since we were both operating under the same basic law, the Flood Control Act of 1944, we should have our staffs meet regularly in a sort of a retreat, where we would get away from the pressures of the day, and decide and coordinate our activities with the same basic set of principles. So we then developed a basic set of principles which would govern and guide our development of our activities with the development of the basin. So that now establishes the first step in our organization of our activities in the region.

After we had identified all the people that should be called *regional* people, who we assigned the function of supervision, and all the people that we determined were project people, and assigned them the adjective "direction of activities," we then started moving right down to the people that was in the MBPAS staff, and distributing them ~~around the regions,~~ around the district offices. So this activity took up most of the year of 1947. It was not until fall that we really felt that we had our organization established.

Fall of 1947 felt his organization was in good shape

I'd appointed Ralph Workinger as the [District Manager] ~~Regional Manager, the Area Manager~~ of the Cody office. I appointed Harold Aldrich, transferred him out of the MBPAS staff up to Great Falls, as the [District] Manager of the Upper Missouri area. I appointed Don Ketchum, who was basically a power engineer, to the Billings office, to the Billings area, the Yellowstone area, because of the planning for the Yellowtail Dam. I appointed Bruce Johnson, who had been the head of the planning operation in North Dakota and was thoroughly familiar with the work on the Missouri-Souris Project

with the diversion from the Missouri River into North Dakota, appointed him as district manager at Bismarck. And then I appointed Joe Grimes, who had been a Project Engineer down on some of the projects of the Lower Yellowstone, ~~which~~ whom I felt had a good deal of knowledge and savvy about what our objectives were. I appointed him district manager at Huron, South Dakota. So that, then, put our organization in place.

Now we have the field team in place, basically. I was reviewing the makeup of the regional staff. The Regional Engineer was Charles Anderson. I knew him from my days when I was working in the Denver office back in the mid-thirties. He had just come in from the Seminoe Dam and was waiting for a new assignment, ~~when~~ when he was then sent out to Shasta Dam as to be the Office Engineer at Shasta Dam. ~~but~~ He had been a part of Grant Bloodgood's Seabee organization, and he spent the war years out in the South Pacific in the Seabees, but on his return to the United States after the war, Denver had sent him up to Billings to be the Regional Engineer. So I had a great deal of confidence in Charlie Anderson, whom I knew as Andy, and whom I used to often [walk to] work with when I worked in Denver.

**Charles Anderson,
Regional Engineer**

I was somewhat concerned about my Planning Engineer. I tentatively assigned Tom Judah, who I think was related somehow to the engineer Judah, J-U-D-A-H, who located the route of the Central Pacific Railway from Sacramento to Ogden, back in the 1860s.

**Tom Judah was the
Planning Engineer**

John Walker was the Power Manager. I found him to be an excellent manager and fully cognizant of what was intended to be done in the Missouri Basin, and who had felt completely frustrated with previous management, because

**John Walker was Power
Manager**

previous management had not looked upon the power program as an important part of Reclamation. The manager of the O&M Department was one of Mr. Comstock's colleagues from the Riverton Project, who was intimately involved in project canal operations and did not envisage project development as a much larger effort in community and area-wide economic development base. So I accepted Charlie Anderson and John Walker, but I reserved judgment on Mr Judah and Mr. Johnson, who was the O&M head, 'til I became more familiar with them.

I interviewed several people for the planning job, bringing them to Billings. One who I was particularly interested in was Mr. Stan MacAsland, who I had become acquainted with when I was in Denver, working in Denver, and [who] had then been doing a number of broad planning jobs around the West for Reclamation, but he was already being talked about as the head of the complex study that Reclamation was undertaking of diversion of Columbia River waters into California, which he felt was a much more interesting assignment.

Stan MacAsland was likely to take a job to study diversion of Columbia River and northern California water into California' Central Valley

Storey: He was working on that for Reclamation?

Vernon: Yeah. He was [to be] set up with an office in Salt Lake City, attached to Region IV for rations, so to speak, in Army parlance, but he was not a part of Region IV. He was a separate entity, but he was attached to Region IV for rations. But their study was to examine the possibilities of diversion of various additional water supplies into the Central Valley of California, both from the streams arising on the West Coast of Northern California, the northwest coast of Northern California, as well as streams in Oregon and ultimately the Colorado River. Not the Colorado River, the Columbia.

Storey: The Columbia. Why would they put him Salt Lake instead of in Sacramento? [long pause]

Vernon: I can't answer that. I don't know [but perhaps politics were involved].

Storey: Do you know if there were any other people working with him?

Vernon: Oh, he had a group of people. Yeah, he had a group of people working with him. Really, I don't know why he was set up in Salt Lake City. Perhaps it was to avoid any implication of political pressures from either California or Oregon or Washington, because there were a lot of vested interests involved. Even though Senator Engle was a prime mover in establishing that study, he did not, as I understood – and this is speculation on my part – he did not care to be known that he was supporting this effort.

Senator Clair Engle supported MacAsland's studies

Storey: This was Clair Engle of California.

Vernon: Clair Engle of California. And one of the special problems that resulted from that study was there was a hell of a lot of water rising from the rivers in California that could be diverted to the Sacramento River, and one of them became the dam up there on the [Trinity River.] Gila—I think it's the Gila River or the Truckee River, not Truckee—but . . .

Storey: The Klamath, maybe.

Vernon: Clair Engle Dam [Lake behind Trinity Dam on the Trinity River], which diverts water into the Upper Sacramento, above Shasta.

Storey: That's part of the Shasta Project [technically the Shasta/Trinity Division of the Central Valley Project].

Vernon: Became part of the Shasta Project, but there were a lot of broad politics involved in this thing, and I think that probably, speculation on my part, why it was set up in Salt Lake, so as to avoid any implication, or avoidance of the application of any political pressures.

Storey: I interrupted your discussion of trying to get a planning engineer.

Vernon: So ultimately the other alternative would have been to select Charlie Heinz, H-E-I-N-Z, as the Planning Engineer, who was an excellent engineer and had been one of Mr. Sloan's favorite subordinates. But in discussing with Mr. Heinz possible career moves, I found that he [was] ~~would be~~ interested in getting out of the strictly planning operation and get over into the other areas of Reclamation, such as construction and project management. Feeling that he was a man of some substance and potential, I then decided to put him up as District Engineer under the District Manager, but put him up as District Engineer up at Great Falls. And then to ultimately get a laying on of hands from the Denver office on Mr. Heinz, I moved him over as Field Engineer, which ultimately was the Assistant Construction Engineer of Canyon Ferry Dam. And then ultimately, after I felt that Ralph Workinger had done his job in the Cody District, I moved Charlie Heinz down to Cody as the District Manager. And just as he was becoming well entrenched down there and performing brilliantly, he had a heart attack and passed away. So it was an early end of what I thought a very promising career. I thought a lot of Charlie Heinz. But he was a tremendously large man, and I think he enjoyed life to its fullest, if you know what I mean, and as a consequence, his heart got the better of him.

**Charlie Heinz becomes
District Engineer in
Great Falls**

**Charlie Heinz becomes
District Manager in
Cody, Wyoming**

So I then ultimately settled on Tom Judah

to be the Planning Engineer. I was still had my fingers crossed about the gentleman we called Ollie Johnson, [in O&M] because I felt that he was a great Project Operator, but he did not fill the bill for the effort that we wanted to place into the division of operation, the project of operation and maintenance. So Mr. Johnson decided, early on, to take retirement. He was well able to take retirement.

Ollie Johnson was the acting O&M Manager

Then I placed a man named [Ed Landerholm]—his name escapes me for the moment. He had a background in agricultural economics, and he had been part of the Bureau of Agricultural Economics, and had worked with the University of California, and had a working knowledge of how to work with the state agricultural colleges, which was an effort that I wanted to strengthen, or introduce and strengthen, and get them deeply involved in our plans for area development. So I moved – it's almost there – Ed [Landerholm], I moved Ed over to be Director of Operation and Maintenance, and I had moved Bill Rawlings, who had been head of this small project activity staff of the Missouri Basin, I moved him in to be my Assistant Regional Director. So I felt that I was capable of handling the engineering side in its early stages, and that Bill Rawlings would look after the economic side in planning and project development. He had a background – he had been a county agent, and had been in the War Relocation Center's operation during the war. He was a graduate of Purdue, so he was a good alter ego for me, fulfilled skills that I didn't have. I felt that rather [than] take on another engineer as Assistant Regional Director, I felt that he would be an excellent man to support me as being Regional Director.

Ed Landerholm made Director of Operation and Maintenance

Bill Rawlings made Assistant Regional Director

So now we had our team in place. During the spring and summer while this was going on,

~~in the spring and summer, it was in the summer,~~
~~it wasn't the spring and summer, it was the~~
 summer of 1947, there was one of those
 horrendous floods that occurs along the front of
 the Rocky Mountains in the high plains in the
 Kansas River Basin. Same thing had happened
 on the Republican River in 1935 when I was
 working in Denver, the same thing had happened
 on the Powder River in 1923, the same thing
 happened in the Great Falls area, and it happened
 as far north as Alberta, Canada, in which
 approximately twenty-four inches of rain would
 occur in a two- or three-day period. This was
 where the wisdom of bringing the Commerce
 Department into the Missouri Basin activity
 proved out, because at that time the Weather
 Bureau was a part of the Department of
 Commerce, and so we drew upon the . . .

**Flood during the
 summer of 1947**

END OF SIDE 2, TAPE 1. APRIL 25, 1995.

BEGIN SIDE 1, TAPE 2. APRIL 25, 1995.

Storey: This is tape two of an interview by Brit Storey
 with Kenneth F. Vernon on April the 25th, 1995.

Vernon: Do I need to backtrack?

Storey: Yes, you need to backtrack a little.

Vernon: I was telling you that these floods that would
 occur along the high plains areas in which up to
 twenty-four inches of rain could occur in a two-
 to three-day period, and the wisdom of bringing
 the Commerce Department and its Weather
 Bureau into the Missouri Basin activity, because
 that gave us a lot of detailed activity on where
 storms occurred and the intensity of them.

Lewis Pick, of the Pick-Sloan name, had
 returned to the United States from his work in the
 campaign, the Burma campaign, and President

**General Lewis Pick,
 Chief of the Corps of
 Engineers, tasked with
 finding a solution to**

Truman had appointed him as the head of the Corps of Army Engineers in Washington, and, of course, with his background in the prewar planning of the Missouri Basin, the President turned to General Pick to come up with some sort of a solution as to what to do about these recurrent high-intensity floods in the plains area.

floods that occurred periodically on the Great Plains

So the Corps of Engineers was coming up with an emergency flood control appropriation, and the Department of the Interior decided that we also should get involved with that, and so the senators that were interested in the Missouri Basin development, particularly in the northern basin, saw to it that Reclamation received some appropriations for this flood control emergency, flood control appropriation. So I can recall that the Commissioner had his first field meeting, program meeting, of all the regions in [Salt Lake City] ~~Boulder City~~, in, I believe it was either August or September of 1947, and it became very apparent in that meeting that there was a dichotomy existing in Reclamation between what one might call the new approach and the older project approach in all of its knowledge of how to build and operate projects.

Reclamation also received flood control money, and the Commissioner wanted fast results

The Commissioner was adamant to me and to Mr. Batson that we immediately show results with this new flood control appropriation, some of which was devoted to projects already for which we had appropriations, but the political powers had included a number of projects, particularly dams, which might have some flood control aspects, but which were considerable distance in the future in detailed planning, preconstruction planning.

So in discussing with Mr. [Walker R. (Brig)] Young, the Chief Engineer, as to how I could satisfy the Commissioner's desires, I suggested that while we institute immediately

dam-site investigations, which would ultimately lead to designs, that we build access roads and establish construction camps at these various dam sites. Mr. Young ultimately agreed that that probably was the most we could get away with without getting in too much trouble.

Storey: Who was Young?

Vernon: “Brig” Young was the Chief Engineer in Denver [- formerly of the Central Valley Project and of Hoover Dam].

Storey: Oh, okay. Brigham Young?

Vernon: “Brig” Young. No, he was Walker Young, but everybody called him “Brig” Young. (laughter) Brigham Young. Brig Young.

Turn it off a minute. [Tape recorder turned off]

While we were trying to get our basic Missouri Basic Program organized, carrying out the activities on the existing projects, we suddenly had dumped on our lap a whole series of new projects for which we were ill-prepared to undertake any immediate activities. So the first thing that we had to do was to find out where these dam sites were, to organize drill crews to start drilling dam sites to find out what the foundation conditions were, and [find out] how we could get access to these dam sites. So we started a program of building access roads and construction of camps, which, if and when the construction of the dam would proceed, we were prepared to start immediately. We'd already had that preparatory work done.

Now, another element that I didn't discuss earlier, which was an interesting aspect of the conflict of existing activities – I shouldn't say

conflict, but the need to coordinate existing activities and the new Missouri Basin Program was the Fort Peck Project. The Corps of Engineers had constructed the Fort Peck Project in the mid-thirties, and had managed to install a couple of generators in the power house prior to the war, but it had to suspend operations during the war for any additional construction. But a transmission line had been built from Fort Peck to Great Falls, which was delivering power from Fort Peck to the Montana Power Company to feed into its distribution system, because the Montana Power Company had a very complex and complete power system, including its tie-in with the Anaconda Smelting and Copper Refining Company, ASCR. The common knowledge was that the Montana Power Company and ASCR controlled Montana, and that if you were one of their people, you wore the copper collar.

**Montana Power and the
Anaconda Copper
Company controlled
Montana at that time**

Storey: The copper collar.

Vernon: I'll let that go by. (laughter) You wore a copper collar.

Storey: What was that supposed to mean?

Vernon: Well, it meant that you were under the thumb of the Anaconda Copper and Montana Power Company.

Storey: Okay. That's all.

Vernon: Now, the Anaconda Copper had ties back to money in New York, and I've been told – I don't know that this is true, but I had been told that it tied straight back into European money. The Montana Power Company was a part of the EBASCO . . .

Storey: E-B-A-S-C-O.

Vernon: Electric Bond and Share Company in New York and its kingdom of power companies out through the [country] region. Anything that says Edison in it, like Detroit Edison, Commonwealth Edison, anything that said Edison in it was part of the EBASCO realm.

There was another realm, the Billsby Organization in Chicago, which had failed during the Depression, because it had overextended its financing, and it went bankrupt during the Depression, but it had been a competitor of the EBASCO operation.

Any rate, previous regional management had been content. . . Back up. Reclamation had been assigned the responsibility to market, distribute and market the power from the Fort Peck Power Plant, so that the power line had been built to Great Falls, and turned, basically, the production of power from Fort Peck over to the Montana Power Company to distribute through its existing system. Previous regional management was not really interested in developing an active power program, but Reclamation had been given the responsibility under the Fort Peck Act of 1930 something or other, '36, '37, something or other, [to] of marketing power for Fort Peck *and* any subsequent power developments which might be developed in the Basin.

Reclamation was assigned the responsibility to distribute and market electricity from the Fort Peck Powerplant, a Corps project

Similar legislation had been written for the Bonneville Power Dam in the Columbia River, and Dr. [Paul J.] Raver¹¹ had created the Bonneville Power Administration, and had absorbed all of the distribution of the power from the dams being built on the Columbia River. I was [questioned] reminded a number of times, both by the Commissioner and Mr. [William] Warne, as Assistant Commissioner, and then later as Assistant Secretary of the Interior for

Water and Power, how I proposed to create a “power administration” for the Missouri Basin, particularly when the mainstream dams would come on line, because we had received the authority to transmit that power and market it around the region.

As I said, this was one of the elements which created unhappiness in the upper echelons of departmental management, because the previous regional management did not see the power program as a really a Reclamation activity, even though it was a cash cow for Reclamation in repaying project costs. I, however, having grown up on a farm and lived about a mile from the end of a power line of a private power company, and saw my father put to the wheel and rack, and all of the things that he had to do to get that line extended to include our farm, and then see a competing power company build a spite line of fifteen miles on a Sunday to prevent the line that served us from picking up a few more customers, I realized how important power development was – the access to electric power on the farm was important to farmers and their operations, particularly in this new age of mechanization.

So I was strongly supportive of a very active power program, personally and professionally. So my power manager, John Walker, felt that a new day had dawned, and he set up a magnificent program of power marketing and the design of a complex 220-volt transmission line system around the Basin, which would ultimately market the power for the mainstream dams, including the third unit from Fort Peck when it was completed after the war.

Mr. Walker was a good negotiator, and he worked out agreements with eight of the existing power companies in our area of the region of the

Missouri Basin, and we had excellent relationships with them through wheeling, what we called “wheeling agreements.” In other words, they would allow us to transmit power over their existing systems to reach rural electrification projects, which, under Reclamation law, held priority in the distribution of and reception of Government power. However, we were never able to arrive at any reasonable agreement with the Montana Power Company, because it felt that it was entitled to market all the power in Montana that might be developed, and it saw to it with its financial resources that it managed to do so, although at a later stage, it did agree to tie in with the Bonneville Power Administration. Because of the low cost, they couldn't equal the cost of Bonneville Power in eastern Montana. So they did agree to join with the Bonneville Power, particularly at Hungry Horse Dam, to bring Bonneville Power into eastern Montana, which then did place a real problem with us in having a successful power program in the Montana area.

Storey: Now, are you meaning to say eastern Montana, or do you mean western Montana?

Vernon: Eastern Montana. Western Montana, Hungry Horse Dam was western Montana. Bonneville Power included all of the Columbia Basin. ~~Now, the Columbia Basin headquarters,~~ The Columbia Basin arises in northwestern Montana. The Columbia Basin tributaries go north into British Columbia, then come back around in the state of Washington, and flows through the state of Washington. So the Hungry Horse [Dam] is on one the various upper tributaries of the Columbia River. And so Bonneville, with Dr. Raver, who was a tremendous administrator, and he had a tremendous group of people with him, they created a broad power program in the Columbia Basin, marketing that very, very cheap power

Montana Power refused to enter into a “wheeling agreement” with Reclamation

How Montana Power worked with the Bonneville Power Administration and caused problems for Reclamation’s power management out of Billings

from the Columbia Basin.

The Montana Power Company said, "Well, you've got this guy Vernon, this guy Vernon giving us all this trouble down in Billings, let's tie in with Raver and get some of that cheap power, and we can block Vernon with his plans for developing a power system in eastern Montana." *Q-E-D*. I had hoped to create a grid, which would include the Yellowtail Dam as the southern anchor, the Canyon Ferry as the western anchor, the Fort Peck as the eastern anchor, and then a main transmission grid down through the Yellowstone River, picking up all the irrigation projects and farms along the Yellowstone River.

Vernon's plan for a power grid in Montana

Now we did, as one of our first elements of our power program marketing Fort Peck Power, was to build the Fort Peck-Glendive transmission line, which came down the Missouri River from Fort Peck, then south to Glendive, and then we ~~were~~ proposed to [build] ~~add~~ it up the Yellowstone River to Miles City and beyond, but, until Yellowtail was built, we didn't have enough power to extend beyond Glendive up the Yellowstone River.

Fort Peck-Glendive transmission line

But that was a problem that we had to deal with, because this power program was another part of Commissioner Straus's and the Department's program for the Missouri Basin. The Secretary had a division in his office called the Power Division, headed up by "Tex" Goldsmith, who was setting up power administrations all over the West – the Southwest Power Administration, ~~the tie-in down~~ [a similar one] in Arizona, [and] the Bonneville Power Administration, and they saw the next logical step was ultimately to be the in the Missouri Basin. So Mike Straus was very interested in seeing an active power program, power

marketing program, set up for the basin, but he was, shall we say, less than enthusiastic about having the power program taken away from him and set up as a separate administration. So he fought for continuing appropriations for us to continue our power marketing operations through Reclamation. As a matter of fact, sometimes in lighter moments I would accuse him of taking and promoting as much irrigation as was necessary to promote his power program. (laughter) During one of our arguments, when he got very strict about insisting in getting irrigation repayment contact signed before we could start the construction of an irrigation project, but he had all kinds of money for power projects.

But at any rate, Johnny Walker set up a *good* design section, designing a transmission system, the layout of a transmission system, and a power marketing program in which he enlisted the support of eight of the power companies that we were dealing with in the area, and all of these REAs that were being established around the Basin. And in the immediate years right after the war, the REAs were very active throughout the basin. John Walker's marketing program, he would establish the size of a substation to deliver to an REA. We placed the orders, but the orders were very slow in being delivered because of the backlog of orders after the war. Before we could get the delivery of the particular equipment for a particular substation, the marketers would come up with a new analysis which showed that that requirement was at least double and maybe quadruple. So we were placing new orders all the time and hopscotching around with old orders, placing them in new areas, and waiting for deliveries in the first designed areas. So it was a very intense program there in the very first few years.

Storey: So there was a lot more demand for electric power than was anticipated?

Vernon: Indeed, indeed. See, having grown up on a farm, and I knew how you could use electric power, instead of all this damn gas-powered equipment that you had to use, how clean and efficient it was, I knew these REAs would take off like wildfire, and particularly right after the war, there was this effort of mechanization, anyway, and as I tell later in this story, through our studies in cooperation with the state colleges, there was a great revolution in farm size occurring, and so that this meant more investment in equipment and farms and in buildings and so on, which I used this to great advantage in my work in Pakistan.

There was a lot of potential for electricity on farms

Storey: You're talking about moving around the substation equipment.

Vernon: We got to the point where we were having difficulty in keeping up with this very growing demand, and so as rapidly as we could get the equipment we were installing, but probably not where we first intended, because the demand had grown larger where we first intended it, so we placed it further out on the system. John Walker had worked out these wheeling agreements with the local power companies, and it was working to everyone's advantage. The power companies were happy, because they lacked generation, and they were making money off of transmitting our power out to these REAs. So they were getting transport charges.

Demand for electricity kept outpacing Reclamation's ability to install capacity

Storey: Could you explain wheeling, please?

Vernon: Wheeling was a term that meant that we were renting capacity on a local power company's transmission system. They might have, say, the built-in capacity much larger than their

"Wheeling agreements" explained

generation, their existing generation. So just as highway traffic builds up, you build a highway to take care of a certain density of traffic, but in its early years, you have less traffic than the highway can carry. So what we did, in effect, was rent that unused capacity in their transmission system, which was done through what was called wheeling agreements. But why they were called wheeling agreements, it was said that we wheeled the power over their transmission systems. And there were measuring devices set up to measure the amount of power that we used, and we paid them a fee for that purpose. So these wheeling agreements were cooperative arrangements with the power companies to utilize the unused capacity of their systems. And it made them look good, too, because they were assisting the REAs in getting power out to them through REAs, the Rural Electrification Administration Projects, which were strictly local operations.

There was one special problem we had, was Nebraska, because Nebraska was a public-power state, and the Governor of Nebraska was insistent that it get its share – quote "its share" unquote – of the power that would be developed, marketed from the mainstream dams, being built by the Corps of Engineers. Of course, in the early years this created a problem, because, obviously, there would be a time when the dams were being constructed, and then there would be a time when the powerplants were being constructed. There would be a time when the reservoirs were being filled, and so there would be a time that there were limited amounts of power being available from these mainstream dams.

So the theory and strategy that was taken was to create a transmission system with concentric circles, an area of marketing of

Nebraska was a public power state and insisted on "its share" of electricity generated at Federal dams

How power was marketed and why Nebraska was upset at first

concentric circles, not the transmission system of concentric circles, but the marketing area in concentric circles, which would equal the then generating capacity developed by the mainstream dams as they were approaching completion. And, obviously, in the early days, well, maybe not so obviously, but at least what occurred was that the REAs were absorbing, in North and South Dakota, all the power that was being generated in this interim phase, before it could reach Nebraska, which made Governor Val Peterson very unhappy. (laughter) And he nailed me to the cross one day at an interagency meeting down at Omaha, as to why we weren't delivering power into the state of Nebraska, which was acknowledged to be a public-power state, which had priority for delivery of power from Federal dams. And I had to say simply, "Governor, I'm sorry, but there just isn't enough power to go around, and there just isn't enough power *yet* to reach Nebraska." He took it good naturedly, but he always kept reminding me that he was waiting to get Federal power.

Well, obviously, after the mainstream dams were completed, the power system included Nebraska, and they were well served.

Storey: The mainstream dams were Corps [of Engineers] dams, right?

Vernon: Yeah. They were the mainstreams right on the Missouri River.

Storey: What were their purposes?

Vernon: Flood control and navigation, principally, with electric power as a byproduct, which they operated the powerhouses, but turned the power over to us at the high side of the substation at the dam, and we took it and built the transmission system and marketed the power. This was a bone

of contention which got aired at one of the interagency meetings, because, in theory, the Corps of Engineers was to coordinate with Reclamation on the design and operation of the power stations and the substations at the plant, at the powerplant, and initially the Corps would send us [design documents] documentation and require review and comment in an impossibly short period of time.

Reclamation took over Corps power at the high side of the substation at the dams

So having my background in the establishment of the Federal Interagency River Basin Committee and the Missouri River Basin Interagency Committee, I took General Pick to task in open meeting when he asked me how coordination was going between Reclamation and the Corps, and I said, "General, it stinks." You could hear a pin drop. (laughter) Because everything was supposed to be peaches and cream, you understand.

Coordination between the Corps and Reclamation wasn't working well

And he said, "Well, how's that Mr. Vernon?"

And I said, "Well, sir, your people in Omaha have sent us the designs for the Garrison Power Station and the Fort Randall Power Station." See, Fort Randall was to be the first dam, which was the lower dam, one of the lower dams, and Garrison was one of early dams. It was in North Dakota. And they had sent us their designs for the Fort Randall Dam and the Garrison Dam, and gave us a week or ten days to review and comment on their proposed design, which did not meet the power marketing requirements, which my people were developing in the power area, the power utilization area, of the Basin. So we had some grave doubts about things, and we wanted some revisions made in not so much the actual design of the power generating equipment, but more that which would be associated with the ability to transmit

power and get it away from the dams and meet the requirements of the power market, which required some revisions. I don't recall the details, because I was not that . . .

END OF SIDE 1, TAPE 2. APRIL 25, 1995.

BEGIN SIDE 2, TAPE 2. APRIL 25, 1995.

Storey: You were saying that Mr. Walker had kept you up to date. You'd been supporting him.

Vernon: Yeah. As a sidebar to the conversation in open meeting of the interagency committee, General Pick met me in the hallway. We were meeting at Fort Peck, and he met me in the hallway, and took me to task for raising such a question and issue in open meeting. So I told the general that this was not a military operation in which he issued orders and everybody said, "Yes, sir," but having been associated with the establishment of the Federal Interagency Committee and the Missouri Basin Committee, I understood the desire at upper echelons of receiving some coordination as a response to a possible Missouri Valley Authority, and that I felt that his actions did not meet those requirements, and I thought that the Interagency Committee should know it, and I would continue to call that attention whenever I felt that he again tried to [overrun us] charge Hill 902, as a metaphor. I think the general understood me, because we had no further problems in that regard, because he was fearful of the loss to the Corps of Engineers should a Missouri Valley Authority be established, and it was being talked about at some length around the valley, particularly the lower valley, because it was more closely associated with what was occurring on Tennessee Valley Authority, and they were enamored with the idea of a Missouri Valley Authority. So coordination did improve greatly after that.

**Implications of Missouri
Valley Authority for
Reclamation and the
Corps**

So to continue with the development of the power program, we then started a transmission system going down the Missouri River [from Ft. Peck Dam] and continuing on toward Garrison Dam, and, ultimately, Bismarck, where we would put in a *major* distribution substation, which would be a key point in the ultimate transmission system of the Missouri Basin. And then we ran a transmission system, an extension, from the Fort Peck Glendive line, eastward to tie into the big substation we were planning at Bismarck. So this takes us into the early stages of the powerplant system planning of what became the basic power program with the Missouri Basin. I think now that we ought to take up some of the other activities that were going on simultaneously, which we might call more prosaic Reclamation activities.

Reclamation begins to build a transmission system

Storey: Okay. Before we do that, did you ever meet Mr. Sloan?

Vernon: Oh, yes. I knew him well. Oh, yes.

Storey: Tell me about him. He's just sort of a shadowy figure out there.

Vernon: Well, Glenn Sloan [William G. (Glenn)] was a man who had a golden tongue, and he had a great vision. I think he could sell iceboxes to Eskimos. He had been up there in the prewar days doing this planning work in the Missouri Basin. But at that time, see, you have to understand that during the Dust Bowl days, the upper prairie states were in horrendous economic condition. Water was low, a dry farming area, wheat production had dropped to practically nil. Farmers were destroying their herds, because they didn't have water or feed. And so Reclamation, in its usual fashion, was trying to develop a program of additional Reclamation projects in the Upper Missouri Basin, which predated the start of

W. Glenn Sloan

World War II.

Pick was then Division Engineer at Omaha. He was developing a program of flood control and navigation for the Missouri River under the General Civil Works Program of the Corps of Engineers, which stemmed and related to what we called the 308 Reports, which was a series of reports that the Corps of Engineers issued on the rivers of the country following the floods of 1928. So their program was a continuing activity under the general authority of the so-called 308 Reports.¹²

General Pick, let us say, was also a man of tremendous vision and ability to express himself well, and he could also not only sell the icebox, but he could he find the Eskimos to sell them to. So we had a real clash of personalities there, let us say egos, to be quite frank, let's say egos, between Mr. Sloan and General Pick.

There was a personality clash between Sloan and Pick

- Storey: He was a general at that time?
- Vernon: Well, he was colonel initially, [when] but he developed his basic program for the Missouri River, but after he came back from the Burma campaign, he then became a general.
- Storey: So he was probably a District Engineer as a colonel?
- Vernon: He was a Division Engineer as a colonel.
- Storey: Division. Okay, I just wanted to check.
- Vernon: See, in Omaha there was two things, there was the Missouri River Division in Omaha –
- Storey: Right. That would have several districts.
- Vernon: Yes. There was the Fort Peck District and the

Omaha District and the Kansas City District, and probably the district at St. Louis was probably associated with the Mississippi River. But there was the Kansas, the Omaha, and the Fort Peck, and then later, as they got into the construction of the dams, he established district offices at the Garrison District and the Oahe District, which was just a means of establishing administrative entities on those large construction projects. But he was the Division Engineer at Omaha, and came up with this scheme of dams, which Fort Peck had been one under the 308 [reports], of course, and these dams related – the Garrison, the Oahe, the Big Bend, Fort Randall, and Gavins Point, all stem from the initial authorizations of the 308 Reports.

Storey: So, anyway, we had this ego clash going on.

Vernon: And so Glenn Sloan felt a “paternalship,” shall we say, a paternal relationship to his scheme that was [outlined] ~~declaimed~~ in Senate Document 191, which is the authorizing document for the Sloan element of the Pick-Sloan Plan, and he protected it zealously.

Storey; Where was Glenn Sloan located when he was doing this planning?

Vernon: I don't know, but I think he was located in Billings, as I recall. I don't really know, but I think he was headquartered in Billings, but he had teams out in Wyoming. He had teams out up in the Upper Missouri. He had teams out in North Dakota and South Dakota, but these were basically planning groups. They were just very small groups, and they were what we would call fly parties. They were here a few weeks and there a few weeks and somewhere else a few weeks. There was no what we call preconstruction planning. It was still broad planning in trying to identify land resources and

water resources.

Storey: So they didn't know exactly? They thought there ought to be a major dam somewhere, but they didn't have the detail background?

Vernon: Let us say that Document 191 was a wonderful catalog. And that's why the flood control appropriation of 1947 was such a thunderbolt to me, because here we were given appropriations to build dams that we didn't even know where they were, and I was supposed to go out there and start construction. So I believe the upper echelons of administration, Reclamation, and the Department, felt that Mr. Sloan's talents could be better utilized, instead of being Assistant Regional Director. He had been made Assistant Regional Director in Billings, would be better utilized to make him as the Chairman of the Interior Missouri Basin Committee, and then also the Interior representative on the Federal Missouri Basin Committee. So that meant Sloan was then moved over and replaced Mills Bunger, who, I indicated earlier, had been the first Chairman of the Interior Committee. But Mills Bunger became interested in overseas assignment, so Glenn Sloan was moved over as the Chairman of the Interior Committee, and then also as the Interior representative on the Missouri Basin Interagency Committee. Both myself and Avery Batson then supported Glenn Sloan with staff work in representing Reclamation in the Interagency Committee, which was composed of the Federal agencies and the five governors.

But, Glenn Sloan was a very interesting gentleman. He had a great vision, and he had a silver tongue. He could go to a meeting and he'd have everybody's vote before he left, there's no question about it. Unfortunately, Glenn did not like detailed work. When it fell to me to bring down some of his ideas to basic fact, it created

W. Glenn Sloan moved to chair Interior's Missouri Basin Committee and Interior representative on the Federal Missouri Basin Interagency Committee

W. Glenn Sloan had great vision and a silver tongue, but did not like detail work

some stresses and strains, because he did not want his baby, so to speak, tampered with. This came to a head when I finally decided that we were not going to utilize his diversion to North Dakota from below Fort Peck, but that's a complete other story, which I'll get into later. Did that answer your question about Glenn Sloan?

Storey: Yes.

Vernon: That's about as well as I can describe him. He was a remarkable guy, really, but at the same time, he was a visionary. He didn't want to be bothered with facts, so to speak. (laughter) And one of the problems we had with him was when we *insisted* that we had to do preconstruction planning, detailed preconstruction planning, as I would get into later, when I instituted the practice, which was similar to that of the Corps of Engineers, of after having, shall we say, a summary report or an exposition of what a project might be, then we had to get down to the nitty gritty and get it at what we called a definite project plan report, which I adopted from the Corps of Engineers' practice, because they would have their authorizing report, which was pretty much a description of what they thought could be done, then they would get authorized to study it in detail and come up with a definite project plan report, which was everything but final designs. Then, ultimately, then they'd get the project appropriated for, and then they would go into their final design work. So I said that makes a lot of sense to me. [Also this was parallel to my experience on the Central Valley Project.] With this stuff that's floating around here in the upper ether, to bring it down to brass tacks, that we would have to adopt something similar to that with this first set of series of projects, and go into detail project planning and come up with a definite project report, where we would establish

Vernon wanted detailed preconstruction planning done for projects

the elevations of the dimensions of what was to be done. Then we would go into the formation of an irrigation district, and that was a whole separate activity, formation of an irrigation district, because each state had different rules and laws, but fundamentally it required a vote of the people that would be involved if there were already people on the land in formation of irrigation district.

Previously, Reclamation hadn't been faced with that problem, because it was designed to develop public lands and get them into private ownerships. Then irrigation districts came at a later date. But Mr. Straus insisted that since much of these lands that had already passed ownership that we were going to develop in the Pick-Sloan Plan were already in private ownership, then private ownership rights were involved, and we would have to give the people a chance to vote on the formation of an irrigation district under state laws as it applied to that particular area, which became a very difficult proposition, a time-consuming proposition.

So now we've got our regional organization in place. We've got our field organization in place. We've got money to spend. So it was to have at it. And that became a very interesting exercise.

Storey: Now, when was all of this in place?

Vernon: Well, by this time, it was beginning of about 1948. I had my field organization, the *structure* in place. I had my leading people in place, and now it was a matter of starting recruitment, which that brings me to the changes I made in my personnel office. I maintained control, myself, of finance and personnel. And so I called one of my colleagues that I knew from my Washington days to come out to Billings and

assist George Pratt, my Assistant to the Regional Director, of examining our personnel office operations, because we were going to head into a very heavy recruitment program.

Well, they came up with the answer that the people that were there were just not capable of executing such an expanded program, and, therefore, we should either find them other places of activity or transfer them out on something, and bring in a whole new team. I was given access to a man from the War Department, Howard Watt, to be the head Personnel Officer. I was immediately impressed with Mr. Watt – Watt or Watts? – Howard Watts – as a guy who understood how to create a really effective personnel organization and how to institute a recruitment program, matching up people with slots – functions. So we made Howard Watts the Chief Personnel Officer.

**Howard Watt installed
as Personnel Officer**

One of the people that we decided was ineffective in his current position was the then Assistant Personnel Officer, who also happened to be the [husband] wife of the Republican County Chairwoman of Yellowstone County in Montana, which Billings is located.

Storey: The husband of the . . .

Vernon: He was the husband of the Republican [county chairwoman], [who] ~~which~~ became my nemesis at a later time, because I suggested that he find a different relationship and a new association rather than Reclamation. In other words, I fired him. (laughter) And she marked on her calendar, "I'll get you, Vernon, someday in the future, along with some of your colleagues."

**Removed the husband
of the Republican
county chairwoman
from the regional
personnel office**

At any rate, we then instituted a heavy recruitment program, because we had money. Just to show you how it worked, the program that

**Began a heavy
recruitment program**

was executed in the year 1946 was only \$6 million. There were a lot of reasons for that. Among others, there were shortage of material, there were shortage of manpower, but there was also this older approach to Reclamation development that had not really received the message of the *new* Missouri Basin Program, and by 1950, in three years, we were executing \$50 million worth of projects and were ready to [expand further] ~~proceed more~~ when the Korean War started, and had to put things in the icebox again. But the point that I'm making is how effective our operations were in bringing the projects to the execution stage, bringing additional projects, the detailed project report stage, and then ready for execution, and then also carrying on what we called broad Basin-type planning operations, which were identifying resources – both land and water.

In 1946 the regional program was \$6,000,000

In 1950 the regional program was \$50,000,000

This is where the Geological Survey came in very handy, because as I told you, we financed and gave them emphasis on their [cadastral] mapping, ~~creating mapping, additional mapping,~~ in the Basin, and also they instituted a whole additional network of hydrologic measuring stations. So we then had a handle on water supplies that were available for development. We had land areas that could be considered for development. We had identification of other resources from the Bureau of Land Management, and the National Park Service for Recreation. All this began to meld together and become a cohesive approach to a basinwide development program. The effectiveness of it was that by 1950, we executed \$50 million worth of activities, including the construction. We instituted the construction of Boysen Dam on the [Bighorn] ~~Wind~~ River. We instituted the construction of Canyon Ferry Dam on the Upper Missouri. We instituted construction of Heart Butte Dam on Heart River

Had provided support to the USGS that proved very helpful

Boysen Dam

Canyon Ferry Dam

Heart Butte Dam

Angostura Dam

Expansion of the

in North Dakota. We had instituted the construction of the Angostura Dam in South Dakota, as well as expansion of the Riverton Project, expansion of the Shoshone Project, and expansion of [the] this transmission system.

**Riverton and Shoshone
Projects and the
transmission system**

So as I say, this was in full flower by 1950 when the Korean War occurred, and that required us to then put a damper on things, so then we had to sort of retract, which obviously stopped our recruitment program, and we had to start retracting in areas of activity that might conflict with the emphasis on the Korean War, and particularly because various supplies became scarce as they were required for the war effort.

**Korean War slowed
work and recruitment**

But I got up to about a total employment in the region of about 2,400 people. I told Howard Watts, when we reached 2,400, I said, "Close the door, Howard, I think we'd better stop." Well, to make a long story short, because of the pipeline, we ultimately got up to do about 2,500 total employees in the region.

Storey: Because of the pipeline?

Vernon: Because of the pipeline. In other words, there were certain commitments that already had been given, which you had to honor. But certain things which were in the conversation stage, you could cut off. So the pipeline produced a total of about 2,500 people.

Storey: The personnel pipeline.

Vernon: The personnel pipeline. Also at that same time, in our finance office, I had instituted a program office which was a carryover of my days as the Chief Progress Control Officer effort in Washington. I insisted on a series of monthly reports, which gave me an up-to-date status of our appropriations, both as to total availability, to

the amounts which we placed encumbrances upon as to future activities, those amounts which were sequestered as obligations for construction and payment of contract obligations, and actual changes into expenditures. So I carried on my desk an up-to-date statement at all times of where we stood with our financing operations, as well as program performance, and where problems were developing, which required administrative attention.

It was working very well. The organization was paying off. As one element in the planning operation, not located in project planning, but located in the Operation and Maintenance Division, was the assignment of establishing coordination with the state agricultural colleges. We entered into memorandums of understanding with the four state colleges that we were dealing with: South Dakota, North Dakota, Montana, and Wyoming. We provided money to them to undertake demographic and other economic studies as to what was occurring in the agricultural development of the Basin.

Storey: Before we go on, you said there were five, but you only listed four.

Vernon: Did I say five?

Storey: North and South Dakota, Montana, and Wyoming.

Vernon: I'm sorry, I should have said four. Because Avery Batson had Colorado. So I mistook myself; it was four. I was thinking districts, rather than the states. We had five districts in the four states.

We would transfer money to the state colleges to undertake demographic and other

Used state agricultural colleges to do studies

economic studies of what was happening in the farming, particularly irrigated farming, in the various states, and we found some very serious things were occurring, particularly in North and South Dakota. As a point in my talks in those states, one of their most highly valued exports was young people, that young people could not find employment within the states, because due to the advent of mechanized farming, farm sizes were suddenly increasing, and therefore, less opportunity for farm population. We found that large operators, which later were labeled agribusiness, were entering into the basin, and taking up large tracts of land through operating relationships, and so that therefore there was exodus of people from the farms both to the cities and out of the Basin, which I felt was an extremely important element, which would affect ultimately the development of the Basin.

I placed that in the economics group. Their training had been in the farm agent work in the Department of Agriculture. I was accustomed to what farm agents did, because in my youth, on my father's farm, my father was considered as a progressive farmer, and the current local farm agent used to use my father's farm for demonstration activities among the other farmers. He came over from the University of California in Davis, and he would periodically hold demonstrations on my father's farm, who had gone into chicken farming, chicken raising, ~~not so much~~ – we [also] had ~~the~~ agriculture, but that was not his primary ~~or~~ income ~~development~~. He ultimately in later years got into chicken farming, and we had, at that time, a sizeable flock of about four thousand chickens. He would buy day-old chicks. At that time, they had developed how to sex the day-old chicks, and so he would buy a certain number of what we called pullets, the females, the hens, and also the cockerels. He would separate those, and he

Father got into chicken farming

would raise the pullets to replace the laying hens. You'd figure they were good for about three years, and then by that time, you'd sell them to the Chinese market to make bok choy or whatever kind of soup they make out of little chickens.

But he would then force feed – ~~they~~ confine and force-feed the cockerels, and so he could turn them off to [the] a broiler market in about ten weeks. This has later become a very, very large activity in Arkansas and other places in California, in Holly Farms and Foster Farms in California, and the Tyson Farms in Arkansas, and so on. But he was one of the early guys to get into that complex of the chicken farming of both the broiler market and the egg market.

I became familiar with the farm agent process and what they were trying to do as a stimulator of activities to improve the farm operations through demonstrations on particular farmers' farms to demonstrate particular things, so I supported the activity that these people were doing, because I understood what they were doing and how necessary it would be, ultimately, to development of these land resources in the Basin.

How he used farm agents

About this time, we were beginning to –

END OF SIDE 2, TAPE 2. APRIL 25, 1995.

BEGIN SIDE 1, TAPE 3. APRIL 25, 1995.

Storey: This is tape three of an interview by Brit Storey with Kenneth F. Vernon on April the 25th, 1995.

Vernon: Do I need to backtrack?

Storey: Yes, just a little bit.

Vernon: Well, as I was telling you about these farm

agents and their activities, we had begun to get into detailed planning and investigations, detailed investigations *and* planning, in Sloan's plan for diversion to North Dakota and diversion from the Oahe, the future Oahe Dam, to [James] Jim's River Valley in South Dakota.

Planning for diversions from Oahe Dam on the Missouri River

We were running into several problems with Sloan's scheme on the North Dakota diversion. His scheme was to build a diversion dam below the mouth of the Milk River as it entered the Missouri below Fort Peck [and] have a canal travel along the northern bank of the Missouri River, delivering water to lands which were then, and I presume now, in Indian reservation ownership, ultimately go through an old channel of the Missouri River and debouch into the northwest corner of North Dakota.

Issues with the North Dakota diversion in the Sloan Plan

Two problems were becoming very evident. One was the problem of ownership of Indian lands. Now, as I told you, when setting up the coordinated Interior program and getting appropriations for the other Interior agencies, one of the problems was the development of Indian ownership lands in the Reclamation program. So here we were face to face with this problem of Indian ownerships of various kinds along this northern boundary, northern bank of the Missouri River. I don't recall which tribes were involved, but it was a *very* complex ownership situation. Some of it was in tribal ownership. Some of it passed to heirships. I recall one particular portion of the land, the lowest common denominator of the heirships was over 300,000. That was the lowest common denominator. The upper denominator was something more than one. But the point was that it was such a complex heirship-ownership, that no one could conceive of how in the world we could determine and get the owners of that land to ever establish an irrigation district, because under Montana

There were problems with applying the reclamation program to Indian lands

law, they would have to establish an irrigation district.

Then we ran into problems as we had proceeded with our land classification studies in northwestern North Dakota. Mr. Sloan, in his studies, planning studies, had not gotten into that very deeply. He had simply laid out a project plan, but had not been able to get into the detail of which lands would be served. We ran into two major problems. One was, this land was a highly dense compacted glacial till, a *cold* soil that nearly approached permafrost. It froze deeply in the wintertime, and it was late summer before *all* the frost was out of the ground. This would create, not only because it was dense compaction as glacial till, but the permafrost created drainage problems in the soils. So we concluded that these soils would present a problem of getting water into the soils and then creating a more difficult problem of getting water *out* of the soils through a drainage system.

Another problem was micro-relief, micro-topographic relief, in this territory. Since this was the remnants of glacial till, in other words, it'd been deposited underneath the Great North American Glacier, and it was why the Missouri River departed from the channel that Glenn Sloan had thought to use going into northwestern North Dakota, it caused the Missouri River to bend south at about the Montana line and proceed down south through North Dakota and South Dakota and so on. So this topography had a serious problem of micro-relief, but it was micro-relief in the sense of not a few feet, but it might be up to twenty feet, and it would be very difficult to create a distribution system that would deliver water over such a system. The only system we thought might be useable was sprinkler irrigation, which was just becoming developed during that period, and it wasn't well

Land classification studies were underway in northwestern North Dakota

Permafrost and drainage issues

Sprinkler irrigation was just developing

known or well developed, and we were a little leery about really putting our future into it.

So Mr. Johnson, who was the District Manager in Bismarck, had been looking at other lands in [North] South Dakota, and he came up with the idea that farther south and east of the lands which Glenn Sloan had thought to irrigate, were lands which were covered with residual glacial deposits, but they weren't highly compacted glacial tills, but were more loamy soils and were what we called warmer soils, which did not frost so heavily and freeze so deeply and became warmer earlier in the spring, and therefore had been utilized as spring planting rather than the winter planting which the northwestern farmers used. They did a lot of winter planting, fall planting, and then allowed the crops to come up right after the fall. But the lands further south and to the east seemed more likely to be receptive to irrigation agriculture.

So along about 1950, as I recall, this study was coming to a head, and I authorized Mr. Johnson to make a comprehensive study of the alternatives of abandoning the Sloan plan of diverting just below Fort Peck and adopting the Corps of Engineers' plan of pumping from the Garrison Reservoir. As I indicated earlier, this created a strong dissension with Mr. Sloan and the supporters of Mr. Sloan's plan in North Dakota. But as Mr. Johnson carried on his detailed investigations, it became more and more clear that the diversion from Garrison, both land resources-wise and hydrologically, was more important to the Basin, and had a higher probability of development than the Sloan plan.

Because of soil issues began to look at diverting water from Garrison Reservoir

Just to make a point, the Sloan Plan would have debouched whatever drainage it developed into the Souris River, which came out of Canada, curved around Minot, and then went

back into Canada. So whatever drainage was placed into the Souris River became lost to the Basin. The second thing was, because of other water-saving elements, we figured that there would be an overall savings of water to the Basin of about 200,000 acre-feet per year, which was a resource which could be used somewhere else in the Basin, particularly, say, the Jim River, the James River, or eastern and southern North Dakota. It could be diverted from the Garrison Reservoir and placed in North Dakota. So that study was going on.

But, under the rules of operation in keeping states informed as to the developments of our investigations, I held a meeting with the Governor of North Dakota and his water commission to explain to him what we were including, and the reasons why we were including it and so on, and that it looked like we ultimately would be recommending abandonment of Glenn Sloan's [diversion] plan to northern North Dakota and adopting a plan to divert into central North Dakota. This, of course, created some problems for the Governor, because he had a political climate to live in, also. And the people in northwestern North Dakota had been very strong supporters of the Pick-Sloan Plan.

Storey: The folks who were living on the permafrost.

Vernon: Yeah, right. It really wasn't permafrost, but it was close to it, because it took late spring before it ever thawed down to through the root zone, and so you'd get water out of it and drain it.

Well, at any rate, he made a reasonable request to me. He said would I engage in a thorough vetting of these alternatives and set up a consulting board, [in] which the state of North Dakota could participate and examine these alternatives, which I readily agreed to. I said,

“Yes, indeed, we will.”

So I set up the consulting board composed of my old professor at University of California, Mr. Sydney T. Harding, who I told you earlier, his elements of teaching related to on-farm developments, drainage, crops, and that sort of thing; a gentleman who was nominated by the Bureau of Indian Affairs because of the Indian land problem, and a gentleman from the Department of Agriculture. Now, I don't recall those names, because I was not intimately familiar with them, but they were carefully chosen, and they accepted the charge, and they examined the results of our investigations both in the field and in the office and so on, and talked with the people in North Dakota and Montana.

They concluded that our results of our investigations were correct, and that the Sloan Plan should be dropped, and that the diversion from Garrison should be adopted as a step to the better for the development of the Basin, not the least of which was that Indian lands problem in Montana.

About that same time, as we began to formulate a discrete plan for the ultimate development of North Dakota, it became essential that we consider how this development was going to be conducted in the state of North Dakota and meet the requirements of Reclamation law. Now, I had a very brilliant regional counsel, who I've not mentioned earlier, but he had been very important in the development of the legislation of the Missouri River Basin scheme, and he was a *very* brilliant lawyer that had been involved for many, many years in the development of Reclamation in the upper plains states, and he was accredited to practice before the Supreme Court of United States, because he had been intimately involved

Consulting board set up to study the issues of irrigation in North Dakota and Montana

in the solution of the Platte River problems between Wyoming, Colorado, and Nebraska.

So I suggested to Mr. Burke, what about the establishment of what we might call a conservancy district in North Dakota, which would have much broader ramifications than just the usual irrigation district where just the lands that were being served. We would then encompass a much broader base. I said, "You know, in a practical matter, the Corps of Engineers, with its non-reimbursable investments in flood control and river transportation, has made a conservancy district out of the total United States. Call it by any other name, basically the United States is a gross conservancy district, and all the people in the United States contribute to their project[s]. So can you can up with some kind of a scheme that would meet requirements of *our* law and North Dakota's laws that we could establish a conservancy district for the Garrison diversion project?"

He said, "That's a very interesting challenge." But he did work out a scheme in consultation with the people of the government of North Dakota for a conservancy district for the Garrison diversion to North Dakota, and it passed. They held an election, and it did pass. Now, that was somewhere along in the early 1950s. I'm not just exactly sure of when this occurred, but it was in the early 1950s, because it was before the advent of the Eisenhower Administration, because the then Governor of North Dakota was Fred Aandahl. He had been very active in Missouri Basin Project affairs and through the interagency committee.

Conservancy district established in North Dakota for the Garrison diversion

Storey: And Aandahl, I believe, is A-H-N-D-A-H-L.

Vernon: I don't remember. It's a Norwegian name. A-A-H-N-D-A-H-L or A-H-N-D-A-H-L, but it's a

Governor Aahndahl in North Dakota

Norwegian name.¹³ But Governor Aandahl was a staunch supporter of the Missouri Basin Program, and he saw the rationale [of what] ~~that~~ we were proposing, and so he put his people to work, and he strongly supported the establishment of this conservancy district.

When the Eisenhower Administration came in, he was appointed Assistant Secretary for Water and Power in the Eisenhower Administration, Interior. So I know it occurred while he was still Governor.

Storey: The attorney's name again?

Vernon: William J. Burke. B-U-R-K-E. As I said, Mr. Burke was a powerful intellect. He was recognized as being one of the fathers of irrigation law in the high plains states. He had his office in Montana, in Billings, Montana. I [inherited] ~~encompassed~~ him, and he was another one of the elements that I had encompassed into the regional structure. Mr Burke was somewhat chagrined because of his close association with the development of legislation for the Missouri Basin, [that] ~~but~~ I did not appoint him as an Assistant Regional Director, but Mr. Burke had some other problems which made him sometimes unavailable. I did ~~not want to~~ feel that he [should] ~~could then~~ become a part of the regional administration, but that his function was best served as regional counsel with a group of assistant counsels under him to solve our numerous problems of legal character. At times, Mr. Burke became unavailable and we never knew just exactly where he was, and sometimes he would lock himself in his office. Sometimes he would disappear for days. We never quite knew exactly where he was, neither did his family. He maintained it was his ability to cleanse his mind of all the confusing thoughts that he had, and become refreshed and tackle the

William J. Burke an attorney important in irrigation law in the high plains

problems anew. [Tape recorder turned off]

Storey: You say ultimately Mr. Burke went to Washington?

Vernon: Mr. Burke, our regional counsel, who was very involved in the original legislation for the Missouri Basin Project, was tapped to be an Associate Solicitor in the Department, in the Eisenhower Administration, after the Eisenhower Administration came in, and I don't recall whether his transfer was effected before I left Billings or after I left Billings, in the fall of 1954, but my recollection is that he was transferred into Washington before I left, and one of the men from the Chief Counsel's office in Washington was sent out to replace him as Regional Counsel. I can't recall his name for the moment, but it occurred probably in the later days of my tenure in Billings, because I was not intimately associated with him, although I had known him very well while I was stationed in Washington. Herb de Vries, that was his name. Herbert de Vries. D-E V-R-I-E-S, I think it was.

Storey: With a capital V?

Vernon: Yeah. Capital D, capital V. Because in my – well, we'll get into this later. After the Eisenhower Administration had gotten itself organized and [Wilbur A.] Dexheimer became Commissioner, it was decided to replace me as Regional Director with a Mr. Frank Clinton from Region I, and I was established as a Special Assistant to the [regional director] ~~Commissioner~~, and was given the opportunity to conduct some studies that I'd wanted to do, which I'd never been able to do while I was Regional Director. Frank took over administration of the region. I think it was during that time that Herb de Vries came out and took over as Regional Counsel, and I didn't have

**Wilbur A. Dexheimer
becomes Commissioner**

**Replaced by Frank
Clinton and made
special assistant to the
regional director**

any direct association with him, any occasion for direct association with him, but I continued to have association with some the associate counsels in the regional counsel's office because of some the special studies I was conducting.

At any rate, we did get the conservancy district established in North Dakota, and we were conducting our investigations of the potential diversion from the diversion reservoir, the Garrison Reservoir, rather than utilizing the Sloan plan below Fort Peck.

One of the elements that we were following up on in our project development phase was the establishment of what we called experimental farms, particularly for the lands in North and South Dakota. This group that I had earlier indicated in the O&M Department had established a development farm in this glacial till area, and they were coming up with all kinds of difficult problems relating to this glacial till soil.

Storey: This was the compacted soils?

Vernon: Compacted glacial till soils. And the drainage problems, and the short growing season, *shorter* growing season, and they began looking into these lands further ~~the~~ south and east, that we called the warmer soils, and we started a development farm over there and were getting much better results from that, and so this was another element that fit into the conclusion that the lands further south and east diverting from Garrison was [a better] ~~another~~ solution.

Storey: Now, when you say we started a development farm, what do you mean exactly?

Setting up development farms

Vernon: We actually either made an agreement with a local farmer or bought some land, and actually set into farming. Irrigated farming.

Storey: So we weren't, for instance, paying the Agriculture Department?

Vernon: No. We called upon the state college to advise us on this, the agricultural college to advise us on this, this was done in cooperation with them, but it was our operation, and these men that I had placed in our Operation and Maintenance Department of project development conducted these operations on these development farms.

We also set up a similar development farm in the James River Valley down close to Huron, and we came up with some *astounding* results, what irrigation would produce in the James River Valley in South Dakota. For example, rain-fed corn, which was producing up to a hundred bushels an acre in Iowa, was only producing under rain-fed conditions in the James River Valley of ten to fifteen bushels an acre, whereas under irrigation, we found that immediately, without going into any further details, with simply the application of water, ample quantities at the right time, we immediately produced eighty bushels to the acre, and by introducing applications of various kinds of fertilizer and other farming techniques, we could see 120 bushels to the acre as a complete possibility. One of the problems we had, however, was that in order to make those results possible, we would probably have to develop a new breed of corn, which the agricultural colleges started to undertake, because under dry land conditions, the corn that was being used had a maturity date of about ninety days, which then meant that corn could be harvested before the freeze-up in the fall. However, under irrigated conditions, and the more intense growing, the corn was still in what was called the milk stage. In other words, it hadn't matured completely. And so that the time the frost occurred, the corn had not matured, and therefore did not become

really a merchantable quality.

So we undertook the program with the state colleges to see what they could do toward developing a new breed of corn. I also called in Dr. Harlan Barrows of the University of Chicago, [head of] the Geography Department of the University of Chicago, as a consultant who had been active in previous stages of the Missouri Basin, who had done some investigations in Russia, of Russian developments on the tundra, of crops which could grow under conditions of a short growing season, mature under a shorter growing season, and he was assisting the agricultural college in coming up with that. Well this was going on while we were carrying on these other investigations.

One of the things that I also wanted to do, particularly as we found out what could occur in the James River Valley, was we were active in trying to develop irrigation in what we called the West River Area, which was west of the Missouri Basin, west of the Missouri River. Glenn Sloan had proposed a number of irrigation developments in what was called necklace developments along the river bottoms, along the Grand River, the Morro River, the Cheyenne River, and other rivers in the west country, but fundamentally that area was cattle-growing area. It was grass country. What irrigation development could occur would support range-fed cattle with additional sources of hay, but the real thing would be, if this corn proposition in the James River Valley could be really made successful, I foresaw a new cattle industry predicated upon the range lands of west of the Missouri River, bringing them over to the James River Valley for finishing operations with the corn that would be developed in the James River Valley, in the irrigated lands of the James River Valley. To a certain extent, this was being done

in Nebraska, and, as a matter of fact, there were great feeding operations going on in the Omaha area, and in the Sioux City, and other cities. Let's see. There was Sioux City and Sioux Falls in the South Dakota and Iowa area of cattle-feeding operations, predicated on bringing cattle from the high plains area down to the Omaha –

END OF SIDE 1, TAPE 3. APRIL 25, 1995.

BEGIN SIDE 2, TAPE 3. APRIL 25, 1995.

Storey: You were talking about the potentials for raising corn in the James River Valley and then bringing in cattle for finishing there, and that kind of thing.

Vernon: Right. Now, I think that that pretty well covers the activities that we were engaged in, in the Missouri Basin area.

Our South Dakota District Office was also involved in expansion project[s], the Belle Fourche Project, certain activities of the Belle Fourche Project. Then in the western part of South Dakota, there was the Angostura dam. And then we also were looking at a dam site on the upper reaches of the Belle Fourche River called Keyhole, and then there was also Pactola Dam, which was closer to Rapid City, which would ultimately service municipal water to Rapid City and the big air base that had been built just adjacent to Rapid City, where the big B-52 bombers, part of the SAC.

Belle Fourche Project

Angostura Dam

Keyhole Dam

Pactola Dam

Storey: I've forgotten the name of it.

Vernon: Ellsworth. I think it was Ellsworth. I won't guarantee that, but I think it was Ellsworth Air Force Base. They stationed first B-47s – no, first B-36s, which was fantastic to see, ~~then~~ that was a pusher airplane, a propeller pusher airplane, then there was the B-47s and then, ultimately, the B-

52s. So we worked out a deal whereby we would build the Pactola Dam and provide municipal water to Rapid City and water to the Air Force base.

So I want to take up now what was going on in Wyoming, because this was a different aspect of the Basin development. Fundamentally, it was predicated on the older Reclamation development, but I was bringing it into the Missouri Basin Program. The first one, which was quite successful, was the Heart Mountain Division of the Shoshone Project, adjacent to Cody. These lands were of high quality and didn't require a large amount of canal construction to bring water from the Buffalo Bill Dam to these lands on this Heart Mountain Bench, which, incidentally, had been the site of a Japanese Relocation Center during World War II.

**Heart Mountain Division
of the Shoshone Project**

So very early on, in 1947, we held our first drawing of [settlers in the] Veteran Settlement Program for the Heart Mountain Division. And then in succeeding years, we held additional drawings and settlement of selections of veterans to award them homesteads in the project area. These lands were very good, and these settlers became successful very early on.

**Veteran settlement
program drawing for the
Heart Mountain Division**

However, it was a different story on the Riverton [Project]. In the expansion of the Division Two of the Midvale Irrigation District, we ran into some soil problems of salinity. I immediately enlisted the help of the Soil Salinity Laboratory of the Department of Agriculture to come and give us assistance in determining what the salinity problems were and what might be done about it. Basically it's called an exchangeable sodium ion, which tends to, in the presence of water, cause the soil to lose its ~~structure~~ loamy structure, and become, first, almost impermeable to water, and then, second,

Riverton Project

once water is into it, become almost undrainable.

It took some time to find out what was going on, and we had already held a couple of drawings for veteran settlement on the expansion of the Midvale Irrigation District. At the same time we were constructing the drainage system, but the expansion of the irrigation was occurring faster than the drainage system was being built, and then because of the problems of the soil becoming impermeable, we suddenly discovered that the settlers on these lands were faced with disaster.

The Farmers Home Administration of the Department of Agriculture had moved in, and had provided financing to these farmers to get them established on their farms, and, therefore, these farmers were not only saddled with the expense of getting their farms into production, but they also were faced with mortgages on their farms from the Farmers Home Administration for financing of equipment and so on. And here, suddenly, they discovered that their land was becoming unproductive, and this began to show up in about 1950.

At the same time, we were planning to expand the canal system of the Riverton Project into what was called the Third Division or the Cottonwood Bench area. These were soils of much lighter character, and it was a much windier area. So to begin with, early on, we established a development farm on the Cottonwood Bench area, and there we found that while these soils responded well to the application of water, they were of such light character that the prevailing winds would cause the sandy soil to move and literally saw the crops off, the growing crops off, at the ground [level].

So before we wanted to undertake, really,

expansion of the canal system into the Cottonwood Bench area, we began another program of trying to figure out how to make these soils less volatile and still retain their productivity. That work was still going on when I left the region in the fall of 1954, and I don't know for sure whether that canal system had ever been extended into the Cottonwood Bench area.

But going back now to the Midvale District, one of the experiments that we were trying with these salinized soils was electrolysis, to see if we could get an eye on displacement in the soils by introducing electric current, and get the sodium out of the soils into the drainage system. Well, that worked to some extent, but not very well, and it was expensive. So in about 1952, I believe, '53, a rescue program was authorized by which these farmers who [had] ~~now~~ received lands, who now were trying to farm lands which had become heavily salinized, would be [relocated] ~~replaced~~ to some other project, given a new opportunity in some other project, and that was going on when I left Billings. I don't know how successful or how long that was carried on. But the experience of this sodium in soils served me very well in my later work both in Iraq, Mesopotamia, and ~~in~~ Pakistan, in the Punjab in Pakistan, because I was now aware that an exchangeable sodium ion had a very bad effect on irrigated soils.

So let's see, what else have we got now? Sloan's Plan, adoption of the diversion for the Garrison Dam Conservancy District, diversion from Oahe at James River, the problems there.

Oh, yes, before I left Billings, we had begun to find out that there were a lot of problems in the diversion of the Oahe Dam waters to the James River Valley, and we began considering, since we were moving the North

Dakota irrigation to further south and east, that perhaps we could create a diversion to the upper waters of the James River, which arose in North Dakota, and bring that water into the James River Valley, rather than going to the expense of creating a diversion canal across the ridge from the Oahe Dam to the James River Valley, and eliminate pumping costs, those pumping costs, in consolidating with the Garrison pumping.

In order to solve this problem and get a real review of it, I again instituted, with the help of the South Dakota Governor, a review board to review our findings to date, and review our land findings in the James River Valley, and make recommendations as to which plan should be followed out in greater detail. Their report was submitted just about the time I left Billings, but I was not directly involved in handling their report, because by that time I was Special Assistant to the Regional Director and it was being handled by the Regional Director and the regular staff. So I'm aware of that report, but I'm not aware of all the things that happened as a result of it.

Now, then, we get to the occurrences of the Eisenhower Administration [while I was still regional director]. We received instructions from Washington [that] and it was desired to retract a number of activities that we were following in the Basin. Particularly emphasis was on retracting our economic studies, our demographic studies, and perhaps revert more to what we called prosaic Reclamation activities. At the same time, there was a group set up, I don't recall from where its authority stemmed, but it was to review the strength of the movement of the establishment of a Missouri Valley Authority and to review the work that Reclamation and Interior had been doing, which could be the basis of a broad Valley Authority program.

**Review board
established to study
irrigable lands in South
Dakota**

**The Eisenhower
Administration's effects
in the region**

This group came to Billings. We prepared much documentation of our activities, and I demonstrated to them, in my view, at least, that what we were doing was for the good of the Basin, whether it be carried out by Interior and the Corps of Engineers and the established agencies, or by a Valley Authority [When] ~~and~~ pressed as to my opinion as to the efficiency of the current standard agency's approach as opposed to a Valley Authority, which would promise a higher degree of efficiency, I stated to them that in my view, a Valley Authority would be much more efficient, probably [more] effective, but that also in my view, it would be less democratic, as demonstrated in the TVA; that we just recently fought a war to destroy dictatorship, which was closely akin to a Valley Authority administration, and that therefore, in my view, I thought that the current program in the Missouri Valley held great promise, it should be continued. I don't know to whom they submitted their report, or what their report was.

Later in the Eisenhower Administration, there was set up a group of wise men, basically of Reclamation stalwarts. I've forgotten exactly who was on it, but I know that Ernie Moritz of Region III was there. I don't recall whether Robert Newell, from Region I, who'd been previously Director of Region I, was on it, but there were four or five gentlemen who were deeply embedded, shall we say, in the *pro forma* Reclamation programs, and not at all acquainted with the broad ramifications of the then Missouri Basin, the type of program we were carrying out in the Missouri River Basin.

They first attacked my structure of the area district offices. I pointed out to them that each one of my district offices had a larger program and more finance than several of the then current regions, and that I felt it was

essential that this structure was [effective in] essential to carrying off the broad program, which was authorized and funded, and that it was copied, literally, from the structure which had been previously created in the Central Valley Project. I don't know how well my presentation was accepted by these gentlemen, because I don't think it quite squared with the answers they were seeking.

Shortly after that, in the fall of 1953, after we had gone through a terrific reduction in force under instructions from Washington, which aimed heavily at our economic activities, and broad ramifications of Basin-wide development, I was in the Washington office and I was about to return to Billings when I received a call from the Commissioner's office that Mr. Dexheimer, who was then Commissioner, wanted to see me at about five o'clock. So I appeared in the Commissioner's office at five o'clock, and "Dex" seemed cordial, but he announced that it had been determined that a change was to be made in the administration of Region VI.

Reduction in force in the early months of the Eisenhower Administration

Commissioner Dexheimer announces there needs to be a change in the region

“Well”, I said, “You're entitled to have your own man there. I've done my best. What do you want me to do?”

Well, he said, “We're bringing in Frank Clinton to become the new Regional Director from Region I, and obviously there should be a period of overlap while Frank becomes familiar with the operations in the region. When he gets ready to place his imprimatur on the operations, then you decide. But until that time, we'll create a new post of Special Assistant to the Regional Director, and then you can be a sort of an advisor and consultant to Frank Clinton if and when he feels he needs you. And, incidentally, of course, you must accept a downgrade from Grade 15 to this new position of Grade 14.”

Well, I said, "That's quite a blow, Commissioner, because I've got one kid in college and another kid about ready to go to college, and I'm at the top of the rank now, and I've been graded by the Civil Service Commission for Grade 16, except there's no slots for Grade 16 in Reclamation," at that time, but my job had been graded as Grade 16. "I've been looking forward to a normal progression, but I've got to stay on somebody's payroll. So you're entitled to do as you wish, because my Commissioner, as I referred to him, Mike Straus, he did as he wished and put me in charge of Region VI. So you're entitled to put your man in charge of Region VI, as I see it."

Downgraded to a GS-14

They did the same thing in Region VII. So they moved Avery Batson over and folded him into the Denver office somewhere. I don't recall what position he held there, but obviously it was some form of a sinecure, and he took the opportunity to be employed by the Ford Foundation in a team that they were assembling for Pakistan to work on the Indus River Basin replacements works.

However, I took the change in Billings and received an office which I could touch the four walls in either direction by spreading my arms out. But I did have some ideas that I wanted to develop, and I talked to Mr. Clinton about it, and he said, "Go ahead. That makes sense. Go ahead." One of which was I wanted to review the ancient history of the Riverton Project to find out if there had been any indication of these problem soils so that had we been aware of the record of the Riverton Project, we might have avoided the problems as they occurred.

Now, after I undertook that investigation reviewing, I called from the tomb, so to speak, all

Studies problems at the Riverton Project

the ancient annual reports that Mr. Comstock had prepared as he was Superintendent of the development of the Riverton Project. By this time, unfortunately, Mr. Comstock had passed on to his reward, and so I couldn't consult with him directly. But in reviewing his reports, I found that whether he knew it or not, the rate of development of the Riverton Project had been, to a certain sense, its salvation. In other words, during the Depression years, he found it very difficult to recruit settlers, so that the rate of expansion in the Midvale Irrigation District was very slow, and as a consequence, then, the drainage program had been able to keep up with the development of the irrigation, so that this salinization problem had not become apparent because of saturation of the soils and the lack of drainage which occurred in the after-war program, the highly intense after-war program.

Likewise, I got the feeling, although it was never identified, that he had developed some uneasiness about some of the soils that they were getting into on the Riverton Project, although it was never specifically identified, but it was pretty obvious that he was avoiding certain areas which we then developed under our post war program ~~after the war~~. So there was a certain amount of institutional intelligence there which had gotten lost in the process and by the loss of one gentleman's not recording his history, such as you're doing now with me.

Another thing I wanted to do, as I told you, I had talked to the Park Service about the expansion and the exploitation of recreational activities around reservoirs and in the project areas. So with Mr. Clinton's approval, I undertook a comprehensive study of the [Boysen] ~~Washington~~ Reservoir, the Boysen Dam having been completed and in operation. Now, we had an interesting problem there,

Studied recreation opportunities at Boysen Dam and Reservoir

because we had both private lands, public lands, and Indian lands involved in the periphery of the Boysen Reservoir. So I enlisted the support of the Indian Bureau and the Bureau of Land Management, the National Park Service, and the Fish and Wildlife Service in a comprehensive study of what we might do to exploit recreational activities at the Boysen Reservoir.

At the same time, Angostura Reservoir was now completed, and it had already developed quite a recreational activity or visitation, shall we say, from people from Nebraska, which were bringing boats and whatnot up to the Reservoir for water recreation, and there had been nothing done toward providing any facilities. So on that reservoir, I enlisted the support of the Park Service, and the Fish and Wildlife Service, and the Bureau of Land Management again, so a comprehensive review of developing some form of a comprehensive plan for development around the reservoirs.

I had previously, while I was Regional Director, being aware of these potentials for recreational development, on one vacation period, I had visited a number of projects both in Region I and in Region II, which I was aware recreational facilities had been provided, and I wanted to get an idea of how it had been developed and *what* had been developed and that sort of thing. Particularly I was impressed with what happened at Friant Dam, Friant Reservoir, Millerton Lake, as it was called, and at Shasta [Reservoir].

This was the genesis of my idea of a special study that I might conduct, create, in our reservoirs up in Region VI, and I had already appointed a guy in our O&M Division, I forget what we called him, but he had a background in

**Studied recreation
opportunities on
Angostura Reservoir**

Fish and Wildlife and in Recreation, and so I utilized him as my staff, immediate staff. I got approval that he was my immediate staff, to assist me in making this study. And he was tickled to death, because he now had an objective that he could really tie into. He was really thrilled with the opportunity.

So we came up with quite a comprehensive report of what to do with Angostura Reservoir and with the Boysen, but we did run into a problem with the Indians, because they wanted to have a hand in the development of any recreational resources, and also get the benefit of any fees that might be charged, which, of course, was an anathema to the National Park Service. They wanted to make it free for everybody. So this was a very special problem that wasn't resolved, but was identified in the report. It would have to be resolved before really a comprehensive program could be conducted, that additional negotiations would have to be carried on with the Indian Bureau [and Indian tribes].

Now, I didn't mention earlier in the discussion the problem that developed with the Indian lands on Yellowtail.

It's now six o'clock. Listen, what I want to find out –

END OF SIDE 2, TAPE 3. APRIL 25, 1995.

BEGIN SIDE 1, TAPE 4. APRIL 25, 1995.

Storey: This is tape four of an interview by Brit Storey with Kenneth F. Vernon on April the 25th, 1995.

Vernon: As I said, this other material, I wanted to get into some detail on the special problems we ran into with the planning for Yellowtail Dam. Now, this, as I've indicated, was to be a key element of

Yellowtail Dam was to be a key element of the power program in the region

our power program, anchoring our transmission systems between northern Montana, Fort Peck, into Wyoming, and further east. It was a concrete dam with short penstocks, and therefore would be a highly productive dam with a high head, and it would create a high degree of firm power, highly marketable power, whereas the mainstream dams, being subject to wide variations of flow, and particularly wide variations of spring flood, would create large quantities of what might be called fuel replacement power, which we could only create an energy charge, whereas firm power could create a power availability charge, demand a power availability charge, as well as an energy charge, whereas this other was seasonal power, which would be marketable as fuel replacement power [of] to the fuel-fired power plants.

And, as I'd indicated earlier, I was interested in the development of the coal resources in North and South Dakota, and I thought that ultimately there would be large power stations, fuel-powered, fuel-fired power stations, in the Dakotas, utilizing the lignite coals. So that this fuel replacement power would be [a] very valuable [supplement] to them, you see. The power stations would only operate during the periods of nonavailability of this intermittent power, and then there would be a third element, which is called interruptible power, which was just over and above everything else, [but] was only occasionally available. And there was also a market for that, too, as fuel replacement, but you never could tell one year to the next if you're going to have it [because it depended upon the size of the spring flood runoff].

So Yellowtail was going to be our anchor in our southern Montana power transmission system. Sloan's plan included irrigation of lands

**Yellowtail Dam and the
Crow Indian Reservation**

below Yellowtail dam on the Crow Indian Reservation. Now, you have to understand that the Crow Indian Reservation was being farmed by three major entities. There were probably others, but there were three major entities. They were dry-land farming, basically wheat farming. And they were renting this land from the Indian tribes and [also] the Indians ~~the~~, land that had passed ownership, ~~and they were farming~~. Tom Campbell, [one of the operators] I can recall one year, reading an article in the paper, that he had harvested a million-bushel crop off of the lands of the Crow Indian reservation. I don't recall the exact number of acres he was farming, but it apparently was some kind of a bumper crop, which, at that time, wheat was bringing about three dollars or three dollars and a half a bushel, so there was literally a million-dollar crop that year that spread between Campbell and his interests and the Indian tribes, and their interest.

There was also the Antler Corporation, which was headquartered in Omaha. Now, I've been told, I don't know this for a fact, but I had been told that the Vatican was involved in financing the Antler Corporation. They were farming a good deal of land on the Crow Indian Reservation. Then there was Matt Tsurgzis. I don't recall how to spell his name, because I think he was a Pole or a Czech, and he had some T-Ss and some Zs in there, but it was something like T-S-U-R-G-Z-I-S, something on that order, so I don't recall how to spell his name correctly. But he was operating more as an individual on a somewhat smaller scale than the Antler Corporation and the Campbell interest, but he still was a large entity operating a good bit of the Crow Indian reservation.

These entities and interests were not particularly interested in irrigation development on Crow Indian lands, because it might cut into

Large agricultural interests on the Crow Reservation opposed the Yellowtail Dam development

their operations, because some of the better lands, obviously, were the lands we might select for irrigated agriculture. So that was one opposition element to Yellowtail Dam.

Another element that was more behind the scenes was the Montana Power Company. I firmly believe that had we agreed, at the outset, to pump Yellowtail Power into the Montana Power Company system, a lot of opposition which developed on the Indian Reservation would have disappeared, and that element of opposition to the construction of Yellowtail Dam, during my tenure, would have been eliminated.

As a counterbalance to our promoting of Yellowtail Dam, the Montana Power Company developed a gas-fired power station in Billings to take care of the growing market in Billings, so they could then declare, with some realism, that there was really no need for the power from Yellowtail Dam.

The third element that was in opposition was the tribe and the Indians themselves, the Crow Indian tribe itself. There was a complication in the lands that would be involved in the creation of the Yellowtail Reservoir. There was some still all-public lands. One bank was still public lands. In the upper reaches, there were lands that had passed to private ownership. And there was still lands held both in private Indian ownership and tribal ownership, so it was a very complex land ownership problem that would have to be solved before we could create a Yellowtail Reservoir. One abutment of the Yellowtail Dam was in public lands, as I recall, and one abutment of the dam was on some form of either tribal or Indian ownership. I don't recall which, but I think it was tribal, under control of the Tribal Council.

Montana Power Company was probably opposed to Yellowtail Dam hydropower development

Some Indians opposed the Yellowtail Dam development

Naming of Yellowtail Dam

Now, the reason for the name Yellowtail, Glenn Sloan, in order to enlist the aid and favor of the Indians on the development of Yellowtail Dam, decided to name the dam Yellowtail after Chief Robert Yellowtail, who was a well-educated Indian. There was also another chief in the Tribal Council, I forget his first name, but his last name was Whiteman. It was [Harry] ~~Charles Whiteman or Robert Whiteman or something on that order, but his family name was Whiteman,~~ but [and] he was also a chief of the Tribal Council. Now, he was in favor of construction of the Yellowtail Dam, although he hated the name, but Robert Yellowtail, for some reason or other, was not persuaded *yet* that all signs were ready, were pointing toward the construction of the Yellowtail Dam, for reasons that were never really clear.

We were faced with all these problems, competing issues, as to how to get the agreement on the construction of Yellowtail Dam. Well, we did get the agreement of the Tribal Council that we could encroach on Indian lands and conduct dam-site investigations such as drilling and so on, and, of course, we got ready permission from the Bureau of Land Management to enter into the public lands, and we made a withdrawal, immediate withdrawal, of the lands for the public lands to withdraw them from entry.

In our investigations of the dam site, we found that the formations which were the Madison limestones, which were a form of indurated sandstones and harder limestones, contained many caverns. Bob Herdmann, who was our engineer over there, brought me a whole big crystal formation which they found in one these caves that they entered into as we were examining the abutments of the dam. We knew that we had a problem there, that there would be leakage from that reservoir into those caves, or

through those caves into this formation, which would not be a loss to the Basin, but would be a loss to the effectiveness of the reservoir, because the Big Horn River was a part of the catchment area which served the formations which underlay the high plain states. ~~and~~ Before a lot of pumping [had been] ~~was~~ created in, say, South Dakota, west of the Missouri River, there were artesian wells all over the place. But as developments occurred along the river and so on, in [western South] ~~eastern North~~ Dakota, the hydraulic pressure in the aquifer was reduced so these artesian wells were disappearing.

But this water that would be lost through the Yellowtail Reservoir *would* go into this formation and would ultimately find its way farther east, but that would seriously affect the efficiency of the operation of the Yellowtail Reservoir. So this created quite a problem in the design of the dam and its flanks, to somehow prevent loss of water from the reservoir. [In other words, a lot of grouting of the flanks would be required.]

I held a number of meetings before the Tribal Council, and it was, one interesting aspect of this, to discuss our findings of the Yellowtail Dam site, and it was very interesting. All these gentlemen were educated in English, but they made me speak through an interpreter, and then they would quarrel with the interpreter whether he translated my English correctly in their Crow Indian language. (laughter)

At any rate, ~~somebody advised—~~ somehow [Robert] ~~Howard~~ Yellowtail had heard about some tribe in Oklahoma who had taken a case to court and had gotten a big award to the Indian tribe for the “strategic value” of their lands for either the reservoir and/or the dam site. So he began propounding before the Tribal

**Meetings with the Tribal
Council regarding
Yellowtail Dam**

Council that the tribe should never agree to the construction of Yellowtail Dam, unless and until Reclamation agreed to evaluate the strategic value and award the tribe many, many, many millions of dollars and at least some share of the power revenues, which, of course, made it very difficult for me, because we were counting on the use of the power revenues, integration with our power system to help [repay] ~~defray~~ some of the costs of the Missouri Basin Program.

I called upon the Indian Bureau to help me evaluate these Indian lands, and they came up with some really difficult problems because of the mixed-up ownership [in which] ~~of~~ the lands; ~~which~~ were ~~not only~~ held, some were held by the tribe and some had passed to private Indian ownership. Then we had also these public lands and then we had other lands which had passed on to other private ownerships.

Storey: Non-Indian.

Vernon: So that my argument to the Tribal Council was that so far as I could see, and I sent my counsel, Burke, down to examine the record of this case in Oklahoma, [that] ~~and~~ there they were awarded their strategic value, because the tribe was capable of financing the construction of the dam itself. In other words, through their oil revenues incurring to the tribes, they had the funds, they could actually finance the development that was proposed by somebody else, but they were willing to, for a price, participate and not expend their funds, but take a payoff for this “strategic value” of their lands for the dam site.

My argument for that was, after Mr. Burke examined that case in Oklahoma, that there was really *no* strategic value of the “tribal lands,” because they did not have sufficient control [of the] land to either the dam site or the

reservoir site, nor could they, on their own, develop it themselves, so therefore under the principles laid down in this Oklahoma case, there was no strategic value accruing to the Indians.

Finally, I think in about 1952, I had decided that we were never going to be able to come to an agreement with the Indian tribe that I felt I could live with and recommend to my superiors under the law, [so] ~~that~~ I told the tribe that I was not coming back, we were disbanding our efforts on Yellowtail Dam, and that I was not coming back unless I was invited back.

So after the Eisenhower Administration came in, in 1953, Governor Aandahl, who was then Assistant Secretary for Water and Power in Interior, passed down an instruction to me to go back to the tribe and again discuss the possibilities of making an agreement for the construction of Yellowtail Dam, because the governor had been very deeply involved in the development of the Missouri Basin, and he was still very interested in promoting the development of the Basin, so he wanted to make an additional effort to see if that problem could be solved.

But in that meeting, again we got nowhere. The tribe would not listen to any agreement that I felt that I could recommend under Reclamation law to my superiors. So I then reported back upstairs that we agreed to disagree, and that I felt that the meeting was a failure to come to any kind of agreement, that's where I left it.

Now, I understand later that Bruce Johnson, *after* Frank Clinton's tenure, he was able to work out some agreement, either politically or otherwise, with the Indian tribe that the Yellowtail Dam *was* built. I don't know for

sure, but I think Bruce told me that Senator [James Edward] Murray¹⁴ from Montana got involved in it, and he was able to push through some legislation which, outside of Reclamation's responsibilities, granted the Indians some kind of a settlement that permitted the dam to be constructed. Now, I'm not quite sure on that detail, but you might, in your other conversations with other people like Harold Aldrich or somebody, get a line on that. I think Harold followed Bruce Johnson. Let's see, there was Frank Clinton, and then I think it was Bruce Johnson. Bruce Johnson was then in Floyd Dominy's regime [as Commissioner and] was sent down to Omaha, and he became the Interior representative in Omaha, but he was not happy with that assignment.

And, by this time, I was back in Washington as Director of Engineering for the foreign aid program, and I'd been in contact with Bruce. I knew that he was interested in some new association, so I brought him into the foreign aid program as Chief Engineer of our ~~Near East/South~~[east] Asia Bureau, and then he moved on into various other activities, but his first approach was as Chief Engineer of – I said Near East/South[east] Asia, I meant our Southeast Asia Bureau, which included Thailand, Vietnam, Burma, so on.

So I was never able to really accomplish one of the things I really wanted to do, was to have the Yellowtail Dam constructed and to then create a complete network of transmission lines from Fort Peck to Great Falls to Helena to Canyon Ferry, down to Billings, down the Yellowstone River, over into Bismarck, connecting up with ~~the mainstream in the~~ network for the mainstream dams. We had set up a power dispatching entity unit in Billings, but in the later stages as more power became available

from the mainstream dams, we set up a main dispatching center, control center, I think it was over in Watertown, South Dakota, as I recall, and that was just being established when I left.

Storey: Of course, Eisenhower didn't like public power, is my understanding.

Vernon: They weren't very favorable about it, no. That's for sure. That's for sure. It was very interesting, the approaches to it. The Montana Power Company was a well-financed organization, and it was very capable. Jack Corett, vice president of their system planning, and I don't know what all his responsibilities were, he was a very capable guy, and I had a number of discussions with him trying to find some way we could come to some form of agreement. The only agreement that he was willing to settle for was that we could generate the power all right, he wouldn't object to that, if we would turn it over at the high side of the substation and feed it through the Montana power system, which then destroyed our ability to integrate this whole systemwide thing and get the maximum degree of firm power.

Montana Power Company wanted to market all Reclamation electricity

And, incidentally, there was a connection built between the Montana Power Company system and the Columbia Basin system built over to Hungry Horse, which then through our connection to Fort Peck, to our connection to Bismarck, to our connection east that tied into the Northern States Power Company in Minnesota, which connected up to the Wisconsin Power Company, which connected up to the Commonwealth Edison, or whatever it was in Chicago, that one year when the Columbia Basin was short of water, they had to reduce their frequency, rate of frequency and alternating current, [so] because all the clocks ran slow all the way to Chicago because the one way of reducing the drain of power is to reduce the

Electricity grid system

frequency, [as] ~~but~~ speed of a motor is directly related to its frequency, the alternating frequency. So if you drop it to fifty-five, [from sixty per second,] you immediately lose approximately 10 percent of your speed of rotation in a motor. So just to make the point, all the clocks ran slow as far east as Chicago, but what we had found out through our interconnections and due to the time zones, we were able to shift excess power that we had from the Columbia Basin [east], because it hadn't reached peak power with demand, shift east into our area. We would shift our [power] ~~area~~ into the Northern States Power, [which in turn] would shift to the central states around Chicago. Then [later as load demands shifted west the power would also be shifted back to the west.] ~~in succeeding hours, the power would shift backwards, the flow.~~ So we had this integrated power system where the power flowed back and forth with whomever, at particular times of day and particular times of the week, because power varies, the power demand varies during the day, and it also varies depending on the day of the week, so that power was being shifted back and forth through this interconnected system. And that was why I was so interested in creating this integrated power system for the Missouri Basin, which I accomplished to a great degree. I saw the construction of about two thousand miles of high-tension power lines.

Oh, and I didn't tell you, about 1950, when things were getting going good and strong, Brig Young – no, it was Les McClellan at that time, he'd taken Brig Young's place, Brig had retired, I phoned McClellan and said, “Les, things are going so strong here now, I've got to divest off of my desk the power program and the construction program. And so if you've got somebody you'd like to suggest for consideration as Assistant Director for those programs[,.please

suggest him.]”

Well, he first sent up Dexheimer. I had my whole top staff talk with Dexheimer, and Dexheimer talked to them and my immediate staff, George Pratt, Personnel Director and so on, talked with Dexheimer, and we never felt that Dexheimer was really interested in coming to Billings, whether it was just isolation, whether it was program content, or whether he had something else in mind, ultimately there would be a change of administration and he might become something else, I don't know. So I talked to McClellan about it, and I said, “I didn't get the feeling that Dexheimer really wanted to come to Region VI, so [do you have] if you've got another suggestion.”

Dexheimer is suggested for a job in Billings

So then he suggested a fellow named Lester Bartsch, B-A-R-T-S-C-H, who was a younger man, and he was a guy on the move. He was a gung-ho type, fitted right in with my method of operation. So I immediately selected him and had him appointed as Assistant Regional Director for the power and construction programs. Andy with his construction program, and working with John Walker, promoting the power transmission and marketing program. It worked out very well.

Lester Bartsch appointed Assistant Regional Director

So every morning that I was in the office, I would hold maybe a half-hour meeting with Bill Rawlings and Les Bartsch, and we called in whomever else I might want to brief me on what was on their plate for the day, because that's how I kept in touch with those activities. Then I kept in touch through personnel and finance on where we stood that way.

How he kept in touch with various activities

Another thought came to me there that I hadn't explained to you. So then I let ~~them~~ [Rawlings and Bartsch] operate pretty much on

their own. Oh, yes, what I wanted to say was, ~~but then~~ [that] I was devoting my attention to field operations, visiting the area offices and being acquainted in detail of what was going on in the field offices, as well as working with the state governments, state commissions, Chambers of Commerce, advising people throughout the region as to what our program plans were, what our funding requirements would be, and enlisting support before the Congress to support our appropriation requests, which was fairly successful. That's about it, unless you've got some questions.

Devoted most attention to field operations and contacts outside Reclamation

Storey: Well, we left me with you as the Special Assistant to the Regional Director. What happened?

Vernon: Well, they brought Frank Clinton in January of 1954. I called a big meeting of the regional staff and formally presented Frank to the staff, and said he was now taking over, that I was stepping down, and that from here on I fully expected they'd give him the same kind of support that they had given me, and that I was going to be in some special studies, but would not be involved in the day-to-day operations of the region. So that was in January of 1954.

January of 1954 introduced Frank Clinton to the regional staff

The Commissioner's office began looking for places that I might be placed out of Region VI. During spring, I got a call from the foreign activities office that perhaps there would be need for me to go to the High Aswan Dam, which was to be constructed in Egypt on the Nile River. I said, "Yeah, sure, I'd be interested in that."

Was going to be assigned to the High Aswan Dam project

END OF SIDE 1, TAPE 4. APRIL 25, 1995.
BEGIN SIDE 2, TAPE 4. APRIL 25, 1995.

Storey: You had talked over going to the High Aswan Dam with your wife.

Vernon: Yes. And she said, "Well, we've taken about all we can here, so why not." So the appointment was proceeding, and we put our house on the market, and I actually had a buyer. When word came through from Washington that "Hold the phone," Mr. Dulles had become disenchanted with Mr. Nassar in Egypt, and that Mr. Dulles, the Secretary of State, was not sure that we would finance the High Aswan Dam, and, therefore, there might not be any need for me in Egypt.

So I immediately had to eat a lot of crow and go to my prospective buyer and say, "I'm very sorry, but I got to take my house off the market, because I've still got to live here." This was, let's say, in May.

Then in about July, Frank Clinton came to me and said, "I've just had a long meeting with the Commissioner when he was visiting North Dakota, and we've decided, Ken, that you've about outlived your usefulness here in Region VI, and that they're seriously going to try to place you somewhere else."

Well, I said, "Okay, that's the way the ball bounces. I got to stay on somebody's payroll, and so let me know what happens."

Well, during this time, George Pratt, who had been called into Washington in 1950 to the Commissioner's staff to take on this foreign activity staff, creation of a foreign activity staff, because Mike Straus was very interested in creating a presence of the Bureau of Reclamation around the world, and he wanted George Pratt to take on that activity[.] , and I [had] argued bitterly with him not to take him away from me, but I said, "After all, you're the boss, you can do as you damn please." So George went in to Washington and then created this foreign activity

staff and was being very successful in getting Reclamation people around the world participating in under the foreign aid program, the Point Four Program. I don't whether you know the Point Four Program.

George Pratt runs the Point Four Program for Reclamation

Storey: No.

Vernon: In Truman's acceptance speech, in his inaugural in 1948, among other things, he came up with a foreign aid program which had four points. One was the Marshall Plan, and point four was the technical assistance program to underdeveloped countries, and we would provide technological assistance to these underdeveloped countries to help them develop their resources. Mike Straus wanted to be a strong part of that program, and so he set George Pratt up as this foreign activities office, drawing upon people in Reclamation that were willing to accept assignments overseas.

Foreign activities approved by Congress after World War II

Well, when the Eisenhower Administration come in, George Pratt, being closely associated with Mike Straus, it was felt that his services were no longer needed in the Washington office, so he was advised to seek another association. He then went to work for a consulting organization in Philadelphia, the Kuljian Corporation, who was also involved in overseas operations.

Storey: Can you spell that for me?

Vernon: K-U-L-J-I-A-N. He was an Armenian. The Kuljian Corporation. Now, in this interim, Mr. Wesley Nelson, who had been Assistant Commissioner, apparently felt that his presence could be better used elsewhere under the Eisenhower Administration, so he received an appointment as a member of the Development Board under contract to the government of Iraq, financed through – no, it was financed by the

Wesley Nelson moved to Development Board for the Iraqi government

Iraq government, but he still retained his American – how do I want to say this? He was still a U.S. Government employee, but the Iraqi government reimbursed our government for all of his salary and expenses. That's the way it worked. And he became a member of their newly established Development Board and also the Head of what was called their First Technical Section, which was related to irrigation, flood control, and drainage. So he was wearing two hats, and he'd been there since 1952, early 1953. That program was getting rolling.

So George Pratt had made a visit to Baghdad in the summer of 1954, and he was telling Wes [Nelson] about my situation – that I might be available. So Mr. Nelson then put a request in to the Director of the Foreign Aid program, at that time it was called ICA, International Cooperation Administration, which is [was headed by] Governor [Harold] Stassen, formerly of Minnesota. And while there were some demurements announced, [in] political quarters, about my getting a “fat job” in the foreign aid program, Mr. Nelson was able to convince Mr. Stassen that I had the qualifications for his support in Iraq to take over the job of the First Technical Section, and that he would then concentrate on being a full-time member of the Development Board. Because by this time the activities in Iraq had begun to roll, just as they had for me in Billings when I was getting the Missouri Basin established. He then had a full-time job as being a member of the Development Board, and he had to shed himself of the responsibilities of the First Technical Section. He recommended to the Development Board that they make a request to our foreign aid program to send me to Iraq.

So I ultimately wound up in Iraq as the Head of the First Technical Section, which, in

Vernon is requested by Wesley Nelson for work in Iraq

International Cooperation Administration

Vernon takes over First Technical Section in Iraq

Director General, First Technical Section, Iraq

their parlance, was the Director General, the D.G., for the section – [which was the equivalent of a bureau in our structure]. But they didn't think that foreigners should hold the title of D.G.; they called them “Head.” The Rais of Alfamya – let's see, the Rais was the head; Alhaya, technical. Rais is head; Alfamya is first; Aluola is section. That was my title in Arabic. Rais [Alhaya Alfamya Aluola. The literal translation is head, section, technical, first.]

So I was then brought into Washington in ~~September~~ [October.] , and I went back to my original purchasers of my house and said, “Hey, my house is back on the market. Are you still interested?”

And they said, “Yes.” So we worked out a deal. It wasn't quite as favorable as the one we'd worked out in spring, because they knew I was under some pressure, and they'd been put up to some travail, also, but at any rate, we worked [it] out, so I sold my house to them.

Then I went into Washington, and I left Washington on my birthday, October sixteenth. I left to Washington on ~~my birthday~~, October ~~sixteenth~~ [thirty-first], and I went to Baghdad.

Moves to Baghdad

Storey: 1954.

Vernon: This was '54. ~~I went to Baghdad on November first.~~ I left Washington October thirty-first.

Now, one of the problems that I had, [in] a lot of people's mind[s], was I was never properly indoctrinated in the foreign aid program. In my view, and some others' view, I was a guy of some substance. I had created my own reputation. I knew how to get things done, and it wasn't felt that I needed to go through their indoctrination program of how to push

Didn't go through foreign aid program indoctrination

papers and how to exist in a foreign environment and so on, and so I never got the benefit of a month's indoctrination program in Washington. I was employed, processed, and sent to Baghdad in two weeks, where it usually takes about six months. (laughter)

Storey: So you were transferred from the Bureau of Reclamation to . . .

Vernon: The foreign aid program.

Storey: Which is part of the State Department?

Vernon: Actually, it was the International Cooperation Administration, which was a part of the State Department, of the Economic Aid Administration in the State Department. You see, in this program of foreign aid that Truman set up, which the main effort was the Marshall Plan in Europe, and that was the transfer of a lot of resources, financial resources to the then existing governments in Europe, which could absorb financial resources and get something done with it.

Went to foreign aid program, International Cooperation, Administration, Department of State

Point Four was the transfer of technical assistance through this Technical Cooperation Administration, ~~International Cooperation, ICA,~~ International Cooperation Administration. It was a separate administration, but it was under the purview of the Department of State, and so the administrator of the ICA, he held the rank of a Deputy Secretary.

Point Four Program

So I was sent to Baghdad and reported into Baghdad on November 4 second. And tomorrow we'll get into some of the interesting experiences I had in Baghdad.

Storey: Yes. Now, when you moved to Billings, what was that?

Vernon: It was January of '47.

Storey: Okay, in '47. You told me about taking the train. How did you travel from Billings to Washington, and then Washington to Baghdad?

Vernon: Well, by that time, during my tenure, during Billings, there was [only] a train system. Billings was on the Northern Pacific Railroad, which went into Chicago, and then we would take the Northern Pacific Railroad into Chicago, and then we would take either the B&O or the Pennsy into Washington. We always tried to take the B&O if we possibly could get aboard, because it was a much nicer railroad. The Pennsy went through all the Rust Belt of Michigan and Pennsylvania, and we like felt it was kind of a cattle car.

Travel from Billings to Washington

Railroad travel

But then about 1950, Northwest Airlines had begun to develop a through airlines from Chicago through to Seattle, through Milwaukee, Michigan, Minneapolis, Fargo, Bismarck, Miles City, Billings, Great Falls, and then on West, I'm not sure just where all it went. But then it was possible to take an airplane from Billings, which went through ~~there~~ sometime ~~in the~~ [Sunday] evening, and we would get to Washington [on Monday morning]. ~~We would leave on a Saturday night, and we would get to Washington sometime Sunday night, so we would be in Washington for business Monday morning.~~

Airlines travel

When we took the train at that time, we would leave Friday evening, and we would get into Chicago Sunday morning, but we had to at that time stay in Chicago for a day. In other words, there were no trains [leaving for the] ~~out~~ East ~~leaving~~ [in the daytime], so you'd spend a day in Chicago. Somebody said a pig could go through Chicago, but a person couldn't.

(laughter)

Storey: Because they were on the freight cars.

Vernon: Yeah, they were on freight cars. So freight was more valuable than people. So we would have to spend a day in Chicago. But then that would arrive us in Washington about nine o'clock, and so we were a little late for the opening of business, because the Interior Department opened at quarter of eight, and we were somewhat bushed. But oftentimes when we were going in for appropriation hearings, we would take the train, nevertheless, because I would then take a drawing room with my finance officer, and we would work on our appropriation material on the train ~~while we were in~~ [on the way to] Chicago and then on the train to Washington.

Storey: Do you remember the names of the trains?

Vernon: Well, the Northern Pacific train was the North Coast Limited. That was a beautiful train. Really enjoyed that train. It was like getting home, and their *pièce de resistance* was prime rib of beef with an Idaho [baked] potato.

Now, this was another element I didn't touch upon, but the railroads were very interested in this Missouri Basin development, because they had been very interested in project development, because it created freight for them from the irrigation developments, and so they had agricultural agents out through the Basin and keeping in touch with us as to what we were doing. And so there was the three main trains. There was the Northern Pacific, the Chicago-Milwaukee-St. Paul, and the Great Northern, which [were] in the Upper Basin and farther south was, of course, the Union Pacific, the Burlington, and the Chicago Northwestern went

**Railroad interest in
Missouri River Basin
development**

west from Chicago, and it wound up somewhere in Wyoming. I don't recall just where it wound up at its terminus, but it was never a real factor in the Basin development.

One of the problems we faced in getting around the basin was there was East and West transport, but there was no cross-Basin [transportation] development. Some—

The problem of moving around in the region

Storey: No north-south.

Vernon: No north-south transport. There was the Burlington Railroad, which came up from Omaha, up through Wyoming, eastern Wyoming, and then to Billings, then it turned around and went down through the Big Horn River Valley, to the Shoshone Project and the Riverton Project, and wound up ultimately in Denver. So until airplane traffic got developed, which was slow in developing, I developed the "Region VI Airlines." We got hold of a number of war surplus airlines.

"Region VI Airlines"

Storey: Airplanes?

Vernon: Airplanes. I hired my own pilots, and we had three airplanes in Billings and another airplane and pilot located in Huron, South Dakota, because they had to get over into eastern Wyoming all the time. Bruce Johnson, in Bismarck, Bismarck being a major center, he was able to contract, to hire airplanes there for transport around if he needed it. But we had a two-engine Beechcraft, five-passenger, two-engine Beechcraft. My pilot that I hired had been an engineer in Region II, a graduate engineer from Caltech, but he had been a Navy pilot and had flown RD-4s, that was the old Douglas, DC-2, DC-3, from Hawaii out through the western Pacific to Australia. I had a number of plane jockeys also on the staff there, but I

Hired pilots and had three airplanes

Willard Snyder was chief pilot

wanted someone who was not a hot-shot pilot. I wanted someone who was accustomed to transport flying and also had the ability to do flight scheduling, so I took on Willard Snyder as my chief pilot.

Then we set up a maintenance center in Billings, and hired an A&E mechanic, an aircraft and engine mechanic. So we ran a three-airplane fleet out of Billings for cross-Basin transport, because there was no way we could get to Huron, for example, from Billings direct. We had to go to Denver and then back up through Rapid City and then over to Huron, or go to Minneapolis and then back around to Huron, but it was only about three and a half hours in the twin-engine aircraft from Billings *direct* to Huron. I insisted that we would not schedule our plane to Denver unless there were at least three passengers. In other words, it was not cost-effective to fly our twin-engine aircraft to Denver, back and forth to Denver, unless at least three passengers. So I had a standing order that people that had business in Denver had to post their requirements with our airplane headquarters so that they could plan if enough people needed to go that they could plan a trip to Denver, which worked out very well. As I recall, we got our cost down to about ten-cents-a-seat mile or something like that in that twin-engine aircraft at that time, something like \$50 an hour flying time.

Storey: What was the train you'd take out of Chicago to Washington?

Vernon: Well, it was either the B&O Columbia – Columbia? Columbus? Something like that, however. And also on the Pennsy, Pennsylvania, I forget what the name of that one was, but that wound through all that Rust Belt and down through Indiana and Ohio and into

Pennsylvania, went through Pittsburgh, and down to Harrisburg, into Baltimore, and ultimately finally got into Washington.

On the B&O, Baltimore and Ohio, that was a more direct route, and somehow I've forgotten the towns we went through on that, because it was at night, but they weren't so large, but we went through western Maryland and came down the Potomac River and directly into Washington.

Storey: Maybe through Harper's Ferry there?

Vernon: Yeah, Harper's Ferry. We didn't have to go through that Baltimore stop. We went directly into Washington, so it was a little easier trip. And it was a nicer trip, because that train [had] ~~was~~ better [accommodations] accommodated – and one thing I always remember about it, the dining car, they served a tremendous salad bowl about like this, that the waiters would carry around that you could dig into.

Storey: Two feet across.

Vernon: Two feet across. And, oh, it was lovely. And it had a lot of bleu cheese in it and a lot of other goodies, so we used to really load into that.

Storey: That was the B&O train.

Vernon: That was the B&O. Their train was better kept up than the Pennsy.

Storey: Well, I appreciate your spending all this time with me, and I'd like ask again whether or not you're willing for researchers inside and outside Reclamation to use the tapes and the transcripts from this interview.

Vernon: Well, [unclear]. I signed it yesterday. I want

this to become a permanent record and available, so, yes, of course I agree.

Storey: Good. Thank you.

END OF SIDE 2, TAPE 4. APRIL 25, 1995.

BEGIN SIDE 1, TAPE 1, APRIL 26, 1995.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Kenneth F. Vernon, at his home in Fullerton, California, on April the 26th, 1995, in the afternoon. This is tape one.

Could you tell me a little more, Mr. Vernon, about the Delta Division? Was there more than one office in the Delta Division, for instance, that you remember?

Vernon: Yes. Initially there was only the one office located in Antioch under the control, or direction, of Mr. Oscar Boden, but about a year or two later, the project began considering the movement of water from the Delta down [south] or up the San Joaquin Valley, whichever you want to call it. The effort became large enough that a satellite office was established at Tracy. That was under the direction of a Mr. George Imrie, I-M-R-I-E, who had come from a project in Utah and other areas of the Bureau effort. We had a full field staff [in Antioch] and a small office staff located in Tracy.

**Delta Division of the
Central Valley Project**

**Oscar Boden in the
Antioch office**

George Imrie

The Antioch office continued directing the work on the Contra Costa Canal, and we worked the studies of the Delta Cross Channel, or the movement of water through the Delta, out of the Antioch office because it was closer.

Storey: And the Antioch office is where you were?

Vernon: The Antioch office. So I did ~~as well as the~~

In the Antioch,

California, office did
office engineering work

office engineering such as all of the contract control estimates, all of the revisions of Denver office designs to meet field conditions, that sort of thing. I also did office engineering work, such as similar work related to the planning work of the Delta-Mendota and the Delta Cross Channel. And I had a small staff associated with me.

Storey: You weren't a supervisor at that time, were you?

Vernon: No, there was another gentleman named Mr. Stubblefield, who was a very elderly gentleman, who was the ~~nominal~~ [titular] Office Engineer.

Storey: Why do you say ~~nominal~~?

Vernon: Well, Stubb had a good career, but he was in the closing years of his service and at times he needed a great deal of support. As I've evidenced at the time, you remember when I spoke about when Mr. Boden had taken the revised estimate for the Contra Costa Canal to Sacramento and it [had] come back and gave Mr. Bellport and me what for?

Storey: Yes.

Vernon: Because we had missed something or had not called his attention to an obvious error in his estimate. But Mr. Stubblefield had been responsible for the review of Mr. Boden's report, and so this was evidence of Mr. Stubblefield sort of losing his grasp with what I might call reality at times. So I literally became the effective Office Engineer, although I did not hold the title.

Storey: I notice that you say "Office Engineer," and I believe a few moments ago you said "Field Engineer."

Vernon: Oh, yes.

Storey: What are we talking about here?

Vernon: You need to understand the structure of a field office. In Reclamation's field structure, there's *the* Project Engineer or *the* Construction Engineer who heads up the effort. He is supported primarily by a Field Engineer, who is really the deputy Construction or Project Engineer, and he controls and directs all the field operations. If it's construction, he has the supporting inspection crews, the survey crews, the laboratory crews that have to do with the construction or all field operations.

**Field and office
engineers in
Reclamation**

The office engineer directs and supervises all of the office operations, engineering operations, and as those engineering operations are related to making computations and record keeping, design estimates, [revisions,] and so on, supporting the field operations. The project structure also includes, back in those days, what was called the Chief Clerk. We would now call him the Administrative Officer. He supervised and directed all of the administrative functions, such as personnel, purchasing, and basically financial records and so on. So that basically was the old structure.

**Functions of the chief
clerk**

Now, after the war, the structure changed somewhat and we got such things as Purchasing Agents and Financial Officers, and the Chief Clerk became the Chief Administrative Officer.

Storey: Okay. Now I'd like to explore a little bit how the office engineers related with the field engineers. For instance, yesterday or the day before, we were talking about how things were designed, how you would send the information to Denver, they would design it, it would come

back with that little note that would say, “As instructed in the field” on it. So who was doing what in all of this process?

Vernon: This related particularly to any structure to be designed, such as in canal work there would obviously be highway bridges, for example. There would be road crossing structures of a different nature, such as you might call them a large culvert, or another hydraulic structure called a siphon, which would cross a depression. It’s really an inverted siphon, but they were called a siphon, but basically they were a pressure pipe, which would start at one side of a depression and go down through the lowlands of the depression and come up on the other side.

How field and office engineers related to designers in Denver

Now, besides our general topographic maps, which we used for layout purposes of the canal system and its distribution systems, we would, at major construction sites, prepare a detailed map of a much larger scale, such as perhaps our general topographic maps would be of a scale of one inch equals a hundred feet, or one inch equals two hundred feet on the ground, but at major structure sites we might make a detail map as small – or as large, I should say, as one inch equals twenty feet or one inch equals forty feet and so on.

At major structure sites, we would then prepare a detailed map of that structure site, a topographic map of that structure site. We would include such data as the dimensions of the canal at that particular site, we would include any foundation information that we might have made, such as borings to determine critical foundation elements. This would all be prepared, packaged up. I would prepare a written report accompanying that map that the Construction Engineer, Mr. Boden, the Project Engineer, or at that time the District Engineer,

he would then submit that to ~~Washington~~ [Denver] with copies to Sacramento for record purposes.

When I was in Denver, we would receive such information from the field, then the designers would sit down and design the structure that seemed to be required, whether it be a bridge or a siphon or a culvert or whatever, and then prepare what would later become the contract drawings to be included in the later contract specifications for construction.

- Storey: Okay. Now, before we go on, you were saying we would prepare the map and then you would write –
- Vernon: A report accompanying that map.
- Storey: Who is "we"?
- Vernon: Well, when I said "we," I meant our office staff. I actually wrote it with the support of –
- Storey: You wrote the text?
- Vernon: The text. My staff prepared the detailed maps. I supervised the preparation of those maps.
- Storey: So they went out in the field to get the data to be able –
- Vernon: No. The field staff, under our instructions, would do the detail. We told them what we required to prepare this report. They would develop the field data, submit it back to us. I set up a system, probably the equivalent of many other places, but first you had your line surveys. I set up a system with the heading of T, T1, T2, T3, which meant transit [survey] book, so those were the transit surveys. Then immediately following the transit books, the [level] transit

surveys, was the leveling information which established elevations along the line, controlled elevations. Those were recorded in a series with a heading of L – level.

Then after we determined – "we" being the gross effort, the field staff and the office staff – had concluded that the location of the canal was in the proper place, then a third survey would start, which was what we called cross-sections, which established detailed measurements at right angles to the canal line from which we could plot and compute excavation and fill quantities. That series of books was headed with an X, meaning cross-sections.

Now, these books, [were kept in] ~~we had~~ a very large safe in the office – "~~we" meaning our whole effort, staff.~~ There was a large safe which we accounted for everything every night before we closed up the office, locked it in the safe, because these were our basic and final records, so they had to be protected. But every night the safe was locked, and then every morning the Field Engineer would come in and look over what of the field books that he would need for his particular efforts that day. He would have to sign out that he had taken those books, and then in the evening those books would have to be returned and signed in again. So there was very careful control. And this fell to me to keep that record, or as my office staff did, to keep that record of who had what books and where they were, because this was the final, so to speak, legal effort of the results of all the field work.

Keeping records in the office safe

Storey: So now, if I'm understanding – not being an engineer, you know, I have trouble with some of this – the first two books would give you the route of the canal, say, and the various

elevations along the canal.

Vernon: Those were the first two books, right.

Storey: And then the third book, the cross –

Vernon: The cross-section book.

Storey: The cross-section book gave it width?

Vernon: Width, width. And then from that you could compute the quantities of excavation and/or fill.

Storey: Okay. So out in the field, then, under the Field Engineer, would be survey crews?

Vernon: Survey crews, construction supervisors, construction inspection, construction laboratory, and any other field operations.

**Field engineer
supervision**

Storey: What kind of a lab are we talking about?

Vernon: Well, you see, when you get into construction, you need to have careful control over particularly the strength of the concrete that you're producing for construction, because the designers have specified that the concrete mix must develop a certain strength per square inch to meet the criteria of their design.

So it was necessary, then, to run a continuous record of the daily concrete mixes and samples were taken regularly as to the proper mix of cement, aggregate, and water. Then those samples were put into curing rooms, except sometimes we would put them in a water bath. We had a small testing machine in which these samples could be tested, and this testing machine tested them for whether they were developing the proper strength, indicating whether the mixing of the concrete had been properly performed and the additives that were

required had been properly added.

Storey: You mentioned, yesterday I think it was, that you talked about, I think it was twenty-four hour strength, seven-day strength, fourteen-day strength. When did you test it?

Vernon: Well, as I said, in the laboratory what happened was, let us say there's a bridge being built. All right. And the first thing, of course, the footings are excavated, the area for the footings is excavated, and the base prepared. Then the forms are set up so that the proper shape of the footing would be prepared. Then the steel work was installed. All right. Now we're ready to pour the concrete, so then the necessary aggregate are assembled, including the cement. Now, it's very necessary, very important, in mixing [concrete] ~~ement~~ that you observe not only the mix of various sizes of the aggregate, such as stone and sand, but also the proper amount of cement that goes into the mix, plus careful control of the amount of water that goes into the mix.

Concrete mixing and testing

Concrete work

Now, we have found – "we" meaning engineers – have found over time what we call the water-cement ratio is very, very important. As a broad general description, a [generic] mix called the 1-2-4 mix, which is one part cement, two parts sand, four parts gravel is the standard which will produce usually better than 2,800 pounds per square inch of concrete. All right. But we have found that you get better strength [and workability] if you temper this just a little bit and add a little more sand and a little less of the gravel. Depending after you've taken tests in the laboratory to define the elements in the sand and the various sizes of the aggregate whether you're going to limit yourself to one-and-a-half-inch aggregate or two-inch aggregate or four-inch aggregate, whatever, depending on

the size of the form that you're going to be pouring this concrete into, you may tamper that to – let us say 1 to 2.2 to 3.8, but you're still around the 1-2-4 mix, which is one part cement to six parts aggregate.

Storey: And you're saying tamper, like to tamper with something.

Vernon: Well, you adjust. You adjust. See, what you do – sand is a mixture itself of various sizes of grains, and it has a certain workability, depending on the size of those grains. It also has a certain amount of voids in it. You don't think of sand of being voids, but sand has a certain amount of voids to it, open spaces in the interstices between the grains of sand. And the gravel also – you obviously understand the idea of the interstices between the gravel because you can see them.

Now, what you want to do is you want to adjust your ratio of sand to gravel, which, as well as you can, fill the interstices in the elements of the gravel with the sand. Now, then, the other notion is to complete your function of getting workability with your cement, with your concrete, is to adjust your cement quantities, so they, in turn, fill the interstices of the sand which is left after filled interstices of the gravel.

Then you've got a question of workability. In other words, depending on the shape of your form, [whether] ~~which~~ it's a mass concrete or whether you're working in a complex structure like the beam of a bridge or the foundation of a bridge, or whatever, you adjust, through laboratory studies, the best mix of the elements that go into your concrete which give you the necessary workability. Then you have to be very careful as to the amount of the water that you add to the mix. We found that the

less water you add, the stronger your concrete will come out. But you have to add water to get workability. So this is called the water-cement ratio.

In dam work, there they go through all these exercises that I'm talking about, but again, in order to reduce this water-cement ratio, or shall we say reduce the water to the cement ratio, they add additives to the concrete which almost gives it a jellylike substance, and you walk on the concrete after it's been poured into a large block in a dam, for several days it actually feels like it's a Jell-o sort of thing, because it slows down what's called the heat of hydration, which is the chemical action of the cement and the water.

In dam work, you also then add refrigeration pipes to this mass concrete, because that concrete in its chemical reaction of the cement and the water and so on, in a big mass of concrete it can get up to, say, 150 degrees. So you set up a refrigeration plant and circulate cooling water through this mass of concrete to reduce that and remove the heat of hydration of the chemical reaction of the cement.

Now, what you want to do – you asked what about this relative strength. You want to find out as early as you can in a structure how quickly can you remove the forms. And that relates to the, as I said, the one- or two-day strength and the seven-day strength. Concrete *will*, within about three days, if it's not subject to any stress like in a footing or in a wall, say, you can remove those forms in about three days, and the wall will support itself if it's not under other stress. But now on a beam, you may have to maintain your form work as high as seven days, because now that concrete has had to develop

enough strength to withstand whatever stresses that beam will be put under, including just its own weight. Does that answer your question?

Storey: Well, I think we're getting there, yes. (laughter)
If I knew how to ask the question so that you would understand it, it would help. So, now, if I'm understanding correctly, the lab for the Delta Division would first of all determine what the mix should be for the various structures, and they would do that on the basis of the concrete available to the contractor and the aggregates of various kinds. Then the concrete is placed in the structure, and during that placement, Reclamation's inspectors would be out there and they would take samples of the concrete.

Vernon: Correct.

Storey: And if I understood what you were saying, they would take them back, they would cure them, and then they would test them in machines.

Vernon: Yes.

Storey: How long did they wait in order to test them? For instance, did they do a test after twenty-four hours and after seven days? Or did they just do it once? How's that work?

Vernon: Well, depending on where the concrete was being placed. Any particular sample or any particular list of set of samples would be subjected to a different scheduling of tests. It if was like in canal lining, for example, which was resting on dirt, it was not really subjected to any stress, so to speak of, other than temperature, probably the testing and strength testing program was not so severe because its strength was not really an issue.

But in a structure, you usually went

through, say, a three- or four-day test to see that the thing was properly starting to contain its strength, and whether you could start removing forms. You get the seven-day test and then you take the twenty-eight-day test. This was a twenty-eight-day test, because you wanted to know. That was the test that determined that it was meeting the design specification.

Now, normally speaking, this mix – I just mentioned the basic 1-2-4 mix adjusted to meet the field aggregate conditions, would develop at least 2,800 pounds per square inch, normally it would develop about a strength, a compressive strength, that is, of about 3,500 pounds per square inch. About the only reason why it wouldn't make that strength is if too much water was used and therefore a slurry developed and a lot of the cement washed out or it hadn't been mixed properly and you get what's called honeycombing, and it wasn't an adequate mix, there was sand filling the voids of the aggregate, if you look at a wall and you can see coarse aggregate, you don't see a smooth surface.

The standard that we were using at that time for Class A concrete was by the American Concrete Association and adopted by the civil engineering societies, was 2,800 pounds per square inch. In later days, because of this advance in technology of concrete, it was getting up to 3,500 pounds per square inch and even as high as 5,000 pounds per square inch in certain very critical mixes.

Storey: Good.

Vernon: That's it.

Storey: That's very interesting, thank you. Now, as Office Engineer, as this design process was developing, did you ever go out in the field?

Vernon: Oh, yes.

Storey: Why?

Vernon: Well, to observe what was going on. In other words, to keep abreast of field conditions as they were developing in the field. Not regularly. As a matter of fact, a lot of the times [that] I went in the field was on my own time, just to keep track of what was going on in the field. Also at times, at critical structures, I'd want to go out there and just see how things were developing on site, such as a bridge or a siphon, one of these inverted siphon structures, and to see how the contractors were developing the form work to construct some of the hydraulic structures, because one of the things we want to avoid in hydraulic structures were sharp corners, because that creates turbulent flow and some of the form work is very difficult. Sometimes it took a little bit of figuring out how the contractor was going to create this form work. So I'd like to follow out how contractors were developing this form work so we could then translate that back into future design work, in other words, to avoid creating an idea that a contractor couldn't make into forms.

Why Vernon went into the field

Storey: What kind of hours did you work in the office, normally?

Vernon: Fundamentally; it was eight-to-five. At first we worked six days a week. Then we got the PWA pay, when they were trying to make work, we got Saturday afternoons off. Sometimes we worked alternate Saturdays. In other words, worked one eight-hour Saturday and take the next Saturday off. Then somewhere along the line, I don't recall just when it was, the forty-hour-week developed. So not too many. But we were on call. If something was required, we were there. If some particular occurrence

Normal work hours for the job

occurred that had to have something right now, you immediately got the call and went back to work.

Storey: Were you living in a construction camp?

Vernon: No. Our office was at the town of Antioch. Now, when I first went there in 1936, Antioch was a bedroom community to this other village called Pittsburgh, which was largely this steel mill. It served as the steel mill plant, I mentioned, and some of these chemical plants. So Antioch was considered a better place to live, and it was usually fully occupied by people who – these towns were only about five miles apart – by the better-paid people working in the Pittsburgh Steel and other plants.

**Living arrangement
while working in Antioch**

So we began our service in Antioch in an apartment in Pittsburgh, and I had to drive back and forth, five miles every day. Unfortunately, the water in Pittsburgh was so filled with minerals, I would carry water from Antioch each day, about four gallons at a time, for our drinking purposes and ablutions, but we only used the local water to do the laundry work, and it used to form such a terrific curd in the water that you could hardly get it out in the rinsing and the washing machines.

We kept eyeing things available in Antioch, and after about a year, we saw a little house become available which we rented, were able to rent, so we moved over the Antioch.
[Tape recorder turned off]

We lived [in Antioch] ~~there~~ until I was transferred into Washington in 1943, winter of '44.

Then some time later, the Contra Costa Canal work was coming to a close, so the main

effort, the main office was moved to the Delta Division office, the Delta-Mendota Canal office in Tracy, and the . . .

END OF SIDE 1, TAPE 1. APRIL 26, 1995.

BEGIN SIDE 2, TAPE 1. APRIL 26, 1995.

Storey: So later on, the office in Antioch just became . . .

Vernon: A satellite office of Tracy.

Storey: For O&M on the Contra Costa Canal.

Vernon: Yeah, right. And then the main effort to – by that time, the Delta-Mendota Canal was being constructed, so that was the very heavy effort down there.

Storey: Let me go backwards just a little bit to the Denver office. You mentioned hydraulic studies while you were in the Denver office. Were you working in the lab there?

Vernon: No. I was in the canal section. In the design of a canal, you have to design the section and hydraulics of the canal so that you can establish various elevations. It's the water surface, the elevation of the water surface, which is your control, not the bottom, but it's the elevation of the water surface, because that is equivalent of the hydraulic gradient of your canal system. Each structure that the water passes through, it loses a little bit of elevation due to turbulence, so you have to make a whole series of hydraulic studies depending on the type of canal section you have, whether it be earth or whether it be concrete or pipe or whatever. So as the designs proceeded, you had to take the kind of design that was being developed into consideration, and each type of structure, we had learned by experience, that you used an empirical formula to calculate what we called the head loss, or the

Worked in the canal section in Denver

loss of elevation for the water surface.

For example, if you're going through an inverted siphon, the water [enters at the upper end.] ~~comes here.~~ Now, your water is approaching it at a very slow velocity. You run it through a transition section which goes ~~out~~ into this pipe, and in through the pipe, you then speed it up to somewhere around from, let's say, a velocity of maybe two or three feet per second up to a velocity of ten or twelve feet per second. That requires a loss of head to do that.

Design issues on canals

Now then, going through this pipe you have a certain amount of head loss forcing this water through that pipe, that has to be calculated. Now, at the outlet you're going to reduce the speed of that water from its ten or twelve feet per second down to canal velocity again, so you get some recovery of that hydraulic [head]. So you have an overall loss of head, we call it, which is hydraulic elevation, to force this water to speed up and then recover, and so then you establish a new water surface elevation at the outlet of your structure. So you have to continue to adjust that depending upon the designs that are created as your design work proceeds.

I remember one of the major studies that I made was on the All-American Canal, I've forgotten now all the details of it, but there was some questions that came up about something in the All American Canal, and they figured I knew more about that than anybody, so I made that study on the All-American Canal and established a whole bunch of elevations for various points along the All-American Canal. That took water from the Colorado River along the Mexican border and then into the Imperial Valley.

Work on the All-American Canal

Storey: And avoided the canal going into Mexico.

Vernon: Yeah, yeah.

Storey: While you were in Denver, did you meet Ray Walter?

Vernon: Who?

Storey: Raymond F. Walter.

Vernon: No, I never did. I reported in to Sinclair O. Harper, who was the Assistant Chief Engineer. Mr. Walter made a lot of visits to the field, but since all my correspondence was signed by Mr. Harper, I reported to him. The Denver office, at that time, the main office was in the Custom House, over by the post office. It was called the New Custom House. The Canals Division was located in a bank building a few blocks away. There were several elements in that bank building. I remember, I think we were on the eighth floor, as I recall. On our particular floor there was the Canals Division, there was the Bridge Division, and over here was [also] the Tracing Division servicing I don't know how many elements, but I know that it serviced the Canals Division and the Bridge Division, but I don't know what other divisions. Then on another floor were the "eggheads," which was called the Technical Division, and they were performing all kinds of "gee whiz" studies, of what I don't know. laughter) But it was called the Technical Services Division. I was never quite sure what they were doing.

Sinclair O. Harper

Location of the Canals Division

Technical Division, the "eggheads"

Did I meet Mr. Walter? Not many of us did. I remember one time there was a chap, a Mr. Wilhelm, who was one of the boys down in the trenches, and he was known as a sort of a wag. He was alleged to have said one morning, "Gee, fellows, I had a long conversation with Mr. Walter this morning."

Raymond F. Walter

"You mean *the* Mr. Walter?" said we.

"Oh, yes, the real Mr. Walter."

"Well, what did he say?"

"I said, 'Good morning, Mr. Walter,' and he said, 'Uh.'" (laughter)

Storey: Was that a general experience? (laughter)

Vernon: Yeah. (laughter) There's another story about Mr. Walter, but I won't tell it on the machine. [Tape recorder turned off]

Storey: We're talking about Grant Bloodgood now.

Vernon: I didn't know Grant Bloodgood's earlier history, but I'd heard of him through my association with Charlie Anderson, who I mentioned earlier, who was Office Engineer at Shasta Dam. But Grant Bloodgood was the Field Engineer in charge of field operations at Shasta Dam, so I'd heard of Grant Bloodgood.

Grant Bloodgood

Then later, after I became Regional Director at Billings and Grant had moved into Denver as the Assistant Chief Engineer, I got better acquainted with him because Charlie Anderson had moved to Billings and was my Regional Engineer of design and construction, and Grant would visit us, and Andy would squire him around.

We were ready to have the foundation inspection of Canyon Ferry Dam. I assembled a group, first in Billings, which was composed of the consulting board, I don't remember who was involved in that, but Mr. McClellan was the Chief Engineer and he was accompanied by Grant Bloodgood and Ken Markwell, the Assistant Commissioner. So my wife agreed

Foundation inspection at Canyon Ferry Dam

that she would entertain all these gentlemen for dinner that evening. Well, apparently she and Grant hit it off tremendously, and Grant really enjoyed the evening, if you understand what I mean. [Now] ~~Then it came time that~~ I was going to take Mr. McClellan and Ken Markwell in the plane and fly them up to Canyon Ferry the next day. We, of course, didn't take everybody. We assigned the consulting board and Charlie Anderson and Grant Bloodgood to ride the train. It left Billings about midnight and would get into Helena the next morning, which was adjacent to the Canyon Ferry Dam site. We had a very difficult time getting Grant to the train. He'd enjoyed himself so much that evening, every time we'd get everybody outside, we'd say, "Where's Grant?" Well, he was back in the house enjoying himself again. And it took us quite a while to pour him into the train.
(laughter)

Storey: Let's see. Another person, you mentioned Walker Young was in Denver at that time. If I'm recalling, he was Construction Engineer at Hoover.

Vernon: Yes, he was the Supervising Construction Engineer at Hoover Dam. Then he was transferred over and became Supervising Engineer of the Central Valley Project. Then after the death of R.F. Walter [and Sinclair O. Harper as Chief Engineer], he was moved in to be Chief Engineer in the Denver office. Since I had been on the Central Valley Project, I was known as one of Brig Young's boys.

Walker R. Young

So what else would you like to know?

Storey: I'd like to know about Walker Young. What was he like and all that?

Vernon: Well, he was a very nice gentleman, thoughtful,

courteous, apparently a very capable administrator, because he had managed the Central Valley and the Hoover Dam. When I had some problems I needed to discuss with somebody, particularly project problems or construction problems, or whatever, I could talk to Walker Young and he'd give serious consideration to it.

Storey: Now, wait. Walker Young is what you're calling "Brig Young," is that right?

Vernon: Yeah. Everybody knew him as Brig Young. In the parlance, he was Brig Young. He was Walker Young, Walker R. Young, but his colloquialism was "Brig."

Storey: Oh, okay. Why was that?

Vernon: Well, I don't know. That was before my time. He had been on the Yakima Project. He had also made a study in the early 1920s, a study of how to prevent the salt intrusion into the Delta area on the Suisun Bay and ~~San Joaquin~~ and San Joaquin Rivers. He was the head engineer on that study for Reclamation. So he had a long history of Reclamation activities.

Walker Young studies saltwater intrusion into the Delta area on Suisun Bay

Storey: You mention Sinclair O. Harper, also, another figure that keeps popping up all over Reclamation's early history.

Vernon: At that time, I was a lowly junior engineer, so it was sort of like the Cabots speaking to Lodges and only the Lodges speaking to God, you know. Sinclair Harper was someone I only know principally by name, because I think I reported to him, and he immediately told me to go somewhere else. (laughter) But apparently he was a very capable engineer. Then he ultimately became Chief Engineer [after Raymond F. Walter. One thing I remember about S. O.

Harper was one time when he was visiting the Washington Office, and we were sitting around shooting the bull, he said, “yeah, I know, you have had the most meteoric rise in the Bureau.]

- Storey: Yeah, he was actually Chief Engineer before Walker Young was.
- Vernon: Oh, *that's* right. That's right. I was just going to say. Because I suddenly caught myself. I remember when we were in the midst of our heavy program in the Delta Division, he made an inspection trip to the project, to the Delta Division. We picked him up at one end of the project and deposited on a low flight in a car at the other end of the project. I think his visit lasted all of two hours.
- Storey: What about Chief Design Engineer Jack Savage? Did you meet him?
- Vernon: No, because, you see, I was in the Canals Division, and Savage made his mark on dams design. So I never was involved in the group that was involved with dams design. I only knew him by reputation as a very forward-looking dam designer.
- Storey: After you left Denver, you went to Washington?
- Vernon: No, no. After I left Denver I went to . . .
- Storey: You went to the Central Valley, *then* you went to Washington?
- Vernon: Yes.
- Storey: Did you meet Harold Ickes and Julius A. Krug¹⁵ while you were there?
- Vernon: Yes, yes.

-
- Storey: And the assistant secretaries, could you tell me about all these folks?
- Vernon: Well, now it's a little difficult for me to – starting with Harold Ickes, it's a little difficult for me to decide what I actually know by personal contact and what I know because I read a biography on him which was very interesting. It's about that thick [indicating several inches]. He's a very complex personality.
- Storey: Yeah, quite a thick book.
- Vernon: And I learned about his history in Chicago and so on and how he happened to become Secretary of the Interior. But he apparently was a very able administrator, and he not only ran the Interior Department, but he also ran the PWA program and the Works Progress Administration. And he was supported, *at that time*, by Abe Fortas as Under Secretary.
- Storey: Mr. Fortas is actually the person who signed the Bureau of Reclamation's reorganization document in early 1944 when the regions were created.
- Vernon: Was he the one who signed that document? Well, I found that there were certain anomalies going on within the Department, which, after reading his biography, I better understood and answered some of the questions I'd had, because there were certain people within the Department, the Department structure, that I always wondered what their role was. I found out later, for example, Mr. Ickes wanted the Forest Service. He wanted to get control of the forestry resources of the United States and he fought regularly with the Secretary of Agriculture, because he felt that the Secretary of Agriculture was being dominated by lumbering interests, whereas Mr. Ickes wanted to develop the

conservation of the nation's timbering resources.

So he had a special assistant whose principal role – well, he was a forester. What was his name? Lee Wood. Lee Wood. I don't know why, but I had some relationships with Wood. I don't recall what they were for, but I got to know him, and I always kind of wondered what his role was in the Department, why was there a forester in the Department. He was obviously in the upper echelons of the Department. Then I find out by reading the biography that Mr. Ickes was desperately trying to get hold of the Department of Forestry, to get it in the Interior department.

He also had a group which was called the Power Division, which was headed up by a gentlemen known as "Tex" Goldsmith, and he had another bunch of guys. They were the ones that ran herd on the Tennessee Valley Authority, provided staff assistance to the Tennessee Valley Authority, and then established the Bonneville Power Authority and the Southwest Power Authority. I don't recall what other power authorities were established, but under the general purview of the Department. And apparently this was a part of Mr. Ickes' and others' effort which might lead to the establishment of other Valley Authorities. Their first move was the establishment of these power marketing authorities.

The Under Secretary and the Secretary that I became most familiar with was Oscar Chapman,¹⁶ because, as Regional Director, as I told you earlier, before I became Regional Director, I had an interview with Julius Krug, known as "Cap" Krug, Truman had appointed [him] as Secretary of the Interior after he fired Harold Ickes. So I did not have too much

Power Division in the Department of the Interior

Secretary of the Interior Harold Ickes moves toward regional authorities

Oscar Chapman

Julius Krug

association with Krug, although he did make a couple of visits to the region, meeting primarily with local big-wigs in the region which we would try to set up for him. Reclamation was only one of the interests that he was reviewing while he'd be out there. So we had very little association with him.

But Oscar, as Under Secretary and as Secretary of the Interior, I got quite familiar, well, I became quite familiar with Oscar for two reasons. One was he was interested in Reclamation because he was a Coloradan, and the other was that because I was one of the leading government officials out in the Missouri Basin, it fell to me to squire – what was [Thomas E.] Dewey's first name, the presidential candidate of 1948, [around my area]?

Tours Missouri Basin area with Thomas E. Dewey

Storey: Well, embarrassed though I am, I don't remember for sure.

Vernon: Well, at any rate, I got notified that Mr. Dewey was making a campaign trip out through the region and that I was delegated to become his *aide de campe*, so to speak, and arranging for him to visit many of the Reclamation – become familiar with the Reclamation and the Missouri Basin effort and squire him around a bit.

Following that, I was deputed to ride Mr. Truman's train. He was making a non-political trip out through the West, and his train would be routed through the Missouri Valley. I was told the trip would not be labeled for political purposes; he was inspecting Reclamation Projects as he traveled through. So I was deputed to ride his train and be on call in case he needed any particular information about Reclamation, which, unfortunately, he didn't seem to need. (laughter)

Traveled with President Truman during a visit to Reclamation projects in the area

Then in 1950 –

Storey: So you escorted the two opposing candidates.

Vernon: Then in 1950, I was again deputed to ride the President's train, Mr. Truman, and this time he did take a little more interest in what was going on in Reclamation because by this time we had things going on. The mainstream dams were being built and he was interested in the Missouri Basin development because he'd grown up in the Lower Basin and he understood [it]. He strongly supported the Corps' program for flood control in the valley. So he was more interested.

Again rode President Truman's train in 1950

I recall we stopped in a little city – we'd been through Great Falls and we stopped in a little village, out in the hinterlands, on our way to Havre, Montana, which was the departing point to go visit the Tiber Dam site, which we were inaugurating the construction of the Tiber Dam. Well, this was a lovely afternoon in the fall, or evening of the fall, early fall. I saw Oscar Chapman at one of the whistle stops and I said, "Oscar, can I meet the boss? Do you suppose you could work me in so I could meet the boss?"

Oscar Chapman tries to introduce Vernon to President Truman

So he says, "Sure, why not, we'll see."

So after we left Great Falls, he said, "Come on, let's go back to the President's car and we'll see if we can find a spare moment that maybe I can work you in to meet the President."

So we went to the President's car, which was at the end of the train and in the little sitting room, which was at the end of this Magellan car

–

Storey: Magellan car?

Vernon: Magellan was the name of this private car which had been built to protect Presidents. It was literally a battleship on wheels. And in this little sitting room, which was about as big as this alcove here, was Mrs. Truman and the daughter .

Storey: Margaret.

Vernon: Margaret. So Mr. Chapman introduced me to Mrs. Truman and Margaret. The President was out on this little platform out on the back of the car, from which he made all his speeches, and he was out there with one of his aides, and so Mr. Chapman said to Mrs. Truman, "This is Mr. Vernon, the Regional Director of the Bureau of Reclamation who's in charge of all the Reclamation activities in this area, and he would like to meet the President. Do you suppose we could interrupt the President so I could introduce Mr. Vernon?"

"Oh," she said, "sure, he's just looking at the scenery out there. Go on out there."

And so just about as we went and got up to go out there, some guy come rushing through the train with a lock bag on his wrist and said to Mr. President, "I have some dispatches for you."

So the President said, "Sorry people, I'm busy." So that was the closest I got to meet President Truman. (laughter)

Then later, at the inauguration of the construction of Garrison Dam, this was at the time that Eisenhower was campaigning and I was [in] one of the parties, because I was involved in the Missouri Basin development, I was one of the parties that got introduced to the candidate Eisenhower. So while I was not involved in the political arena, you got awfully

Escorted Dwight D. Eisenhower during his campaign in 1952

close to it at times, but never into the sense of determining politics, but just associated with it.

Storey: Tell me more about Oscar Chapman. What was he like as an individual?

Vernon: Well, he was a very thoughtful guy. He was a quiet sort of type. Good administrator. I believe his background was a lawyer, as I recall. But he'd been involved in resources development in Colorado and whatnot. So he was a different personality from either Ickes or "Cap" Krug.

Storey: Now, at this time he was actually Secretary of the Interior?

Vernon: After he'd become Secretary of the Interior, that's when I got to know him the best. I had some association with him, but not [so] much [when] as he was Under Secretary, as he took on Secretary after "Cap" Krug left. I forgot how long he was Secretary.

Reclamation was only one of the various efforts that the Secretary of the Interior is involved with. So you did not have, let us say, a daily association with the Secretary. Mike Straus used to say, if some question would come up, I heard him say many times, he'd call down to the Secretary's office to speak to Secretary Ickes' secretary and say, "This is Mike. Can I speak to my employer?" (laughter) Apparently he had a good relationship with Mr. Ickes.

Oscar was, I think, an effective Secretary, as I think Secretary Udall was an effective Secretary, because they were Westerners, they understood the problems, the multi interests, as was indicated in this Interior Missouri Basin Coordinating Committee, the six or seven departments that were involved there and how we were able to integrate that. But it

**Interior Missouri Basin
Coordinating Committee**

was just an indication of the broad spectrum of Interior's efforts. So each Secretary might have a particular interest in certain sections of the Interior activity. Ickes, while he was very strong with the public works program and resources development, he also was a conservationist at heart. The Park Service and the Bureau of Land Management and Fish and Wildlife Service, those, I think, were the things he *really* liked, personally.

"Cap" Krug was more interested in power development and things that were more involved with TVA and with the War Production Board and the War Utilities Office.

Oscar was more interested in broad resources development that he met up with in his experience in the West, Bureau of Land Management on Taylor Grazing [Act of June 28, 1934, ch. 865, 48 Stat. 1269] and that sort of thing, as well as the Fish and Wildlife and the Park Service. I think he had a broader spectrum of interests than the others that I've been associated with, in terms of resources development.

Storey: At that time did they have assistant secretaries?

Vernon: Well, yeah, they had – it was during, I don't recall whose administration it was when they established the Assistant Secretary for Water and Power and there was a restructuring of the level of assistant secretaries, and I think that was about 1950. So that might have been during Oscar Chapman's tenure, because Bill Warne moved up from being Assistant Commissioner and moved up to become Assistant Secretary for Water and Power. Then there was an assistant secretary which covered the Park Service, the Fish and Wildlife Service, and there was another assistant secretary that included the Bureau of

**Establishment of the
assistant secretaries in
Department of the
Interior**

Mines and the Geological Survey and so on. So they partitioned out among the assistant secretary level [the] to various agencies¹⁷ in the Department. At times we wondered if the head of *our* [bureau] department was not a strong person if the assistant secretary [wouldn't] didn't become really the effective administrator who was calling the shots.

Now, Mike Straus and Bill Warne worked very closely together because Bill had worked under him as Assistant Commissioner, so they got along very well and there was no doubt who was boss, Mike Straus was boss. In later days I was never sure, particularly in what little I saw of the Dexheimer Administration in Reclamation, as to who was boss, but I thought it was the Assistant Secretary or the Under Secretary. I forget – Tudor, I forget whether he was Assistant Secretary or Under Secretary.

William Warne and Mike Straus relationship

- Storey: Tudor?
- Vernon: Tudor.
- Storey: Yeah, Under Secretary [James Douglas] McKay.
- Vernon: Yeah, Under Secretary McKay, yeah.
- Storey: Now, there was another secretary who got Floyd Dominy appointed. That would have been Secretary–
- Vernon: McKay. He was in the Eisenhower Administration.
- Storey: Yeah, but he had been replaced, I believe.
- Vernon: Oh, that I don't know.
- Storey: I've forgotten the name right now. [Secretary of the Interior Fred A. Seaton].

Vernon: By that time I was overseas, so I don't know.

Storey: Tell me about politicians. When you were in Washington and when you were Regional Director, did you have any contact with congressmen and senators?

Vernon: Yes, yes. As Acting Engineering Assistant to the Commissioner, I helped prepare a lot of the documentation that was presented to the Bureau of the Budget and to the committees of Congress. At times I accompanied the Commissioner or his other assistants and provided them with staff support as they were making testimony to the various committee –

**Acting Engineering
Assistant to the
Commissioner**

END SIDE 2, TAPE 1. APRIL 26, 1995.

BEGINNING SIDE 1, TAPE 2. APRIL 26, 1995.

Storey: This is tape two of an interview by Brit Storey with Kenneth F. Vernon on April the 26th, 1995.

Members of Congress would refer –

Vernon: Would refer questions down to us that they'd received from their constituents, and whenever it related to an engineering problem, I would review the problem and draft a response for the Commissioner's signature to go back to the particular member of Congress, or I might even go up and explain some of the details of it before we submitted our formal response. Then as Regional Director, I would prepare my budget for the region, I would defend that before the Commissioner and his assistants. Then I would defend whatever they included in the Commissioner's appropriation request in the Department and at the Bureau of the Budget, and then would accompany the Commissioner and his staff to the committees of Congress and would supply detailed information if I was called upon to do.

**Responding to
questions from
Congress**

For example, one of the congressmen or the senators might have a particular question from a constituent, he wanted to know a little more details than the Washington staff would be aware of, and this was particularly true as the Missouri Basin development developed. So at times I testified directly before the appropriate appropriations committees. Then I became acquainted with all the members of Congress in my area, the four states in my area, and regularly as they visited their districts, regularly talked directly with them to keep them apprised of what was going on, because it was very important to them to be informed as to what was going on so they could talk intelligently with their constituents.

Just as a sidebar, one of the things we had stressed in setting up the budgeting process in the Missouri Basin, we wanted to prevent what Mike Straus used to ~~label~~ [call] his “thirty-one pocketbooks.” He wanted to keep that appropriation as one single appropriation *to* the Missouri Basin, and then he would parcel out or we would maintain a sort of fluidity within general guidelines, applying that money to the various activities.

Well, it so happened that after the – I think this was in the fall of 1947, we decided that we would advertise the contract for Boysen Dam in Wyoming in the fall of the year, but that before we could get the contract awarded, it would be wintertime, and therefore the actual construction would *not* begin before spring and there would be adequate funding to finance the contractors' activities until a new appropriation became available.

**Boysen Dam contract in
the fall of 1947**

Well, in my activities as Chief Progress Control Officer, we'd worked on the Denver office to improve its ability to award contracts at

an earlier date, not requiring quite as much review. So to my surprise, the contract was awarded in early November, and it turned out that in this new system, they had issued a letter of intent, so the contractor, which was a combination of Morrison-Knudson and Peter Kewitt, two very large Western contractors, had begun assembling equipment. One of the major elements, and the first things we had to do before we really began dam construction, serious dam construction, was to relocate the Burlington Railroad, which ran through the bed of the canyon, around the dam site and reservoir.

Now, as it turned out, in that relocation of the railroad, the construction of that, there was a great deal of excavation that wasn't required for filling, for the road bed, but would be simply deposited [off] ~~out~~ at the site and [with] no particular engineering requirements to ~~cover~~, so it was just a matter of excavating and disposing of it. And it turned out that particular winter was an open winter, so the ground didn't freeze. We were down, then, working well below the frost level, so this contractor just went hell-bent for election on excavating that railroad relocation.

**Relocation of the
Burlington Northern
Railroad at Boysen Dam**

So here I was. That was about February, and I was staring disaster in the face, facing the Anti-Deficiency Act, so to speak, which is a Federal crime. (laughter)

Storey: If you overspend.

Vernon: Creating a deficiency. So I went to the Commissioner's office and said, "Hey, look. You guys are aware of what's turned out here, and I need, oh, several millions of dollars to finance this operation for the rest of the year. What can you scrounge up in the rest of the Missouri Basin and feed it into me to finance the

Boysen operations?"

Well, they said, "Region VII has gotten a little slow on getting its program going, so we'll assign some of Region VII's money to you."

Moving money to cover the Boysen Dam construction operations

Well, the next thing I know, Senator Wherry¹⁸ had called from Nebraska, had called a special meeting of the Senate subcommittee on our appropriations, and I was called on the carpet as to what in the world I was doing stealing the money that he'd fought, bled, and died for to get for the projects in Nebraska. (laughter) Well, he was just cutting me up in small pieces, when, fortunately, Senator O'Mahoney¹⁹ from Wyoming, got wind of what was going on.

Political complications in funding Boysen construction operations

Storey: Senator who?

Vernon: O'Mahoney. He was the O'Mahoney-Milliken Amendment. He was the senator of the O'Mahoney-Milliken Amendment [of the 1944 Flood Control Act], which created our part of the Missouri Basin development. He heard what was going on, so he came in, and he undertook to create record from me that rescued me. He saved my bacon. With Wherry, I couldn't get into the record what had happened. [Wherry's position was that] "This was strictly a dirty plot of you bureaucrats to rob our good people of Nebraska of the projects that they were entitled to." But O'Mahoney was able to let me get into the record of the series of actions which had occurred, and it was a strictly logical event of moving money to meet requirements which wasn't otherwise being used. But of course this created a problem for the politicians, because after they had made their record during the appropriation hearings and so on, and with their constituents and so, then suddenly they'd have to do it all over again, because we'd take the

money, rob Peter to pay Paul, and this kind of made them a little unhappy.

I got into a similar situation to that, the reverberation of that Boysen situation in North Dakota, because I robbed a North Dakota project of some money to feed into Boysen. Governor Aandahl at that time, he took me to task about that, and [also] the people who supported the appropriation for the Heart Butte Dam. I wasn't their favorite person for quite a long while.

Storey: Can you spell O'Mahoney?

Vernon: O, I think, comma.

Storey: Apostrophe.

Vernon: Apostrophe, yeah,

Storey: O'M . . .

Vernon: Apostrophe. I said comma. Apostrophe. M-A-H-O-N-E-Y. It's an Irish name.

Storey: Yeah, which I would say Mahōney. Okay.

Vernon: Normally you would do O'Mahōney, yeah, O'Mahōney. Yeah, anybody else would call it O'Mahōney, but he called it O'Mah ahnē.

Storey: Oh, okay. Did you ever see politicians come in and try and get you or somebody else in Reclamation to do something? You know, to implement a project or –

Vernon: Yes, yes. And this is how I became less than Congressman D'Ewart's²⁰ favorite. He was the congressman from the Second District in Montana.

Storey: And you spell that name how?

Vernon: Dewart, D-E-W-A-R-T. Up to this point he'd been one of our stalwarts. He was ~~on the~~ [a] member of the House Appropriations Committee, Interior Appropriations Committee. I'd squired him around the projects many times, flew him around in our airplane and all, and he was impressed with what we were doing.

We were starting the construction of the Fort Peck-Glendive transmission line, which I had mentioned earlier. This transmission line would be located adjacent to the town of Sydney, Montana. Well, the town of Sydney decided that they needed an airport. So since we had not started any construction or anything down there, they said, "Well, could you relocate a portion of the line around the favored location of the airport?"

I said, "Yeah, we can handle that okay."

Well, it wasn't too much longer before they came back with another request for relocation. But by this time we'd started to purchase right-of-way for the easements for the transmission line. I said, "Now this is going to be a little difficult, but I'll see what I can do." So we made a second relocation.

Storey: This was at D'Ewart's request?

Vernon: Not yet. Then came a third request. This time I said, "No, fellas, we can't do it. We're committed to this location."

So the next thing I knew, Mr. D'Ewart visited me in Billings on one of his various trips to his district, and he said, "You know, we've got a real problem down at Sydney. They want to get that new airport in there and that transmission line that you're building down there is having a very serious effect on their

plans for their airport."

I said, "Yeah, I know, Wes, but under our laws, I just can't move it *again* because it adds an unneeded expense, and under Reclamation law our expenses are reimbursable to the government. So it seems to me that *if* that transmission line is going to be moved again, there's going to have to be a bit of legislation involved that would somehow excuse the expenses that we've already made and take on any additional expenses – that provide for any additional expenses in making this *third* relocation."

Well, he evidenced some displeasure at that response, because he, at that time, was on an economy kick, and he did *not* want to go before his committee and start talking about an added expenditure. So it seems that after that, I was not one of Mr. D'Ewart's favorites, and after he was defeated as a congressman from the Second Congressional District of Montana, he became Assistant Secretary for Water and Power, I think, in the Department of Interior, about the time I got sent to the suburbs.

Storey: Oh, really. Along that same line you mentioned that you had a problem with the Chairperson of the Billings Area Republicans.

Vernon: Yeah, yeah.

Storey: Do you know if she played any role in –

Vernon: Yes, indeed. Mr. D'Ewart, and I've forgotten what her name was, they were both deeply involved, because I have a letter from – I don't know whether I still have it, but I had a letter in my files from Len Hall, who was the National Republican Chairman, which indicated that in the early days of the Eisenhower Administration

**How he lost his position
as regional director in
Billings**

there was a requirement that the Republican big-wigs in your residential area had to give you their blessing. This they refused to do. Now, this was the sorry part of this situation. *I* only resided in Billings. *I* only got home to Billings once in a while for a clean shirt and see my family. My activities were spread out over *eastern* Montana, *all* over North Dakota, *all* of South Dakota, and the northwestern part of Wyoming. I had no relationship, basically, with the people in Billings.

I was supported by Francis Case²¹, the senior senator from South Dakota, to Leonard Wood. I was supported by the senior senator from North Dakota, he was Chairman of the Senate Agricultural Committee. I was supported by Mr. Lemke,²² who was one of the senior representatives in the House from North Dakota, and Senator O'Mahoney, from Wyoming, was supporting me. But none of that carried the weight of the County Chairwoman in Billings and Mr. D'Ewart in the Second Congressional District. Our activities were very small within that district, except that was where the headquarters were located.

As I understand it, when I first was nominated to go to Egypt to go to the High Aswan Dam, Mr. D'Ewart objected to that. Now, I have no record of that, but that was what I was told, that that was one of the things which caused some shaking of the tree in getting my appointment approved to that.

**D'Ewart's opposition to
Vernon's appointment to
the High Aswan Dam in
Egypt**

Storey: Did you ever run across anybody changing figures in order to make cost-benefit ratios appropriate for projects? You know, one of the big arguments and challenges that critics of Reclamation often come up with is that Reclamation *cooked* the cost-benefit ratios in order to get good cost-benefit ratios.

Vernon: No, I never saw a deliberate conversion of figures. We *often* studied many ways of calculating cost-benefit ratios, because it's a *very* elastic subject, if you understand, and there's a great deal of difference, there was at that time, a great deal of difference between the "broad economic benefits," which weren't recognized by Reclamation law, and the reimbursable elements, which *were* required by Reclamation law, and sometimes the two didn't meet. There might be broad economic developments which we couldn't take into account, but the reimbursement elements didn't quite add up. So it caused our economists a great deal of problems, particularly in the high plain states, because economics up there were pretty tough.

That was why I was so deeply involved with the state colleges and their agricultural economists and programs to somehow crank in, to the extent that we possibly could, more than just simply the reimbursement elements. But, no, I never saw any deliberate cooking of the books.

Storey: You mentioned yesterday that you wanted to proceed on construction of some project or projects without [repayment] contracts signed in advance.

Vernon: Yes.

Storey: And you mentioned a little while ago that Tiber Dam was started under you. Now, I believe that one was started without reimbursement contracts in place.

Vernon: That's right. And that was a long and difficult struggle. My approach to it was that we had been working with the people in the Marias River area and had set up various boundaries of

Cost-benefit ratios at Reclamation

Reclamation projects started without reimbursement contracts in place

possible irrigation districts. So there was no question about it, in my mind, that ultimately we would arrive at a satisfactory irrigation district contract, but also I approached it from the standpoint that the Tiber Dam was basically a part of the flood control program for the Missouri Basin, so that I argued with the Commissioner that he should accept the proposition that we would continue to work on the definition of the irrigation district and approval of the irrigation district, but to proceed with the construction of the Tiber Dam as an element of the flood control program of the Missouri Basin, which I was ultimately able to prevail, and that's how we were able to get it started.

Unfortunately, just about the time we got the darn thing started, the Korean War began, and so we had a number of difficulties really making any progress with the construction of the Tiber Dam.

Storey: So it was primarily flood control, from your point of view?

Vernon: Well, part of its capacity was dedicated to flood control on the Marias River. It had the irrigation element, yes, but it also had a flood control element. So my argument was that the irrigation element would take longer to work out, but the dam – again this goes back to your cost-benefit ratios. We were able to show that its flood control benefits would justify its construction as a part of the flood control program of the Missouri Basin.

Storey: Oh, I see, okay.

Vernon: So that is not cooking the books, but it's using some, shall we say, enlightened approach to the calculation of benefits. (laughter)

Storey: Okay. (laughter) What was the style of Reclamation managers back when you were in Denver and the Central Valley Project and in Washington? You know, people talk about democratic styles and autocratic styles and all that kind of thing.

Vernon: Well, I mentioned Oscar Boden, that I worked directly under. I mentioned also Harry Bashore as Commissioner. And I also said way back in our earlier discussions that Harry Bashore was, I felt, the only man that Oscar Boden really feared. And this goes way back to the North Platte Project days when – this is an anecdote.

Oscar Boden and Harry Bashore as managers

Storey: That's fine.

Vernon: When Harry Bashore was the Project Engineer on the North Platte Project and Oscar Boden was a young engineer at that time in the construction of the North Platte Project. As this story goes, Mr. Boden was down in a construction hole doing some kind of inspection work or something or other, and Harry Bashore climbed down in this hole and didn't like what he saw and did a royal chewing-out of Mr. Boden's rear pockets. And so apparently Mr. Boden always gave Mr. Bashore considerable respect thereafter.

Now, *I* saw that happened in Washington in my three-year tenure in Washington. After working under Mr. Boden, I found working under Harry Bashore just old home week. They were two of a kind. They demanded immediate response. They also demanded accurate responses. I told you about the time we missed the point on the estimate that he took to Sacramento.

Harry had the habit of challenging you before you really got through the door to his

office, and he'd start yelling at you before you got there. What really was a method of testing you, as to how well you'd thought through what it was you were talking about, how well you were able to defend what you were proposing, if you were proposing something. And so the better you were able to defend and discuss what you wanted and thought should be done, the better he liked it and he'd ultimately come around to this point of view, but he'd give you a strong discussion in the process.

I saw him jump poor old Bill Kubach, K-U-B-A-C-H, who was at that time Harry Bashore's Chief Clerk, the equivalent of his Project Chief Clerk, [although] he was at that time called the Director of Finance, or something like that. But to Harry Bashore, he was his Chief Clerk. Every time poor old Bill Kubach got a call from the Commissioner's office to come up front and center, Bill would start to shake, and he'd literally collapse on his way in to the boss' presence. (laughter)

Now, Harry was not a cruel man, but it was just his style of administration. Walker Young had a different style of administration. He was thoughtful, kind, considerate, knew what he was about, knew what he wanted. He demanded results. He got his staff to do their staff work. So he was a different administrator.

**Walker Young's
management style**

Storey: How about Grant Bloodgood?

Vernon: Grant, I don't think was an administrator, really. [For] my Regional Engineer, Charlie Anderson, if Grant Bloodgood told Charlie that the moon was made out of green cheese, Charlie would believe it. He was a guy who elicited strong support from his subordinates, but at the same time he *really* wasn't an administrator, if you get the distinction of the word. He'd become

**Grant Bloodgood as a
manager**

personally involved in things. He didn't take the broader view, it seemed to me. Now, that was my reaction to his way of administering things.

Storey: And after him came Barney Bellport. What about him?

Vernon: I never knew Barney as a senior administrator. Barney and I worked adjacent to each other in the Delta Division. To a certain extent, we were competitors. He had preceded me on the Delta Division by about six months. So therefore he had established certain relationships, particularly with old Stubblefield, that I've mentioned. And then I was the Johnny-come-lately from Denver, who really didn't understand project activities, you understand, although I'd spent four years with the state highway – surveys of the state highway. So I felt that I was fairly capable in my own right and understood some of Denver's requirements, and I was [ready and did] ~~open to~~ announce what I thought Denver's requirements were and tried to put them into effect. So there was some contest there.

So as time wore on, Barney got deeply involved with the surveys for – the Contra Costa Canal was being built in lands that were already into ownership. There were some very complicated ownerships, the Spanish land grants that went way back to Mexico and even Spain. So Barney got very deeply involved with the right-of-way acquisition elements, and so he pretty much devoted all of his time to that, and he spent a lot of time at the county courthouses, developing deed information and so on. He would take the elements of the canal of which my group was developing and lay out the required right-of-way boundaries and then would do all the preparation of all the land plats for the right-of-way acquisitions. So he was deeply involved in that sort of thing, and so

Barney Bellport worked on right-of-way acquisition for the Contra Costa Canal

while we were there working together and associated, we weren't in any form of competition.

I don't know how Barney would have been as an administrator, really I don't. I mentioned to him that he was a cruel man to his subordinates. He had an unhappy way of needling people and embarrassing them and also to undercut them, which he tried to do to me several times. I knew he did with old Stubb.

Storey: Yes, you could see that first-hand, huh?. When you went to Billings as the Regional Director, in '47, right?

Vernon: Yeah.

Storey: In '47, I think the regional reorganization had actually started in '43, but it was signed by Abe Fortas only in early '44, when it became official.

Vernon: Yes, yes, that's, yeah. Wait a minute, wait a minute. Well, I don't know about his signature, but Wes Nelson left the Washington office in the winter, January of 1944, because that's when I was moved into Washington. He went to be Regional Director of Amarillo in January of 1944. So the regions were established by that time. I don't know about when it was signed.

Wes Nelson becomes regional director in Amarillo

Storey: Yeh. Okay. So '43-'44, the regions were created and you arrived about two to three years later to become Regional Director. Do you have any sense of how the regional office was put together before you arrived, where it had come from and –

Vernon: Yes, indeed, I do.

Storey: Tell me about it, could you? And how the people were selected and brought in, all those

kinds of things.

Vernon: That I can't answer, as to how they were selected, because many of them were selected before I got there. When I arrived, there was a group of about 350 people spread out in ten different locations in the town of Billings, because there was no adequate provision of office space which could house that many people. Because Billings was sort of an out-of-the-way cow town.

Did you give me some sort of a signal?

Storey: No, go ahead. I remembered something I need to ask you later.

Vernon: Oh, okay. Also, as I told you earlier, I found the regional office heavily involved in what I call project activities, very little what I expected to be assigned to regional activities, regional planning and thinking ahead and that sort of thing. This group had been assembled from all over, many of them were from Reclamation, many of them were from various other agencies of government, such as there was this group doing Missouri Basin Project work . . .

END OF SIDE 1, TAPE 2. APRIL 26, 1995.

BEGIN SIDE 2, TAPE 2. APRIL 26, 1995.

Storey: You were talking about the situation that you found in the region and where the region had come from and all of that.

Vernon: As I had indicated earlier, I found about 350 people spread all over Billings in ten different locations, [some in] garages. The Regional [Director's] office itself was in a downtown office building, ~~the Regional Director's office~~. I believe that the design and construction group also had space in that, as well as the power

**Status of the region
when Vernon arrived in
Billings**

group, but planning was some distance away. Operation and maintenance was somewhere else in the town. This group that had been doing what work was being done on the Missouri Basin Project was over in a converted garage building. The Regional Counsel had himself an office which he had had for many, many years in one of the nicer buildings in town and he wasn't about to be moved out of there.

So the first thing I said was, "I've got to break down this bunch of people and get them classified as to what they're doing and define what they're doing, as to regional work or project work." These people had come from many other agencies, [but] so there was a core of Reclamation people, but most of this 350 people did not have Reclamation history or Reclamation association, so there was need to develop, shall we say, a closer affinity among the various newcomers to the organization and have them learn that Reclamation basically was guided by a relatively strict law, but at the same time it was flexible enough that you could accomplish a great deal, properly applied. So that was basically the problem I first addressed when I got there, was to break that effort down.

Storey: You say these people had been brought in from outside Reclamation.

Vernon: Yes.

Storey: So there had been a recruiting effort?

Vernon: Oh, yes, to a certain degree, but there hadn't been a real effort devoted to the field yet. There was this 350 people concentrated in Billings. This is why there hadn't been any real [field] activity. As I indicated earlier, previous management of the region, [previous to] my advent, was project oriented. Their feet were

anchored in the projects. Therefore, most of their attention was devoted to servicing the existing projects. They had not become really concerned with this new vehicle, the Missouri River Basin Project, and really they didn't know how to approach it.

Mr. Sloan, as the Assistant Regional Director, had been the Planning Engineer, and he had this broad vision of what might be accomplished, but he was not an administrator and he didn't know how to accomplish it. He didn't want to be bothered with developing people and getting them organized and all the various activities that were required to carry out a total program. So my field experience taught me that if we were ever going to get anything done, we had to get people moved out into the field, actively working close to the project areas, that we would have to carry on a dual program, not only servicing the older projects, but also the new vehicle of the Missouri River Basin.

**Glenn Sloan, Assistant
Regional Director**

Storey: Was there another office in Billings before the regional office?

Vernon: No, only the Regional Counsel. The Regional Counsel had been established in Billings for quite some time, I don't know exactly how long. But this was a special problem. With the personality of the Regional Counsel, ~~was~~ he felt that he was being shunted aside in the importance of his role in the Basin because the region was assuming many functions which, *de facto*, but not *de jure*, he'd been exercising as a sort of a regional functionary among the various existing projects.

**Regional Counsel had
been stationed in
Billings before the
region was created**

Storey: Did you get everybody under one roof?

Vernon: Ultimately, not one, but two. The first thing I did was I had Mr. Pratt scour the town to see

where there might be any space that we could set up the regional headquarters, including the personnel and finance operation, because that's what I wanted close to me. So he found a building, which, incidentally, happened to be the same building that the Regional Counsel was located in. [It] had been a lodge hall or some such a matter. It had been some form of assembly hall. So we had that remodeled and my regional suite, regional office suite was established in there, in which I had myself, my Assistant Regional Director, Bill Rawlings, next to me. I had George Pratt in the same suite. I had the Regional Finance Officer and the Regional Personnel Office and their supporting staffs in that same suite, and I was next door, across the hall from the Regional Counsel, which I conferred with regularly over various problems. That was our first move of consolidation.

Then I actually had the temerity at one of my appearances before the Appropriations Committee of the House to request an appropriation to build a building in Billings which could become our regional office. I described how utterly inefficient it was the way we were. I'd come to the office in the morning with requests to maybe I'd like to see three or four people, but it took all day to locate the various people that I might want to talk to. I might say, "I want to talk to the Planning Engineer," but he was over in construction. Or I'd want to talk to the Power Manager and he was over somewhere else, and it would take all day to get those three or four guys over to me so we could sit and discuss whatever it was that I wanted to talk about. It was a grossly inefficient operation. The heads of these various operations were constantly fluctuating among themselves, talking and trying to coordinate among themselves. So I asked the Appropriations

Scattered regional officing in Billings was very inefficient

Committee for an appropriation to build a building so I could get these people under one roof. I described this grossly inefficient operation we had.

Well, the head of our subcommittee was Representative Ben Jensen, from Iowa. Ben was a serious conservative and he said, "Well, can't you arrange to get somebody to *build* you a building and rent it?"

I said, "Yeah, we hadn't gone that route because there's certain difficulties about long-term leases with the government. So my preferred solution would be to have them build a building which could be the Reclamation headquarters."

He said, "Well, before we go any further I'd like you to explore the other opportunity."

So I got George Pratt visiting with everybody in town, and he found a number of people, some of the town leaders, that might go together and build us a complex, which if we could give them a long-term lease, they could arrange construction financing. They said they didn't want to build one building, but there was some property on which they would build two buildings, in which case if Reclamation went through one of its usual reorganizations or whatever and contractions, they would wind up with maybe a unit they could rent to somebody else. In other words they wouldn't have half a building left vacant, which made sense to me.

So I talked to the Regional Counsel to see what we might be able to do about making a long-term lease, and he came up with a possible solution. I've forgotten just how he solved it. But we were able to come up with a proposed lease which these people were able to take to a

group of finance people and get construction financing.

So about 1950 we moved out of the center of town. I said, "There's no point of us being in the center of town, because we don't do any business with the townspeople, really. Our business is the people who come to Billings to visit, and we're talking to people from all around the states. So there's no need for us to be downtown taking up expensive space downtown." So we got these two buildings built.

I remember the first morning after we [moved] ~~walked~~ in, I told my secretary I'd like to see Charlie Anderson, I'd like to see Tom Judah about something, I'd like to see Johnnie Walker about something. So then I went to my desk and started busy, the next thing I knew, by 10:30 I'd seen these guys, and I was all through with my day's agenda. (laughter) Because one guy was upstairs, one guy was down the hall.

Storey: And it was easy to locate them now.

Vernon: Yes. And by the time we got through with this separation that I talked about earlier, of all the various functionaries, we got what we called the regional office down to something more than 100 but less than 150. In other words, we moved nearly 200 to 300 people, about 200 people, out of Billings into the field offices. Of course, it created a lot of stress for them family-wise. On the other hand, they had been having some struggle with housing in Billings, because Billings had been a bywater during the war.

One of the little gimmicks that we did, I brought Fred Gilbert, from the Washington staff, out, who I'd gotten acquainted with. He was a supply officer in the Washington office. I

**Brought Fred Gilbert in
as Supply Officer**

brought him out to Billings as my Regional Supply Officer. He was the guy who managed the disposition of these relocation centers that I talked about, these Japanese relocation centers. But he also got wind of a whole camp that had been built at a mine. ~~that had been involved~~; I think it was a chromium mine, because the chromium supply of the United States was very limited. So this very expensive mine had been developed to mine chromium. It had closed when the war closed down. It was closed. So this camp became available.

Disposition of Japanese relocation centers

So Fred came to me and said, "Hey, I think that camp's going to be declared surplus. It's got a bunch of nice housing in it. I think we can move that down here to Billings if we can find the property to put it on, and we can help this housing problem in Billings"

Moving in housing for Reclamation staff in Billings

So it turned out that we got something like fifty or sixty wartime houses. Some of them were prefab. Some of them were log cabins. Some were various forms of emergency housing. And we labeled that Termite Terrace. (laughter)

But at any rate, the next thing that occurred –

Storey: And you got them relocated?

Vernon: We got them relocated and assembled in Billings, and then we were ready to put people into them. Then I called Fred over, I said, "Now what are we going to do, Fred? How are you going to parcel this stuff out? What have you thought about parceling this stuff out?"

He said, "We've got a problem."

I said, "Oh?"

He said, "Yeah, I've got rumbles already. You know Andy Anderson, he's been very close to top management in the projects and obviously the head of the project and his various assistants have got first call on the housing."

I said, "Fred, set up a committee immediately. We can't have that happen here. If anybody can buck the town on its housing cost, it's the prize people around here. They are not automatically eligible for this emergency-type housing. This is for the poor people in the lower grades that can't afford the housing which becomes available within the city. So you create a committee with personnel and finance and others around the office which then will set up some form of a grading and ranking system. Obviously there has to be an inverse proportion of ranking to salary, and that's how you're going to solve it." And that's how we solved it.

Andy wound up in one of the houses out there, but he didn't get the best house in town. It used to be common knowledge, when you go on the project [if] you didn't know where the project manager [lived] was, you'd look for the best house in the camp and that would be the project manager['s house], obviously. (laughter) So that's how we solved that little problem.

Storey: Were these all in one location?

Vernon: Yeah. Those fifty houses, we found a plot of ground. I forgot whether we rented or just what we did now. But we had to put in sewers, streets, and that sort of thing on an empty plot of ground on the periphery of the town, and set up these fifty-odd houses, I think that's how many there were, on little plots of ground, put in sewerage, streets, other utilities, and then ranked the various people needing housing, particularly giving preference to the lower-grade people that

Problems with assigning housing

couldn't afford the basic cost of housing in the town.

Storey: Did we sell them or rent them?

Vernon: No, we rented them. They had to pay for them. We rented to them because they didn't know how long they would be in any one particular location. So we rented them to them. It was a nominal rent. But that's why I insisted on an inverse proportion of ranking to salary.

Storey: I remember, when you were first talking about the Pick-Sloan Plan, you pointed out that there was some tension between the Upper Missouri Basin and the Lower Missouri Basin because the Corps was proposing basically a flood control and navigation project, and the Upper Basin was afraid the navigation water would take precedence over the irrigation water for the Upper Basin. How did that work out? How did navigation affect water rights on the river? Or "water use" maybe is a better term.

Vernon: Let me think this one through. That was one of the very complex questions. You really handed me a hot potato there. That was one of the real differences that existed between the Upper Basin and the Lower Basin.

Storey: Well, I know it's still there because in these recent floods . . .

Vernon: It was sort of a standoff. The Corps had to yield somewhat on its navigation project, the demand for water and the length of the navigation season. Reclamation, because of the length of time that it would complete its completion of the Reclamation and the consumptive use of water, did some yielding on its adamancy of demanding a cessation of flow for the navigation. And then also we found that the power releases from the

Tensions in the Missouri Basin over navigation demands versus irrigation demands

main dam, would, to a certain extent, ameliorate the water requirements for the navigation, and certain improvements that the Corps introduced into the channel of the river assisted in ameliorating some of the navigation water requirements. It was a problem that the Missouri Basin Interagency Committee wrestled with all the time I was there trying to find [the ultimate] an answer.

One of the things which, if you'll recall, I challenged General Pick at one of the meetings on the amount of coordination. Well, after he had left to become Chief of Engineers and his successor of interest, General Sturgis,²³ who was a much easier man to work with, and he didn't have any pride of proprietorship, shall we say, of project, he was an easier man to work with. We established a coordination group, a hydrologic coordination group. I patterned it after what was going on on the Colorado River, between the various competing interests on the Colorado River, and my suggestion was patterned after that coordination group. So that we established a coordinating hydrologic study group. My group was using the data that the Geological Survey was developing on improved water supply records and the Corps with its continuing studies on how the mainstreamed dams [were] to be operated and the water requirements for the navigation system.

This group met rather regularly to figure out how water could be allocated among the various functions. So we did solve a serious problem of lack of coordination and water demand on that score, but it was always a continuing problem that would probably never be solved completely, because it varied year to year. If it was a generous water year, then there was no problem. If it was a scarce water year, then it became a real problem, and there had to

be an adjustment of requirements.

Storey: So there was still a tension over navigation?

Vernon: Oh, yes, there was all the time.

Storey: It wasn't an issue that was solved.

Vernon: Yes, there was all the time. I don't know whether it still is or not, but I know that after we set up that hydrologic study group, it solved a number of the issues and put them in a format that some intelligent solutions could be arrived at, or at least compromises.

Storey: One of the things I'm sort of interested in is the way working space has evolved for Reclamation employees over time. If you could start back in the Denver office and tell me what your office space was like and then go to – let's see, you went from Denver to Antioch to Washington to Billings. Go through each one and tell me how the office space evolved. I'm talking about the office space for the workers out in the office, you know.

Vernon: Well, when I was working in the Denver office, which we developed the name Bullpen; it was an open space. Each person had a drafting table in the engineering office; ~~had a drafting table~~. He had to have room enough because on this drafting table was called a drafting machine, which was an apparatus which the draftsman used in making his drawings, which you could move, but it was a series of parallelograms, so that you could move this thing anywhere around your paper. Your control ruler would stay perpendicular to your drawing. Or you could change it. It had an adjustable head so that you could change it to any angle.

Office conditions in various offices where Vernon worked

But incidentally, I was struck by what I

saw last Sunday, "Jefferson in Paris," the movie "Jefferson in Paris." It's a new movie that's just out. And in that thing, here's Jefferson writing letters, and he's got a damn parallelogram writing machine, and as he's writing his original, his machine is making a copy. So this thing goes way back, which, of course, the drafting machine has been much improved in its later connections.

But you had to have space enough that as you moved this thing around, this parallelogram didn't poke the guy sitting in front of you in the back and we wouldn't have to duck all the time, or if you were busy down here and he'd bump into it. So your fundamental space really hasn't change much from what we consider now, as I recall. I was talking to my son about this the other day, because this is one of the things he's involved in, moving people around at McDonnell-Douglas [Aircraft Company]. The basic modular space is somewhere around 100 to 120 feet per person. Of course, being in a bullpen and not being in a cubicle, in other words, you didn't have visual privacy, which when you sit in modular spaces you set up visual privacy. You may not have oral privacy, but you may have visual privacy.

In the "bull pen" in the Denver office you didn't have visual privacy

I would judge we had about 120 square feet per person, but that didn't include the hallways ~~and that sort of thing, alley ways,~~ aisleways and that sort of thing. It was an open space on this floor of the bank building, and here were the various groups of engineers and over there was the various groups of the draftsmen making the tracings and over there was a group of somebody else. But basically it was a wide open space. I don't know how it was over in the Customs building, because there there were a lot of different efforts requiring different space requirements, and I presume that the engineering

offices were much the same, because it probably did the same thing in the bank building that they were doing over in the Custom House, I don't know.

When we moved to Antioch, there we were able to rent an idle what had been previously a joint union high school. A new high school was built and so this one had become standing idle. So we were able to rent spaces of that. We used as much of that as was needed. As activities grew, we kept increasing moving out into different rooms. The laboratory, as we discussed earlier, was in the basement. We had one room which we would use if we were doing some kind of work [on] in the office, doing some remodeling or whatever. We'd send some guys, one of the boys of the office down there to do some painting or staining or whatever.

Office space in Antioch

The field office, at first, as you come in there was one room which probably had been the principal's office, that was the Project Engineer's office. On the other side of the entrance was not quite as large an office space, but they both had plumbing facilities. That probably had been the assistant principal's office; that was the Office Engineer's office. Going down the hallway on this side was the finance office, the Chief Clerk. Then there was a large room here at the end which included the Purchasing Agent, the personnel office and whatever assistants were involved in that work.

Across the hall from the entrance was this large [room] which had been the assembly hall. That was the bullpen for the office engineering staff. Barney and I and my group of assistants worked in there. We had various equipments that we [used] worked. For instance, as the field staff would bring in the

field sheets from the plane table work on the topographic mapping, one of my draftsmen was tracing those field sheets onto what we called out hard copy rolls, and do that [on] ~~through~~ a light table. Then we would align the map of the canal so as to get the best advantage of a long roll of paper. So north was always being adjusted, segment to segment, so we'd get the most efficient use of paper.

At one time we had ~~one, two, three, four, five, six, seven, eight,~~ about ten people, the immediate office engineering staff there.

Storey: In the bullpen?

Vernon: In the bullpen.

Storey: And they all just had drafting tables?

Vernon: Yeah, except later we brought in some more people as things were going on. I got promoted to a flattop desk because I was basically doing administrative work, reports and supervisory work. I wasn't doing actual drafting anymore or mapping or whatever.

Storey: Did you move to a different grade?

Vernon: Yes, by this time I was up to P-3, the wondrous grade of P-3. I was Associate Engineer by that time.

Became an Associate Engineer in Antioch

Storey: And P-2 was higher or lower?

Vernon: It began with P-1, which was junior engineer grade. Then there was a second level. That was the magnificent salary of \$2,000 a year. Then there was an upgrade in that, which was to \$2,300; that was the first assistant engineer grade. But that was still P-1. Then P-2 was \$2,600. It was like the Navy, you had your

Engineer grades in those days

junior lieutenant and your senior lieutenant. P-2, you were senior assistant engineer. P-3 was \$2,900 a year. Now wait a minute. P-3 was first grade of associate engineer, that was \$2,900 a year. Also at P-3 there was a senior grade of associate engineer, that was \$3,200 a year. By this time you were given some supervisory responsibilities. Then [at] P-4 ~~was~~ you were now considered to be a journeyman engineer. You were capable of doing anything in the engineering line. So you were given maybe the responsibility of a section, a group of people to supervise. I should say a squad, not a section but a squad. Because P-5 was \$4,800 a year. That was now – what the hell did they call a P-5? It was \$4,800 a year, but now you were head of a section of maybe ten or fifteen people or of a particular activity. P-6, you now had a division, which was \$6,500 a year. Now you were with it now. You almost could talk to the Lodges. You could almost talk to the Cabots at P-6. P-7, you were now the head of an effort, a division. P-8, you were head of everything.

Storey: So P-8 would be . . .

Vernon: It was now considered a supervisory engineer, P-8, and that was \$7,000 a year.

Storey: Your Supervisor on the Contra Costa Canal was Mr. . . .

Vernon: Mr. Stubblefield.

Storey: Above him?

Vernon: Was Mr. Boden, who was the Project [or Division] Engineer.

Storey: What level would he have been?

Vernon: I'm guessing now that Stubb[lefield] . . .

Storey: No, Boden.

Vernon: Oh, Boden. He was probably a P-7. I'm guessing now. I never did ask him, but I'm guessing. Because Walker Young was at the top, he was obviously a P-8. He was a Supervisory Engineer.

END OF SIDE 2, TAPE 2. APRIL 26, 1995.

BEGIN SIDE 1, TAPE 3. APRIL 26, 1995.

Storey: This is tape three of an interview by Brit Storey with Kenneth F. Vernon on April the 26th, 1995.

It might have been a six or a seven.

Vernon: Six or seven. I would say this, probably, that because of the hierarchy in the Bureau at that time, the Project Engineers at Shasta and at Friant were most likely P-7s. The Canals Division, which were sort of poor relations, so to speak, in the hierarchy of the Bureau structure, Mr. Boden *probably* was a P-6. In other words, I don't think he had arrived at grade P-7 yet.

Storey: Tell me about these relationships. Tell me about relationships among different types of engineers in Reclamation, among canals versus dams, versus hydro versus –

Vernon: Well, in the hierarchy of the Bureau at the time I entered it, dam construction was *the* thing, and therefore they were assumed to be the fair-haired people. Walker Young and Harry Bashore and people of that group had had project experience which included maybe not the direct supervision of a dam construction, but they had had the supervision of project development. So if asked to define them, I would say they were people of broader consideration than the people that were involved in dam construction, because it involved not only – but perhaps could include

“ . . . in the hierarchy of the Bureau at the time I entered it, dam construction was *the* thing, and therefore they were assumed to be the fair-haired people. . . . ”

supervising or being the supervising engineer of a dam, such as Boulder or Grand Coulee, but it also would include dams like, for instance, on the Snake River, would include dams on the Snake River, but also the development of the project lands or on the Platte River where dams and diversion dams and so on was involved, as well as the development of the project lands.

So the men that had the basic project experience were, I would say, of much broader caliber and of higher administrative capability than the men who came up through the strictly dam construction route. The dams people were more technical. They answered to Jack Savage. You mentioned Jack Savage. They answered primarily to Jack Savage, who was the Chief Designing Engineer. As I recall, under Jack Savage, he controlled all the laboratory work which was related to dam designs and construction.

Then I mentioned earlier a bunch of eggheads up on the tenth floor in our building, they responded to Mr. Savage. I recall one thing they were working on, I don't know what you'd call it, but it was just coming into vogue. They would take pieces of plastic and formulate that into various forms of structures, and then they would put that piece of plastic under stress, under polarized light, and it would show the stress patterns in that structure by the variations of the wavelength [light] bands in the plastic.

So as structure design was advancing, many types of structures became impossible to analyze directly. You reverted to this imagery to get stress patterns, and then you figured out how you would either change the form, because if certain concentrations of stress would show up, or design your reinforcing to meet those requirements. So this all was under Mr. Savage.

**Technical Division work
in Denver**

Then my head was a Mr. McBirney in the Canals Division. I don't know his background, because I never had a lot of direct contact with him, because he was the Supervising Engineer of the whole Canals Division. But Art Reeves, who was my group's leader, had been on the Platte River project, so he had a good deal of field experience. I used to spend a good deal of time, when I could, talking with him about project experience, because I wanted to absorb as much of that as I possibly could.

So then Walker Young had a very broad pattern of experience on projects prior to his being designated as a Supervising Engineer of Hoover Dam, and then that fit in with his previous experience, so then he was designated as Supervising Engineer of the Central Valley, he had supervisory responsibilities over dam construction, the transportation systems, and all the rest of it. So that's the extent of my knowledge.

Now, Mr. Frank Banks, who was the Supervising Engineer of Construction of Grand Coulee, he'd also had a broad experience in early project development, but I think he found his heaven, so to speak, as the Construction Engineer, Supervising Engineer of Grand Coulee Dam, because he was offered, as I understood, the regional directorship of Region I. It's my recollection that he turned it down. He said he would rather be at Grand Coulee Dam.

Frank Banks was offered the job of regional director, but chose to stay at Grand Coulee

Robert Newell at Boise was designated as Regional Director of Region I, or it may have been in the early days of regionalization, Frank Banks was Regional Director, but Bob Newell was Assistant Regional Director down [in Boise, Idaho, and was running the regional affairs, and Frank Banks really had nothing to do with it.

As a sidebar to that, when I was talking about the departmental effort to set up these regional power authorities and Bonneville Power Dam Authority, Bonneville Power Administration was being set up, it was my understanding that Mr. Banks had been offered that responsibility, but he turned that down. He said, no, he wanted to close his career out at Grand Coulee Dam. So that's my experience.

Frank Banks was asked to head the Bonneville Power Administration

Harold Comstock, who was my predecessor at Region VI, he'd had project experience. He'd been down for many years developing the Riverton Project. The men were changed around and over the years had a considerable variety of experiences.

Storey: You mentioned a moment ago, if I understood you correctly, that the canals people were sort of poor cousins to the dams people.

Vernon: Yes.

Storey: Was there sort of a pecking order among concrete dams and earthen dams and the other specializations?

Vernon: Well, I can't say that I can answer that directly, but my general reaction to your question is "yes," and that it was only in the later stages of my association with the Bureau of Reclamation that forms of construction, other than concrete dams, was becoming recognized as a real alternative. ~~because~~ Concrete dams required certain specific requirements in order to support the construction of a concrete dam with its high stresses[. Later] ~~and that~~ the development of earth-moving equipment through the Robert LeTourneau²⁴ effort – incidentally, I should mention that as a sidebar. But the manner of constructing earth-filled dams with the improvement of earth-moving equipment made

earthfill dams a respected alternative.

Now, I want to mention that when I was working for the California Division of Highways on the construction job in the Santa Cruz Mountains, the contractor on that job [knew Bob LeTourneau who] was a born-again Christian. He also was a metal worker and an inventor of sorts. He had a workshop over in Stockton, California. Over time he'd been, shall we say, messing around with trying to develop some form of mechanized earthmoving equipment which was an improvement, an enlargement, over the old horse-drawn scrapers.

**Bob LeTourneau
development of
earthmoving equipment
used on early job at
California Division of
Highways**

Storey: The Fresno Scrapers.

Vernon: The Fresno Scrapers. The contractor on this highway construction job worked out a deal with the Reverend Bob to bring some of his early efforts of his earth-moving equipment over on the highway job. So we helped him develop and improve some of his early efforts on this earth-moving equipment, such as the bulldozer and such as the carryall scraper, mechanized carryall scraper which was powered by a tractor.

In later years he was bought out – I should say that his efforts were primarily – how will I explain this so you will understand it? His lifting mechanisms were basically winch and cable. For instance, the blade of a bulldozer could be raised, but it depended upon its weight to cause it to dig into the ground. But his powered scrapers, his tractor-drawn earth-movers, it was the weight of the equipment that caused the blade to excavate the earth[.] ~~but~~ he, by a minute inflation of winches and cables; He could move the various parts up by a minute inflation of winches and cables, but it depended upon their weight to move them down. In its later reincarnation, he became associated with

the Caterpillar Tractor outfit, and they instituted hydraulic controls. So by the time I was – my early experience was in 1930, and by the time that we were starting construction on the Contra Costa Canal, say in 1938, he had joined forces with Caterpillar Tractor and there were several new forms of this earth-moving equipment which had hydraulic controls so that you not only had positive up pressure, but you also had positive down pressure. And over time, the Caterpillar Tractor outfit won that market with its advanced equipment.

**Improvements in
earthmoving equipment
in the 1930s**

Storey: Do you remember how to spell LeTourneau's name?

Vernon: It's a French name, I'm going to have to guess. Now, this is my guess. L-A-T-U-R-N-E-A-U. Laturneau. It was a French name, it had a French spelling. But I believe that was the way it was spelled. Robert LeTourneau. He was known among the trade as Reverend Bob, because he was a sort of born-again Christian and part-time preacher.

Storey: What was the significance of this equipment?

Vernon: Well, it was the advent of mechanizing – he had three pieces of equipment that he worked on. There was the bulldozer, which could shove earth around. There was the carryall scraper, which could pick earth up and move it and carry it and dump it somewhere else. And there was the sheep's foot roller, which was used in compaction of fill material so it could achieve the proper density. It was the development of this equipment that made earth-filled dam construction an alternative to concrete construction, because before that time, and being limited to concrete construction, all sorts of various designs of dams had been developed, all sorts of buttress dams, slab and buttress dams,

buttress and arch dams, which would save concrete, but again it would increase the foundation stresses. So each one of them increasingly required more favorable foundation conditions, because as they transmitted the concentrated loads to the foundation, the foundation had to be more secure.

This is one of the benefits of earth construction. In the first place, although the mass might be larger, its unit mass is much smaller, therefore the unit pressure on the foundation is much lower and is spread over a much wider [area]-~~distance~~, and so you were able to accept a less strong foundation. Also, [in] ~~to~~ my later experience I saw this [was a big advantage in] ~~to a great extent that in~~ an area which was earthquake prone. An earth-filled dam will adjust to the shake but it won't fail, whereas a concrete dam [might fail] ~~has failed~~. I've got some pictures of the failure of a famous dam in France. One of the famous dam design engineers who developed the complex arch dam, concrete arch dam, to its finest end did not have a success with some of them because he had failed to evaluate the conditions of the foundation. It was the foundation, not the dam that failed, it was the foundation that failed.

Incidentally, when I was Regional Director out there, the Bureau had him visit. He visited the United States and he came up and visited Region VI. I discussed with him what he thought about what was going on in the Bureau of Reclamation. He said, "Well, it's very interesting, the economics of dam design. In Europe, labor is the inexpensive element of construction. Materials is the expensive element, so therefore *our* design is directed more toward reducing the requirements of materials but [that] would require more manpower in formation and placement and that sort of thing.

Benefits of earth construction of dams as opposed to concrete

Andrew Coyne discussed differences in dam design and construction between Europe and the United States

Whereas I noticed that you people consider the materials as the cheapest part of the equation and your labor is the most expensive part of the cost equation, and therefore you use materials profligately to save labor."

I said, "Yes, that's correct. That's exactly the way we approach it."

And later in my experience in Iraq, he was on one of the consulting boards for one of our dams out there.

Storey: Do you remember his name?

Vernon: It'll come to me. [Tape recorder turned off]

Storey: You were saying that this French designer's name, you think was Andrew Coyne.

Vernon: Andrew Coyne. I forgot how he spells it, but perhaps it was C-O-Y-N-E.²⁵

Storey: And the dam that you were talking about that failed was Mal . . .

Vernon: Malpassat, however you pronounce it in French. M-A-L-P-A-S-S-E-T.

Storey: E-N-T, I think.

Vernon: It's on a river in southern France. The point I was making was that thin arch dams, obviously made out of concrete, but very high stresses require a very competent foundation. It was the failure of the foundation stresses, rather than the actual failure of the dam, which caused this tragedy. Of course, after the foundation failure occurred, the dam was destroyed because they found chunks of the dam, lower elements of the dam, [some distance] ~~distances~~ downstream with pieces or parts of the foundation material still

attached, so the failure was below the base of the dam.

In my later experiences, I was working for the Iraq Development Board, I had the opportunity to recommend to the Development Board to change their proposed design of a dam from a concrete dam, because I felt that the foundations were not adequate, to a rock-fill and earth-core dam which could be superior on the particular foundations that existed there.

Storey: Backtracking a little again, I asked about whether there was sort of a pecking order in these different specializations.

Vernon: Yeah, yeah, yeah. I can't answer specifically in the dam elements, but, yes, there was definitely that – those in the dam efforts didn't consider the people in the canal efforts, shall we say, their peers. But having been raised on an [irrigated] irrigation farm, my argument always was nobody knew whether the dam was five feet too high or five feet too low, but the poor old farmer certainly knew whether his turnout was six inches too high in a low water stage. So in terms of the irrigator, he didn't know anything about the dam, but he certainly knew the operation of the canal.

Storey: Was there a pecking order in the different specializations within engineering, in Reclamation, I mean?

Vernon: No, I don't believe so, because Reclamation had a broad spectrum of requirements. Of course, fundamentally, I would say they were civil engineers. But then there were electrical engineers who worked in the electrical generation areas and the transmission systems. There were mechanical engineers who dealt with the requirements of the mechanical apparatuses

that were required. Then there were people who were involved in the laboratories. In terms of hierarchy, I don't know whether there was a consideration of a pecking order, so to speak, but among the people in the trenches, certainly we recognized that under the Walter and Savage era, the dams people got more recognition, shall we say, than the people out on the canals.

“ . . . we recognized that under the Walter and Savage era, the dams people got more recognition. . . than the people out on the canals. . . .”

Storey: Okay. Let's see, after we had stopped yesterday, you mentioned a war materials meeting, or some such thing, about Harvey-Tynes Company in Birmingham, Alabama. Could I get you to put that on tape for me?

Vernon: Yeah. That was an interesting exercise. It demonstrates the difficulties that were being faced by servicing the war effort [with] in the limitations of the facilities that were available to service it. As I'd indicated earlier, one of my functions when I was acting as Engineering Assistant to the Commissioner was to process applications from Denver to and through the War Production Board to get priorities for production priorities.

It developed that the Tennessee Valley Authority was constructing the Fontana Dam, and it had placed an order for some high-pressure gates with the Hardy-Tynes Foundry Company in Birmingham, Alabama. We didn't know what the Fontana Dam would be servicing, but it later developed it was for the Oak Ridge atomic effort.

World War II efforts to obtain necessary construction material

At the same time, Reclamation was installing the eighth unit on the Nevada side of the Hoover Dam. The power from the Hoover Dam was being required to service the burgeoning aircraft industry in Southern California, so that all the power that could be sent into Southern California was urgently

Dueling priorities in wartime production at plants caused problems for the War Production Board

required as an important war effort. Now, the problem with that was that the requirements of the contracts for each of these high-pressured gates was supposed to require the foundry to erect these gates in such a way, **at the site, at the foundry**, to subject them to the full hydraulic pressure head that they'd be subjected to when they were installed. This was to make sure that there wasn't any warping, there was no leakage, etc., and that they'd function, etc., etc., under the complete hydraulic head that they'd be subjected to. This would be very disruptive to the other operations that were going on at the Hardy-Tynes Foundry because of the space requirements. At the same time, then, this gave Hardy-Tynes a problem, because ~~at the same time~~ they had a very high-priority order – well, actually they had two very high-priority orders from the Navy Department, one of which was a high priority for pumps going into submarines. Another was an order from the Navy, or perhaps it was from the Army, I'm not sure which, I guess maybe it was the Army, for some requirements for pumps and things and equipment that were required for landing craft that were being built down somewhere along the Gulf Coast. These all were taking up space and activities in the Hardy-Tynes Foundry, and, of course, the Navy insisted [that] to stop their production would put them at great disadvantage with the submarine warfare and the Army insisted that it was absolutely critical not to delay the construction of these landing craft which would ultimately be used in the Overlord invasion from Britain to France and [General Douglas] MacArthur in his leap frogging operations out in the West Pacific.

So it was easy to see this was a very critical question for Hardy-Tynes as to who was to get the nod. This question was placed before the War Production Board, and I attended a large

meeting which representatives from the Denver office attended, representatives from the TVA were there. ~~There was a flight of eagles,~~ A galaxy of stars and a flight of eagles from the Navy and Army were there to plead their cases].

It was interesting to note that the first half-day of this meeting was spent on arranging exit transport from Washington back to the various participants' headquarters, because the War Production Board also controlled the transportation [priorities] ~~limitations~~. (laughter) So the first half of the meeting was spent on everybody getting priorities of transport back to their headquarters. However, everybody presented their case and then the War Production Board representative said they would take the matter under advisement. I don't recall exactly how that was settled, because I was not intimately involved in the settlement, but I presume there was some way of ~~either~~ ameliorating the contractual requirements of both the Tennessee Valley and the Hoover Dam requirements, ~~Reclamation requirements~~, or there was some other way suggested to subject these gate apparatuses to stresses in some other fashion than full hydrostatic head. **That I** cannot recall. My memory fails me on that on how that was solved. But ultimately, of course, the requirements of the war effort were served. But that demonstrates the problems which were faced by the various people involved at the War Production Board.

Storey: Can you spell the name of the company for me?

Vernon: H-A-R-D-Y (dash) T-Y-N-E-S. Hardy-Tynes Foundry in Birmingham, Alabama.

Storey: This raises an interesting issue. When Reclamation does specs, I understand for construction we do it in quantities, so that if we

use an extra thousand cubic yards of cement, the contract covers it, we just pay by cubic yard of concrete.

Vernon: Cubic cost, yeah.

Storey: How did we write specs for things like high-pressure gates?

Writing specs for high pressure gates

Vernon: Well, that's a completely different kind of thing. To begin with, your specifications included various requirements of the metallurgy. It was more of the performance-type specification after specifying to various metallurgy that was involved in the various parts of it, such as whether it would be stainless steel . . .

END OF SIDE 1, TAPE 3. APRIL 26, 1995.

BEGIN SIDE 2, TAPE 3. APRIL 26, 1995.

Storey: You were saying that first of all, you specified material.

Vernon: The quality of the materials.

Storey: Which might be stainless or cast iron.

Vernon: Cast iron or a cast steel or a various – the metallurgy, the gender of the metallurgy. Then you would set up certain stress requirements, capabilities of resisting stress, which then might be required, as I was describing earlier, in the exercise involving Hardy-Tynes. It might be a requirement of a demonstration, in other words, a performance test, before it was shipped from the factory. *Usually* the payment was made per pound of equipment, which would be an incentive to the contractor or the manufacturer to reduce the weight of the equipment and to perhaps use higher-stress materials. But you had to watch out in higher-stress materials, you had to watch for deformations within that equipment.

So there had to be a payoff there.

Usually the specifications were clear as to what was wanted, and then usually the payments might be made per pound or could even be per unit. It all depended largely on what it was. For instance, gates, other than high-performance pressure gates, might be by the pound. Gates which were operated by machinery, such as valves, that might be by performance – by per unit.

We'd gotten into some of those difficulties when we were building the pumping stations on the Contra Costa Canal, because we had both the electrical equipment and the pumps were mechanical equipment. The ultimate requirement, as I recollect, for the pumps, was per unit, but they had to [meet] be certain specified performance requirements before that payment would be made, but there might be a schedule of progress payments made as the thing was being manufactured. In other words, the contractor did not have to completely finance the whole operation before he got any payments, but he might draw certain progress payments when certain things were accomplished, so there might be certain units set up for purposes of payment as they were completed.

Storey: For instance, on pumps you say performance standard. What does that mean?

Vernon: Well, I was just going to get into that.

Storey: Oh, okay.

Vernon: The pumps that were designed for this Contra Costa Canal were a relatively new form of pump. It was called a mixed flow turbine pump, and, as I recall, the normal efficiency on the electrical side, in other words the motors that

**Pump design on the
Contra Costa Canal**

drive the pumps/impellers, had to meet a 95 percent efficiency. In other words, the amount of electricity ~~that was put into the~~ output of that motor had to be at least 95 percent, exceed 95 percent of the input energy. The energy output of the motor had to exceed at least 95 percent of the input energy, electrical energy. Now, that then had to be combined with the energy or the efficiency of the pump. This became a real problem, because pumps are notably inefficient due to a number of problems inherent in the design of impellers and other moving parts of the pumps. But it's related also to the design of turbines that generate electricity so that the principles are basically the same, but since in the one you're generating power, whereas in the matter of the pump you're utilizing input power, so as I recall – and this is used as an example rather than as a finite truism – that the overall efficiency of the combination electrical input and motor and the pump output had to exceed 85 percent of gross power input. And [on] this we ran into trouble.

The company that designed and provided the pumping equipment had to replace, in the first pumping station, had to redesign the pumps because they couldn't meet the efficiency requirement after they were installed. So they had to redesign that pump and remanufacture at their cost, because they didn't meet the overall efficiency requirements.

Storey: So it had to pump a certain amount of water in comparison . . .

Vernon: For instance, let us say that the initial quantity of the canal at the first lift, pumping station, was, let's say, 400 cubic feet per second. I don't remember the exact quantity. But let's say its 400 cubic feet per second. There were, say, four pumping units in there. Each pumping unit had

to lift 100 cubic feet of water per second, 25 feet, at an overall efficiency of 85 percent.

Storey: And there are standardized ways of figuring that efficiency?

Vernon: Yes. You meter all of this, so you know how it is. You meter the inputs of the electrical side. You meter the output on the hydraulic side. You know the amount of water that's being lifted. You know the lift, so that's a certain energy requirement. And when you measure what's lifted in a certain particular period of time against the electrical power input, you can calculate the efficiency –the overall efficiency of the unit.

As I recall, the first designs came out at somewhere around, let's say 80 percent, which was a considerable deficiency, which meant then that had they been accepted, the irrigation district would have been faced with a higher energy charge than they really should have been because they would be losing 5 percent efficiency each time the pumps were operated. So there is a combination of material specifications and again a final test overall operational efficiency requirements. This is true, also, in the design and output of electrical turbines.

Storey: And there would've been cities also doing repayment on this project, right?

Vernon: Yeah. Right. It's all involved in repayment, you see, so this is why it becomes important to you.

Storey: So now, for instance, on a high-pressure gate, I presumed that we had already designed basically the holes on which these were going to be installed.

- Vernon: Yes. The structure had been designed.
- Storey: So we gave them constraints within which they had to operate.
- Vernon: Yeah. The powerhouse had been constructed at Hoover Dam, and on the Nevada power side, there'd already been seven units installed, but this was the eighth unit. So that all of the elements of the design were well known. So it was simply the meeting of a performance requirement, that this new unit would meet the performance requirements which caused the problem of space to make the test.
- Storey: Yesterday we talked about your traveling to Washington from Billings.
- Vernon: Yes.
- Storey: We didn't bring you back from Washington to Billings.
- Vernon: Oh, well, that was simple. In the early days, because of the lack of an airlines development, we would travel by train, both in and out of Washington. It seemed like every time I lived somewhere, my transportation left in the middle night and arrived in the middle of the night. It so happened that the North Coast Limited on the Northern Pacific went through town on it's way to [Chicago] ~~Washington~~ somewhere about two o'clock in the morning, so we'd leave either late Friday night or early Saturday morning . . .
- Storey: Depending on your perspective.
- Vernon: Get into Chicago early Sunday morning. Have to stay in Chicago all day Sunday and then take a train out somewhere around five o'clock in the evening, either on the Baltimore and Ohio or the Pennsylvania Railroad, and get into Washington

**Travel to and from
Billings**

somewhere around eight or nine o'clock Monday morning. Then again the transportation out of Washington was arranged literally the same way, because people would leave around five or six o'clock in the evening, having done their business in Washington. So as we would leave, say Friday night, from Washington we'd catch a train. again either somewhere around five o'clock in the evening. We'd get into Chicago the next morning, on Saturday morning. We'd have to spend all day in Chicago. Then we'd leave Chicago around five o'clock in the evening and then we'd get to Billings. That train went through Billings at five o'clock in the morning.

Storey: On Monday morning?

Vernon: On Monday morning, yeah. Then sometimes it might work out that I would take the Chicago-Milwaukee-St. Paul road from Chicago to Billings or Billings, but the Milwaukee road went up the Musselshell River. So the closest station on the Musselshell was over at Roundup. So I'd have somebody drive me over to Roundup, where I could pick up that train. It had a little better schedule, but it did involve a fifty-mile auto trip. So it was a little faster train, but scheduling for some reason or another might fit a little better, but it involved an hour's drive both going and return going to Roundup.

Then when the Northwest Airlines began a better degree of service through Billings, we then could leave late Sunday afternoon. It literally became a red-eye flight. We could leave late Sunday afternoon and we would make a change connection on the Northwest Airlines, would go to Chicago, and there we would make a connection to a flight from Chicago to Washington, and we would arrive, say, in Washington somewhere around seven or eight

o'clock in the morning, although you [were] kind of [the] worse for wear, having made a red-eye flight. Then literally we'd reverse that process. You'd leave Washington on a flight to Chicago somewhere around five or six o'clock in the evening, get to Chicago, and then you'd catch a flight around midnight out of Chicago and get to Billings early the next morning.

Storey: So when you had to take the trains, it was basically a full week and the two full weekends on either end?

Vernon: Yes.

Storey: And a rather tiring trip?

Vernon: Yes.

Storey: When you were able to take Northwest Airlines, you could take half a weekend on one end, half a weekend on the other end, and the full week in between, and it was still a very tiring trip.

Vernon: Well, yeah, but literally we would get the full weekend at home because you wouldn't leave 'til Sunday afternoon some time.

Storey: Oh, okay,.

Vernon: And you would leave Washington on Friday night and you'd be home relatively early Saturday morning. So it literally just involved the working time. But it involved red-eye flights. That's the way we did it in order to get home. But I don't know. I presume it could've been daytime flights. As traffic built up on the Northwest Airlines, there might have been daytime flights, but I don't recollect [if there were] while I lived there, ~~there were~~.

Storey: You mentioned to me when we didn't have the

tape running that Mr. Sloan was opposed to the ancillary activities, the recreation and so on. Could I get you talk about that a little bit?

Vernon:

Well, it became a bone of contention. Sloan didn't feel, really, that all this other stuff was important to his plan for the development of the water and land resources of the Missouri Basin. In other words, he was of the school that believed Reclamation's interest was simply the construction of facilities to deliver water to land, and other interests would take up the farmers' problems, so to speak. He didn't want to bother the Reclamation effort or felt that Reclamation interest [didn't go] ~~went~~ that far, shall we say.

I had learned, listening to both Oscar Boden and Harry Bashore, that they both were seriously concerned, from their project experience, they were seriously concerned about Reclamation's lack of interest of what happened during the stages of project development to the farmers making a success, and it was widely quoted that it took three generations of settlers to make a success out of an irrigation project. In other words, the first settler, he got a shack built and got his irrigation system, an on-farm irrigation system constructed, but by that time he'd lost interest in it, he'd lost heart. So then he would manage to sell his interest, whatever it was, to somebody else who would pick it up from there and proceed with the on-farm development with whatever resources he had. Then he would run out of steam, and then the third guy would come in and he would probably live to make the farm a success.

So I heard this thrown at Glenn Sloan many times, and Glenn refused to acknowledge, because he had never had any real on-farm experience, he refused to accept that and said, "Well, that's other people's problems. That's

Glenn Sloan didn't want Reclamation to devote energy to anything besides water and land development in the Missouri Basin

Some Reclamation managers were concerned the bureau didn't pay enough attention to ensuring farmer success on projects

"... it took three generations of settlers to make a success out of an irrigation project . . ."

not our problem."

So that was why my own personal experience and the problems of on-farm development and making a success of the first farmer was why I was interested in supporting these ancillary facilities. And Glenn was afraid that the cost of these ancillary facilities might get somehow lodged against his plan of irrigation, and he knew that because of the kind of agriculture we had in the high plain states that the repayment of irrigation costs was going to be a difficult thing for the farmer, the direct irrigation costs were going to be a difficult thing. That's why, in fairness to him, his view, he wanted to make those costs somebody else's, so to speak.

Vernon was interested in ancillary activities Sloan didn't support

Sloan was concerned about whether the costs for ancillary activities would be reimbursable

Storey: Okay. Was there anything else that you think we ought to talk about with Reclamation before we go on?

Vernon: I'd kind of make a sort of a swan song here, in regards to all this conversation. It's brought to mind a lot of things that I've thought about and I've dealt with in my later professional life. I don't know whether it's been apparent in this thing, but one of my regrets after I left Reclamation was I had never become Commissioner. I felt that my training, seriously felt that my training and experience in the various elements of Reclamation, would have qualified me to become an excellent Commissioner. I say this seriously and with humbleness.

Regrets not having become Commissioner of Reclamation

I had learned how, in my various incarnations, particularly in Washington and in Billings, to enlist the aid – well, first in Washington how to coordinate with other agencies, enlist their support in the overall objectives of Reclamation. And then I also

learned in setting up the Missouri Basin program of how to work inside of Reclamation law to accomplish some of those things, whereas prior to that time, Reclamationists sort of felt that their only concern was to simply build the works, get the water to the land, and then somebody else had the worry of that. So the Reclamation interests stopped at the farmers' turnout. But my own personal experience was it was something more than that was involved to really make a successful project.

I had learned in my experience how to enlist the aid of other agencies and to enlist their cooperation with coordinating efforts that they were interested in with our effort to make a total development. Then I got involved in the business of developing the Missouri River Basin, that became very apparent, and there, because I spent a great deal of time working with elements of state government and trying to adjust the requirements of Reclamation law to the requirements of the various state's requirements such as irrigation districts and water rights and so on and so on. I also learned how to work with the electric utilities to get the most out of the investment and power facilities to the Federal Government and to help the repayment of the Reclamation investment.

So I sort of regretted that my tour with Reclamation was ended where it did, because I felt the next logical extension of that career would have been to move back the Washington office and run through the various chairs there and hopefully at some point in time become the Commissioner of Reclamation. But it was not to be, and as it worked out, my career as an engineer blossomed in other areas, and I became director of engineering of a much larger effort when I became Director of Engineering for the total foreign aid exercise. *QED*. Finish.

Terminus.

Storey: That's it?

Vernon: That's it.

Storey: Okay. Why don't we take a little break.

Vernon: Okay. [Tape recorder turned off]

An example of the coordination of the various interests that were involved in the development of the Missouri Basin. For instance, Harry Polk, P-O-L-K, was the editor/publisher of the Williston *North Dakota Journal*, a small-town newspaper which covered a relatively wide area of northwestern North Dakota. He was also a staunch supporter of the Missouri Basin Development Plan and Reclamation, in particular, because he felt that this was important to the Upper Basin. He became president of the National Reclamation Association, which was, let's say, the lobbying organization for Reclamation and which was supported heavily by the railroads, because the railroads wanted Reclamation development through their traffic areas because it generated traffic for them. They'd been heavily involved in the settlement of the West. So they had set up agricultural agents that kept track of what was going on, and we had a lot of associations with them.

Harry Polk become director of the National Reclamation Association

But at any rate, going back to Mr. Polk, at the time he was President [of the National Reclamation Association], there was this fight going on. Commissioner Straus had this fight going on in California where the California [agribusiness] agricultural interests were trying to break down the 160-acre limitation so that the agribusiness interests could get Reclamation water to larger units. At the same time, I was

Wanted Commissioner Straus to agree to increase acreage permitted on Reclamation projects

trying to convince the Commissioner that we should be permitted to somehow adjust [upward] the 160-acre limitation, because we were finding a difficulty of developing a viable farm unit in [160 acres.] ~~the lands~~; In fact, [in the] of agriculture we had in the Upper Basin, and the amount of irrigable land that would usually result [from] ~~in~~ a 160-acre tract which usually, at a maximum, would be about 120 acres, because there'd be space taken up by buildings, perhaps some sink holes or whatever, it was not desirable land or a knoll or something that was not under the command of the canal.

So our average of Class Three, Class Two, and Class One lands which were desirable for irrigation was what we called the equivalent of about 100 to 120 acres of Class One equivalent. This just wasn't enough in the Upper Basin to support all the investments that were required in a modern farm and support the farm family and pay the water charges. But the Commissioner was very adamant. Mr. Straus was very adamant, because of this fight that was going on in California, not to hear our arguments, consider our arguments about enlargement.

But Mr. Polk came back from a meeting of the National Reclamation Association down in, I believe it was held somewhere in Arizona, in other words it was in the southwestern portion of the Reclamation area, and I had heard that he had made an agreement with the California interests [who supported the 160 acre limitation], as President of the National Reclamation Association, to support their views; in other words, ~~somehow~~ [against] enlarging ~~and just literally destroying~~ the 160-acre limitation.

I visited with Mr. Polk and said, "Harry, do you really know the trouble you've created

The upper Missouri River Basin required more land than permitted under Reclamation Law for an economic farm unit

by making that agreement to **us** in the Upper Basin that you're so interested in developing?"

He said, "I was put to the rack on this thing. The California delegation came to me and said, 'Mr. Polk, we want to enlist the support of the National Reclamation Association and if we can have that support, we're prepared to make a sizable donation, financial donation, to the cover the expenses of the National Reclamation Association.'" And he said, "What do I do? He said we needed the money. The Association needed the money to support its lobbying activities, considering the whole area of the West, so," he said, "I had to agree. I felt that I had to agree to support the California interests."

I said, "You know, there's two problems that are going on here. One is the agricultural interests [up here] that want to break down the 160-acre limitation, but there's also another competing interest in there, which in California and Arizona, a twenty-acre or a forty-acre plot of ground can meet the test of a farm family and meet the water charges. So you've got two competing interests there and we're caught in the middle up here, because we're limited to the 160-acre limitation. I can't get any consideration of it up here. But you supporting the California interests is just putting us in a real bind, and it's going to slow our rate of development up here."

And another issue in that thing was that California had entered into a number of water contracts on the Colorado River which [Ray] Lyman Wilbur [of California], as [a previous] Secretary of the Interior, had agreed to, which grossly exceeded California's share of the Colorado River water. In effect, California, particularly the Imperial Irrigation District and

Vernon believed California's contracted water on the Colorado River exceeded its share of the river under the Colorado River Compact

the Metropolitan Water District, was borrowing Arizona's [and the Upper Colorado River Basin's] water, which was really going to be used in the Central Arizona Project. ~~So you had another element in this argument of not wanting Arizona to develop its project. So supporting California threw Arizona into a tailspin, too.~~ [I had been told that California's strategy, by supporting the 160 acre limitation, would delay development of the Upper Colorado Basin, and thus that unused water would continue on down to California.]

California supported 160 acre limitation to slow upper Colorado River Basin development

So I said, "You've really put a lot of development of the West into a tailspin when you decided to accept the money from the California interests."

"Well," he said, "I felt I had to do it – I did it." And it did. (laughter) End of story.

Storey: Well, let's see, it took until '82, I think it was, to revise the acreage limitations.

Vernon: My counsel, ex-counsel, Bill Burke, after I don't know just exactly how long in the Solicitor's office, when I was on home leave in the fall/winter of 1959, my son was living in Sacramento at the time, I visited the Sacramento regional office, and lo and behold, there was Bill Burke, as Regional Counsel. And apparently he'd come up with one of his brainstorms and had found out a way to come up with some legal scheme, legal theory, by which it – and this, of course, was much earlier than '82, but somehow or another, he came up with some kind of a legal scheme which satisfied to some extent [the agribusiness interests in breaking the 160 acre limitation.] ~~California's interest in getting the = the agribusiness interests.~~

I think that when the Central Valley

Project, or the state project, I don't remember where the water came from, I think it was from Reclamation, went into that Westlands Irrigation District, I think somehow he came up with the scheme for that that made that Westlands Irrigation District somewhat looser [on] than the 160-acre limitation. So Bill came up with one of his brainstorms there. This was it. He had an uncanny ability but it created a toll on him mentally-wise. Turn it off. [Tape recorder turned off]

Storey: Well, I think we're about ready to start talking about your assignment in Iraq.

Vernon: Okay. As I told you, when it became apparent that my tour in Billings was to end, my first possible assignment was to go to the High Aswan Dam in Egypt. There . . .

END OF SIDE 2, TAPE 3. APRIL 26, 1995.
BEGIN SIDE 1, TAPE 4. APRIL 26, 1995.

Storey: This is tape four of an interview by Brit Storey with Kenneth F. Vernon on April the 26th, 1995.

For the High Aswan Dam, you would've been on loan from Reclamation?

Vernon: I believe I was to be on loan, or to be a team from Reclamation to the Foreign Operations Administration, which would then be supporting through the technical activities program of Point Four and be stationed at the High Aswan Dam. My reasoning for that is that by continuing to be a member of Reclamation, I could call upon the Denver office, say, for some support activities if I felt that I needed them. Then we could issue what was called a P-I-O-T, Project Implementation Order Technicians, and perhaps borrow some people from Reclamation to

The High Aswan Dam assignment would have been on loan from Reclamation

perform certain specific activities in support.

But as it turned out, Mr. Nassar, who had been the support to the then President of Egypt, decided to hold a bloodless coup, *coup d'état*, and he became the President of Egypt, and the previous president was retired. Well, Mr. Nassar was a great operator and he was also toying and trying to play the Russians off against the United States. So Mr. [John Foster] Dulles, who was then the Secretary of State, got provoked with Mr. Nassar and said that we were no longer interested in supporting the construction, the U.S. was no longer interested in supporting the construction of the High Aswan Dam.

Nasser's *coup d'état* ended the possibility of the Aswan Dam assignment

So therefore, even though I had begun arranging to sell my house and close out my interests in Billings, I had to suddenly call a halt to those operations because I was told nothing would be forthcoming for the immediate future. So the Egyptian thing passed on.

Later, through one of my friends, George Pratt, who I mentioned earlier, who was working for a consulting firm and was visiting Baghdad, and Mr. Wesley Nelson, who had been an Assistant Commissioner with whom I had worked closely, had joined the Foreign Service and had been assigned and loaned to the government of Iraq to be an Executive Member of [the] a Development Board which was going to utilize oil revenues to finance a development program within the confines of Iraq. Mr. Nelson was holding two positions, both as an Executive Member of the Development Board and as the Head of the First Technical Section, which was the equivalent of the Bureau of Reclamation for the Government of Iraq, for covering irrigation, drainage, and flood control, and hydroelectric power generation.

Wesley Nelson solicited Vernon's working for the Foreign Service in Iraq

So Mr. Pratt told Mr. Nelson about my availability, shall we say, and Mr. Nelson, his program had developed to the point where he was becoming completely involved in Development Board activities, as a member of the Board, because by that time other elements of the board activities had begun moving ahead. So he felt that he needed to remove himself from the First Technical Section's activities, and he felt that I was capable of handling that. So he went to Mr. [Harold] Stassen, the then head of the Foreign Operations Administration, and told him of my availability and suggested that he go to Reclamation and request my transfer over to the Foreign Operations Administration and be a part of Mr. Nelson's team at the Development Board.

At the same time there was another group of Reclamation people who were still on Reclamation payroll that were in the Irrigation Directorate, which was in the Ministry of Agriculture in Iraq. These people were still on loan from Reclamation. But it was decided that I should transfer, terminate my connection with Reclamation, and actually transfer over into the Foreign Service, in the Foreign Service part of the Foreign Operations Administration. So then I assumed a Foreign Service reserve officer's rank.

Transferred into the Foreign Operations Administration, Department of State

So, I reported into Washington October 16th, 1954, went through a *pro forma* [indoctrination] ~~enlistment~~ program, but I did not engage in what was the normal indoctrination program because I was needed in Iraq. So I was sent immediately out. I left Washington the night of October 31st and arrived in Baghdad the morning of November 2nd, 1954.

Arrived in Baghdad for service on November 2, 1954

As an item of interest, I left Washington

in the midst of a snowstorm and I arrived in Baghdad and it was 98 degrees the 2nd of November. I asked my colleagues there, "When do we go swimming? Where's the swimming pool at 98 degrees?" They said, "Oh, no, we've stopped swimming for the season because [of] the [lack of] humidity, it's so arid, that the body evaporation is so rapid, that the body can't replace the coolant effect of the rapid evaporation of the water off their body. So when the temperature gets down to 100 degrees, we stop swimming." It's a fact.

Storey: I'm not following it, I'm afraid.

Vernon: Well, if you're wet, you see, for instance, when I go to Atlanta – you might want to take this off the tape.

Storey: No, go ahead.

Vernon: Well, when I go to Atlanta, for instance, they have periods, they get air from the Gulf, or when you go to Florida, that air is very humid. For instance, in the spring in Pakistan it was air coming off the desert. Beginning about June 1, the monsoon winds began and air came off the Arabian Gulf, and it was 95 percent humidity with 95 percent temperature, in other words, nearly 100 percent humidity, so the body did not lose any heat through evaporation. Your body would perspire, but you would drip, because it couldn't evaporate and therefore have a cooling effect. But in the spring of the year, they would get air off the desert, which was the same as Baghdad, and the [temperature] aridity might be at 110 or 115 degrees with 5 to 10 percent relative humidity. So you would have a very rapid evaporation which had its . .

Storey: So that would cool you off.

Vernon: . . . cooling effect, but if you tried to swim at 100 degrees, you'd be very wet and you'd have this rapid evaporation which would chill the body, you'd actually get a chill in the body. So the general rule was that around 100 degrees, you stopped swimming.

Storey: At 100 and above?

Vernon: At 100 and below. When the temperature got down to 100 – you see, in the middle of the summer in Baghdad, it ran from 110 to 115 degrees in the middle of the day and with 5 percent relative humidity, very arid, and we could use the swamp type of coolers there. So then ~~when~~ we would say that we were having a cold wave if the maximum daytime temperature got down to 108, say, or 105. So as the temperature in the fall of the year decreased to, say, maybe a maximum of 100 degrees, you were still on the low end of the scale, but you still had arid conditions, so you still had at 100 degrees rapid evaporation from the body, which would create the removal of heat.

There's not such a thing as coldness, that's not an element, it's heat that is the element, and coldness is simply the absence of heat. So that when you have this removal of the heat from your body, but through evaporation, because evaporation, as I recall, takes eighty calories per gram to change one cubic centimeter of water from liquid to vapor. So for every gram of water, a cubic centimeter of water you have on your body, you're removing eighty calories of heat in its transfer of liquid to vapor, plus one calorie per gram of every degree between zero centigrade and the ambient temperature.

Storey: But what I don't understand is, why wouldn't you chill more at higher temperatures?

Vernon: No, because then you've got a counterbalancing effect because it was so damn hot, that it would counterbalance and replace the heat in your body.

Storey: I see.

Vernon: There was a counterbalancing effect. But the breaking point was about 100 degrees. I was confused on that, too, until I experienced it and I accepted the rule. (laughter)

Storey: Well, that's interesting.

Vernon: Yeah, it's just one of those things.

Storey: So you got over there and then what did you end up doing?

Vernon: It was our practice at the station that the people you would be associated with met you at the airplane, were the welcoming committee, so to speak. So I was welcomed there, and a number of people that I was to work with met me out at the airport. And, of course, I was completely bushed because I'd been traveling directly through from Washington to Baghdad. That was back in the days of propellers, so it took quite a while to get from Washington D.C., to Baghdad, Iraq. And I think, and as I say, I left Washington the night of October 31st and arrived in Baghdad the morning of November of 2nd, but with a rather a long layover in Rome, which is an experience I want to tell you about and discuss later.

Met in Baghdad by the people with whom he would work

Flew to Iraq in propeller planes

So I arrived the morning of November 2nd. I went immediately and reported in to Mr. Nelson at the Development Board. His office was in the Development Board downtown.

I should explain that there was what was

Joined the Development

called a “usom” a U-S-O-M, United States Operations Mission [of the International Cooperation Administration], associated with the U.S. Embassy. This was the group of people that were still U.S. employees and were performing U.S. activities patterned out through the various ministries of supporting the technical activities of the various ministries.

Board which was different than the United States Operation Mission (USOM) staff

The Development Board [group] was a separate operation. Although we were tied to the Mission in Army terms, for rations, we were a separate entity and we worked directly within the Ministry of Development. The Ministry of Development reimbursed the U.S. Government for our salaries and expenses. But we were basically considered Iraqi employees, Iraqi government employees [because we occupied Iraqi positions]. Of course, we were under the constraints of general U.S. policy and received direction to that extent from the Mission Director and from the Ambassador. But our fundamental operations were as individuals working within the Iraq government, and I was actually assigned [as] to the head of the First Technical Section, which in their terms was as the Director General of the First Technical Section, which was the equivalent to the Bureau of Reclamation in the Reclamation portion of the Development Board’s activities.

Worked for the Iraqi Ministry of Development within some limitations because was still employed by the State Department

Storey: So Mr. Nelson would’ve sort of been the equivalent of the Secretary of Interior.

Vernon: No, if it had been a commission that was governing, for instance, you would be more like a member of the governing commission of the TVA. The TVA was covered by – well, it had a Chairman. It also had a Commission which set the policies and direction and that sort of thing. So he [was] ~~then became~~ a member. His basic assignment was as Executive Member of the

Development Board, and the Development Board [and the Ministry of Development] had to act upon [requests for] and grant funds to carry out the operations of the Development Board. Now, the Development Board [and ministry] had five separate sections: there was water and irrigation drainage development; there was what they called communications which included highways, railways, (pause) I believe, telephones; there was the third section of industry. Industry, they were developing industrial plants, cement plants, sugar mills, other industrial developments. They were also closely associated with the oil administration. Because the oil ministry, the oil development in Iraq was making great strides. The fourth section was agricultural development. The fifth section was social development, which included housing for refugees, schools, that sort of thing.

So all of these activities now, by the time Mr. Nelson asked for me, all these other activities had begun to become very active. So he was having to devote a good deal of attention to consideration of [those] ~~their~~ program activities and he wanted to take off his hat that he wore when he [was] first Head of the First Technical Section, as being responsible for water development and that's why he asked for me to come in and take his place in that department. ~~So then I began.~~ First I said, "I've got to go home and get some sleep."

Well, Bernard Murphy, who'd been part of my group in Billings and had been caught up in a reduction in force when the Eisenhower Administration came in and told us to peel off a lot of people, Bernard Murphy had gotten a connection with Wes Nelson in the Development Board, [and] was heading up a design unit in my First Technical Section. So he was training a bunch of Iraqi engineers to design irrigation

Bernard Murphy, RIFed in Billings, was heading a design unit in Iraq

systems. So Barney says to me, "Come on [to my] home, Ken. I've got a big house, we've got room, so I'll put you up till you get located."

So I went and took up quarters with Barney Murphy and his family while I got myself located. At a later time I decided it was time for me to move out of Mr. Murphy's house, and I moved into a hotel because my family did not come until after the school year was out in the States, and they came over in July of 1955. So I did not see my family from the middle of October of 1954 to the middle of July of 1955. So that gets me started in the Development Board.

**Family came to Baghdad
in July of 1955**

I mentioned that I had an experience in going through the airport in Rome. It was about a ~~four~~ or five or six-hour layover, I've forgotten just what, from the plane from the States to picking up the connection to get into Baghdad, Iraq. We were assigned to places in the transit lounge so we didn't have to go through immigration, through Italy. We stayed in the transit lounge, and I noticed this gentleman sitting over there across the room from me, and it was apparent he also was an American. So we kept eyeing each other and finally I decided, well, why not go over and introduce myself. So I did. I went over. We started up a conversation, and it turned out that he was Calvin Davis, who was President of Harza Engineering in Chicago, who had been employed by the Development Board of Iraq to design a dam at the Derbendi-Khan site up in the mountains of Iraq on the Diyala River.

**In Rome airport met
Calvin Davis, President
of Harza Engineering,
which was under
contract to the
Development Board in
Iraq**

I said, "Well, that's very, very interesting, because I'm going over to Iraq to take on the job of head of the First Technical Section in the Ministry of Development."

He said, "I'm going to be reporting to you instead of Mr. Nelson."

I said, "Yeah, I guess that's right."

So he said, "You know, I've got a problem that I'd like to discuss with you."

I said, "How's that?"

Well, he said, "The Development Board, in assigning me the job of designing this dam, the then Prime Minister – " I should explain, the Development Board was composed of ten members. There were three political members: the Prime Minister, the Minister of Development, and the Minister of Economics, they were the political members. Then there [were what] was called the Executive Members. The Vice Chairman was a military man. He went by the title [of Pasha], he was a brigadier general who had been trained in the Turkish Army, before the British days. So he was an elderly gentleman, a senior gentleman. He went by the title of Pasha, which was a Turkish title, which [allowed him to] ~~he could~~ wear the feathers on his lance. I've forgotten how many feathers he could wear on his lance as he rode his horse and all that sort of jazz. But at any rate, he was the Vice Chairman, and then he headed up what was called the Executive Members [which formed the Steering Committee].

Make-up of the Development Board

There were (pause) four other executive members. These members were under contract to the government and they were appointed for five-year terms, and they were all important Iraqi people. One, Dr. Jaleeli was a graduate of Cambridge, I believe, in economics. Said Chalibi was a member of a prominent banking family in Iraq. The Chalibi family owned the

Rafadain Bank, which was literally the government depository of all revenues. There was Jalal Baban, who was a Kurd, who spoke very little English. Mr. Jaleeli spoke excellent English because he had been educated [in England] ~~either in France or Europe somewhere; I've forgotten what.~~ Then Jalal Baban was a Kurd who did not speak English, but he was bringing Kurdish interest into the activities of the Development Board. Then there was Abdul Majred Allawi, who was an ex-ambassador, a diplomat. So you had a typical board to deal with.

Then you had two foreign members, Mr. Nelson was one, an American, and Mr. Ionides, who was a Britisher, who had formerly been a member, had experience with the Directorate of Irrigation, had many years of experience with irrigation in Iraq and in Jordan. So he was an experienced irrigation engineer.

So you had quite a complexion of interests and skills in this board. The way the board operated was the executive members operated as a Steering Committee. The work week began on Saturday, [and you worked] ~~work~~ through to Thursday. Friday is the Muslim Sabbath. So that Friday was the holiday, so you took off, you didn't work. The Development Board began what they called a new agenda with their Steering Committee meetings on Saturday, and each of the sections would send up through the Minister items to be considered by the Development Board. The heads of the various sections would appear before the Development Board, explain and discuss what the proposal was, and then the Steering Committee would either require more information, or put the item over to a later meeting, or send it forward to a full plenary session of the Development Board headed by the Prime Minister, and that would

How the Development Board worked

meet on Thursday evenings.

Then the Development Board, the formal plenary session of the Development Board, would take a decision as to either approving or sending back for further consideration whatever item you might have that the Steering Committee had set up for consideration. I introduced a practice there, which I found useful in my experience in working with the commissions in the States. I would send up my reports through the Minister and [ended] ~~fixed~~ up the discussion with a set of recommendations which would formulate, basically, the language of the decision I wanted from the Development Board. So I would request the Minister to place this before the Development Board for its consideration, and then I would send up my report addressed to him covered by a memorandum from him to the Development Board transmitting my report and request for consideration. My [Iraqi] colleagues had [previously] ~~all~~ gone [, without any recommendations,] before the Minister, who didn't know what the hell was going on, because he was a political member. [And so earlier Board's decisions left a lot to be desired.]

Storey: He was the brigadier?

Vernon: No, no. The Minister, you see, was a member of the Parliament. He was a member of the Prime Minister's Cabinet. He didn't know a goddamn thing about what was going on, but he was a political member, you see. In the British system, it's very interesting, the Minister is simply a titular head. The Ministry is run by the First Secretary. I got into this with a vengeance in Pakistan, but in Iraq it has sort of been changed somewhat.

But anyway, the Minister then, found it

very simple. He didn't know what the hell I was proposing, so he'd automatically sign it and tell his secretary to send it down to the secretary of the board to put on the agenda, and then I had already set up what I wanted as a decision. So I got decisions that were workable. But up to that time, these things kind of got to the Development Board. The Development Board didn't know quite what was going on and they didn't know quite how to formulate a decision, and so some of the earlier decisions were very vague and nobody knew quite what the hell what they covered and what was authorized.

So I would set it up in such a way that I [could] ~~would~~ formulate [the discussion] ~~this thing~~ after [which] I would make ~~my discussion~~ that my recommendations ~~would begin~~, and I'd recommend that the Development Board consider taking the decision along the following lines. The Development Board, in its "blank meeting," in its "blank session," took the following decision, points one, two, three, four, five or however many things I wanted done, and particularly I made them authorize me to do everything I did. In other words I did very little on my own [authority], but I was always covered by their instructions. Because I felt, after all, the worst thing that could happen would be a foreigner to get skewered by somebody with an ax to grind. But I always was covered by a detailed Board's decision.

Well, the board found this very handy and so they kind of put it into practice in the other sections there. But at any rate, now you've got the structure that I was working in.

I got a call from Mr. Nelson, he said, "Ken, we're going to take up in the next Steering Committee meeting Calvin Davis and his proposed Derbendi-Khan Dam, so you be

Derbendi-Khan Dam

prepared to discuss that with the Executive Members in the Steering Committee meeting."

So, we went to the Steering Committee meeting. It began on a Saturday morning. They turned to me and said, "Well, what's on your agenda, Mr. Vernon?"

I said, "Mr. Davis is here from Chicago and he's got his plans for the proposed Derbendi-Khan Dam. I happened to meet him in Rome, and we've been discussing this. He indicates that he's got a problem that he'd like to discuss with you."

So with that entree, then, Calvin said, "I have completed my charge of designing a dam that I feel is sound and safe for the Derbendi-Khan site, but there are problems with that site which I do not feel are the kind of problems which should be solved with a concrete dam[. So], ~~that~~ I believe you should authorize me to design an earth and rockfill dam." The problem was in the foundation. These foundation formations were tilted at an angle so that you wound up, [with foundation formations that could easily fracture from the pressure of the water.] ~~here was the face of the pressure of the water, and then you wound up with these formations shaped like this.~~ You had the tendency for this foundation formation to shear, and they weren't all that strong, just as I pointed out in that Andy Coyne example [of the Malpassat Dam].

Derbendi-Khan site had foundation problems that suggested an earth and rockfill dam

Storey: So they were slanted, so they came up facing downstream?

Vernon: Yeah, facing downstream.

Storey: So that if you put the dam on it, the dam . . .

- Vernon: Would have a tendency to break those corners off.
- Storey: To just break it off and go on downstream.
- Vernon: Yeah, right. And it was an indurated sandstone. It was kind of a poor-quality limestone. It wasn't a foundation that was best served by a concrete dam. So Mr. Davis explained all this to the Board and he said, "I've completed my charge as I was told to, and I have the plans with me. But I would recommend that you seriously consider a design for a rock filled dam, because I believe that is the type of structure that should be built there." Incidentally, Mr. Davis had been the Chief Design Engineer of the TVA, so he was a highly qualified engineer.

And so the Board turns to me and says, "Well, Mr. Vernon, you're our expert. What should we do?" My second day there. (laughter)

So I said, "Well, gentlemen, I've only had general discussions with Mr. Davis, but my experience in Reclamation, building dams and having been associated with dams in the United States, I seriously recommend that you consider his suggestions. But I would suggest that you authorize me to hold detailed discussions with Mr. Davis, and we could come back with a proposal which you might authorize him to design such a dam if that seems to be really indicated."

So they said, "That sounds pretty good."

So I got the [problem] putty off their back. They said, "You go ahead and do that and report back to us."

So Cal and I went back and so we really went into it in depth. I was convinced from

some of my experiences in the States,
particularly with – not rock-filled dams, [but
with earth-filled dams to. . .]--

END OF SIDE 1, TAPE 4. APRIL 26, 1995.

BEGIN SIDE 2, TAPE 4. APRIL 26, 1995.

Vernon: ... listen seriously to Mr. Davis, that some form of at least a compacted earth-fill dam or perhaps the rock-fill dam, of which I'd had little experience was warranted, a better selection. And it might even work out to be cheaper. So I prepared a report. The way we would deal with these things, then as Head of the First Technical Section, I would prepare a report through the Minister to the Development Board, a written report, a formal report, discussing all these elements, putting it forth, and this would then be submitted bilingually. On a page there'd be the English and the accompanying Arabic, so that the members who weren't conversant in English could read the Arabic.

It was very difficult sometimes for my boys to translate engineering terms into the Arabic, because the Arabic is not [as rich a language as] ~~the rich language~~, the romance languages, as in particularly English with its combination of Germanic and the romance languages. So when you get into some of your conditional phrases, it's very difficult. I remember [Said] Chalibi one time was discussing this with me and he was commenting about how difficult it was some times to convert the English into the Arabic, because the Arabic was basically two tenses, to do or completed, the present or completed. And it didn't have the subjunctive phrases or the conditionals in there.

So at any rate, I prepared my report. My recommendation was that the board authorize Mr. Davis and his organization to come up with

a design for a rock-filled dam, but to also prepare parallel specifications [and] tender documents, for a rock-filled dam. ~~and~~ Then when those were completed we would go out for tenders for both the concrete dam and the earth-filled dam to see how the prices worked out, and then the Development Board could make an intelligent decision based on economics.

Well, they thought that sounded pretty good, so they authorized that. So I took Cal back to my office and I said, "All right, now, Cal, I got you to your point that you wanted, now you've got to give the Development Board something. I think you should do this job at expenses only, no fee, no profit. You've got to give the Development Board that much."

Well, he squirmed and wiggled a little bit and he said, "Well, I guess you're ~~aff~~ right."

So normally our formula was, which we began negotiations with consulting engineers, was two and a quarter times direct [drawing board] ~~board~~ expense, direct activity expense, which covered overhead and fee. I got him down to something like no fee and a reduction of his overhead. So I got him down to something like 1.6 times his direct expense. He squirmed with that, but he finally accepted. He said, "Well, I guess you're right."

So he went back and then in a few months he came back with the design for the rock-fill dam and then we went out for tender. When the rock-fill dam came in several million dollars cheaper, less expensive than the concrete dam, ~~so~~ the Development Board then authorized the construction and appropriated the money for the construction of the rock-fill dam. That was going on midway when the revolution occurred in 1958, so I never did get to see the completion

of it.

What I was trying to work in there was my introduction to the Development Board, how the Development Board operated, how the Ministry operated with the Development Board, getting back, authorizing decisions, including appropriations of funds to the activity, because the Development Board controlled the money, although the basic allocations of oil revenues was by the Parliament.

Now, that creates another element of my activities with the board which I'd like to go into now, rather than getting into project details. The government of Iraq began to get into the world market of its petroleum resources after the Mossedegh revolution.²⁶ [Tape recorder turned off for telephone call]

Storey: We were talking about . . .

Vernon: I said that now I'd like to give you a little better explanation of the government budgeting structure which the Development Board operated under. The Iraq Petroleum Company was just entering the world market in the early years of the 1950s. What had happened was that there were problems in Iran, and the Anglo-Iranian Oil Company had been sort of closed down, and so the British then stimulated activities in Iraq to put the Iraq petroleum oil resources on the world market through the Iraq Petroleum [Company], which was closely associated with, but not openly, with the Anglo-American Oil Company, later became British Petroleum [BP].

**Iraqi budgeting structure
and oil money**

But at any rate, this began ~~then~~ developing oil revenues, and the government of Iraq decided that it was going to take and devote 70 percent of those surplus oil revenues to

development of various functions within the country. It would also [devote] develop 30 percent of those revenues to supporting activities of the then existing government.

Now, in the British system, in order to get around its strictures of avoiding the expenditures of money, which are indigenous to the British system of government, they would use the corporate entity to give the power to expend money. So they set up both in Iraq the Iraq Development Board as a separate entity, as Pakistan did with their Water and Power Development Authorities, and literally gave them the power to do everything but declare war and to coin money, but they could sure spend it.

So then the Parliament had general oversight of this operation, particularly through the Prime Minister and the Minister of Development. At first there was simply the Development Board, but the Development Board then began to get such strength that the government felt they needed a little more political control, or policy control would be a better term, policy control over the activities of the Development Board, so they then set up a Ministry of Development, which the Development Board was attached to. The make up the Development Board I previously described [was retained], but the Development Board then became an attachment to or an adjunct to the Ministry of Development. And the Minister of Development was theoretically the executive officer of the Development Board.

Storey: And this is the Minister who signed the paper?

Vernon: Yeah. The Development Board would issue its decision, which would be passed down to the Minister of Development, who would then pass it down to me, and if I felt that there were any

policy issues involved, I would go back to the Minister, but I'd never refer any technical question to the Minister, because he was not qualified to make that decision, but I had that basic authority as Head of the Section. Had I been a local Iraqi in a position like that, I would have been called a Director General, and in the other ministries like Agriculture and Public Works and so on, their various elements were called Directorates. So it's strictly patterned after the British system, which was headed by a Director General.

So the Development Board then would develop its various programs and then they would go up to Parliament to be considered for approval. Well, in the mid-1950s, Iraq petroleum was really making money and ~~they~~ ~~were~~ generating excess revenues, and while I arrived in the fall of 1954, by 1956 I'd decided how I was going to operate, and I had put together a program of activities. So I went back to the Development Board and got a great expansion of the current program. So it was fully funded by financial resources from the Development Board, but they were lodged in the Bank of England, the funds were lodged in the foreign exchange, the resources were lodged in the Bank of England.

So then in the middle of 1957, I got a call from the Vice Chairman's office, and he requested that I come over and visit with him and his colleagues. I said, "Yes, sir, I'll be over there immediately." So I put my tie and jacket on and went over to meet with the Vice Chairman. As I walked in, he was there in a meeting with his Iraqi colleagues, but the [foreign] board members were not there. So I thought, "Well, this is going to be an interesting session." And it turned out it was basically a political problem.

He said, "Mr. Vernon, you've given us a bit of a problem."

I said, "Oh, how's that, sir?"

He said, "As you know, the government has issued a directive that the Development Board, because oil revenues are building up, that it wants [an expansion of program] ~~a program expansion~~ of activities that it could consider for approval by the Development Board, and all the other elements of the Development Board have come forward with expanded programs, [but] ~~which~~ you did not. Now, this gives us a problem with the Parliament, because as you well know, your program, the program of water development, is the most important one and the most widespread one within the country. If we go to the Parliament with a program that does not include an expanded program in water development, drainage, irrigation, flood control and drainage, we're going to have a problem. So how can you help us solve that problem?"
[Tape recorder turned off]

The Iraqi members of the Development Board requested an expanded program

So he said, "Can you help me with our problem?"

I started to laugh, and he said, looking at his colleagues, he said, "What's so funny?" He was very serious about it. He was a little bit miffed.

I said, "Pasha, that's the first time in my professional career, in working through the elements of the U.S. government, that I've ever been told I didn't ask for enough money. It was usually fighting for enough money. But in truth, you people did approve my requested expanded program last year, if you'll recall, and I had put in everything in that expanded program that I felt we could reasonably accomplish within the

next few years. And as a practical matter of fact, we're only up to a performance rate of about 50 percent of that expanded program, so I didn't feel that it was appropriate for me to request an additional expanded program, because we wouldn't ever be able to get to it for a number of years."

He said, "Could you come in with an expanded program?"

I said, "If you'll agree that you won't press me about accomplishments on some of [the] things I might put into that program, I think we could come up with a few items." In other words, we could come up with a wish list, like Glenn Sloan did in the Missouri Basin.

So I went back to my group and called in my people and said, "I've just been directed by the Vice Chairman to come up with an expanded program even beyond the expanded program we already have. So you guys go back and clean out everything you've got in the drawers back there that anybody ever thought of, and we'll go back, then, with an expanded program for consideration by the Development Board and then up to the Parliament." (laughter)

So these guys went back and they dragged out things that anything that had ever been mentioned as a possibility, and we came up with about a 50 percent expansion.

I had become rather friendly with Dr. Jaleeli, who had a good sense of humor and he was very facile with the shadings of the English language. So you could talk pretty directly to him and he understood an English-language joke or a sarcasm and whatnot. So I went back to him in an informal session one time, after that all happened and said, "You know, that really was a

poser, because I was concerned that you people were concerned that I wasn't accomplishing enough on the currently approved program and here you were telling me I didn't have a big enough program." And this really was a poser, and I was really confused. But I said, "We did what you asked, but we had a lot of work to do before we'd ever get to a lot of it."

I had instituted, as I had in the Missouri Basin, I had instituted a program section, program planning section, which I got Larry Whearty from Billings, who was one of our program planners, schedulers in Billings, I'd gotten him through the mission, the U-S-O-M mission, to bring over to Baghdad and be a part of my group down at the Development Board. So I put him to work developing a programming system and a reporting system for why we would report regularly to the Development Board our use of funds and accomplishments each month by month. This was the first time they'd ever had that reporting function in Baghdad where they could actually see what was being accomplished.

So they then authorized me to make Mr. Whearty available to the other sections of the ministry to see what could be done about instituting such a system. The English member of the Development Board gave me strong support in that, because he felt that was an essential part of the operation, was not only getting the authorization to act, but the reporting back to the administrators what was being accomplished with what funds were being provided.

As a matter of fact, after we got that expanded program approved, I had a fully funded \$500 million program, of which we were expending at that time only roughly 50 to 60

Imported Larry Whearty from Billings to help establish a programming and reporting system for the Section

million dollars a year. But by the time the revolution occurred in 1958, we had about one-hundred million dollars of contracts ready to issue for tender.

In one of the initial stages of the appearance before the Development Board, they said, "Now, Mr. Vernon, how do you want to organize your First Technical Section?"

I said, "Well, I'm not familiar with your government structure, so give me a little time to study the government structure, particularly your financial operations, your personnel operations, and how elastic they are, and what seems to be the availability of Iraqis to assume positions and their capabilities in the First Technical Section."

Well, it didn't take very long for me to determine there were very few, at this point in time, very few Iraqis who could take on positions within the First Technical Section and execute engineering and design studies and construction components. Also I concluded that the personnel operation and the Director General of the Diwan, which was administration, was such that even if they were available, it would take forever to employ them, because they would have to go through some form of a political clearance operation or they'd have to be at least promoted, by some particular – get the laying-on of hands by some particular big-wig, because it was a paternalistic organization.

Then also their financial operations were such that – the Director General of Accounts was such, it was all predicated on the British system of the avoidance of the expenditure of monies. So in a construction operation, you need money and you need it fast. At a later time, I had quite an argument before the Minister with the Director General of Accounts,

The Iraqi system

but I really don't want to get into that detail. But it was a system which basically was designed to prevent the expenditures of money, and avoidance of expenditures of money.

basically was designed to prevent expenditures

So I went back to the Development Board and I said, "Gentlemen, my conclusion is this. I would like to employ as many Iraqis as I can. You've already employed a group of Dutch drainage engineers under contract with the Dutch Government, which are advancing the drainage section of the program, and I would like to employ as many Americans as I can locate either directly through the U.S. mission or under direct contract or through consulting engineers. So this will be the central group which will do the administration. This would parallel our regional organization in our structure in Reclamation. Then to perform project activities, we will employ consulting engineering firms who can then recruit and employ competent people who can perform the designs or whatever is required." I said, "You're accustomed to that situation because you now are employing engineering contractors as well as construction contractors in the construction of projects, and it seems to me that under your local conditions, that a continuation and expansion of that system makes sense if you want a rapidly expanding program. If you want a training program of Iraqi engineers, we never will get much accomplished for quite a long while. So in order to respond to your desire for accomplishments, my recommendation is the latter program."

Obtaining Development Board approval of a system for the Technical Section to follow

So they said, "Well, go ahead."

So we developed a stable of consulting engineers worldwide. Fundamentally they were American, British, German, French, Dutch. I don't believe we had any Italians. A Greek firm,

Doxiades Associates. When we got really going, I figured we had, through these engineering firms, had about 500 employees working on **my section** on the Development Board's program. So by 1958 then, as I said, we had developed definite project plans, design drawings and all, and tender documents for approximately a hundred million dollars.

Storey: A hundred million, I think.

Vernon: Five hundred million was my bank account, but we developed contract documents for \$100 million of projects, and we had a pipeline addressing itself to that 500 million, because we had this fine group of engineers working on specific projects.

Now, what I had done, also, was while we were working on specific project plans, I said to the Development Board, "There's a number of things that we need to do."

Before I get into that, I had spoken about the desire of the Development Board or of the government of putting part of their oil revenues into the existing departments. Also the Development Board had a section of its budgetary process, called Chapter Two. Chapter One was direct Development Board activities. Chapter Two was money that the Development Board handed over to existing agencies of government to perform supporting activities, such as my colleagues and counterpart was the Directorate of Irrigation in the Agriculture Department.

The Director General of Irrigation was a graduate of Michigan, and his Assistant Director General, the Deputy DG, was a graduate of the University of California-Berkeley. So here I was dealing with well-trained individuals and

conversant in English, so it was easy to discuss things.

I had suggested then to the Development Board that they authorize me to set up what they call in their language a Tanse'eq committee, T-A-N-S-E-E-Q, with an apostrophe between the two Es. T-A-N-S-E-'-E-Q – it's a glottal stop in their language, which is literally a coordination committee similar to what we had in Interior on the Missouri Basin. So that we held regular meetings with [our] ~~the~~ counterparts [in] ~~and~~ the Directorate of Irrigation, because they would have to come to me with their proposals for Development Board support. I would have to review them and then pass them forward to the Development Board with my comments and recommendations, and then they would consider it and then we'd pass that approval back to the Directorate of Irrigation, and then they would execute it.

**Working with the
Directorate of Irrigation**

But through this coordination operation we could settle out any technical differences in the proposals. Any policy decisions which might be relative to agricultural operations, because the Director General was receiving instructions from his Minister of Agriculture, and it at times gave him problems. I obviously couldn't solve those problems, so I would pass those up unresolved to the Development Board. I could solve all of the technical problems, but I would have to pass those kind of problems up to the Development Board, through the Minister, to be solved at governmental levels, and it worked out very well, at that rate.

So we would hold our regular meetings and also I would consult with Anwaral Hasani, who was the Director General of Irrigation or Mahmoud Hassan-Al Juma, who was the Deputy DG, with some of the things that we were doing

and kept them apprised of what we were doing in the Development Board, because it was the intention of the Development Board to turn over the operation of the completed projects to the Directorate of Irrigation. We had several projects that were nearing completion and we needed to bolster the personnel and build up the abilities of the Irrigation Directorate to take on the operations of those projects. So we would sometimes ask the Directorate of Irrigation to assign some of their personnel to these projects which were approaching completion so they could become familiar with it. So they then could get involved in the later stages of the operation of the project.

So there was a close coordination there between the activities of the Development Board, and this went through all of the agencies of government, particularly the section was heavily involved with the Ministry of Public Works, for example. I don't know exactly who the Third Technical Section on industrial projects was involved with it, but I imagine one of them was the – I don't know whether it was the Ministry of Oil or the Directorate of Oil Affairs, whether the Director of Oil Affairs was in the Ministry of Economics or the Ministry of Finance, I don't believe it was a separate ministry.

But the Development Board wanted this cooperation between the Development Board's activities and the old ministries, so that the ministries then could take on the operation of the completed projects. At the time that I got there, the Development Board, during Mr. Nelson's tenure as Head of the section and as member of the Development Board, had commenced construction of the Wadi Tharthar Flood Control Project on the Tigris River and the Ramadi Barrage, which was a part of the flood control

**Wadi Tharthar Flood
Control Project on the
Tigris River**

project on the Euphrates River [also the Dokan Dam on the Lesser Zab River. When I got there, these were in the midst of their construction program.

The Wadi Tharthar Project was a complex project of literally a dam across the Tigris River and then a control structure which would divert water from the [flood] flow of the Tigris River into a channel which was constructed out into the desert, an escape channel out into the desert, and pour this excess flood water out into this very large depression, the Wadi Tharthar, which would then take the excess surplus waters off the flood flow of the Tigris River because the channel capacity [of the river through Baghdad was limited to 7000 ^{M³/s}, and flood flows could approach 12,000-14,000 ^{M³/s}.]

END OF SIDE 2, TAPE 4. APRIL 26, 1995.

BEGIN SIDE 1, TAPE 5. APRIL 26, 1995.

Storey: This is tape five of an interview by Brit Storey with Kenneth F. Vernon on April the 26th, 1995.

Vernon: I was describing to you the elements of the Wadi Tharthar flood control project on the Tigris River located about sixty kilometers upstream from the city of Baghdad. The need for this flood control project was because the channel capacity through the city of Baghdad was limited to a flow of seven thousand cubic meters per second. And during the flood of 1954, flows of up to twelve to fourteen thousand cubic meters per second was experienced, and so levees were breached above the city of Baghdad, and flood flows were diverted around the periphery of the city of Baghdad which isolated the city of Baghdad for a considerable period of time.

**Flood of 1954 in
Baghdad**

So this Wadi Tharthar project had been instituted, which consisted of basically a dam structure across the river, a low level dam construction across the river bed, and then a diversion control structure which delivered water, surplus waters to a surplus flow channel which went about fifty kilometers out into the desert between the Tigris River and the Euphrates River [to a large depression in the desert], the bottom of which was at approximately zero or sea level elevation, but its periphery was at an elevation of some sixty to seventy meters above sea level. So that the total quantity of water which could be held in this depression totaled a quantity of [about twenty-five] cubic kilometers of water, I've forgotten the exact number, but it was a tremendous depression. This was already under construction when I got there, when I arrived in Baghdad.

So when I entered into the exercise, I immediately made an inspection tour up to the project. There were two major contractors busy there, one constructing the actual diversionary structure in the bed of the Tigris River, and another contractor who was building the control levees for the diversionary channel. I was somewhat amazed at the design of the structure, because the consulting engineer who was in control of the design and engineering of the construction had great experience in building things both in Iraq, Iran, India, and Pakistan. So that organization had developed certain construction techniques and design techniques which were strange to me as an American. Not to say whether they were effective or not, and as I examined them, I found that they were very effective in terms of the capabilities of the Iraqis. The contractor was a German outfit and it was a very capable outfit from Germany – had built many structures in Germany.

One of the techniques which was strange to me was this diversionary structure consisted of a number of gates mounted on buttresses across the bed of the river. These gates were being manufactured in Britain. Mr. Nelson, in his review of the initial project, as head of the section, he had support of other Americans that he had brought to Iraq, reviewed the basic British design and had proposed to the Development Board a completely revamped design of the initial British engineer's construction design, and, among other things, had suggested that instead of six-meter gates, which would require a tremendous loss of channel capacity because of the abutments that would be required to service the gates, he recommended that the design be changed to twelve-meter gates which would reduce the number of abutments which would be required, although it did introduce problems of stability of the size of the buttresses and the machinery that would be involved in the raising and lowering of the gates.

It was apparent to me, after studying the British design, that I could understand the principles of their overall design because they were accustomed to the lack of machinery to handle large pieces of equipment and had to depend largely upon something that manpower could handle. So their design for the abutments, instead of using form work, as we would do, they had the contractor construct a series of one-cubic-meter blocks of high-density concrete. These one-meter concrete blocks then would be literally the form work and an integral part of the buttress formation with a hollow center, which then could be filled with a low quality of concrete which was ~~simply~~ not required for strength, but simply for weight and stability of the buttress or pier. Then this high-density concrete could resist the erosional effect of

water passing around it, but the utilization of the lower-grade concrete in the center of the pier would be economic and save its costs. These one-meter cubes were of a size that could be handled through various devices that could be handled by manpower. But, of course, the German contractor was accustomed to utilizing equipment, machinery and so on, so he was handling this all by very modern German hammerhead cranes.

Then also the contractor had developed a bridging form work to support the deck between the piers so that transport could travel back and forth across the completed structure and it would be an operational deck and so on. The machinery, which would raise and lower the gates, could be stationed on this decking. But because of the increase of the span of the gates from six meters to twelve meters, this introduced new problems of design of the bridge decking and the loading that it would have to sustain, which the British engineer had not considered in his original design of six-meter bridge spans.

The German contractor then created a form work which literally was on wheels and let us say we had eight [or ten] gate openings to span, he built three or four of these dollies, jigs, if you want to call them that, and then he could put those in place, and by the time he got placing the concrete in the third or fourth span, how ever many he had, the concrete had achieved enough strength in the bridging that he could remove the form work [from the earlier spans] and move it ahead, so he could leapfrog his form work. It was a very effective method, but was strictly modern construction type, which was strange to the Iraqis.

There were a number of other elements in the design which were different to me which I

reserved judgment on until I became more experienced and familiar with it, and found that they were effective, although literally it was not what I was accustomed to.

I reported back to the Development Board the results of my first examination, and I pointed out there were a number of things which I felt we should discuss with the consulting engineer and the contractor, particularly his methodology of handling mixing of the concrete, control of the concrete, and the control of his so-called relationship of the water-cement ratio that I discussed earlier. Because he was utilizing a very sloppy mix. In other words, for ease of transport and handling, he was using a very sloppy mix with surplus water, which there was a good deal of wastage going on, of cement which was scarce. Because all the cement at that time was being imported. So I told the Board that I would follow up with the contractors and see if we couldn't get some control over there, and I mentioned a number of other items which I thought we could improve upon. But fundamentally I said that the project seemed to be going along on schedule.

There was also a similar project going on over on the Euphrates River, which was called the Ramadi Barrage, barrage meaning a low diversion weir. There were certain elements that had been previously built of that particular project. There had been a diversion channel built from the Euphrates River and into the Wadi Abu Dibbis, which was similar to but smaller than the Wadi Tharthar, which I had mentioned earlier. So that also was in the middle of construction.

Ramadi Barrage

About 1957, we were approaching completion of both the Ramadi Barrage and the Wadi Tharthar flood control project. During

1956, it became time to close off the Tigris River, in other words, complete the closing bank and divert the river out of its existing channel and into the diversion control structure, which was being built that I described earlier. The Consulting Engineer from Britain came down, and he had requested a meeting with the Development Board to discuss this issue on how to conduct the closing operation of the river. This was one of the ticklish operations when you decide to divert a river from its existing channel to its diversionary structure.

That year, after having an extreme flood year in 1954, here we were in 1956, literally a drought year, and the consulting engineer was concerned because he felt that the contractor really didn't have the capacities around to support the effort that would be required to close off the Tigris River. The [Development] Board requested my reactions. I said, "My reaction is that we *must* close it this year because we happen to be in a very low flow year, and we would have no guarantee if we put it off another year that we'd have the equivalent low flow," and this was a very favorable year for closing the river, and I thought that the Development Board ought to authorize the Consulting Engineer to issue a change order on the contract to provide the contractor with additional financing so he could assemble additional equipment that would be required, to assemble on an assembly line bit back-up resources of rock and materials to make the closing bank, so that once we commenced it would be around-the-clock operation and that the critical time of when you finally close off the flow, everything was in order, and ready and available, we [wouldn't] ~~didn't~~ have to wait for any production, but it was already there and the contractor could have the material and the equipment all organized and a continuous

operation could be conducted to ultimately close off the river.

The Board agreed with me and authorized the Consulting Engineer [by] to a decision to make a change order on the basic contract with the contractor, negotiate the change order to let him do the things that I had suggested. It worked out very well.

I had an interesting experience. I was visiting the project during the time [of] this activity of closing the river off, and I was at the Resident Engineer's house, enjoying lunch with he and his wife. His dining room was such that you could look out over the scene of the work, because he was up on a bluff above the river where he could sit on his veranda and watch what was going on. They had completed the closure of the river and were rapidly building up the body of the [closing] embankment, and at the same time the contractor was constructing a wave deflector structure along the crest of the embankment, the facing of the embankment upon which the water would rest.

All of a sudden, I saw a tremendous cloud of dust arise off the work site. I thought, my God, there's been an explosion. So I said to the Resident Engineer, "We'd better get down there and see what's happened."

Well, what happened is that the construction operation had been going on so rapidly that air had been entrapped within the embankment and was being closed off by this wave deflector structure, and that finally the pressure built up to the point where there was an actual explosion and this entrapped air sought its release. The minute I saw what had happened, I said, "Yes, this happens. We call it pore pressure in the building of an earth-fill dam.

Explosion at the Ramadi Barrage caused by pore pressure

You have to be very careful on your rate of compaction, the rate of water, the amount of water that you introduce to the embankment and the rate of embankment, because there is a build-up of what we call pore pressure or entrapped air in the interstices of the material going into the dam."

[That] ~~What~~ happened at Fort Peck, when Fort Peck was being built, Fort Peck was built by hydraulic dredgers, the embankment at Fort Peck. They actually had a great sloughing out of the downstream face of the dam through a build-up of pore pressures in the embankment material that was being dumped by these very large dredgers. So it actually generates a large overpressure within the structure. I just happened to watch the release of that pressure.

So when I was involved with the construction of the Beas Dam in India and was involved in the redesign of that, I was very concerned about the rate of construction and the ability of construction to close off the Beas River. And again it was an earth and rock filled dam.

Beas Dam, India

[We were also constructing the Dokan Dam on the Lesser Zab River up in the mountains of Kurdistan. Dokan Dam was a curved arch gravity section dam about 500 feet high, very similar to Bureau of Reclamation designs. The dam was located in a dolomitic limestone formation which had numerous caverns, so reservoir leakage was anticipated. The construction contractor was a French firm supported by a number of French subcontractors.]

Dokan Dam, Kurdistan

[Extensive curtain grouting was extended out on each abutment from the dam site. As construction was winding down and the grouting

sub-contractor was preparing to remove his equipment, I went to the Development Board and asked for authority to enter into an agreement with the sub-contractor to leave some of his equipment on-site because I anticipated that we might not have located all the caverns.]

[I was later told by the Consulting Engineer that after the reservoir was filled a large leak, about 10cumeecs, 350 second feet, developed and my foresight in having the equipment left at the site proved to be very useful. By that time I was working in Pakistan.]

I think that's a pretty good place for us to stop for today.

Storey: Okay. Good. Let me ask you whether or not researchers can use the tapes and resulting transcripts from this.

Vernon: I'm glad to make this available to anybody that finds it interesting.

Storey: Good. Thank you.

END SIDE I, TAPE 5. APRIL 26, 1995.
BEGIN SIDE 1, TAPE 1. APRIL 27, 1995.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Kenneth F. Vernon at his home in Fullerton, California, on April the 27th, 1995, at about 8:30 in the morning. This is tape one.

Vernon: Yesterday I was describing to you the construction of the Wadi Tharthar Flood Control Project. This was a rather major project, a major construction. It consisted of an earth-filled dam across the main bed of the Tigris River, then looking downstream, the closing bank on the river was to the left, then there was a weir-like

gated control structure of some twelve to fourteen bays controlled by gates. Then there was about 200 feet of section between the weir structure, and then a new side discharge weir structure of some 18 bays. Of course, the cell on the weir structure passed the main flow of the river was somewhat lower in elevation than the side-channel weir discharge, because that was to take the surplus flood flows that we did not want to pass on down through the river.

As I told you the main channel through Baghdad was limited to 7,000 cubic meters per second, and anything above that, we would discharge through the flood channels to Wadi Tharthar. The Tharthar is spelt T-H-A-R-T-H-A-R, one word. [Tape recorder turned off]

Now I should describe the flood control channel which led from this control structure to the Wadi Tharthar, which consisted mainly of a dike on the lower side in the channel. On the upper side was up against about a twenty-meter escarpment. So that the channel consisted mainly of the normal ground level plus a dike along the lower side. In order to improve the alignment of the dike at some places, it was necessary to excavate peninsulas, say, of the higher ground, so that in some places there was excavation in the channel bed, which got into a more permeable formation than was in the top surface of the ground. Also certain places along the construction of the dike, excavations had been made on the lower side, on the downstream side of the dike, so that again there were areas where the excavation borrow pits had gotten into this more permeable foundation.

So in the flood season of 1956, while the project was not completed, the construction was not completed, it *was* operational. So the Director General of irrigation, Mr. Anwar-al

Hasani, A-N-W-A-R, dash; small A-L, dash; H-A-S-A-N-I, Anwar-al Hasani, came to me and said, "You know, I think we ought to test the operation of the project, including the flood channel, while the contractors still have all of their equipment available, so in case anything should show up, they could take care of it." Because he was concerned that his department would be charged with the overall operation and maintenance of the project after it was completed.

I thought this was a pretty good idea, but I also said, "Well, we'd better not test the channel full bore, but close the gates on the control channel just enough to raise the forebay to give us a reasonable discharge out through the flood channel." Is that clear?

Storey: Uh-huh.

Vernon: So that was the plan we adopted in the flood season on the Tigris River, T-I-G-R-I-S, which arose in the mountains of Turkey and then flowed eastward through Iraq and then into the Persian Gulf.

We closed the gates sufficiently to give us a reasonable discharge. Actually, the fundamental, or the maximum carrying capacity of this flood channel was more than what we would allow through Baghdad, because it had to take the surplus of the flood waters, whatever that might be.

Well, it was a good thing we tried this out, because it soon developed that in these areas where there had been the excavation, which got into this lower permeable foundation, what we call boils appeared on the downstream slope and beyond the downstream side of the dike. The contractor, then, having his equipment there,

could immediately build up walls, circular walls, around these boils, similar as what happens in the Mississippi River Valley when dikes start to leak and leakage from the high-side water either in on the slope of the dike or beyond. The way you control that is to build up retaining walls of earth or sandbags or whatever to equalize the hydraulic pressure, and then you can undertake control and repair before the dike is washed out.

So we felt that was a successful operation, because it showed up in a number of places, and we hadn't realized the extent of this more permeable layer of material.

Storey: And if I'm understanding, I think a boil is where water starts bubbling up, and it looks like a little boiling area.

Vernon: Yeah. [drawing an illustration.] Like that. This dike was constructed – well, here, like this. Whenever they'd take out one of these things, they would borrow it back here and get this – see, maybe there was a nose of earth, a point of land, or something like that. We didn't want to put great bends in this channel. It would improve the alignment, you see, then you'd have to excavate here. Now, down under here about some five or six feet or more, there was this more permeable earth.

In a structure like this, the water level is like that. Say that the hydraulic gradient is something like this, and what we try to do is make this slope extend out far enough that the hydraulic gradient never reaches this point, because then you start getting leakage here, and it starts washing out your bank. Or if it gets out beyond that, the area around here, then it starts boiling up out here, what you do is immediately erect a berm or a wall or whatever to equalize [the hydraulic pressure], so that this hydraulic

gradient becomes stabilized, and so you counterbalance the hydraulic pressure. This prevents any washout, and you can get in and repair and do whatever you have to do to repair that leakage. So that worked out very well on several areas that needed correction which was made.

Storey: Wadi Tharthar was the location where the water was going to go?

Vernon: Yeah. The Wadi Tharthar . . .

Storey: Were they storing water there?

Vernon: No, they hadn't been. No, this was out in the middle of the desert.

Storey: But were they intending to?

Vernon: Oh, yes. Yes. And, a matter of fact, it shows up on aerial photos in today. I left – I wanted to get into this a little later, one of the things I wanted to mention.

Storey: Sorry.

Vernon: This same kind of project had been developed on the Euphrates River, but to a much smaller degree, and there the water went out into a depression called the Abu Dibbas, capitol A-B-U new capitol D-I-B-B-A-S. The word Abu in Arabic means father, Ibn means son, I-B-N, so Ibn Saud the King of Saudi Arabia, Ibn Saud, was the son of Saud. My principal Iraqi assistant, his name was Hassen-al Rufai, R-U-F-A-I. He was also known as Abu Majud or Abu Morad or something like that, meaning he was the father of his son Majud. So Abu Dibbas meant it was the father of something of Dibbas, whatever Dibbas meant, I don't know.

But that was such a location that nobody had ever figured out how to use the water that might be diverted into that during a flood time and get it back into the Euphrates River. So the Wadi Tharthar Flood Control Project was completed by the spring of 1957 and was dedicated. The thing left to be completed was a power station, a hydroelectric power station, but that was to come along later.

Hydroelectric power station on the Wadi Tharthar Flood Control Project

So now going back to the general operations at the Development Board. One of the things I instituted early on in my tenure was to proceed with comprehensive, what we would call in the United States, Basin-wide planning. While the Development Board had employed the American firm of Tibbetts, Abbot, McCarthy, & Stratton of New York to make a comprehensive survey, which it was more or less like a catalog of things people had talked about, with some analysis, but it was sort of about the same level as Glenn Sloan's plan for the Missouri Basin. There was an awful of lot work that would be required to produce basic plans which might be developed.

Developed a comprehensive basin-wide planning program

So I instituted two things. One was a comprehensive hydrologic survey, what we called the hydrologic survey of Iraq, and there I employed a joint venture of Harza Engineering of Chicago, H-A-R-Z-A, and Binnie Deacon Gourley, a partnership of London, because both were active and already active and had forces in Iraq. In fact, Binnie's firm was the consulting engineers who designed and was controlling the construction of Dokan Dam, D-O-K-A-N, on the Lesser Zab River, Z-A-B.

Storey: Could you spell Binnie Deacon?

Vernon: B-I-N-N-I-E; Deacon, D-E-A-C-O-N; Gourley, G-O-U-R-L-E-Y, which later, in its later

incarnation just became Binnie & Partners, because some of Binnie's more senior partners were either retiring or had died, and so they had to reformulate their structure under English law, because they could not contain the name of a deceased partner, so it became Binnie & Partners.

When we were setting up this hydrologic study, obviously we needed stations out in remote areas which could make a continuous record, a hydrologic record. In one of our coordinating meetings together with the irrigation directorate, we were concerned with, number one, what kind of equipment could we put out there which could take continuous measurements and wouldn't get stolen the first day and show up in the Souks, "the marketplace."

The second thing was, well, what kind of observers could we employ? Who could we get that would go out to these hinterlands? Because everybody at that time wanted to come to Baghdad or some center where they felt they could get the amenities of modern life, because out in the hinterlands it was pretty grim.

So one of the English engineers who had served a long time in the irrigation directorate in Iraq came up with a couple of ideas which we adopted. He said, "Well, we need to have somebody who knows how to read and write and can follow an instruction. So, therefore, let's see what schoolteachers might be available in these hinterlands that we could send in the records of the gauging stations, and where we can't find schoolteachers, you know, in the school system in the cities and villages, as the students progress along the educational path, they become failures, and as they have progressed further in the school system, they have at least learned to read and

**Developing a field staff
to read gauging stations**

write and can understand an instruction, but they're failures, so they never can find a place in society that they'll be happy with. But at least they'll have the qualifications that we need, and maybe we can pay them enough to interest them to take on and become an important personage in the locale as ~~to be~~ an observer of the gauging station." And that's the method we adopted.

Some of our more technical brethren from the United States and England wanted to go into radio, continuous radio recording and sending into a central location, but we all feared that that equipment would disappear by the first evening that it was left alone. So we set that up.

Then as a second operation, I had the Development Board employ Tibbetts, Abbot, McCarthy, & Stratton again. That's T-I-B-B-E-T-T-S; Abbot, A-B-B-O-T; McCarthy, M-C-C-A-R-T-H-Y; Stratton, S-T-R-A-T-T-O-N – of New York, who was already busy, had forces in Iraq, in a comprehensive study of the Lower Tigris and Euphrates. There were a number of very difficult problems there that needed to be fit together in some kind of a comprehensive program, not the least of which was about 100 kilometers below Baghdad, there was a control structure which diverted water out into the hinterlands between the Tigris and Euphrates Rivers. But below that, there had developed a big break in the levees along the Tigris River, which poured additional waters out into what's known as the marsh area, which had become known to everybody during the [Persian] Gulf War, because that's a group of people live down there in the marshes.

Also I wanted Tibbetts, Abbot, McCarthy, & Stratton, which was their acronym was TAMS, T-A-M-S, to study the possibility of reestablishing navigation on the Tigris River

between Basra, which was the port that serviced Iraq, and Baghdad, could we reestablish a navigation project. TAMS had access to many Corps of Engineers people in the United States with navigation experience, so they made a study on that.

A third element that I introduced, and this, again, I used Harza Engineering, H-A-R-Z-A, was an economic evaluation of a number of competing projects which were located on the Tigris River above the Wadi Tharthar and its various tributaries to the Tigris River, because in the general ideas of Iraq, a dam had been proposed on the Greater Zab River.

Dokan Dam on the Lesser Zab River was already under construction, D-O-K-A-N, but the Development Board had not really considered going into construction on the Greater Zab, but also there was talk of a dam near Mosul, M-U-S-O-L, the city of Mosul on the Upper Tigris.²⁷

At the same time as we were discussing and describing the Wadi Tharthar Project, the British had long thought that as the flood waters would be impounded in the Wadi Tharthar, in its geographic and elevation position, it could become a source of irrigation water to the lower-lying lands between the Tigris and Euphrates Rivers south of there, south and east of there. So there were also competing demands for irrigation areas along the Tigris and Euphrates Rivers, which would require irrigation water. In other words, how much water would we have available, which was the best way to conserve that water, whether it be in upstream dams or complete the Wadi Tharthar diversion system out of the Wadi Tharthar? And then which of the lands below Baghdad and along the Tigris and Euphrates ~~that~~ ought to be developed.

So I instituted a comprehensive study, which Harza undertook, and this was my first introduction to the modern age of computers, and that study was not completed by the time I was reassigned from Baghdad, but I saw an initial draft.

While I had Harza doing that study, I had assigned a study to a Dutch firm, went by the acronym NEDECO, N-E-D-E-C-O, which meant Netherlands Engineering Development Company, which was a sort of a Netherlands government-sponsored organization of a combination of Dutch consulting engineers. I assigned them the task of what would be required to make it possible to divert the Wadi Tharthar water to the lands lying below the Wadi Tharthar and between the Tigris and Euphrates River. So we had this comprehensive study going on to evaluate what should be the next phases of the development of Iraq, beyond those that were already started and under way.

That work was proceeding and coming to fruition by 1959 when I was reassigned from Iraq. So I don't really know what the results of that study showed, because it was not completed, although as I recall, the NEDECO group had arrived at some numbers which looked like it might be promising and really be a competitive source of water as opposed to the upstream dams.

I haven't discussed the drainage side of the Development Board activities, but through this organization NEDECO, the Netherlands group, the Development Board had employed a number of individual Dutch drainage engineers which were set up as a drainage section in the First Technical Section, and it was a very competent group of drainage engineers. There had been one in charge who had gotten a good

**Drainage issues in the
First Technical Section
of the Development
Board**

program started before I arrived, and then his tour was over just about the time I arrived, and a new Dutch drainage engineer, a Mr. Peter van der Sluis; small V-A-N; small D-E-R; Sluis, capital S-L-U-I-S. Sluis, in English, it meant a sluice, a channel. Peter used to say, "Vernon, you never did know how to pronounce my name." (laughter) Since he had a very competent group that he had working with, I gave him pretty free rein to develop and execute the drainage program. I had charged him with keeping in very close contact with the Irrigation Directorate and to utilize the Irrigation Directorate over there in the Department of Agriculture, to the greatest extent possible. So we had all these activities going in.

Then we come to the revolution of 1958. By this time, the oil revenues were building up very rapidly, and the Development Board was moving ahead full blast on its five basic programs. I believe it was the morning of either July 14th or 15th of 1958,²⁸ as I was showering and shaving, getting ready to go to work, I could hear a lot of what sounded like gunfire. The American enclave and embassy was not too far away from a rather major garrison, stationed for the protection of Baghdad. So my immediate reaction was, "Gee, the guys are out firing early this morning, must be out having an exercise," when my phone rang, and it turned out to be my Deputy Chief Engineer Hassen al Fufai, F-U-F-A-I, he was my counterpart, said, "Mr. Vernon, don't go downtown today, there's trouble." and hung up.

So I immediately called the embassy and got hold of the Marine guard. I should add, parenthetically, he did not want to say too much, because obviously my telephone was always tapped by the intelligence agencies, because I was a foreigner in Iraq, and they wanted to keep

**Revolution of 1958 in
Iraq**

track of what the hell I was up to. Because we found out later they're all paranoid, you know. So I called the Marine guard and I said, "Please advise the Ambassador immediately that I've been reliably informed that there was a revolution going on."

They said, "Well, we understood what the hell was happening because there were a lot of trucks and tanks moving down the boulevard in front of the embassy into town."

So I went over to the embassy later in the day to see what they knew what was going on. [Tape recorder turned off]

So I went over to the embassy to see what was going on, and so I decided to take my – there was these truckloads of peons from the field coming into the center of Baghdad, they were yelling and screaming and having a great time, and we found out later that the revolutionaries had gone out into the farms and villages and gave everybody a quarter dinar, which is about seventy cents, to come on in and have fun in the center of town, raise hell.

So I immediately called the people I was responsible for that were working for me at the Development Board. A couple of them were in isolated far-out locations. And since my wife had returned to the United States earlier in the spring to attend my oldest son's graduation from the University of Colorado, and my youngest son had indicated that he was having trouble with the authorities at the University of Colorado, and had been invited to leave, he was going to join the military on the bounce, which caused my wife no calmness, and so she wanted to go home and attend my son's graduation from the university and see if she couldn't straighten the younger son out. So I said, "Go ahead. It's

going to be a long hot summer.” It was May. “Go ahead, go on home. Don't come back until October, or later when the weather gets better.” I said, “You know, these summers here are pretty brutal, so enjoy yourself in the States.”

So I had an empty house there, and so I immediately told one family to come in, move in with me immediately, because they were so far out, that if something really happened, there would be no way of getting to them.

Another man I had there, who I had got the Development Board to employ directly under contract, who had been an ex-*New York Times* correspondent in the Middle East, he was to advise the Development Board on a public relations program, how to inform the populace what was happening in the Development Board and . .

END OF SIDE 1, TAPE 1. APRIL 27, 1995.

BEGIN SIDE 2, TAPE 1. APRIL 27, 1995.

Storey: A *New York Times* correspondent . . .

Vernon: Because he was to develop a public relations – I should say a public information, not relation, a public information program, which could figure a real pattern of informing the public as to what was occurring and happening and developing in the Development Board activities. He was a single man, and I forget just exactly where he was living, but, again, it was in an isolated area, so I had him come and stay, move into my house.

That evening, I received a call from our mission director. Even though I worked in the Ministry and Development Board every day and was assigned to the mission, our operation's missions were rationed, so to speak, I was still

under the general policy guidance as an American employee. I received a call from the mission director, who said, "Ken, don't go to work."

I said, "Oh, why not?"

He says, "It's a matter of recognition."

I said, "Oh, that's all right, Ben, everybody knows me down there. They'll recognize me."

He was very cryptic, he said, "I said, don't go to work."

So as I hung up the phone, I walked in and I was talking to this correspondence guy, this *New York Times* guy. I said, "That was a very strange telephone call. I was advised that none of us should go to work, because it was matter of recognition. What the hell was he talking about?"

And so he said, "Oh, that's *plain*. It's a matter of our government isn't recognizing the revolutionary government yet, and, we, as fundamentally Americans, and under the general policy guidance of the American group, we can't go to work. We're told to stay home." Well that was, I felt, a grave, and as it developed, it was a grave tactical error. However, we had to follow that up.

So after about a week or so, the embassy had arranged with the government to allow some planes to come in and take out all of the American dependents, and send them and put them up in a Rome, station them all in Rome. Of course, my wife was already in the United States. But the wife of one of my people, who was rather garrulous, used to call me up, call up

on the phone, and she start to voice her opinions rather loudly, and I used to have to say, "Chris, for God's sake, shut up."

She'd say, "Why?"

I'd said, "There's very good reasons. You're saying too much" I'd try to get her to shut up. Then I'd get her alone, and I'd say, "Chris, damn it, you know my phone's tapped. Everything that happens on my phone is listened to, and you get spouting off on what you think about what's happening here and your low opinion of these people. We, as Americans here, are diplomatically in a tough spot, so keep your goddamned mouth shut." (laughter)

Well, we had known them, because I had brought him over from Billings, Montana, out of Billings, Montana. He was the man I had doing this program and scheduling and reporting work. So I finally got her to shut up.

Then, as I say, the embassy had arranged with the government to bring in planes to take all the dependents out, and they sent them to Rome. Then they decided that our previous ambassador would never be able to work with the new group of revolutionaries, so he was reassigned somewhere else, and a new ambassador, who had no ties to the old government, came in, and, hopefully, he could learn to work with the revolutionaries.

Shortly after he came in, it was decided that our mission director and I would go down to the new Minister of Development and see if there was some way we could get our group back to work within the Ministry of Development and reestablish the relationships that we'd had. Well, the first challenge was, "Why did you stay away? Nobody's told you to

stay away. All the other people came to work. Why did you people stay away? And if you stayed away, why do you want to come back now?" So it was a kind of a real standoff there for a while.

But, anyway, the new government gracefully decided that, "Okay, come on back to work. We didn't tell you to go stay away. Come on back to work." And so we reported back downtown.

In the meantime, now, a whole new group of people, there was a new minister and a new set of directors general in the Ministry and a new Development Board had been established, because the old members, some of them had been put in jail, some of them were under house arrest, and so on and so on. So the new Development Board decided that no foreigner should hold a position of administrative charge of any of its sections, of which there were several, and therefore, by appropriate decision, and I have a record of it in my file, the Development Board took a decision that it was decided that Mr. Vernon should no longer be head of the First Technical Section, but that should be assigned as a consultant to the Director General of the First Technical Section. Déjà vu all over again, as Yogi Berra said – Billings. (laughter)

But it so happened that I knew the new Director General. He being Iraqi, was declared to be Director General. His name was Mohammad Hassan al Jumma, M-O-H-A-M-M-A-D, Mohammad; Hassan, H-A-S-S-A-N; al, A-L, small A-L; Jumma, J-U-M-M-A. I was told that he really didn't have a family name, but he had taken on a family name. Jumma, I was told, meant Friday, and he says he'd been born on a Friday, which was their Sabbath, they accepted

that as his family name, but we always knew him as Mohammad Hassen, and you would address him as Said Mohammad Hassen. But he was a graduate of the University of California, and I'd worked with him over in the Directorate of Irrigation and so on, so I knew him well. We got along fine.

So then I was set aside as a consultant and gradually our mission, what we called the U.S. Operations Mission, which was basically Technical Assistance Group, was transferred out of Iraq, because it became very difficult for the people to work. So it wasn't too long before I became the most senior citizen of the American community, and as such, a number of things devolved upon me. I had become the President, the first President of the Iraqi-American Society, which had been set up to foster relationships between the American community and the Iraqis. And the embassy was requiring me, or desired me, let's say, I don't know whether it ever was issued an order, but indicated their desire for me to keep them apprized as to what might be going on within the government that I could know, which I did regularly. I usually reported to the DCM, the Deputy Chief of Mission, which was literally the Deputy Ambassador.

Well, again, I had a number of items that I thought were worth study, so as this consultant and set aside the daily chores, I made some additional studies, particularly I'd developed the idea that – I knew that a dam was being built in Syria, and I knew that the Turks were considering a dam on the Euphrates in Turkey. Since these dams would be largely, for a long long time, devoted to the development of power, their releases would be completely out of phase with the irrigation requirements in Iraq, because Iraq had a very highly developed irrigation

system along the Euphrates River.

So I went to Mohammad Hassan, and said, "Look, I have already instituted some studies, sent some field crews out to see if there was a possible location for a dam above the Ramadi Barrage and between that and the Syrian border to act principally as a reregulating reservoir from these power releases from the upstream dams, and then you can release that water on a schedule which fit the irrigation schedule in Iraq."

So he said, "Okay, go ahead, that makes sense. Go ahead and do it."

So just before I was ordered to leave and transferred over to Pakistan, I had completed a rough draft of that report, which made it look very favorable that such a dam should be built. I also said, "I think we ought to have the NEDECO group study, since we've located a dam site, if water could be diverted into the Wadi Tharthar from the Euphrates as well as from the Tigris to see how that would work out." So that study was undertaken, also.

So all of these things were going on, and during that fall of 1958 and the winter of 1959 and spring of 1959, things were very difficult. There is this new group of revolutionaries, they suspected everybody, and my yard was full of police all the time. As a matter of fact, watching a documentary one time on what happened in Iran after the embassy was attacked in Iran, and the people had escaped from the embassy and got protected, got asylum, in the consulate of the Canadian Embassy, and the experiences that they went through. I said, "Déjà vu, I went exactly through that," and I said, "My God, isn't it a fact, same thing happens."

Studies a reregulating dam between the Ramadi Barrage and Syria

By the spring of 1959 the situation had deteriorated

So as that spring wore on, it was more and more difficult to work, and then it had gotten to the point where the wives were coming back, and Helen was able to come back to the post in late April of 1959, so I hadn't seen her from May of 1958 to April of 1959. So she was very busy getting the house reorganized and said, "This is a pigsty. Why did you let the boys let this place run down so?"

I said, "Well, hell, all I was doing was sleeping here, that's all, sleeping and eating here. I wasn't paying any attention to it. I had other problems on my mind." Anyway, she was getting the house organized.

In early June, an order came through from Washington for the mission to send Mr. Vernon over to Karachi, Pakistan, to our mission in Karachi, Pakistan, on TDY [temporary duty]. So I went to Mohammad Hassan and told him that I had received this order, and that I would be going on leave under orders from our government. Well, he said, "Okay, go ahead." So then the question was, could I get exit visas. So I had the people I was working with start working and get me exit visas from the government of Iraq. Well, there seemed to be some problems.

Had difficulty obtaining an exit visa from Iraq

So anyway, the day came that we were supposed to leave, and I told Helen, I said, "Listen, you're coming with me. I'm not going to leave you here."

She said, "Well, I want to stay here. I've just gotten here. God, I've been gone a year. I want to stay here. You're only going to be gone a couple of weeks. I want to stay here and get this place organized." She liked Baghdad.

Insisted his wife leave with him

I said, "No way am I going to leave you

under this situation here. It's too dangerous. You never know what's going to happen. I don't really fear, but I'm concerned. I've been living in it, but to you it will be a real shocker, because it's not the same place.”

So at any rate, we appeared at the airport, and I went to the Immigration Control to get my passport and visas, exit visa, so they handed me mine, and I looked at it, and I said, “Where's my wife's?”

“Oh, well, where is your wife?”

“Well, she's right here.”

“She's going with you?”

“Oh, yes, of course she's going with me. I couldn't leave my wife here. Obviously I must take her with me," etc., etc., etc.

“Oh, well. I see.” So they had to go back and contemplate their navels a while, made some telephone calls and so on, and ultimately they came with her passport with an exit visa. And then I looked at them again, and said, “But where are our reentry visas? We're only going over there on temporary duty, and so we'll be coming back.”

“Well, why do you want to come back?”

“Well, because my house is there. All my goods are there. My car is here. I owe a lot of bills around town that I haven't paid, current bills, etc., etc.,” gave them a long song and dance, you know.

“Oh, is that so? Well, you know, I'll tell what you do. When you get over to Karachi, you go to our embassy over there, and they'll

**Upon leaving they were
refused reentry visas**

give you reentry visas.”

I had been told by my Dutch Chief Engineer that when he left, *he* had found out that there was a black mark against my name in the book that said, “La moojude [phonetic],” meaning “No travel.” La, meaning no; moojude, meaning in its translation, travel. La moojude. He said he had a struggle getting out, and in their contracts with the government, what was called a provident fund. In other words, they put, I think, 10 percent of their salary, or 15 percent of their salary into a provident fund, which the government held and matched it with another 15 percent, so that they couldn't leave broke. That was an excellent employment contract. It had been worked out by the British. It had been widely used, and it was an excellent contract, personal services contract.

Anyway, he told me, he said, “Look out, Ken, you're going have trouble when it comes time for you to leave, because it took me quite a while.” And he said, “Boy, it looked for a while like I wasn't going to be able to get my provident fund,” equivalent to several thousands of dollars in it.

Finally, I said to the person that seemed to have control of it, I said, “What's it going to take for me to clear my provident fund?”

He said, “It cost me 100 dinars.” Dinar being worth \$2.80. It cost him three hundred bucks, literally, to clear us on his provident fund, so he managed to get his provident fund out. Since he was an employee under contract to the government, he was able to get his exit visa. He wasn't interested in a reentry visa, so he left. He left a couple of months prior to my leaving.

So in June of 1959, I went over to

Karachi, Pakistan, leaving all my worldly goods in Baghdad. Closing out my Baghdad experience, I was never able to get a reentry visa to reenter to Baghdad, and as my work developed in Pakistan, I ultimately was reassigned there. I said to my wife, "You know, I'll bet you the day after I'm formally transferred to Pakistan, the offer of a reentry visa will be made." Sure enough, after my formal transfer had been made, somehow or other, the grapevine knew that I'd been transferred to Pakistan. Maybe our mission in Pakistan and Baghdad had informed the Ministry, I don't know exactly, or the government, that I'd been transferred. I said, "I'll bet you that the offer of a reentry visa will be made." There was never a denial, never an outright denial, you know, it was always a put off, a put off, a put off, and then when they could offer and know I wouldn't accept it, they could make the offer, see? (laughter)

Ultimately reassigned to work in Pakistan

God, working with the Arabs was really an experience. It was a lot of fun working with the Arabs, because they had a sense of humor very similar to ours, and you could make a joke and they'd just laugh like mad. They told me some of their Arabic jokes which were pretty rich. (laughter)

At any rate, I closed out my house. After my transfer had been made to Karachi, I requested our mission in Baghdad to pack up all our goods and send them over to Pakistan, which ultimately they did arrive. In the meantime, my wife and I had lived six months out of just two suitcases, all the clothes we had taken when we went over there on TDY.

Mission in Baghdad had to pack up the Vernon house and ship the goods to Pakistan

But I always look back on my Iraq experience as a very fruitful one. It became very difficult after the revolution, because these revolutionaries had to reestablish a whole

governmental structure. It was a bunch of discontents and whatnot. They didn't know how to run a government, and they suspected everybody of being malcontents and plotters and so on.

So the Communists started moving in. There were Communist cells all through the country, and the Communists started moving in, because they had a program. So they started taking control of the government, literally, and so it became very, very difficult, because you were living then under a government which was going under Communist control and all the disagreeable things we've heard about Communist control were occurring,

My God, the city was under curfew. I got caught one night, had been over the nine o'clock curfew, and I'd been over playing cards with a group of people over at one of their house, and was some distance from my house. I looked at my watch and said, "Oh, my God, it's five minutes to nine, and I'll never make it home before the curfew." So I had a choice of whether I would go down the main drives past the German Embassy, and around to my house, or whether I'd tried to sneak up a back road and come into my house from the back. But I forgot about the Baghdad Pact Headquarters, which was a very suspect operation by this new group, particularly the Communists, because that was just something that the British and Americans had set up parallel to NATO. It extended all through the Middle East, and Dulles had set up the SEATO, S-E-T-O [sic.], Southeast Asia Treaty Organization, so you had this what he called the bulwark against Communist expansion, NATO, Baghdad Pact, SEATO, Southeast Asia. That was a bulwark of nations, a treaty organization that we created to try to stem the expansion of the Communists.

Well, at any rate, it was a very difficult time, and the Communists were moving in, so I had told the mission, after I got transferred I told them to send my goods over to Pakistan, and that closed out my tour, which lasted from November 2nd of 1954 to mid-June of 1959. But from July 14-15, 1958, through my leaving in June of 1959, I was as a consultant to the First Technical Section, and living under the very difficult conditions of the revolutionary government.

I happened to see one of my old colleagues one day on the street, Doctor Jaleeli, who I mentioned earlier, J-A-L-E-E-L-I, Jaleeli, who was a member of the Development Board, and I said, "Oh, Doctor Jaleeli, how are you keeping?" That's the way you would ask people how they were. "How are you keeping?"

Well, he says, "I'll tell ya, I'm keeping out of jail." (laughter) "I'm keeping a low profile."

Another little sidebar on this, there had been a previous Prime Minister, Salah Alswaud [phonetic] – no. At any rate, I can't remember his full name. At any rate, his son had been to school in the United States and then had married an American woman and had several children. He came back to Baghdad, and he kept in close touch with the American community. We'd become good friends, and he used to visit me periodically. One day in the spring of 1959, he showed up at my house, oh, maybe two or three o'clock in the mid-afternoon, because in the summertime you worked from seven to one, and then you took a siesta and then you began moving around again around about five o'clock after the heat of the day was over.

He showed up, and I thought, "Oh, that's nice, Saud, Saud, come on in, come on Saud,

come on in. What will you have? What will you have?" Well, so we decided to drink bourbon – not bourbon, but brandy on ice. I had a bunch of Courvoisier, and so we enjoyed ourselves with a little brandy over ice, you know? He, being a Muslim, didn't touch liquor, you understand. (laughter)

Storey: I understand.

Vernon: So we chewed the rag there for most of the afternoon, but he kept watching his watch. And along about five or 5:30 he said, "Oh, I've got to go. I must go."

I go, "Oh, Saud, can't you stay a little longer?" You go through this formula, you know, of protesting anyone leaving, all this and that. "Oh, must you go now? It's been so nice being here," etc., etc.

"No," he says, "I must go."

"Okay." Well, after he left, I said, "Now, what the hell was that guy up to?" Because I knew he was involved in a counterparty to the revolution because of his family ties. Has a son of an ex-Prime Minister of the old government, and he being an American and all, he wasn't at all in favor of this revolution. So I said, "What the hell is that guy up to?"

Well, it developed that there was a counterrevolution occurring, a counter coup revolution, up in the village of Kirkuk, K-I-R-K-U-K, Kirkuk, and there was some hangings going on up there. I said, "Aha! I know what Saud was doing, he was creating an alibi. Anybody asked him what he was up to that afternoon, why, he was visiting with Mr. Vernon, the ex-head of the First Technical

Section of the Development Board. Everybody knows Mr. Vernon. Obviously, I was not up anything at all.” (laughter) He was creating an alibi.

Want to break for a minute?

Storey: Sure. [Tape recorder turned off]

Vernon: I wanted to tell you about . . .

Storey: You remembered the name of the Prime Minister and his son, I believe.

Vernon: Oh, yeah, sure. His name was Solly Jabber, S-A-L-L-Y, or S-O-L-L-Y, or however it might have been spelled in Arabic. Jabber, the family name was Jabber, J-A-B-B-E-R, and the son's name was Saud, S-A-U-D, Jabber.

The reason Saud Jabber, the son, was having a problem in making a living, was his father was very wealthy, but his mother had died, the son's mother had died, and the old man had remarried and, of course, marriage is of convenience in the Arab world. There was a matter of financial arrangements, there's a marriage contract, which we call a prenuptial agreement in our terminology, but they very definitely have marriage agreements, which I read before the assembled multitude, before the marriage ceremony. The wife, the new wife, made it very clear that not only did she maintain her family's financial resources, but she claimed a great deal of the father's financial resources, and poor old Saud found himself kind of out in the cold, whereas he had been raised as a relatively rich man's son and was having difficulty keeping his family going.

Another item I want to get into the record before we leave Iraq was in evaluating

Evaluating contractors' bids in Iraq was different

contractors' bids, which is completely different from our practice. In the United States, because our financial institutions make financing readily available, the method of financing a contract is not considered in evaluating a contractor's bid. A contractor gets a line of credit from a bank, and the cost of that is cranked into his bid, but it isn't apparent, and also there is usually like . . .

than in the United States

END OF TAPE 1, SIDE 2. APRIL 27, 1995.

BEGIN TAPE 2, SIDE 1. APRIL 27, 1995.

Storey: This is tape two of an interview by Brit Storey with Kenneth F. Vernon on April the 27th, 1995.

Vernon: In a bid for dam construction, there's a practice in contracting of what we called front-end loading on his bid, in order to get initial cash flow, for example. So that, for instance, costs which might more properly be allocated to the cost of concrete production, for example, some of those costs would be loaded onto, say, foundation excavation, or some other early item of construction which had a high likelihood of overrunning the stated quantity, which gave the contractor, then, some initial financing to operate. It was a practice, but that wasn't evaluated by the government in terms of the cost of money which it would have to borrow to pay those contracts.

However, I found that in foreign affairs, the cost of money *was* considered in evaluating contractors' bids. He had a number of new items that were considered. For example, since this was in the world market and many items would come offshore, so to speak, the requirements for foreign exchange in the contractors' bid was an important item. The question of whether Customs would be involved. Now, with the Development Board of Iraq, Customs really wasn't considered a vital item, because it was

another way that the government could transfer the funds from the Development Board, oil revenues, into other elements of the government costs and expenses, because customs in times past, eons past, customs was an honored way of, taxation. was an honored way of financing government, levying custom charges on goods transport.

So in your bidding then, in your bidding documents, you'd always set up what kind of funding the contractor thought he would need as to both foreign exchange, the kinds of foreign exchange. For instance, was it British pound sterling? Was it French francs? Was it German marks, or some other currency, or U.S. dollars? And what schedule those costs, those monies would be required, and also the local currency that might be required to pay local expenses. So you took those into effect, you took those into consideration, as well as the total cost of the bid.

Just to show the difference, now, in this practice, I can recall when I was on the Central Valley Project and Shasta Dam, the contractors bid Shasta Dam, I pointed out, after my own analysis of those bids, that the ostensible low bid was more costly to the government than the ostensible high bid, because the contractor who was awarded the contract to construct Shasta Dam, had front-end loaded his bid, and there was a high likelihood that those early-on items, particularly dam site foundation excavation, was likely to overrun. So there would be an "early over-payment of costs" to achieve early financing to the contractor, but the cost of the government would be that those costs which might later be more properly charged in when concrete was being placed.

Let's just say, for example, a dollar per cubic yard of the concrete cost was moved over

into the early excavation charges and payments, just to show how it worked. And this might mean two or three years of borrowing costs by the government, if borrowing costs were taken into account. Now, if it had been private financing where bond issues were being issued – this is what gave me the idea of this analysis, was because if it happened to be a private outfit that had to issue bonds and so on, then the cost of that money would be an important item. But the government apparently did not figure that the cost of borrowing could or should be taken into account. So I always kept that in mind, even when I was Regional Director in Region VI.

But this was absolutely apparent after I got into Iraq. Not that it had a shortage of foreign exchange or whatever, but it took into account the way the money was being drawn, because their surplus money *was* drawing interest in the Bank of England, so if they had to pay it out early, *they* would lose interest on that money that was being paid out. Another thing was, at what schedule. For instance, when it was, say, for example, an equipment item, some form of mechanical equipment such as turbines, generators, high-pressure gauge, or whatever, that obviously had to be manufactured, purchased in Europe, and then transported by ship. There had to be a schedule again of foreign exchange requirements. *But* instead of going to a bank to borrow the money, the contractor would establish a series of foreign exchange requirements of payments, such as, let's say, a 20 percent down payment of the contract cost on the signing of the contract in certain foreign exchanges. That permitted him to start operations of buying materials, and, etc., etc.

Then when the equipment was prepared for travel, he got another, say, another 20 or 25

percent. Then there was another element called CIF, which meant cargo in freighter, or maybe which meant it was aboard ship and ready to ship, or in the presentation of shipping documents, you'd get another progress payment. Or it might be CIP, cargo in port, and it was on port and ready to offload and come ashore. And then you made another progress payment when it was installed, but there was always a withholding, a final withholding, of, say, 10 or 15 percent to ensure that the equipment met its stated specifications, etc., operating specifications, and so on.

But this issue of financing, in foreign work, is very important, which was not important in practice in America, because financing was always readily available. These elements of foreign exchange were not involved because everything was in dollars and there was plenty of dollars to go around.

Storey: We've manufactured most of our stuff in the U.S., anyway, didn't we?

Vernon: That's right. And a matter of fact, for a long time, there was "Buy America," and it became very difficult. Because I can recall when I was in the Commissioner's office, General Electric and Westinghouse had moved into Japanese industries immediately after the war, at the behest of the American government. So then, *I believe* this came to the forefront with the bidding on generating equipment for, I believe it was Grand Coulee, and while it was nominally American bidders, GE or Westinghouse, it was fundamentally Japanese equipment, and this caused the great deal of stress and strain as to whether the bids could be accepted because of the "Buy America" Policy. I don't know if it was policy or actually legality, I'm not quite sure, but any rate, I don't remember how that

was resolved, but at least this became an issue.

But with the Iraq Development Board, with its great resources of foreign exchange, it was no problem, but they wanted to know and took into account the pattern of flow of money in the evaluation of the total contract.

You said you had a question.

Storey: I have a couple, actually. First of all, the Iraq Development Board, what was the objective of this program? Did they have one?

Vernon: Yes. It was to develop the resources of the country. As I said, they had these surplus oil revenues, but the government had determined to spend seventy percent of the oil revenues in what they called a development program. My section was devoted to the expansion of irrigation projects and drainage projects and flood control. In the Second Technical Section was communications. There was highways, telecommunications, railroads, ports. In other words, and then there was the Third Section, was industry. There was a spinning and weaving mill being built. There was a sugar mill to process beet sugar, was being built, and there were other projects, which, since I wasn't working with the Third Section, I didn't know all that was going on, but I happen to remember those particular items. And that was being headed up by a French industrial engineer under personal contract to the Board.

**The various sections in
Iraq's Development
Board**

One of my men on my group I brought over from the Central Valley Project in California, was working in the Industrial Section, Third Section, fuel-fired plants generating electricity. I handled the hydro end of it, and the Third Section was handling the fuel-fired as an industrial project, and so they

were using oil-fired plants, and there was one built in Baghdad and there were a number being built around the country. Oliver was working on an integrated transmission system to integrate these plants together, just as we did in the Missouri Basin, and he had been power manager in Region II, so he was well qualified to do this work. I ultimately brought him over to Pakistan, too.

At any rate, the Fourth Technical Section was agricultural development. I don't recall whether the Fourth Technical – that was crop improvements, crop practices, everything related to the improvement of crops. A number of the Iraqi, young Iraqis, had been to the States and were acquainted with our County Agent Development Program, and so they were instituting the same kind of a thing. There was a couple of agricultural colleges and so on. As a matter of fact, they started a beef project there, which prior to this, about the main source of meat, protein and meat, was goats or sheep and water buffalo. The thing about eating water buffalo, it's great when it's steaming hot, but the minute it got a little bit cool, your mouth got just about a quarter-inch layer of tallow fat that you just could not get off the roof of your mouth. (laughter) So these boys out at the Aggie Colleges had been to school in Texas, and so they were instituting a beef-feeding program, and before I left Baghdad and before the revolution, actually you could buy a T-bone steak in the market, a good T-bone steak in the market.

So then the Fifth Technical Section was social development, refugee housing. A lot of people had come off the villages and the farms to move into the cities. So they felt that the children had a better chance of getting an education, even though they lived in great

squalor and so on. They felt that their children had a better opportunity for education and other social programs.

For instance, at one of my home leaves, I had been deputed by the Development Board to find a new Chief Engineer for the Second Technical Section. I had utilized one of the consultants, his headquarters were in Newark, New Jersey, to advertise and review applications and to weed out. Then I visited him on my way back to Baghdad. I visited him and interviewed the candidates which he felt were most likely that the Development Board could use. I remember I ultimately recommended a gentleman who had a great deal of experience in highway construction for the state of – I think it was the state of New York.

At any rate, it turned out that his wife was, shall we say, a power, I'm not exactly what her level was, but it was in the Ladies Garment Union in New York. So when she came to Baghdad, there was an American ex-Prime Minister's wife, who was interested in the improvement of ladies' welfare and particularly instituting a garment industry. So this lady, the wife of this man I brought over from New York, she immediately tied in with this ex-Prime Minister's wife and became very strong in developing improvement of ladies' welfare through the institute of a garment production program. That was the part of their social development.

Then there was, as I said, refugee housing, there was a school program and a number of other activities which I wouldn't be familiar with – but the point was that the thrust was to *not just spend* those excess revenues. You said what was the objective. It was not to just spend those revenues for “armaments” or in

Asked to find an engineer to head the Second Technical Section

The thrust was to spend oil revenues for development of Iraq

After the revolution, the

the gambling houses in Beirut, such as the Saudis did, but to intelligently pour those revenues into development and better the economic conditions in the country, and it went to hell in six months after the revolution.

**development program
fell apart**

Storey: What kind of an administration was it before the revolution?

Vernon: Well, it was primarily based on the English system. There was a young king whose father had been the original king, but he had been “killed” in an untimely automobile accident.

**Prior to the revolution in
1958 government in Iraq
was based on the
English system**

Storey: The son or the father?

Vernon: The father, who was a brother or a cousin of the King of Jordan. They were members of the same family. So then this child, when his father was killed, became, well, I guess the prince regent, or whatever you might call it, prince-in-waiting and king-in-waiting, or whatever. And his uncle, a brother of the former king, was declared the regent.

So when I got there in 1954, I think the young king had reached his majority, and I think they had gone through his coronation. The uncle still was active in government and so on, but he was no longer the power, but a senior advisor to this young king. Then the rest of the government was strictly patterned after the British system. There was a Prime Minister and a Council of Ministers, which were members drawn from the Prime Minister's party heading up the ministers. Then in the operation of the ministries there were several directorates general, such as we would call bureaus. There was a directorate general always of administration, which in the British system would be the First Secretary. And in the British system that First Secretary really holds the

power, administrative power, in the ministry.

Storey: That's the civil service person?

Vernon: He's the senior civil servant, and he actually holds the power of life and death, almost. He goes to the Minister and says, "Sir, it's my understanding your policy is thus and so," always giving the Minister the opportunity for diplomatic denial, "Oh, yes, that's correct, that's the government's policy," or, "No, unfortunately, you misunderstood the government's policy, it's thus and so." And then the Chief Secretary or the DG of the Diwan would then enunciate such orders that were necessary to carry out the Minister's policy. Then the Director Generals were the equivalent of our Commissioners and so on, to head up various departments, such as there was the Director General of Irrigation in the Ministry of Agriculture. There was the Director General of this and that and so on. There was a Director General over the Ministry of Public Works of this and that, who I had to deal with regularly.

Then there was the Lord Mayor of the city of Baghdad, and he headed up a city administration. But these guys were all part of the Prime Minister's political group. Nuri-as Said, Nuri, N-U-R-I; small A-S; capital S-A-I-D, Nuri as Said was known as the Fox of the Desert, and he was the principal Prime Minister of the Iraq government. Periodically he'd decide that he needed a rest, so then he would have the King appoint a new Prime Minister and usually then there would be a general game of musical chairs among the ministers, the Council of Ministers, and a new Minister of Development might show up. The old minister might come back or it might be a new minister.

Then there was the Parliament, and the

Parliament operated just as the House of Parliament. There was not a House of Lords, but I *believe* they called it a Senate. I think they called them senators, as I recall. Then there was the Lower House, which was composed of various representatives.

Now, the form of government facing beyond the central government, there were the Mutasarriffs, M-U-T-A-S-A-R-R-I-F-F. This was a Turkish term and it was carried over from the old Turkish administration days. The country was divided into liwas, L-I-W-A-S. This was equivalent to our States. So then you had a Mutasarriff, who was the Governor of the liwa, and he had also a full complement of supporting government to support him, patterned after the central government.

Then in the liwas, I forget what they called this lower units now, but it would be equivalent of our counties, but he was headed by a Kaimerkahn, and I believe that was spelled K-A-I-M-E-R-K-A-H-N , but he would be the equivalent of the Executive Officer of the county, under the Mutasarriff. That was the structure of the formal government.

Unfortunately, there was another shadow government within the country, which was the tribal sheikhs, S-H-E-I-K-H. These were the heads of the tribes, and they had the power of life and death over the tribes. So there was always a dichotomy going on within the country that central government was trying to accomplish certain things, and some of the more enlightened sheikhs were cooperating, and many of them were members of the Senate. But there were also some that were not so enlightened, shall we say, and they were resisting efforts of the government, because they felt that the government's, the central government's effort

There was a shadow government in the country, the tribal system

was encroaching upon their prerogatives as heads of their tribes.

Now, the good sheikhs *were* the good father of their tribes. They had their--I've forgotten the Arabic term, but literally they were their foreman, and they told the fellahin, F-E-L-L-L-A-H-I-N, fellahin, which is equivalent of the peon in Mexico, what to do, who ~~would~~ farms what plot of ground, when it was time to plow, when and what was to be planted, when and what was to be irrigated, when and what was to be harvested.

Then the harvest was divided between the sheikh and the fellahin, individuals, according to their rules of division, the theory being that the sheikh had two responsibilities. One, of course, was to provide for himself, and the other was to provide what we called one time during the Depression the ever-full granary. In other words, he was to store his part of his share for seed for the next year, and to provide a store of food in case there were shortages during the next year.

This system worked to a certain degree, quite well. If it was an enlightened sheikh and he was serious about his responsibilities, and many of them were, the tribes were very well managed that way. Others were not so well managed. My sons told me one time, that a young Arab took them for a weekend stay out to a village, and they were amazed at the obvious cruelty that was visited upon the fellahin by the sheikh and his family, and that it was obvious that there was no respect for life or limb by this upper echelon. They said they were really amazed and shocked. That was not the rule, but that did happen.

Storey: You mentioned when you moved to Baghdad,

moving into a hotel for a period of time, then the next thing I know you're in a house. Tell me about living accommodations, and how you found it and where it was, and how it was set up and all of that.

Vernon: Well, it was very interesting.

Storey: And what the lifestyle was.

Vernon: As I said, I stayed with this American family for about two months. I felt it was a good idea. It gave me a chance to get accustomed to this new culture. I was in a sort of a familiar environment, home environment. It gave me an opportunity. I didn't have the responsibility of managing a household. It gave me an opportunity to spend a lot time studying, because here I was, I was dumped into a strange place, all strange names, and all the rest of it, so I had to spend a good deal of time finding out what was going on.

Finding a house, living conditions, and lifestyle in Iraq

So after about two months, I thought, "Well, now, look. It's about time for me to strike out on my own." Of course, my family was still in the States, because this time it was about – just after Christmas or something like that. So I told Mr. Murphy, I thanked him very much for putting me up. I'd been paying him rent and so on, even though he was – well, I'll get into that a little later. But I thanked him very much, and I certainly appreciated – enjoyed living with him and his family and so on.

So I moved into a hotel downtown. Well, now, it wasn't the Hilton. There were three main hotels downtown at that time which foreigners used. There was the Sindabad, which I moved into. There was the Semiramis, S-E-M-I-R – I can spell it this way, Semi-ramis, S-E-M-I-R-A-M-I-S, it's pronounced "Semeris," which

is very similar to the Sindabad. Then there was also another hotel called the Hotel Zia, Z-I-A. A lot of people liked the Zia hotel, because it was run by a Michael Zia, who was a Christian. Matter of fact, I think all the hotels were run by Christians. I think they were run by Assyrian Christians.

But, Michael Zia was a great raconteur, and a lot of people liked him, and he liked the Americans, so he treated them pretty well. I can recall, after my wife had come there, one night we were invited to dinner and Michael was the host, and he was telling one of his famous stories that he had a bartender whose name was Jesus. A British lord was visiting, and Michael was hosting a dinner for this British lord, and so Michael in his loud raucous voice roared out, "Jesus, bring the lord a drink!" (laughter) But poor ole Mike drank himself to death. He just couldn't leave a bottle alone.

At any rate, I moved into the Sindabad Hotel, and I enjoyed that stay there because it gave me an opportunity now to rub elbows with really a cosmopolitan group of people, because this commercial interest was growing very rapidly now, foreign commercial interest was growing very, very rapidly in Baghdad, and the Sindabad happened to be a sort of a headquarters for a lot of the commercial, foreign commercial interests that come to town.

So in the late afternoon and evening, we'd sit around out in the garden and chitchat and so on. I became familiar with a lot of different people of different backgrounds, which I found was very valuable. At the same time, I found that there was quite a social activity going on, evening social activity, which usually was headed by a cocktail party and then you went on somewhere else to dinner. Now, one thing I

learned early was that a cocktail party in that environment was not as we know a cocktail party where people drink to get drunk. You would walk around all evening with a glass in your hand and maybe have, over a period of a couple of hours, not more than two drinks, but you were working, you were on the alert all the time, because you were being pumped and you were pumping others as to what some things you might want to know, and you had to very careful that you didn't say what shouldn't be said, because they pumping to find out. Then you would go on to dinner.

One night before the revolution, I had to make an appearance at three cocktail . . .

END SIDE 1, TAPE 2. APRIL 27, 1995.

BEGIN SIDE 2, TAPE 2. APRIL 27, 1995.

Vernon: You were invited and you *had* to make an appearance. Now, one of Parkinson's law is, you can tell the hierarchy of the visitors invited to a party – you understand Parkinson's law?

Storey: No, I don't.

Vernon: Well, he was a British wag. and one of his laws was that expenditures always rise to meet budget, rise to exceed budget, that the staff always rises to equal or exceed workload, or you can tell the hierarchy of the invitees to a function as to who arrives last and leaves first. (laughter) He even gets with an ambassador who meets the host, makes a small circle around the room, and immediately exits, and so he arrives last and leaves first. So you have this extracurricular activity going on all the time.

So I found myself – Jesus, and one the things that was also difficult was when you were invited to dinner, usually you sat around. The

Iraqi fashion was very similar to the Spanish practice. You'd sit around all evening 'til they were sure everybody had arrived, and you might eat dinner about eleven o'clock, then you ate dinner, and then you went home. And here you were at about midnight loaded up food and drink, and had to get up early the next morning and go to work. It was a really a terrific environment.

Well, then we get to the housing. Now, the housing had not become modern by *any* means. Fundamentally, the houses were of a Turkish pattern, where they were a Muslim pattern, where there were basically two living rooms, because in an Iraqi society, the men gathered in one living room and the women were segregated, what women attended, sat separated in another living room.

Then in the back of the house there were a number of bedrooms, you might have an upstairs, but basically the houses were one story, and they had flat roofs. Because in the old days before the advent of adequate electric power and air-conditioning, it was the custom to sleep out of doors on the roofs, in the open. So there were these flat roofs, and with parapet walls around them, and that so that you can hang your laundry out there and also in the summertime you could sleep on the roof. Unfortunately, those damn roofs were not waterproof, and so you had a problem with the construction. These houses were probably kiln-dried, K-I-L-N, kiln-dried, clay brick, but not hard burned, or they might even be just sun-dried adobe brick covered with plaster. So if there had not been a good water seal developed at the base of a wall, because of the texture of the soil and the high groundwater table in the Baghdad area, you would get capillary rise within the wall, and the first thing you know, the wall, for the first four or five feet,

might disintegrate.

Now, these rooms had ceilings usually about twelve feet. They did very well. They cooled well in the summertime and they cooled well in the wintertime, if you understand what I'm saying. Because, God, you just couldn't heat the damn things. And in the old days, all they had was fireplaces. They also had this problem with this leaky roof, so that the type of roof structure was – for instance, these beams that you see up there would be maybe two feet apart, but they would be made of steel I-beams, and then there would be a small brick arch laid in there, which would support the roof, and then that would be plastered over, so that you had then a series of small looping arches across the ceiling of the room. But there would be then an insulation layer of maybe a foot of earth above that little arch, over which then was placed some tile, and the seal material between the pieces of tile would leak in the heavy rainstorms in the wintertime, and this earth material, insulation layer, would become saturated. Then, again through capillary attraction, the water would leak through these brick and so then your ceiling would start to disintegrate, and it would come down the side walls.

So in the older houses, you had this disintegration of the walls coming up from the bottom and you had disintegration of the walls coming from the top, which required that every so often, they had to get in to repair the bloody things.

Then, you get into the kitchens. Now, the kitchens were something that the women just absolutely – our American women absolutely were horrified. Many of them might have a sink, and they would have a water tap. Baghdad had a good water supply. The British had built a

good water supply for Baghdad, but they might only have a water tap in some of the Iraqis' homes, and those that were made for the foreigners probably had some form of a sink.

The cooks would prepare their food on the floor. If they didn't have a workboard, they'd prepare it ~~on the floor of the sink~~, on the floor of the kitchen.

Before my family came over, one of my men was ready for home leave, and so he said to me, "Why don't you come out and babysit, housesit my house while I'm on leave and you're getting ready for your family to come over, and it will give you a chance to see what living in a house is like, and you'll have the time to look around. Maybe you can find something that you can consider for your family."

So I said, "Sure, that makes a lot of sense." So I moved into his house, oh, maybe in May or June of 1955. My family was due to come after school ceased in the States, and they would arrive sometime in mid-July. So I was looking around at houses, and it turned out that there was a house not too far away from that, and it was not too far away from the American Embassy, which was a good location. It so happened that this house had been built by a guy, an Iraqi, who had been to America, and so he had hired an architect to work in some notions of American amenities, so it was rather a nice house.

Now, it sat well back from the street. Our front, what they called garden, would be our front lawn, our front garden was some 80 to 100 feet back from the street, all enclosed in a wall. We had a party for 150 people there and weren't crowded. It had the two living rooms. It had a nice dining room with a nice built-in cupboard

in the dining room. There were some nice built-in cupboards elsewhere in the house that had three bedrooms downstairs. There was an upstairs that had a bedroom and bath, large room, bath, upstairs, and then there was this broad expanse of roof. The kitchen was a separate kitchen much like our colonial houses. There was a breezeway between the kitchen and the rest of the house. So I had that enclosed with a screen and made a runway across there, so that food being carried from the kitchen to the house wasn't exposed to flies and that sort of thing.

The kitchen was much like this modern kitchen you see here. There were cupboards, there was a proper sink, there was what we've called a godown, which we would call a pantry, but it was an enclosed room which had shelving in it, because you'd send off an order to the States or Europe or wherever for supplies, and you'd get six months' or three months' supplies at a time, you see, because it wouldn't be available on the local market.

Also in that house there was one bathroom downstairs, one main bathroom downstairs, that served the bedrooms. There was one little powder room off the entry hallway. Upstairs there was this big bath up there, which we used as a laundry room, and I'd had some clotheslines erected up on the roof, because we didn't need to sleep on the roof, so I had some clotheslines erected up there. So I had the house crew, when they did laundry, hang the clothing out there on the roof.

Again, on the roof, there was a water tank, because while there was an adequate supply of water, of good-quality water in Baghdad, in order to get pressure in the house, your water would be delivered to a cistern in the ground, and then you had a pumping system

which would pump the water up to this cistern up on top of the house, water tank on top of the house, which provided the water in the house. But also during the summertime, this water tank would be heated by the sun, so that also gave you your hot water, much of your hot water for bathing.

So I found this house, it was not too far, so I thought, "I think this will suit Helen, best house I've seen around," and so when they arrived, I was still living in Harold Miller's house. I showed her some of the other houses, you understand, and then I showed her the house. I said, "Now, I think that this house maybe will do. What do you think?"

Well, she said, "I can see it's the best house you've shown me."

When we moved to Billings, she looked at, she said, sixty houses before she found one that she would accept. She said, "I looked at everything that was vacant in the city." We finally took one that was being constructed so we could work some ideas into it, because Helen was a very particular housekeeper. That was one of her joys, was keeping an immaculate house. She wasn't a club woman, so to speak.

At any rate, then, we moved into what was known as the Pierce House, because George Pierce, who had preceded me in Baghdad, he had been working over in the Third Technical Section, an American, he had vacated the house, his house was vacant, and he was back in the States, and so we took on the Pierce House.

The way housing was handled, we received a housing allowance, and my rank gave me \$2,000 dinar housing allowance, which, at \$2.8 dollars to the dinar, was roughly \$5,500.

Now, it was up to you to negotiate your own contract with the householder. Some of the less astute members of the American community were paying through the nose. In other words, their housing allowance was gone before they walked through the door, because the American Embassy *did* have an Iraqi Housing Advisor, shall we say. His function was to know which houses were available. I'm also sure he let his colleagues, Iraqi colleagues, know as to what a person's housing allowance was, but you had to do your own negotiating.

So this Iraqi that owned the Pierce House, Vadget, V-A-D-G-E-T, Vadget Ayer, A-Y-E-R, he was a Christian, and he'd been to America, and he had this nice house, so he and I negotiated. Well, I managed to negotiate him a year lease on the house for less than my housing allowance, because I'd been working enough with the Iraqis, I knew the game and the gambit, you know, and you go through a negotiation, and if you don't negotiate, their feeling is, if you can't hold your own, you don't deserve it. (laughter) At any rate, I got my house for less than my housing allowance. So then the embassy would pay the – I didn't get that money, it was just an allowance which was credited to my account.

We also got a hardship allowance, which we had our base foreign-service salary. I think Baghdad at that time was classified as a 15 percent post, so we got a 15 percent hardship allowance in dollars, which would take care of all the extra costs that were involved in living overseas and so on, as opposed to your stateside salary, which was the normal Foreign Service schedule, and this varied between posts. For instance, it might be a very nice post, but, hellishly expensive like Paris, or it might be some God-forsaken out-of-the-way place that

they couldn't get anybody to go to, unless it was at least a 25 percent post, and so on. So some people would opt for the real hardship post because it gave them money in the bank, because they couldn't have anyplace to spend it. Others would enjoy going to a post which had no hardship, really a low hardship allowance, because it was a much more cosmopolitan place.

So we moved into this house, and we're going along very nicely. Come time one year things were going great guns in Iraq, and it was time to renegotiate my yearly lease. So Vadget called me and said, "Mr. Vernon, I'd like to come over and visit with you."

And I said, "Fine. Please do. Come over to the house about four o'clock in the afternoon. I'll be pleased to see you." You were always very polite and so on, very effusive in that.

So he came. Helen offered him – you always began a visit offering them something, coffee, tea, a soft drink, but never liquor, unless you knew them very well, but you always offered them something. So she offered him a soft drink, he took it, so then we could commence our conversations after we had gone through the formula, the formula, you understand. He said, "Well, Mr. Vernon, your lease is up, and I need to talk to you about next year."

And I said, "Yes, I figured that's probably time, Vadget, yes, indeed. What's on your mind?"

Well, he said, "I think I'm going to have to have some more money."

"Oh," I said, "Vadget, I'm so disturbed

that you said that.” I said, “God, I’m in a terrible situation. I’ve got two sons in the university, which is just *killing* me. My wife wants to go back to the States, and that’s going to have to be at my expense,” and I just dredged up a hell of a lot of things that just really put me into the rack.

He sat there with kind of a sly grin, you know, and finally he said, “Well, Mr. Vernon, I’m in a spot. All my friends are getting increases in their leases. Don’t you think you could do something for me?”

“Oh,” I said, “Vadjet, oh, oh, my goodness, I didn’t realize that. Well, listen, maybe we could work out something there.” And so I think we agreed on giving him a 10 percent raise. I think we raised it to 2,200 dinars or something like that, or whatever, a 10 percent increase.

He was happy. “Oh,” he says, “now I can tell my friends I got an increase. I don’t have to tell them how much, but I can also tell them I also got an increase, too, out of that son of a bitch Vernon.” (laughter) He was happy. I was happy. I thought he’d get over my housing allowance, and I’d have to paying through the nose. (laughter) So does that explain the housing to you?

Storey: Yeah. Tell me about the house crew.

Vernon: Well, in Iraq the Arabs were pretty good. You had difficulty sometimes. But basically we started out with a cook and what was called a bearer. The cook did the cooking, and if you trusted him, he could do the shopping. But the bearer was sort of a butler, he was the houseboy. In Pakistan, we called him a bearer, but in Baghdad, he was called a houseboy, and he took care of the house and served the meals and that

sort of thing.

We also had a laundry person come in, who did the laundry. We had Amali, [phonetic], who was the gardener, took care of the garden. And at later times, we had what was called a cook bearer, because Helen managed to get a pretty good one, and he was fairly intelligent, so we just had the one. He did the cooking and the work around the house.

So some people were very lucky. I know there was one family who got a real sharp houseman, and we used to hire him to manage our parties, so he started a business doing that. He was really sharp. The thing that you had to watch was their sanitary conditions and habits were not always very good, and you sort of had to watch and make sure that things were being kept clean in the kitchen.

I didn't describe one of the things, which in this housing there was always provided in the back of the plot, quarters for the house crew if they wanted it. Some of them were married out, and so they would go home after dinner, go to their home and be there before breakfast in the morning. Others might live in the provided house quarters.

The toilet facilities for the Arabs was of the Turkish style, which is basically what we always called a bomb site in the floor. I don't know whether you're familiar with the Turkish toot [phonetic]?

Storey: No.

Vernon: Well, it's fundamentally a toilet bowl sunk in the floor, and it's got the trap in it, so it traps the gases and so on. But the methodology employed by the Iraqis and others in the Middle East is

that they don't sit on a toilet. They squat over this bomb site on the floor. And they feel that that's much more sanitary. And then they don't use toilet paper, they employ water in the left hand, so that it's a custom in the Middle East that you don't touch a person's left hand, you shake hands with your right hand, nor does he touch, theoretically, any cooking thing or anything like that with his left hand, because that's reserved for wiping himself and washing off his private parts. You provided a towel and a jug of water in their facilities so they can wash themselves after a bowel movement or whatever.

So you had to be very careful about that, make sure that your house crew observed the sanitary rules, like you see in today's restrooms where there's a high rate of Mexican employment, "All employees must their wash their hands after using the restroom," you had to make sure that they observed those sanitary rules.

I can remember one time, I was in Ankara, and I was in a hotel in Ankara, and there was a very ornate Turkish toilet. It was about a yard square, tiled, porcelain tiled area with a rim around it, and in the middle, of course, was the trap. But there were a couple of foot pads out there, so you stood or squatted on those foot pads raised above the elevation of this tiled area, because when you flushed, the water would wash out the whole area, you see, so you squatted on these foot pads, so you're up above the level of the water, and after you've had a few beers, or whatever, you weren't quite sure whether you could manage that. (laughter)
Okay.

Storey: Let's see, one last thing. Were there any Bureau of Reclamation staff working in Iraq that were still Bureau of Reclamation staff?

- Vernon: Yes. There was a whole team over in the Ministry of Agriculture. I'd forgotten, I think there were six or eight people over there, which they stayed essentially as American employees, were not under loan to the Iraqi government. They were "advisors" to the Directors of Irrigation as . . .
- Storey: That was the Fourth Directorate or the First Directorate?
- Vernon: No, no, this was over in the Ministry of Agriculture. The Directorate of Irrigation was over in the Ministry of Agriculture. They were completely separate from me, and they had a head of their division in our mission, and they maintained their offices in the mission. So they were not like me, attached to the mission for rations, so to speak; they were a part of our mission, and they felt that they were a part of the U-S-O-M mission. They would sometimes be working in the Ministry of Agriculture in the Directorate of Irrigation, or they might go out into the field, or do the work directly in some office.

I would keep in close touch with them, because I knew most of them. Fred Locher, who was the head of that group when I first arrived there, L-O-C-H-E-R, Fred Locher, had been the First District Engineer that I assigned up to Great Falls District Office. He had been part of the group at Billings, and then I assigned him as First District Engineer up in Great Falls, and he had come over there to Baghdad, along with Mr. Nelson in 1952.

They were having difficulties working as advisors, because you could give your advice, you never knew whether it was going to be accepted, and they had no way of enforcing the acceptance of it. It was a matter of persuasion

and demonstration, etc, etc. So at times they would get rather discouraged, and more than one of them came to me and said, "Jesus, we wish we had the same kind of a relationship with the government that you guys have, because you guys can get things done, and we can't even sometimes get transportation out of town. If the Directorate doesn't want to give us transportation, we can't leave town." So it wasn't a completely happy relationship.

And then as a sidebar to this, Fred Locher, before he left, came over one day to the office, said, "Ken, I want to talk to you a little bit. I want to talk to you quite frankly."

I said, "How's that, Fred?"

He said, "Watch your back." He says, "It's a game of king of the hill." He says, "Doesn't matter who's in charge, everybody's against him, so you've got to watch that somebody isn't trying to stab you in the back, if you want to exist here."

And I said, "Well, I kind of learned that, Fred." (laughter) You "CYAed" [cover your ass] all the time. But I said, "I get along pretty well with those guys over there."

He says, "You know Anwar, and you know Mohammad Hassan, both educated in the United States, but each is jealous of the other, so Mohammad Hassan wants to be Directorate of Irrigation. As a matter of fact, Mohammad Hassan wants your job as director," and he ultimately got it after the revolution. So he says, "Just be careful how you operate, and always make sure that you're well covered."

So then he left and went on. He went to Brazil and he went to Ceylon and several other –

he stayed in the Foreign Service, and then he also went down to Dar es Salaam in East Africa. But I think all that time he stayed as a Bureau of Reclamation employee. I don't think he ever transferred into the Foreign Service, as I recall, and he retired to Florida.

When Mr. Nelson got word that his contract was not going to be renewed, this was in the fall of 1956, apparently there had been pressure by the British Ambassador not to renew Mr. Nelson's contract, whatever the reasons I don't know, because Mr. Nelson had done an outstanding job on the Development Board, but for some reason or other, the British felt that he was making the American presence too much felt. The Americans did not want to be known as a competitor to the British, because in the scope of things, or affairs, Iraq was really considered a part the British sphere of influence. So I think it was that they were feeling that his influence was bringing in too many Americans, etc, etc.

**Wesley Nelson's
contract was not
renewed in 1956**

At any rate, before he left, we held a party for him and Etta Lou, Mrs. Nelson, with all these American colleagues from the Bureau of Reclamation and my group that were down there in the Ministry of Development. So altogether, I think there was probably working in our area, Bureau of Reclamation and the group I had, basically from the Bureau of Reclamation, probably about twelve or fourteen of us altogether, maybe at the maximum at one time. Fred Locher's place was taken by another guy that I had known in the Bureau of Reclamation, and he had become head of the . . .

END OF SIDE 2, TAPE 2. APRIL 27, 1995.

BEGIN SIDE 1, TAPE 3. APRIL 27, 1995.

Storey: This is tape three of an interview by Brit Storey

with Kenneth F. Vernon on April the 27th, 1995.

This person had . . .

Vernon: When the Bureau took on the Litani investigation in the Lebanon, one of the my guys who became surplus to our needs was sent over to Beirut, assembled a team, and headed up the investigation of the Litani Project, L-I-T-A-N-I, in Beirut, in the Lebanon. Then he finished his tour there, and I happened to be home on leave in Washington, and I happened to meet this other gentleman who I'd also known in the Bureau of Reclamation, I can't think of his name at the moment, in the elevator, and I said, "Oh, what are you doing here?"

**Litani Project in
Lebanon**

"Well," he says, "I'm going to Beirut, Lebanon, to take on the Litani Project."

"Oh," I said, "Great, that's great."

So then he fulfilled that tour, and then after Fred Locher left, he was sent to the Bureau of Reclamation team in Baghdad in irrigation to head up that team that was working with the Irrigation Directorate.

Storey: But in the meantime, you had gone to Pakistan?

Vernon: No. No, this was all occurred before Pakistan.

Storey: But then you moved from Iraq to Pakistan.

Vernon: Yes. Then in June of 1959, I was sent over to Pakistan, I didn't know just exactly what for, but this was on TDY.

Storey: Temporary duty.

Vernon: "Send Vernon over to Karachi, Pakistan. He'll find out what his assignment is when he gets

there."

So we went over to Pakistan. I took my wife with me. The plane had been delayed, so we arrived in the middle of the night and there was nobody to meet us. Here it was June and it was hotter than hinges of Hades, humid as south Florida, and there was nobody there from the mission to meet us.

So Helen said, "Well, what do we do now, go back to Baghdad?"

I said, "No. Some of my British friends have told me about Karachi, and I understand there's a hotel called the Hotel Metropole. I have no idea what it is or where it is, but we'll get a taxi and go into the Hotel Metropole, see if we can get a room."

**Went to the Hotel
Metropole upon arriving
in Karachi**

So we got into the hotel there about two o'clock in the morning, something like that, and so went up to the desk, and said we had just arrived at Karachi, and could we get a room, particularly an air-conditioned room. "Oh," they said, "we're so sorry, Mr. Vernon, all of our air-conditioned rooms are taken, but we do have a room we can put you, very nice room, you understand, but unfortunately, it doesn't have any air-conditioning." And we found that the basic structure of hotels and buildings in India, or the Indian subcontinent, were single-loaded corridors which were an open veranda, various floors, and you had first a veranda, which was open on one side, then the room took off from that veranda, and then they would have windows in the room and then you had ceiling fans. So you would open your door and open this windows and turn your ceiling fan on, and if there was any breeze, this was your cooling.

Well, that night we got very little sleep, I

can assure you, because we were not accustomed to this sort of climate, because we'd come from an arid desert climate, which might be 110 degrees, but here it was 95 degrees and 95 percent relative humidity, and you walked around with your hands like this so the perspiration would drip off your fingers.

Storey: Just holding them out.

Vernon: Because if you touched yourself, you were soaked. (laughter)

So at any rate, the next the morning I got a cab and went up to the mission, found out where the mission was, and reported in. They said, "Well, where in the hell, where were you, where were you yesterday? You were supposed arrive yesterday."

And I said, "Well, we did, but the plane was delayed, had engine trouble, or something or other, we were delayed en route, and we didn't get in until about two o'clock in the morning. So here I am. What am I supposed to do?"

Well, James Killen, K-I-L-L-E-N, was the Mission Director, and he was an ex-labor leader, a very forthright gentleman, the kind of guy I was accustomed to working with, like Mike Straus, who said what he thought and didn't mince any words. This was old home week again. "Well," he said, "Kenneth, we've got a problem here in the mission. I understand our government is going to pour a lot of dollars into Pakistan. We've already got a big program going of what's called PL-480 money." It was import of foodstuffs, grains and that sort thing, which the government paid for in local currency. Then the mission would turn that back to the government for what was called budget support.

**Assignment in Pakistan
was water development**

I'll get into that a little later. But basically they had that program.

Then through the Development Loan Fund, which had been set up in the later days of ICA, in, I should say, the Eisenhower Administration, rather, was called the Development Loan Fund, which was a separate entity, but was in the Department of State. ~~Because the World Bank = in 1954 = correction,~~ Going back to 1947, there was the partition of the Indian subcontinent into India and Pakistan. Unfortunately, in that division, which was predicated primarily on a religious basis, the Muslims in Pakistan and the Hindus in India, the dividing line between India and Pakistan carved right across the Indus River system, and separated the source of the water in the Indus River system from the tremendous land resource of the Punjab, P-U-N-J-A-B, where all the water utilization was occurring, so Pakistan, which had 5 million acres of irrigable land in the Punjab, didn't have a form of water supply, and India said, "Well, we now have to develop a separate land base, irrigated land base, to replace what we lost in the partition. So we're going to take all the water from the headwaters and divert it into lands in India." So this became the Indus Basin controversy, and it was a very important political issue, a world issue.

The World Bank got into it and set up a commission to study and possibly come up with a solution which might ameliorate the difficulties which would occur. So in 1954, an agreement, an Indus Basin Agreement, had been arrived at, and the World Bank was going to head up an effort to get financing to support these activities which would be required, and so particularly in Pakistan, what was called the Replacement Works, for the existing previous irrigation system, the water supply system when

it was undivided India. India, of course, was going to have to build structures which they could call their water and then divert it to their lands.

So, fundamentally, Pakistan's water would have to come from two of the northern tributaries. "Punjab" means five waters. "Punj" is five, water is "ab," A-B. So the five waters. The northern river was the Indus. Then the – well, I'll have to think how that comes out. But at any rate, there were the five tributaries which ultimately formed the main Indus River system and debouched to the Arabian Gulf.

So when I arrived in Pakistan, Mr. Killen said, "I've been told that our government is going to pump a great many dollars into the development of Pakistan through the Development Loan Fund. I was advised to have you come over to tell me how to organize to help the government of Pakistan spend those monies wisely."

So I said, "Well, that's very interesting. That's old home week. That's what I did in the Missouri Basin, and that's what I did in Pakistan. You have to make a distinction right now." Here I had been in charge of organizations, which were larger than they were under Jim Killen's command in Pakistan. So I made it known that I wanted policy direction, but I didn't need technical direction, and I would come back to him after I had examined everything and made conclusions that he could accept it or refuse it, but it would be my work, if you get the distinction there I was insisting upon. I wanted freedom of action, in other words.

Because most of the people that were coming overseas – I'd been challenged when I was discussing the situation with one of my

colleagues at the Development Board in Iraq. He says, "Vernon, we feel that sometimes the United States sends us their riff-raff, It's not your best people. Now fortunately, you're one of your better people, but a lot of people you send over here are not your better people."

And I said, "Well, Dr. Jaleeli, I have to admit I was a little guilty of that myself, that sometimes when a call would go out for somebody to make up a technical assistance team, I'd call the personnel officer in and say, 'Who do we want to get rid of?' (laughter) So a lot of the people that they had in the mission – it was a large mission, too – a lot of them were pretty good, yet they had not had the responsibilities like I had faced, so they weren't accustomed to working on their own and demanding freedom of action."

"Well," he said, "yeah, I understand that. Go ahead do what you do and you come back and we'll talk about it."

There were already a couple of Bureau of Reclamation types that were, at that time, working in the mission's Agricultural Division. So I immediately enlisted their help and told them what Killen had told me was my charge, and I said, "As I see it, this is going to be a large capital development investment program, and we've got to set up something which will have freedom of action across a broad spectrum of things, and water is going to be a very important one because of the Indus Basin Settlement. So first off, I want to get you guys into some other entity."

Jack Robeson, R-O-B-E-S-O-N, had worked in India and had worked in Nepal and was now working in Karachi, said, "You know, Ken, the structure of government here, the best

thing to do would be set up an equivalent pattern called a Public Works Division, and then you could collect into that division various elements of the mission's program to provide the engineering support." So I examined that, and I talked to the – there was these guys from Reclamation.

Incidentally, Jim Darnell, D-A-R-N-E-L-L, had been with me in Baghdad. He had been at Shasta Dam. He'd been with Wes Nelson down in Amarillo. But he was fundamentally a geologist had gotten in over into the engineering side, but after he'd left Baghdad just before the revolution, he had then been assigned over to Karachi. So here was a guy I was accustomed to working with and was accustomed to working with me.

So then we talked to the people in the Industry Division who was working on ports, working on the improvement of the railroad system, and then were involved in a lot of other industry activities. I talked to the Educational Division and found they had a large program of school construction. I found out that educational types that came over overseas, the first thing they wanted to do, instead of getting into improvement of the educational process, they wanted immediately to go into a large capital development program of school buildings, the like of which no school board would ever approve in the United States. They wanted to build their monuments.

Then I also talked to the Public Health Division. I found out they were deeply involved in municipal water supplies, among other things. So I formulated a plan which I set up. There was the Irrigation Division, Water, Irrigation, and Flood Control and Drainage Division, an Electric Power Division, a Transportation and

Communication Division, and, I think a – I was trying to remember the other day what I called that, a kind of a General Engineering Division, which I found out later that there was this school – I was going to assign them the school building program and a number of other programs that I found existing in the mission. Also then we set up a group of local engineers and draftspeople, that could service us.

So then I went back to the mission director and outlined my program and method of approaching this thing, and I also created a grade structure, and I said, “Now, if I understand the amount of money that's going to be poured into here,” I said, “I understand you don't know how much, but it's going to be lots, we're going to have to have some very good people. So it's going to have to be a high level, and I'm going to say that the top job should be a Foreign Service officer, Rank 1, which is a grade A team. And the heads of these separate divisions should be Grade 2, which would be about equivalent of a Grade 16 or 16 and a half, something like that. Then others in the division would be graded 3 and 4, but they all were senior people. And I indicated where I thought the resources might come from.”

“Well,” he said, “makes a lot of sense to me. So when are you going back to Baghdad?”

I said, “I've been over to the Iraqi Embassy a couple of times, and I haven't been able to get a reentry visa back to Baghdad, and I don't think I'm gonna get one. I think that the door has been closed.”

“Well,” he said, “okay, let's go to work.” He says, “We'll just stay out here on TDY.”

Well, shortly after I got settled in there,

Proposed a reorganization of the mission's construction programs in Pakistan

Jim Darnell said – he and his wife met Helen and me down at the Metropole Hotel, and said, “Hey, look, we've got an extra bedroom out at the house. Why don't you come out and move in with us since you're on TDY. It's got air-conditioning, and so stay with us.” So that made a lot of sense, so we moved out with Jim Darnell to their apartment and took residence in their spare bedroom.

Well, then Killen said, “I think you put this package together, write it up in formal report. I'll transmit it to Washington via you hand-carry it and work it through the echelons in Washington.”

So I was sent to Washington to go and explain this new program in Washington. First off, each of the divisions, you see, Transportation said, “Hey, wait a minute, we're going to lose something here, going into this Public Works Division.”

**Sent to Washington,
D.C. to explain his
proposed program**

Industry said, “Hey, wait a minute, we're going to lose something here. I'm going to lose the engineering aspect of our industry program, etc., etc., around the various divisions.” But I pointed out that this was patterned after the structure of government, which most of this big effort headed up in the Department of Public Works, under the Minister of Public Works, and not the least of which was the Karachi Water Supply Project, which was in *grave* troubles. It was being headed up, if it was being headed up in the Mission, by this Public Health Division who were a bunch of doctors.

Washington had hired the Ralph M. Parsons Company as a consultant to provide bodies to the mission. The head of this consulting group, contract employee, if you will, was operating as a mission employee, and he

was even attending the mission director's staff meetings. He was an ex-Army post engineer and had brown on his nose clear to his eyebrows, because he would go play chess with the Mission Director regularly. It was a real incestuous thing, and the project was in *real* trouble both financial and physically. So that was one of the first things I said that *had* to come over to us, so we could get an engineering handle on what was going on.

So I set up a charge as a series of objectives for this Public Works Division. The first one was to review the project proposals of the Pakistani government, or rather, to review the plans of development that were being developed by the Pakistani government, and to determine those which might be recommended to our mission management for financing.

The second one was to provide technical assistance to our colleagues in the Pakistani government in the execution of any projects which had been approved for U.S. financing.

The third one was to provide engineering expertise and assistance to the various divisions of the mission in the execution of their capital works programs, such as school buildings, etc., etc. I think there were a couple of other items, but basically it was this idea of advising mission management as where investments might be made, advising mission management for those projects which were approved to give the Pakistanis technical assistance and guidance in executing those projects, and to get the engineering aspects of all other elements of the mission under some kind of engineering control, instead of doctors and educators and God knows what, running around and trying to oversee building projects.

Well, I managed to persuade Washington that it was a workable plan, and it was approved, but they did not approve my grade structure. They wanted to haggle a bit, so I was in close contact with the Mission Director. I said, "I've run into a problem," and I said, "Jim, the amount of money that's being talked about, we've got to [have] absolutely *topnotch* people if you're going to make a success out of it. You just cannot afford to have second-rate people sent out to manage this program for you, and so you're going to have to go to bat with the administrator of [the Agency]" At that time it was I-C-A, International Cooperation Administration, one of the later incarnations of the Foreign Aid Program. "You're going to have to go to bat with the Administrator to unlock some of this bureaucratic delays," which he did.

So finally they did approve the grade structure, so then I went back to Pakistan and started to recruit people and get this thing organized. Well, this was about November, and I was due for home leave. This is December, late November or December of 1959. Although my appointment had not come through, so finally when writing my end-of-tour report – see, in the Foreign Service, you usually are designated for a two-year tour. Then you can come on home leave and get refreshed, and then you went somewhere assigned for another two-year term.

How the Foreign Service worked then

Actually, in the Foreign Service it's a non-uniform[ed] service. There's an Assignment Board set up in personnel, and these requests come in from the field for particular [type of] personnel, and then the Assignment Board starts pulling out the personnel jackets to see who's on home leave, or who's ready for assignment, and then they'll recommend a particular person will be assigned to a particular post for a particular

function.

Well, there was some delay in this bureaucratic delay going on in Washington about approval of all this as I had proposed, and the bureaucrats in Washington were wanting to go on the cheapie, so as I was writing my end-of-tour report, I said in the final paragraph, "Either Washington is unable or unwilling to approve my appointment at the appropriate grade to this position, and therefore I wish to be returned to the United States possibly for separation from the Foreign Service."

Now, I did this with an ace in the hole. I had already done some work with the Chairman of the Water and Power Development Authority in West Pakistan. I had accompanied him into Washington in a meeting for the Development Loan Fund Board and gotten acquainted with him, and the Water and Power Development Authority in West Pakistan had also employed Harza Engineering of Chicago as their overall managing consultant. So shortly after I had arrived in Karachi and had gotten acquainted and done some work with the Chairman of the WAPDA, W-A-P-D-A, the WAPDA – they loved acronyms. The Paks loved acronyms. He [the head of the Harza team] said, "Ken, the Chairman of the WAPDA would like us to hire you. They'll pay for it, but to assign you on our payroll to him as his technical advisor, personal technical advisor."

So I thought – well, this was cooking in the background. So I thought, "Hell, if I can't get what I want through the government, I can get a pretty good job with the WAPDA through Harza," and I always wanted to get over to the consulting field anyway.

So I made this recommendation of being

returned for separation with an ace in the hole. Well, anyway, I got back into Washington on home leave, and I went in to the then Regional Director, and having an interview with him, I've forgotten his name, he said, "What do you want to do, Vernon?"

I said, "Well, basically I want you to fire me."

"Oh," he says, "what the hell. Why do you want us to fire you?"

"Well," I said, "you won't approve me in that job in Pakistan at a grade level that I'll accept. At any rate, I've been living for a year under a government that went Communist, and I've been living out of a suitcase for six months in Pakistan, and I've just about had it up to my chin with your bureaucratic approaches here. So, also, as a matter of fact, I'm at such a stage that if you fire me, I can withdraw my retirement funds. I'd like to get into consulting engineering, and I can use those retirement funds to help support myself for a while 'til I get established."

"Well," he said, "we can't fire you." He says, "There's three countries asking for you. And now that you're available, they're asking for you." He says, "We can't fire you. And anyway, we want you to go back to Pakistan."

And I said, "But look, somebody's got to give here." (laughter)

Well, to make a long story short, lightning struck somebody. The word got down. Lightning struck somebody, and he signed off on my appointment as a Grade 1 in the grade structure for the Public Works Division in Pakistan, so then *I* went back to Pakistan.

We had a very exciting experience in Pakistan. I set up the Water Division. I got Johnny Walker, who'd been my power manger in Billings, to be picked up by the Foreign Aid Program and put him in as the power manager in my group. He worked with developing the power distribution system in [both East and West] Pakistan, ~~in East Pakistan~~. At that time, East Pakistan, which is now Bangladesh, was a part of Pakistan, and they had a WAPDA of East Pakistan. We were building a dam over in East Pakistan, and some other activities over there, irrigation development and so on.

I got Jim Campbell, who was an ex-Corps of Engineers dredger man, because in East Pakistan, he . . .

END OF SIDE 1, TAPE 3. APRIL 27, 1995.

BEGIN SIDE 2, TAPE 3. APRIL 27, 1995.

Storey: You were talking about working with East Pakistan.

Vernon: Yeah. I got Jim Campbell, who had been sent out in a team from – he had been a dredger man in the Corps of Engineers on, I believe, the Columbia River Development. I'm not quite sure just all where he'd been, but he had been a part of that team, and they'd reported on some of the problems in East Pakistan. So I got him to head up my Transportation Division.

Then one of the gentlemen, which I mentioned earlier that I had reviewed for a possible employment by the Iraqi Development Board as to the Chief Engineer of the Second Technical Section, who had a good background in highway work, he showed up. I got him to head up the Social Development Division of my General Engineering Division.

I got a man that had worked in Europe under the Marshall Plan with the Corps of Engineers in the reconstruction of the infrastructure, particularly in France, and then had worked for a consulting engineering group out through the Western Pacific, working through the Corps of Engineers on depot facilities. So he had a good background in general engineering, so I managed to bring him in.

Then I appointed Jack Robeson, who had been formerly working in the ~~Department of Agriculture~~ [Agricultural Division]. I appointed him as my deputy. Then I got another young man, who was a younger engineer, American engineer, who had a pretty good background, I got him in as my program and scheduling engineer. I always developed my program and scheduling group wherever I went, because I always wanted to know what was going on, where we were, and what was coming up next. I was one of the few members of the mission in staff meeting who always could report exactly where we stood in program execution. So then we were set up to go.

Set up a program and scheduling group so he would always know the status of work

It was my time to go on home leave in late November, and so we took off for the stateside, and were gone for about three months at stateside. Then this question of my appointment in Pakistan had been settled while we were gone, and so then I reported back to Karachi as the head of the Public Works Division. Then I kept recruiting and bringing these people in, and we got going at great lengths there.

Storey: This was in the American mission?

Vernon: Yes. *There* I was working in the American mission. I was another head of another division

In Pakistan worked in the American mission

in the American mission. My offices were in the American mission. We worked with and through the various elements of the Pakistani government, particularly the Ministry of Public Works; the Ministry of Health; the WAPDAs, the Water and Power Development Authorities; the railroads; the port authority.

One of the projects that I got involved in early on in my stay in Karachi was in measuring what the mission was involved in. I got involved in a review of the Karachi Development Authority's water supply plan for Karachi, Municipal Water Supply Plan for Karachi, which was a diversion of water from the Indus River through a system of canals to a filtration plant in Karachi, and this project was in *dire straits*. Somebody had decided that the projects should have a tunnel. Rather than going around a particular promontory, the project should have a tunnel. Well, they were just in the midst of the damndest problems out there, and this group from the Ralph M. Parsons Company just didn't seem to be able to hack it.

**Karachi Development
Authority water supply
plan for Karachi**

Now, I'd had a good deal of experience in tunneling, both on the Central Valley Project, on the Dokan Dam Project, and then the Missouri Basin. So over the Fourth of July in the summer of 1959, I analyzed all the problems that were going on, and I presented the Mission Director with an analysis of the things that were happening, and, quite frankly, it was my recommendation that unless a lot of trees were shaken, that thing would never be completed. Just to show you the kind of things that were going on, this tunnel was not through a deep mountain, for example. It was going to be concrete-lined after construction making the bore of the tunnel, then it was to be concrete-lined, and what they decided to do was to periodically drill bore holes, and they would

dump the concrete down these bore holes and fill the forms with the concrete, which would line the tunnel.

My God, one day the man from the Parsons Company said he started walking from the lower end of the tunnel, and he noticed that the water was warm. So as he got up to where they were pouring the concrete, he found out that the forms had broken, and they were just merrily plugging that tunnel solid with concrete. This was the wonders of the Ralph M. Parsons' inspection crew.

I found out a number of a bunch of other things that I didn't like about the Parsons' inspection crew, so one of the things I insisted early on with the mission Director was that management of that crew be assigned to me, and that we'd get a real handle on it. In the first place, he [Harza team leader] was horribly expensive, and we could get much better service out of some direct hires, then we'd have some control over them. So I advised the Mission Director that we really needed to go to the government and talk about it, and show them my analysis that this project would never be completed unless they completely revamped their approach to the construction of the project, *and* a good deal more money was going to have to be assigned to the project, because there was a serious overrun in the cost.

This created a rather a intense situation between the Mission Director and the Minister of Public Works. During one session, the Mission Director sort of lost his cool. The Minister, who was a very capable man in his own right, closed the meeting forthwith. As we were riding back to our mission headquarters, the Mission Director said to me, he said, "Did I blow it?"

The head of the Parsons group said, “Oh, Mr. Killen, you did exactly what they needed. You gave them a dressing-down that you exactly needed.” [Just] No – brown-nosing.

He said, “What do you think, Vernon?”

I said, “You blew it! What the hell, didn't you notice he closed the meeting forthwith? We're going to have to take another month to ever get back to where we were. You deeply insulted that gentleman.”

He said, “Well, that's kind of the way I felt, but, unfortunately, I've got a hot temper, and when I get provoked, I speak out of turn.” He says, “I kind of felt the same way, and I just wondered what your reaction was.”

I said, “Well, I worked with these kind of people long enough to know you don't do that sort of thing. You may be seething inside, but you never evidence it.” So that really put us back.

So my relationship with Killen was very good, because I understood him and he understood me, and I could talk very frankly with him, and at times we swore at each other, but he took it in good faith. A couple of times I had to apologize to him, I said, “I spoke out of turn.”

He says, “That's all right, I understand that kind of language.” (laughter)

Basically, our operations in Pakistan, *my* operations in Pakistan, were supporting the American effort in the Indus Basin Development Replacement Works – that primarily was through the Water Power Development Authority of East [West] Pakistan. We were

**Indus Basin
Development
Replacement Works,
Water Power
Development Authority
of West Pakistan**

supporting – the Port Authority wanted to enlarge the port capacity.

I found that ships were having demurrage charges of thirty days or more, sitting idle in the ports [waiting to be] unloaded, because there was not port capacity enough to unload them. So I assigned to Mr. Campbell, who I mentioned earlier, to study what could be done about enlarging the port capacity, perhaps was there room enough to put in some additional unloading facilities, additional berthing, etc., and additional equipment, or was it going to require the construction of a satellite port, or just whatever might be the solution.

Look at improving harbor facilities

I urged the Industry Section of the Industry Division that was working with the port management to see what they could do about introducing mechanized unloading, because one of the big imports was bulk cargo and wheat, for example, from our PL 480 program, Public Law 480 program, the bulk wheat, grains, and so on, and these were all being unloaded by hand. I said, “Why don't you see if you can't get them to introduce some equipment, mechanical equipment, in speeding up this unloading, as well as we'll undertake the idea of going into enlarged port facilities.” I said, “This is only going to get worse, because the Indus Basin Program is getting going now, the Mangla Dam is under construction, other elements of the Indus Basin Program are going into construction. So that this port is chuck-a-block now, and it's just going to be absolutely choked solid. I'll tackle the railroads and see what we can do about improving their physical structure, and you tackle them on the basis of their management and improved equipment.” So we undertook that program.

Mangla Dam

Then John Walker was there by that

time, and he started working on what kind of a transmission line system might be required to market the power, distribute the power, that the WAPDA would be developing at these dams that were being developed under the Indus Basin Program, and so on down the line. So we had a big program going in West Pakistan.

Then in East Pakistan, we were constructing a dam on the Karnafuli River, K-A-R-N-U-F-U-L-I,²⁹ Karnafuli River, which was being financed by Development Loan Funds, so therefore we had a definite interest in it. We were keeping track of that construction with the Water and Power Development Authority of East Pakistan. They also wanted to improve their irrigation facilities over there, so they had a number of irrigation proposals, but they also had two special problems relating to storm surges in the Gulf of Bengal. These are equivalent of hurricanes or typhoons, but they called them cyclones, which would develop in the Indian Ocean and would gradually travel up the Bay of Bengal, and then come to land, as hurricanes do in the Gulf of Mexico. They might land, go to land in India or at the headwaters of the Bay of Bengal, or on the east side of the Bay of Bengal, which was a part of East Pakistan, or on Burma, which was south of the part of Pakistan that was on the eastern side of the Bay of Bengal.

So I brought over a gentleman from our hurricane center in Miami to study that situation and to come up with some measure of these storm surges as they occur, because this land was around the periphery of the Bay of Bengal, was only about, say, elevation three or five feet above high tide. So a storm surge of ten or fifteen feet created havoc, and there was record of hundreds of thousands of people being drowned because this was some of the most

Karnafuli River dam

**Problem of cyclones
[hurricane or typhoon]
in the Indian Ocean**

densely populated rural areas in the world.

So he studied that situation, and he gave us a handle on what we were facing in terms of these storm surges. Also we found that these monsoon storms would come in, and it was like these storms I mentioned earlier on when I was discussing these intense storms in the Missouri Basin, where you would get twenty-two to twenty-four inches of rain in two to three days. The only problem in East Pakistan was, you'd get twenty-two to twenty-four inches maybe in *eighteen hours*. As a matter of fact, in the Assam Province in India, which was just behind the province of East Pakistan, was the rainiest place ~~on earth~~. They didn't measure their rainfall in inches, they measured it in feet. Because this monsoon flow off of the warm waters of the Indian Ocean would get batted up against the Himalaya Mountains, and just dump water like it was going out of style.

As a matter of fact, we – very serious – almost lost the Karnafuli Dam before it was completed because of one of those storms. We had something like twenty-three inches of rain in something like eighteen hours up there.

So they had this problem of these low-lying lands, and what the government wanted to do, was could we create a system of polders, just like the Dutch did, around and reclaiming land from the sea. So I went to Holland and I studied their system as they were reclaiming the seas, as to how they operated their polders, and so we created a series of basins, so to speak, just like in the Sacramento Delta.

The Sacramento Delta, the low-lying islands there only had – really, the problem there was flood water, high flows of flood water. But in East Pakistan you had a dual problem. Not

only would you have these intense rains, but you had also the floods coming down from the Brahmaputra and the Ganges Rivers, from the high Himalayas, and so you had to keep that flood out, but you also had to be able to get the rainwater out of the polders before it drowned the crops. I think that they concluded that they advised that you had a period of something—these crops would stand a submergence of something like five to seven days, something like that, and these intense storms would come on a schedule of something like maybe every two to three weeks. So you had to be able to keep the flood water out, but then you had to be able to evacuate the rain floods in a five- to seven-day period, so the crop could then grow before the next flood came. So this was the dual problem.

So then the next question we addressed was how to prevent these storm surges from flooding everybody out over this low-lying land. I've forgotten now whether our rule of only employing Americans, or whether at that time we could also employ foreigners, but I know that Doxiades Associates [from Athens, Greece] were employed, because they were already in Pakistan working on social problems, and I've forgotten now whether we financed them or the government of Pakistan financed them. But at any rate, we held a close association with the Doxiades Associates to study what might be done about protecting the low-lying lands [from] of the storm surges.

I don't know whether you understand, but in a concentrated storm like a hurricane, for example, in the rapidly swirling winds, in the Northern Hemisphere, the circulation is counterclockwise, and so as these intense winds circulate, they pile up a storm surge of many feet, which then comes ashore. I went through

the destruction of Hurricane Camille down in Mississippi, where ships had been washed ashore miles inland, boats that were miles inland, and actually some apartment buildings were absolutely destroyed because they had been completely washed out.

The local people had instituted a program of where, in farming these low-lying lands, they would try to build little mounds of earth on which they could locate their houses and other institutional buildings like schools and so on. But Doxiades came up with a solution that we should build a series of dikes which would have a sufficient height that would contain, hopefully, the highest surges on record, and make the seaward side a very flat slope, and that would be planted to trees and other growth which would help break down the force of the tidal surge. As I recall, that forward slope was to be on a rating of about – a rise in elevation of one foot and every ten feet horizontal, and these things then would be rather large structures.

Proposed to build a large system of dikes and polders

Then in the polders, the dikes there around the polders would be of more normal dimension. But I also said, because of my experience with that flood control channel of the Wadi Tharthar and its leakage, and the dikes around the Mississippi River in the States, I said there could be no excavation for the building of the dikes on the *inside* of the polder. All the excavation had to come on the exterior, because I did not want to have this undermining of water leaking through the dikes, such as I was telling you about on the leakage through that dike along the Wadi Tharthar channel.

So at any rate, this was all adopted, and we got started at it. Now, the method of construction was such that you couldn't get equipment into this low-lying land. The only

kind of equipment that you could use would be like that walking Monighan that I described to you that was used on the Contra Costa Canal in the Delta area, but you didn't have that kind of equipment in East Pakistan, but you had this great tremendous [amount of] manpower. When I was in Iraq, I saw some of the old residual canals that had been developed centuries ago, which had been built by manpower. There was one canal which had been built somewhere around either 200 B.C., in the period from 200 B.C. to 200 A.D., which was about three to four hundred feet wide and about ten feet deep. It was a tremendous canal that ran for two hundred kilometers, and that was all done by manpower.

So I said to the chairman of the WAPDA, "What we need to do now is, you go to the Army and see if you can borrow a lot of the Army, particularly the squad leaders, the sergeants, who can take an instruction and execute it, and then you have your system of local contractors who go into the villages and employ crews [of] for the villagers. So these employment contractors will provide the manpower, the sergeants will provide the leadership, and this will all be done by head-basket work."

They had a formula for doing that sort of work there. Some people dug the material. Some people put it into baskets, head baskets. Other people picked up these head baskets and put them on their head and carried them up and dumped them on the dike, or whatever, to remove the material from the excavation. Others had little donkeys with paniers on them, and they'd load those up, so now we get this material up to the dikes.

Another question was, well, are we just going to dump it? How are we going to get compaction of this? So I suggested – now, there

were a lot of mechanical equipment, compactors which were very good with this kind of thing, *but* they didn't have the foreign exchange to begin with, but they had this gross manpower. So I said, "There are a lot of big trees down there in the Sunderbyans, this area of low-lying land. Cut out some trunks of those big trees to a size, say, that two or four men could lift, and then put handles on this chunk of wood so that two or four men, depending on its size, or even more, could lift and use that as a tamper." In work crews in that world, they usually have a leader of a crew who sings the chant, just like on the old sailing ships where they had the sea chanties. So these guys, then, all worked in unison to the chanter who's singing the song. So I said, "We can get compaction of these fills while they lift. These tree trunks will have enough weight, and you got the manpower to lift them, and so they can lift them up six inches and drop six inches, lift up, drop six inches, lift up six inches, drop, and get compaction, because these head baskets will not deposit enough material at any one point [so] that you will have a thick layer and then not get thorough compaction. That's why in sheepsfoot rollers you have these feet that stick out maybe six to eight inches, these projections that stick out six to eight inches, of conical shape, and so the material is laid down in layers of maybe eight inches to a foot, then you put this sheepsfoot over it, and as these feet go in, you get not only the direct compaction, but you get the lateral compaction because of the conical shape of the foot of the projection. So we had to do it by manpower, and it worked. It worked. And, heck, at one time I think they had 100,000 people working out there. Can you imagine?"

Storey: That's quite a process, isn't it?

Vernon: Now, have you got any more questions about

Pakistan that you can think of? It's almost – Amy [, my housekeeper,] will be here any moment now. Sometimes she doesn't get here 'til 12:30 depending on where she's worked in the morning. Sometimes she gets here at twelve o'clock.

Storey: Were the polders and the dikes what you did in Pakistan? That was it?

Vernon: Yeah. Well, that was it. I think that process is still going on, because they had a tremendous area to do. Now, then, on the West Pakistan, these replacement works have been largely completed.

But, oh, I didn't get into the other big effort we had in West Pakistan, had this five-million-acre Punjab area, plain, a perfect plain for irrigation, and it was under irrigation, but they were suffering from SEM and their salinity and water logging, because there was an over-application of water in irrigation and they didn't have any drainage system. So they would also get tremendous monsoon rains there, so the combination of irrigation water, and the monsoon rains, and no drainage system, they were suffering from a good deal of waterlogging. Then also the water that was being applied for irrigation not being drained out, they had raised the water table to such a height that the capillary rise from the water table was evaporating, was bringing the water to the surface, and then it was evaporating and this was salting up the soil column.

Dealing with salt and drainage in the Punjab

So the irrigation engineers in Pakistan had done quite a lot of experimental work in terms of trying to define this problem. The problem was, what was the solution. So the first thing I said to the Chairman of the WAPDA was, "I think what we ought to establish is

something we might call the Water and Soils Investigation Division, and we'll call it the WASID," another acronym they love. "But what we need to do is get an actual handle on where this is really occurring and where the most difficult areas are which must be treated first, if at all possible, and whether the groundwater is of such a quality that we might tap it as an additional water supply, and, in a sense, develop a drainage system [through pumping]." So this was adopted.

Then I went to him and said, now – they had been experimenting, shall we say, with . . .

END OF SIDE 2, TAPE 3. APRIL 27, 1995.

BEGIN SIDE 1, TAPE 4. APRIL 27, 1995.

Storey: This is tape four of an interview by Brit Storey with Kenneth F. Vernon on April the 27th, 1995.

Vernon: I was telling you about the problem of soil salinity and waterlogging in the Punjab. So I had gone to the chairman of the WAPDA and said, "Now we got this group defining the area of the problem. Now let's start a real ~~program of~~ salinity control and Reclamation program, the SCARP Program. It's ~~worldwide~~ known [worldwide] now, the SCARP Program. And let's set up a series of areas, which SCARP One, SCARP Two, SCARP Three, and so on, that you could approach the problems in their most logical order, and what I suggest is that as the Indus Basin water becomes available, we'll leapfrog this water down the Punjab. In other words, it will discharge water from the canal, it will go into the ground, we'll establish a battery of wells, which will take the surplus water out of the ground, mix it with fresh Indus water to correct any salinity unbalance that you might have, through another element, then another battery of wells, and so on, march down this

tremendous area, and we'll call those the SCARP One, SCARP Two, and so on, and set them up as separate project areas.”

Well, by this time it had gotten – the Kennedy Administration had come in, and we had now become the Agency for International Development. The government of Pakistan had come to President [John F.] Kennedy, the President of Pakistan had come to President Kennedy and said, “We've got this very difficult problem in the Punjab.” [Tape recorder turned off]

**Agency for International
Development created**

The President of Pakistan had gone to President Kennedy and said, “We've got this problem in the Punjab, and could you give us some [aid] – send us some real experts over here to help us solve this problem?”

So the President turned to Jerome Weisner, who was his Science Advisor and later became President of MIT, assembled a team of “experts,” none of whom knew a blessed thing about irrigation or drainage. Oh, there was one guy that did, and he was from the – he'd been at Reclamation, and then he was working in the U-S-G-S. But there was an ichthyologist. There was Roger Revelle, who was a demographer. He was head of the La Jolla Research Institute down near San Diego.³⁰ There was a guy from some asphalt institute or some blessed thing. I'm not really – a group of disparate people, which – jiminy Christmas. Any rate, under the head of Roger Revelle. They came to Pakistan, and my job was to squire them around, arrange all their meetings and so. Well, I was completely disgusted with this operation. I said, “Jesus, what a waste of money and talent.”

So as we were flying around one day, one of the gentlemen had his wife with him, and

she came down and sat beside me in the airplane. And so she started to talk to me, and I thought to myself, “She's on a mission.” She was asking me questions, trying to get my opinion about what was going on and this and that and the other thing.

I thought, “I'm gonna give her an earful.” So I said, “Quite frankly, I think it's a goddamn waste of time, and all we're doing is an educational program for these people. They haven't got the foggiest notion of the problem, or how to solve it. They'll leave here after having a nice tour around the country, and then they'll go contemplate their navels for a month or two and come up with some kind of an innocuous report, etc. and etc. and etc. and etc.”

So shortly after we landed that night at Lahore and we'd gotten bedded in when I got a call from Mr. Weisner's office that he'd like to talk to me. He happened to be along on that particular trip. He apparently had been primed as to what I told this lady, and he was trying to explain to me the wisdom of this choice of this group. He said, “You know, these guys are the guys that put man on the moon, and if we can solve that kind of problem, we ought to be able to solve this kind of problem, and we wanted a fresh approach,” blah, blah, blah.

I said, “Well, that's very fine, Mr. Weisner, but these poor people [in Pakistan] have got a problem they need solving now, and they don't want to go into an educational program with this group that you've assembled. So that, quite frankly, I think it's a bloody waste of American money, myself.” Any rate, we parted friends.

Well, to make a long story short, after I got transferred into Washington, Roger Revelle,

who then had become the Science Advisor to Stu Udall, Secretary of the Interior, he had a room piled with documentation, but he was unable [to] write a report. And I then would go over to the gentlemen in Mr. Weisner's office, who would be sort of riding herd on this effort, and I used to tell him, "For God's sakes, light a fire under Roger Revelle, because these people need an answer. Whatever it is, they need an answer, and they keep coming to me and saying, 'When are we going to get Mr. Revelle's report?'"

Well, we finally got Mr. Revelle's report, and as I said, it was about as useful as "mammary glands on a boar hog."

As a matter of fact, then, to close this side of the issue, the SCARP Program became a very favorable program, and all the financing agencies of Europe and whatnot wanted to get into the act. They wanted pieces of it, and it's been a very positive program. So that was one of the most successful efforts that were there.

Storey: Good.

Vernon: I think that's a good place to break, on that.

Storey: Okay. [Tape recorder turned off]

I was wondering, now, if you could tell me about the living accommodations and Bureau of Reclamation folks who were in Pakistan with you.

Vernon: Well, there were, as I said, two previous members of the Bureau of Reclamation in Karachi, who became part of my new staff in the Public Works Division. We had a—the Mission had an area office, shall we say, up in the town of Lahore, up in the area of the Punjab, which had a lot of people up there, and there, a Mr.

~~Fred Locher~~ [Ed Landerholm], an agriculturist, who I mentioned earlier as having been in Baghdad and had been with me in Billings, was stationed. But again, he was a member ~~=but then he was a member~~ of the Foreign Service, as I was, as well as the two men in Karachi. [Also there was Roy Goss from the Gila Project]. There was also a former member of the Bureau of Reclamation who was the resident engineer of Reclamation, ~~resident engineer of the Foreign Service~~, [the] Foreign Aid Program, stationed at Karnafuli Dam in East Pakistan. We all now had transferred over to the Foreign Aid Program of the Foreign Service. We were no longer associated with the Bureau of Reclamation.

There were many people with Reclamation backgrounds in Pakistan, but they were all on the Foreign Aid Program staff

Storey: Oh, okay.

Vernon: We all had Bureau of Reclamation history. Walter Bierce, B-I-E-R-C-E,³¹ before being stationed over at Karnafuli Dam, had also been a part of the Bureau of Reclamation team on the Litani Project in Beirut, as I previously mentioned that team. But there was no “Bureau of Reclamation team” in Pakistan, as such.

Storey: Okay.

Vernon: And any member that I brought in – I brought in several members from the Bureau of Reclamation into my Public Works Division, but they transferred over to the Foreign Service, and so they had terminated their association with the Bureau of Reclamation, as a Bureau of Reclamation employee.

Housing was quite a bit better, shall we say, more modern, both up in Lahore and in Karachi. It was still fairly primitive for the people over in Dhaka East Pakistan, which was the headquarters of the Mission Area Office over in Dhaka East Pakistan. Of course, Walter

Bierce, up at the dam, a rather modern construction camp had been created there, constructed there, because there were a lot of Americans and foreign employees and contractors there, so that was fairly modern. But Dhaka was still fairly primitive, about the same order as it was in the early stages of Baghdad.

Fundamentally in Karachi, the government had created what were called housing societies, cooperative housing societies, and many of the Americans had found quarters in what was called the P-E-C-H-S, which was the Pakistani Employees Cooperative Housing Society. The type of housing that had been constructed was multiple-unit buildings, either duplexes or quadraplexes, but rather apartment style, shall we say, which were quite commodious, in fact, and quite modern in their construction.

Housing and living conditions in Karachi

My wife did not like to live in multiple housing, and my rank justified individual housing. So we wound up in a relatively modern house in a much smaller housing society. It was quite commodious. It was owned by a man from Kashmir, not that that really made any difference, but just as a distinction. He was not truly a Pakistani. He was a Muslim, but he was not truly a Pakistani. He had come to Pakistan.

Our housing society was called the Union Trading Cooperative Society. My house was Number One Union Trading Society. I don't even know the name of my street, except that I was at the corner of a side street and a big boulevard called the Shaid-A-Milat, S-H-A-I-D, dash A dash, Milat, M-I-L-A-T. This was a broad dual carriage way, boulevard, with a rather large parkway between the two, a large park area between the two carriage ways, as the British call them.

It was a single compound. We had a nice garden area. The house had three bedrooms. It had a *large* living area, which in one of our houses would be called a living room, combination living room/dining room area, and that was what it was originally intended for.

But all the houses in Pakistan would have nice verandas, so adjacent to one end of this large living room area, we enclosed that veranda with glass and made that into a dining room area, and then we used this big living room area as a living room, combination living room. And since I was a kind of a music bug, I used one end of it sort of as a music room area, had my stereo equipment, [piano,] and so on in the other end of this. This room was about seventeen by thirty-five, actually.

Storey: That's a nice-sized room.

Vernon: There was a central hallway, and off this central hallway was a pantry leading into a kitchen area. Also, doors off this central hallway led into two rather larger bedrooms. And then off of this larger living room area I mentioned, there was another, third bedroom, which I used as an office. Now, one of the differences in Pakistan was, each of the bedrooms had dressing rooms and bathroom facilities, tubs and the usual toilet and lavatory facilities, so these were quite more modern than the ones that were in Baghdad.

There was another building on the back of the compound over the garage which had housing for the staff, so some of the staff lived in the compound, and some of the staff had family and they'd go home at night to their families.

Also in this outer building, there was a quarters there for the chokidar,

C-H-O-K-I-D-A-R, who was the nighttime guard. His post was at the compound gate, but when it rained he could retire to this little cubicle area to be out of the rain. A lot of the people complained about their problem, because they would say these guards would go in there and go to sleep. But I was usually very fortunate to get a good guard who seriously took his guarding responsibilities. I've got a little side item that I'll mention later.

So here we were. Oh, yes, these houses also had, as we had in Baghdad, flat roofs, so that you could, if you wanted to, you could sleep out of doors in the summertime. There was also a laundry room up there, another bathroom upstairs which we converted to a laundry room.

In Pakistan, instead of using the swamp-type coolers, the evaporator-type coolers, we used refrigerant air-conditioning units, window units. Unfortunately, the humidity during the summertime and the dust and grime in the air would cause the humidity and grime to congeal on the coiling of the condensers, and they'd actually become blocks of ice, because the coolers, in the cooling of the air, this would cause the moisture to condense that was in the humid air, and the cooling units would actually run a stream of water.

The houses, as I say, were quite commodious. There was lots of closet space. It was superior housing to what was in Baghdad. Now, up in Lahore, it was much the same there, except there were, I think, more single compounds with larger gardens, more like we had in Baghdad, because Karachi was more of a – it was the commercial hub of the country, but a lot of the Muslims from India moved into Karachi at partition back in 1947, so it had a much more secular affect, shall we say.

Lahore had long been a more modern city and a more larger [with more] cosmopolitan inhabitants, so the housing was quite nice ~~but~~ [with] larger gardens and more modern housing. So our people up in Lahore, we've always felt it was a much better station if you could possibly get assigned there. The climate was much better, too. Those who were in the outlying areas were subjected to primitive conditions. In the villages, if you happened to be unlucky enough to get assigned to a village, you never knew quite what kind of living accommodations you might get into, because it was very difficult.

Karachi was an interesting city, because it was a port city and it was a commercial city. So there were some modern facilities downtown, but there was a great deal, also, of strictly Southeast Asia market stalls. Each little merchant would have a little cubicle, and he might sell one thing. For instance, you would go to one place and buy a bolt, another place you'd buy a nut, another place you might buy a washer, etc., etc.

My wife dearly loved to go to those places and sit down with the merchants and bargain with them for various items. And if she stopped to [go] ~~get~~ into a shop that had more than one item, she would bargain with them for each particular item, and then after she'd selected a number of items, she'd say, "All right, now let's talk about all of it. How much for all of it?"

And these guys just loved to see her coming, because they always knew it was going to be a good mental exercise, because they loved to bargain. And they'd say, "Please sit down Memsahib, please sit down. Let me order some tea, or would you like a cold drink?" (laughter) And then the crowd would gather, and they'd

participate in this bargaining. (laughter)

She used to say, “Let's go downtown. I want to look around.”

I'd say, “Oh, my God. Okay, all right, let's go.”

And she'd go down, and she'd take several hours down there, and that's why we have so much stuff in the house that she'd got in the local marketplace, because she'd go browsing around and find stuff, and she'd dig into these places. They might have stuff in a trunk or a case or somewhere that they didn't have on display. Well, she said, “Let me see your good things. Let me see your – now come up with a good thing.”

But living in Lahore was much nicer. I think that Lahore was quite comparable to living in New Delhi, New Delhi, India, because New Delhi, India, was quite a cosmopolitan place.

Storey: Did you live in Lahore?

Vernon: No. I was stationed in . .

Storey: In Karachi.

Vernon: In Karachi. The embassy was in Karachi. The Mission headquarters were in Karachi. Now, before I left, the government had come to the Ambassador and told him that the President of Pakistan wanted to create a new capital city, Islamabad, in northern Pakistan, up near Rawalpindi, R-A-W-A-L-P-I-N-D-I, which was basically the military – Rawalpindi was basically the military headquarters of the Pakistani army. And so he, [the President,] being a Pathan, P-A-T-H-A-N, the warrior class, he felt uneasy down in Karachi being surrounded

**Ambassador
approached about
construction of a new
capital city – Islamabad**

by the group called the Sindhis, S-I-N-D-H-I, the Sindhis, because the lower region of the Indus River Basin was called the Sind.

Now, I don't know the translation of the Sind, but Madam Bhutto, who is now the current Pakistan Prime Minister or President, I've forgotten which, her family were Sindhis, S-I-N-D-H-I, and there was always a conflict between the Punjabis and the Pathans and the Sindhis. The northern tribes looked down upon the Sinds. And so the President had this uneasiness being located in this, shall we say, less favorable environment, so he wanted to establish a new capital up what he felt was a more salubrious environment.

Tensions among tribal units in Pakistan

He'd come to the American ambassador and wanted to know if the Americans would support the construction of this new Islamic Islamabad. The ambassador said, "No, Mr. President, we can't really do that. That's not really our mission here. But what we can do, perhaps, is provide some of the local currency that was being generated through the PL-480 Program,³² the Agricultural Import Program, as a budget support item through your government, which then might free up resources of your own government which would otherwise be allocated to those activities, and then you could use *those* to construct your capital up at Islamabad." But the U.S. would, *de jure*, not be associated with the construction of the new capital.

So that had started before I left, but it had not been completed. But by the time that this group, led by Mr. Weisner, back in 1961, the President had moved his headquarters up to Rawalpindi, and the construction of the new Islamabad capital was under way. I understand that the government has moved up there now and is operating out of Islamabad, because I've

talked to a number of people and they said that the government is conducting its operations out of Islamabad.

Now, an interesting sidelight, I told you earlier on that the U.S. government was starting to pour a lot of money into Pakistan. We had a very heavy military group there, Military Aid Program there, as well as a large embassy staff, as well as a large Foreign Aid Program. The ambassador was getting ready to go to Washington for a conference about what might be done about the total U.S. effort, and there was also indications that others now, other financing entities such as countries like Britain, Germany, France, and so on, were getting interested – including Russia – were getting interested in participating in the Development Program of Pakistan.

So he called me over one day and said, “I’d like to talk to you about what your thoughts are on what we might decide we would give up to other interests.”

Well, I said, “Mr. Ambassador, my recommendation to you would be that, for God’s sakes, hang on to the development of the Punjab. This is something that will really be very important in the development of Pakistan, the agricultural development of Pakistan. And if the Russians really want something, let them take the Sind, which would be the lower area of the Indus. That’s a real problem area, and I think it would be a real good trick, dirty trick, to play on the Russians. Let them worry about the Sind, and we should steer clear of it if we possibly can.” Although there was a good deal of activity going on down there, but it did have a lot of problems associated with its development.

So he thought that was pretty good

**United States Military
Aid Program in Pakistan
was heavy**

advice, ~~but he did~~, and our side did agree, that since others wanted into the development of the Punjab, other financing entities began taking on some of these SCARP Programs that I'd mentioned, such as the SCARP One. I think we kept through SCARP Three, but I think SCARPs Four, Five, and beyond were allocated to British interests, Dutch interests, because I understood that [at] later dates that those people were active in that area.

Now, I had talked about living conditions and so on. One of the things that was different in Pakistan was that there was a large enough American presence, particularly in Karachi, both embassywise and missionwise, that it was possible to set up an American school, because many of the families had small children, and even [students] of high school age.

~~But~~ We had found that in the Foreign Service that one of the difficulties of family life was, that as long as the children were small, let's say of grammar school age, it was easier to take care of them than it was after they approached high school age, because of the variety of studies that might have to be presented. So while we were in Baghdad, the school effort there was a very rudimentary one, and most of the students were getting their curricula through university extension courses, which were supervised by some of the ladies that were married to people that were in our Educational Division in the Mission. I don't [know] whether they ever got paid or whether they were strictly voluntary, because I know my son, who was of high school age, we finally decided we would have to send him back to the States to a private school, because he just was not learning . . .

There was an American school in Karachi

Son had to be sent to private school in the United States

END OF SIDE 1, TAPE 4, APRIL 27, 1995.
BEGIN SIDE 2, TAPE 4, APRIL 27, 1995.

Vernon: We had decided that we would send my son back to the States to a private school, because he was not really studying or getting enough supervision to really gain an education through the extension course. So one day in Baghdad, when he'd been talking about wanting to go back to the States, I said, "Now look, boy, you haven't been measuring up here, and you've gotten yourself into some troubles around here, as a teenager does. You'd better buckle in and get some work done on your extension courses ~~or, by God, you will end up going~~ [if you want to go] back to the States to go to school to a private school."

He had already been in a private school in Denver the year when I first went to Baghdad, because he had some problems. He had been seriously burned in a motorcycle accident, and so he'd had some personality problems. The physical part of it was over. He'd had the skin grafting and all the rest of it, but it left him scarred emotionally, and so I had to periodically challenge him to get something done if he really wanted it.

So he buckled in and brought his work up to date. We had sent him back to the States and entered him in this, again, this private school in Denver.

In Pakistan, although we didn't have any real association with the American school, I understood that it was rather successful. The wife of the head of our Educational Division in the mission was also an educator, and so she was – I think she was a paid employee of the Mission to head up this school. And a relatively good curriculum was being presented, because many of the children of foreign embassy families were asking to be included. Now, I don't know how many of those were included, but I understood

that as many as could be accommodated were being provided for, such as the French Embassy, the Dutch Embassy, the British Embassy, and so on, because they also had that same problem of education.

And then in Lahore, they had a similar operation going, but it was more of the supervised university extension courses. They didn't have a big enough community up there, as I understood, to create a formal school program like was established in Karachi.

Did I cover the housing problem sufficiently for your purpose?

Storey: I think so. How about house staff when you were in Pakistan? How did that work?

Vernon: Now, that was something completely different. One time I counted up eight or nine people serving the two of us in our house, single compound, in Karachi. Unfortunately, not a damn one of them was doing a complete job.

Staffing of the Vernon home in Karachi

But, let's see, there was what was called the bearer. He was theoretically the butler. He was the major domo of the household. There was a cook, and there was an hamal, H-A-M-A-L, who was sort of a utility person around the house, swept and mopped the floors and did other chores as assigned by the bearer. There was a derzey, who came in once a week or twice a week, whatever was required, to do the laundry.

There was a seamster, a man – we would normally called the feminine a seamstress. I don't know what the masculine form of the seamstress is. But he had his little hand-operated sewing machine, and he'd come in and he'd do whatever sewing my wife wanted,

helped her put up the curtains and draperies in the house, and whatever other chores and mending that she might need. There was the mahli, M-A-H-L-I, who was the gardener.

There was the chokidar, who was the guard, and at one time we had some dacoits, robbers, D-A-C-O-I-T, break into the compound over the back wall, and it just so happened at that time that the chokidar came around the house and caught these guys coming over the wall, or this man coming over the wall. The guard was armed with a long sort of a bamboo switch. They called it a lathy. It was a little bit limber, but it was strong, about four feet long, something on that order, and he started whipping the heck out of this guy and grabbed hold of him. A police station was only a short two blocks away, so he whipped this guy all the way to the police station, [where] ~~which~~ they threw him in jail, *and* they worked him over there, I'm sure.

But that morning I awoke and my yard was full of police, and I went outside and I said, "Well, good morning gentlemen, what's the problem?"

Well, the officer in charge of the group told me that my chokidar had collared this guy and brought him over to them. They were over to look and see the situation, to see how it was and what might be done about it. Well, what had happened was, a house was being built next door, and a lot of materials had been piled up against the compound wall on their side, and this guy had crawled up on there and was able to climb over the wall and drop down into the back of our compound, where our chokidar had caught him. So for a while we had two chokidars, one in front and one in back.

Now, the chokidars kept each other around the community [informed] that they were okay and things were okay by a system of whistles, police whistles. One would whistle, and the others listen, and then whistle back. And they all knew [who was stationed where] ~~whoever = now, these were employees.~~ They were not my employees. They were employed by the Embassy. They were provided by the embassy group, or our mission group, I don't quite remember just which. But anyway, I didn't employ them. They appeared at sundown each night and were picked up each morning at sunrise. And so you heard these whistles going on all night long, and theoretically, if one didn't return the whistle, the others were supposed to go over there and see what was going on, make sure he was all right, so it was sort of a mutual support activity.

So here I found this group in the yard, and I went out to see. They were telling me what had happened. My chokidar was a very honest and sincere guard, took his responsibilities seriously, and particularly if I had to go to the field on a trip. He would walk around the house and make noises, either tapping on the window or rattling his cane against the wall or any ironwork that might be around, and my wife first complained. She said, "Can't you tell that guy to not make all those noises going around? I get so nervous, I can't sleep."

I said, "No, you're misunderstanding. He's letting you know that he's on guard, he's on the job. So you get worried if you don't hear those noises."

And our cook was a pretty serious guy, and if I was gone, he would sleep over at the house, and he'd lay his bedroll down beside my

wife's bedroom door. And so he would stay all night, and he'd sleep in the house at her bedroom door. So I said, "You're well protected. So, gee, you just worry if you don't hear those noises."

Then the bearer, the butler, had decided he wanted to get another job, so he left our employ. And the cook had been doing a good job, so I thought a lot of Ali, A-L-I, and I said, "Ali, you've done a good job of being the cook. Do you think you could be a cook/bearer," because he had a very large family that he was supporting. I think he had something like, family, I don't know how many kids, sisters and brother-in-laws, and God knows what all, but I think it was some nine or eleven people that were riding on his wages.

Now, the cook earned, for Paks, a pretty good salary. I think they paid him 160 [rupees] ~~dirars~~ a month as a cook, which at five to one would be, what, \$40.00 a month or such, approximately. So I thought, "Well, Ali's done a pretty good job, and he's pretty serious. Maybe give him a promotion. Let him be cook/bearer, if he wants to do that." And he said, yes, he'd like that.

So I said to my wife, "Well, if he takes on that job, I think we should give him a raise, because he's going to take on two jobs, and he's got this big family to support."

"Oh," she said, "No, that's a grave mistake. Don't you do it. That's a grave mistake." She was a pretty good judge of character. "If you do it, you ~~do~~ it [will ruin him]."

I said, "But seriously, if [I took] ~~he takes~~ on another job, I would certainly ~~would~~ want more money. In all fairness, I ought to give him

more money. So I'm gonna do it. So I'm gonna raise him to 200 rupees a month.”

“Well,” she said, “It's your problem.”

Well, she was right. Unfortunately, it ruined him. He now was making so much money, we'd find him sitting around. We'd be gone, we'd find him sitting out on the front porch enjoying the view. So it wasn't too long after that that I said, “I'm sorry, Ali, this is just not working out, and I think you'd better find a new association.”

About that time, a real sharp young fellow had come down from Lahore, who'd been working for a private contractor up in Lahore. I never knew quite knew why he had left up there, his employ up there, but his chits all looked in order. They all have their chits, you know. Each employer gives you a chit of “recommendation,” and you had to learn the language. If it said that he had become redundant to the household needs, it meant he wasn't worth a damn, and other such terms, British terms that told you, ”Look out.“

But he had some good chits, and he'd worked for this American contractor up there. But as I found out later, he had been operating what we would sort of call a bootleg operation up there. This American contractor wasn't very smart in the ways of things Asian, and he had apparently had a very large expense account. And so he was importing stuff all the time, but his family wasn't watching what was going out through the back door. This young fellow was smart enough that he had quite an operation going on out through the back door. Then he'd tell the sahib that they needed this, that, and the other thing, and the Sahib would provide it, and half of that would go out through the back door.

And that's why he finally had to leave Lahore, because I think they finally caught up with him.

But as I say, at the time he was a nice personable-looking young man, and his chits looked in order, so we took him on as a cook/bearer. Well, I had been gone over to East Pakistan for several days. I came back, and my wife was showing me some of the things that she'd been working [on] with the gardener out in the garden, and they were doing very nicely, so she was quite proud of it. She was showing me these things, and as we were standing out there in the yard, this young man and a most beautiful Pakistani young woman appeared with him coming around from the back of the house up toward the front gate. And I said to Helen, "Who's that?"

She said, "Well, that's Joseph's wife."

I said, "His what?"

She said, "That's Joseph's wife. He said that she was having a little trouble where she was living and could she come and live in his quarters." And she said she thought that would be all right, so she said, "Sure."

I said, "My God, Helen, don't you know that he's got a wife and family down in a particular area in the city? He's running an operation with that young lady for the unattached Pakistani males out over the back fence. Get her out of here." This had been known among the Pakistani help, because these compounds are large and they might have back door access. And most of these guys that were doing this housework had families out in the villages, and so they were unattached males and they needed certain services periodically, and some enterprising Pakistani would set up an

operation to satisfy their needs, you understand, without calling it what it was. So I told Joseph that the young lady had to leave.

Well, then it developed that Joseph had some other problems. And one day Helen was entertaining a bunch of her lady friends with a card party, and it was the rest period for the household help. Joseph came running in, all bloodied, and said, "Memsahib, Memsahib, I need help, I need help, I need money. My enemies are outside the gate trying to kill me."

"Well," she said, "you've got to wait till Sahib comes home. I don't know anything about that. You go to your quarters, and talk to Sahib when he gets home."

It turned out that he'd been gambling and apparently owed a lot of people, and they were outside waiting for him, trying to collect, and so he was going to collect from Memsahib while Sahib was off to work. He'd try to get on her sympathies, get her to give him some money so he could satisfy his creditors waiting for him outside the gate.

So I said, "Joseph, you'd just better find yourself a new association. This just isn't working out."

The ones that were really good, were pretty sharp. But if you were lucky enough to find someone who wasn't quite so sharp, but he would give you good service, why, then you were fortunate. But the problem was, in the parlance of the Southeast Asia, not one of them would break the other man's rice bowl, which was a simile to mean, ~~a metaphor, to mean~~ that if somebody could set up a particular area of grind, nobody else would crowd in on him or try to take it away from him, so they would coexist

together. That's why we had up to seven or nine people, not any one of them doing a full job.

I remember I was yelling at the main bearer one day. I said, "Why in the hell don't you do that?"

He said, "Not my work, Sahib, not my work. That's the Jamal's work."

"Well, get Jamal and get him to do it."

"I can't make him do it."

"Well," I said, "that's your job."

So to that extent it was – periodically Helen would drive them all out the house, lock the doors, take a broom and a dustpan, and start on the house. Then they'd get all excited and pound on doors and yell, "Memsahib, Memsahib, you must let us in. What Sahib say when he comes home?"

She said, "He'll tell you off when he gets home."

But she'd get so disgusted with them. She did not like Pakistan. She was really – and that's where her health really started to fail, was when we lived in Pakistan, because the inadequacy, not the insufficiency, but the inadequacy of the help just drove her crazy on trying to run a household. And many of the other women had the same problem.

Storey: How were cars arranged?

Vernon: Well, as members of the Foreign Service, we were entitled to import one car for our personal use. So I had just bought a new 1953 Oldsmobile Ninety-Eight when I was in Billings,

before I left Billings, so I arranged to have that imported over to Baghdad, and then after Baghdad, I had it arranged to be imported over to Pakistan. So we had that '53 Ninety-Eight Oldsmobile over there.

The problem was that it required modern gasoline, and, of course, the basic cars that they had, or the community had, were getting about sixty-octane gasoline. So what we would do, there was also available aviation gas, so for every, literally on the proportion of every four or five gallons of this low-grade gasoline, we'd put in a gallon or two of the aviation gas, which, while it was an unbalanced fuel, our American engines could operate on it. But I found out later that I burned all my valves in that process.

So then when I was transferred back into Washington, again it was one of those damn things where we had to leave everything in Karachi and have it sent to us. Had I stayed in Karachi, I would have been able to – usually fellows, when they were transferred out, they could manage to sell their American car on the car market there and make a nice profit. But since I wasn't there, I just said, “Well, bundle it up and send it to the Stateside along with all of our household goods, and I'll use it as a trade on a car when I get back here.” But fundamentally, we were allowed to bring in one car, and then you could usually make an arrangement to sell it when you were transferred out.

Storey: And the U.S. would pay for the transportation and so on?

Vernon: Yeah, because, depending on your rank, you were entitled to a certain amount of household goods. When we were in Baghdad, during that spring of 1955, I had set my family up, had moved them from Billings and set them up in

Denver. My son, oldest son, was going to the University of Colorado in Boulder, and my youngest son was in this private school in Denver. So I kept advising my wife as to what she should prepare to bring when orders were issued for the family to come over.

Well, first I got a statement from the Mission that they didn't have any funding, so therefore she would not be able to bring very much. Then I get word, "Well, we discovered some funding, so you can bring more of your household things," back and forth, back and forth, back and forth.

So then just before she was scheduled to leave Denver, she came down with pneumonia and wound up in the hospital. And [she'd] ~~It~~ just gotten back ~~to~~ home when it was time to pack up, so that she really couldn't supervise the packing, because some of it was to go to storage in the States and some of it was to be prepared for overseas shipment.

So, let us say, at that particular time in mission funding, I was authorized to bring, say, 2,500 pounds. First off, it was cookware and other accouterments which made life a little more easy, but no really heavy furniture. But in the process, about 4,400 pounds – we had something like 7,000 or 8,000 pounds altogether of household goods, because we'd had a large house in Billings, and then I'd rented a large apartment in Denver. So about half of it got wrapped up for shipment overseas, so we wound up with about 4,400 pounds overseas, which was about twice what would have been normally authorized.

Well, I ~~was~~ finally managed to get paid for shipping that overseas, but I had to pay for the storage for the rest of it in the United States

all the time we were overseas. So we were winding up with a good deal more American household equipment than most people had, and then also having a single compound and so on and so on, that we were fairly well fixed for Americans. Of course, we supplemented with other things.

One of the things that I had sent overseas was an Americanized kerosene stove. They used kerosene stoves in Baghdad. And before we left Baghdad, they were beginning to talk about LPG, liquid petroleum gas, but before we left, they hadn't gotten around to creating a gas network. So then when our stuff finally arrived in Karachi, we had this American kerosene stove, which was much better than the local stuff, which otherwise would have been provided, but still, it left a hell of a lot to be desired.

By the time we were there about a year and a half, the Mission had instituted a program of bottled LPG and were providing gas stoves, LPG stoves for kitchens. So we removed our kerosene stove and stuck it out in one of those back buildings, and so then life got very much easier by having a really gas stove. My wife liked to cook, and so periodically she'd shoo the cook out of there and she'd do some cooking herself.

Also in Karachi, the water left the filtration plant in excellent condition, but because of the status of the water distribution system and the inadequacy of the supply, they would have to segment the water supply system in Karachi. So that while they serviced one area of town with water, the rest of the town would be out of water. Now, this sets up a negative pressure within the non-supply area, and leakage from the groundwater then starts leaking into the

system, so *all* of the water becomes contaminated, because this thing moves around, and so ultimately everybody was being delivered contaminated water.

So we were provided an electric boiler, in the kitchen, to boil all of our drinking water, and we found at times that the guys were just too goddamned lazy to turn that damn boiler on. We would keep gin bottles of water in the refrigerator so it would be cool, and we'd find them filling the damn water bottles out of the tap. For someone who was careful about her household, it would just drive her crazy.

Since we had a single compound, I had the problem of a water supply for the yard, the garden, and the amount of water that was being delivered to the compound through the municipal water supply was inadequate for that purpose. We could use it for bathing and that sort that thing, and boiling it and so on, but it was inadequate to garden.

The Mission had instituted a program of delivering water through tank trucks, tanker trucks, from the filtration plant to the various compounds, and these were large tanker trucks. I used to let the boys order it and keep the record and so on, and then I would get a bill for that water. Well, I got counting it up one day, being a water engineer, and I got counting it up one day, and I said, "Jiminy Christmas, we're using two and three, four tanks of water a week. How come we're using that much water?"

So I started snooping around. And so then I insisted that the Mission *not* deliver any water to the compound unless I was there. So I would watch the operation to see what was going on, and what was going on was that they would come up with a full tank of water and

deliver half of it, and then they'd take the other half and peddle it on the street.

Also, when we had the kerosene stove, we could order kerosene from the Mission, and they would bring out a number of four imperial gallon [tins, this] would be [a] five ~~gallon~~, U.S. gallon tin. And I got to looking at the record of the kerosene one day, because I had worked with these people in my work and learned the things you had to watch. I said, "Yee, Gods, if they burned that thing twenty-five hours a day, we couldn't be using that much kerosene."

So I got snooping around some of the outbuildings, and I found eleven tins full of kerosene stashed away, which was going out over the back fence. They had an operation going on over the back fence. People were showing up with their little tin cans to get a fill of kerosene, and the boys were conducting a business, at my expense, over the back fence.

Well, maybe I was too strict. Maybe I should have said, "Oh, what the hell, I can afford it. Maybe they can't." So maybe I should have closed my eyes. But having worked with the people more closely than most of the people in the Mission, and I knew what their own people did to themselves, I said, "Well, I've got to do the same thing." So I put a stop to that.

Then as another matter, I knew . . .

END OF SIDE 2, TAPE 4, APRIL 27, 1995.

BEGIN SIDE 1, TAPE 5, APRIL 27, 1995.

Storey: This is tape five of an interview by Brit Storey with Kenneth F. Vernon on April the 27th, 1995.

Vernon: As I was telling you, Brit, about the

relationships with household staff and the problems that were associated with that. I was telling you a little bit about the water supply and the kerosene supply.

Storey: When they were paid in the government.

Vernon: Yeah. There's another item that I wanted to mention that escapes me for the moment. It slipped my mind. It's what I want to tell you, but it related to the problems of your household staff. Now, you have to understand that these people were desperately poor. The salaries we paid were *good* salaries in their terms, but still it wasn't very much money. For example, when I paid the cook 160 rupees a month, he was a well-paid cook, and he had eleven people living off of him.

As I was telling you, that I started to tell you, that, as I would pay them their salary each month, the local practice was, that as the employee was paid – in the government this is – he would either have to sign the payment book or he'd have to put his thumb print. So I had a set up an accounts book for each household employee, and at the first of the month, as I would go around with their payments, I would enter into the book, in their presence, their name and what was being paid. If they could write, they either had to sign the book or they had to put their thumb print on it to show that they had been paid in that amount. So I tried to operate as closely as I could to the local custom.

Of course, you had to provide, if you wanted your help to wear uniforms, you took them to a local tailor and had white duck uniforms prepared for them, made for them, and then you provided them with enough uniforms so they could stay clean, but they did have to do their own laundry.

Now, one main difference between the American system and the British system, say, in the use of household help, was our economy was predicated on cash payment. Our economy is a cash economy. You get paid, and that's [the end of] your responsibility ~~from there on out~~. You don't normally accompany your cash payment with a whole bunch of perks.

But the British system was, give them a pittance, so to speak, but then provide them with a lot of perks, like uniforms or household supplies or whatever, and they liked to keep the help on compound. Usually the compounds that the British lived in would be large enough to have staff quarters, and so they might have two or three families living on the compound, which they would provide rent free. So there was a more of a paternalistic approach to the staff in the British system than in the American system, which said here's your money, now go forth.

Storey: Um-hmm. Did the embassy pay for any of these staff people?

Vernon: Oh, no. This was all on you, no. Now, the embassy did – the Mission paid our rent. They gave us a quarter's allowance. And also in Pakistan, I've forgotten what it was, there was also a hardship allowance, but I don't believe, as I recall, it was as much as Baghdad, because Karachi was considered to be a better post than Baghdad. So let us say that Baghdad was a 15 percent hardship allowance post, which was a 15 percent override on our basic salary, whereas Karachi was, I say, a 10 percent post.

But one thing we did have in Karachi that we didn't have in Baghdad was, there was a large enough military contingent there, the MAG group, Military Assistance Group, and there was also a two-star general heading that group. The

**Using the military
commissary in Karachi**

military had a commissary there, which we could participate in as members of the American community, the *official* American community. Not contractors who worked for private outfits could, but as American employees, we could also participate in the military commissary, which made supplies, household supplies and food, a much simpler problem than it was in Iraq, where we would have to import the stuff ourselves.

The Mission had set up, or the Embassy, I don't know which, had set up a sort of a review committee, which would review your purchases at the commissary to try to forestall any black marketing of commissary imports. And regularly at that time, since my wife and I were both heavy smokers, we would buy as many as three cartons of cigarettes a week, three cartons of cigarettes, that's thirty packs, for each of us, and I was smoking at least three packs a day at that time. So periodically I got called on the carpet, "Mr. Vernon, we've been reviewing your purchases of cigarettes. Would you please explain why you're using so many cigarettes?"

I'd say, "Well look, I'm a heavy smoker. My wife's a heavy smoker. Look at my fingers. They're all brown. And then look at a month. If it's a five-weekend month, we always do our shopping on Saturday, if it's a five-weekend month, I buy the supply for the month. If it's a four-weekend month, I buy a four-week supply. So that's why there's a variation in the quantity of cigarettes we purchase."

And likewise, other supplies, and particularly liquor. They'd check on your liquor. And then somebody got the bright idea that since liquor was very cheap, because we got it duty free, a quart of best whiskey was only \$2.00, \$2.50. Cigarettes were something like a \$1.50 a

**The problem of using
the commissary for
black market purposes**

ten-pack carton, something like that, \$1.10, something or other, because it was tax free, and other things the same way. They were trying to control this back door economy.

As a matter of fact, one of the guys that I had brought over in the later stages that I was in Pakistan, and then after I had – he had been in Korea, and after I had been transferred into the U.S., I learned that they collared him for carrying on, he, an American, was carrying on a black market operation of commissary supplies. And then he came to me when I was in Washington and said, “Can you help me? I'm up for a discharge.”

And I said, “No, I'm sorry. You know the rules of the game. I don't know what they did in Korea, but it certainly wasn't condoned in Karachi, and you knew the rules of the game, so you did it deliberately. You deserve everything you get. So, no, I'm sorry, I just can't help you.”

Well, they kind of kept that under close control, because we were rather heavy users on, particularly, cigarettes. We weren't abusers of liquor. But after all, I did have to do quite a lot of entertaining because of my position, so we did use more than the average family because we served cocktails and that sort of thing. We might have twenty or thirty people in for an evening or something like that, which American liquor flows rather freely, in a Muslim community, that is. And so I was periodically dragged up. And I said, “Listen, you jokers, I'm one of the ranking members of the mission. Criminy, if I was trying to cheat on anything, would I be dealing with a carton or two of cigarettes, for God's sakes, or an extra bottle of whiskey? Get real.”

So one time they came in with a whole

big shipment of T-bone steaks. So I said, "Oh, boy. Helen, let's give the gang a treat. You invite all the group, my group." I had about a dozen Americans by that time, eight or ten at least, and they had families. So I said, "You call and invite everyone to dinner, and I'll go down and buy enough T-bone steaks for everybody."

Boy, did I have to explain *that*. And I said, "My God, what's the matter with you people? It all went to Americans. I could afford it and they couldn't. So I gave them a treat of a god-darn good T-bone steak." I said, "You guys have got to get real. You're accustomed to watching somebody who's got to watch his pennies." But I had equivalent salary and allowances that I could do something extra for my people at times, and I was willing to do it, because I was accustomed to enlisting the support and to create a family feeling among my staff. I always had done that.

Professionally, the work in Pakistan was pretty good, not the same quality as Baghdad. But the living was not the same at all. It was much less satisfying, both familywise and also profession-wise.

I had one Pakistani official at my house one night for dinner. We had a group in. And I don't know whether he had a drink too many, but he started to deliver himself of an oration how the Americans were giving the Pakistanis a bad deal, and we're kind of giving them, shoving them off to the side and telling them what they could have and what they couldn't have, etc., etc., etc.

So I finally got kind of tired of it, and I said – whatever his name was – I said, "You know, I'm an American. I'm kind of proud of what were doing here for you Pakistani people."

I pay my taxes at home. My taxes are helping support you. It's very disagreeable for me to listen to you talk that way and show the lack of appreciation you're showing for the effort that we Americans and the American public are doing for you people. So if that's the way you feel, I'd feel much better about it if you'd leave.”

But he shut up, because he was the Ministry of Economics, Ministry of Finance, I think, or something, and under that system over there, they thought they were somebody. So it had it's disagreeable aspects.

So do you have any more questions about Pakistan?

Storey: How long were you there?

Vernon: I was there three years. I was there from July of '59 to March of '62. I finished my Baghdad tour on this TDY in Karachi. So that was up in November of '59. Then my next tour was up in March of '62. And a whole new experience came about when I was moved into Washington, which we can take up. If you want to make a break now and stretch your legs, we can take up my Washington experience, unless you have more questions about Pakistan.

**In 1962 moved to
Washington, D.C.**

Storey: No, not that I know of. No. Right now, why don't we walk around a little. [Tape recorder turned off]

I think we were at the point of your getting ready to come back to the States.

Vernon: Yeah. This occurred – my tour was winding up in March of 1962. Mr. Killen, the Mission Director, had been transferred to Korea, and we understood that the Mission Director in Korea, after his home leave, was going to report as

Mission Director of Karachi. Also, some new people would be coming in on the new Mission Director's staff, but this would occur after I left for home leave.

One man came in of this new staff. He was to be the Assistant Director for Administration. And he called me just before we left and indicated that he hoped that I would come back to Pakistan. Well, I wasn't all that thrilled about my work in Pakistan, not to the extent that I was in Baghdad, so I indicated that, well, I probably was coming back to Pakistan. I had to stay on somebody's payroll, because I had kids in school, and all the rest of it. Any rate, I was kind neutral on the subject.

So as we took our tour home, we stopped at a number of places in Europe, and then finally wound up in the United States. The life in Pakistan had started to take a toll on my wife's health, and she had been ~~sent once up to~~, evacuated [once] to Germany, medically, to – at the time, we thought she would need some form of surgery, but it turned out that it was just mainly stress of living in there. And so I had beat my way across Europe on MATS, Military Air-Transport System, up to Frankfurt, and while I was ~~on~~ beating my way up there, they had determined that she simply needed some rest and recreation. So I got there, and she didn't need any surgery and so on, and they were prepared to discharge her. So we took a few days' vacation, traveling through Europe, stopped in Vienna and Athens and so on, finally got back to Karachi. This was sometime during 1961.

**Wife becomes ill in
Pakistan**

Then as we were working our way home on home leave, we stopped in Tehran and a number of other places. We stopped in Rome and had a nice visit in Rome. And then we were

going to spend a couple of days in Barcelona and a couple of days in Madrid and a couple days in Lisbon, and finally get to Washington.

While we were in Madrid, we were in a hotel downtown, and I went to the Embassy and told them I was here, and I said, "I understand that you've got a large air base contingent here."

"Yeah."

I said, "Don't they have billeting office here?"

And they said, "Yes."

Now, I had learned that at my ranking in the Foreign Service that I drew the ranking of two stars in the military for quarters. And so I said, "Do you have any objections if I go talk to them? We are going to be here in Madrid for a few days. Do you have any objections if I go over and talk to them?"

"Well, we really don't think you should. We don't like to impose on them, and they don't like them to impose on us – bureaucratic business."

I said, "Well, am I forbidden to go talk to them?"

"Well, no, you're not forbidden."

So we drove out to the headquarters, the in-town headquarters there, where the billeting officer was. And he was a Sergeant, a nice guy, and I told him who we were and what we were doing and so on. And I said, "Do you have any available quarters that we might be assigned?" because it would be a good deal less than the hotel.

"Well," he said, "I can't do it today, but come back tomorrow. I might be able to work something out for you tomorrow."

So we went to the museums and whatnot around Madrid, did the usual Cook's tour, went back tomorrow, and I said, "Well, Sarge, have you got something for me?"

"Oh, yeah," he says, "sure. The general's quarters are available." It was a two-room suite, a bedroom and a sitting room, suite. "I'll move you into that."

Well, who am I to look a gift horse in the mouth? So we moved in. I didn't bother to go back and tell the Embassy where we were, because I said it would make them awfully unhappy, although I wanted to go over and jerk their chain a little bit. And so we moved out to their air force hotel.

Unfortunately, the night we were there, she suffered again one of these damn attacks that had sent her to Germany. We were eating dinner, and all of a sudden she just kind of froze. Well, I managed to get her up out of the dining room and got her upstairs, and her abdomen was just absolutely drum tight. And I said, "My God, what's going on here?" So I drew a bath of warm water, and I said, "You get into that and see if you can relax, and I'll go see if we can get some help."

So I went down to the billeting officer and said what had happened. I said, "My wife needs some medical attention. Do you have a doctor on call?"

Well, he said, "We use the local doctors, and we have one that we refer to."

I said, "Well, could you get him over so he could look at my wife?"

So about an hour later he came and examined my wife. He said, "Well, I'm not quite sure what's going on here, but I think I better take her over to the British-American Hospital so we can run some tests and see what's the trouble."

So I rode through Madrid in an ambulance, sirening in Spanish all the way to the hospital, which was a very nice hospital, incidentally. This Spanish doctor seemed to be a very knowledgeable guy. So they put her up there, and they started running a bunch of tests.

In the meantime, I was staying there at the hotel, the air force hotel. We had planned to leave Madrid and go to Lisbon and stay several days. Well, my wife was concerned about that.

She said, "You always wanted to go to Lisbon."

And I said, "Oh, forget it. It's more important that we get you able to travel, and we'll try to get you home. So we'll forget Lisbon."

So they kept her there for several days, and then finally they didn't really know what was the problem. But I asked the doctor, I said, "Well, is my wife in a condition to travel? What we would like to do, if possible, [is] to get her back to the States, and then they can determine what in the world is going on."

So they said, "Yeah, we'll give her some medication and whatnot to make the travel easy."

So then we left Madrid and flew directly to Washington, by way of New York, and arrived in Washington March 21st, a very cold, stormy night. Any rate, so we reported into the Medical Department of the State Department, because every time when you came in they examined you to try to identify anything you might have picked up while you were gone and whether you were then in a condition to take on another assignment.

Well, they examined her and came up with the fact that several vertebrae in her back had deteriorated to the point that it was affecting her sciatic nerve and everything else. It was just throwing her whole nervous system out of whack. And so they recommended that – they said, “Where are you going for your leave?”

And I said, “Well, we're going first to Denver.”

They said, “Okay, we'll issue orders for you take your wife to Fitzsimmons Hospital in Denver.” At that time Fitzsimmons was a military installation. I don't whether – is it still there?

Storey: Still is.

Vernon: And so they said, “You take your wife there, and they'll take over and see what they can determine.”

So we stayed in Washington about two weeks, as I recall. In the meantime, I was touching base to all my colleagues in Washington, and I'd become acquainted – at that time, the Washington office had set up a thing called the Office of Technical Services in the Near East South Asia Bureau, and so I was working particularly through James Bloom, who

**Touching base with
colleagues in D.C.
during home leave**

was the head of the Office of Technical Services.

Now, in that office there was the Chief Engineer and his group, and also the other technical groups, like Agriculture, Education, Industry, and so on, which is basically the Technical Assistance Group. His deputy had been in the old ICA [International Cooperation Administration] Office of Industry, and so I had become acquainted with him and he had become acquainted with me, because I'd been working with his industry people overseas as we worked out this business of the division between capital development and the managerial side of industrial technology.

So Jim asked me what my plans were, and I told him about this medical problem that had developed, and I said, "Well, I've got to stay on somebody's payroll, so I presume I'll have to go back to Baghdad [Karachi]. But I don't know whether the medics are going to clear my wife to go, so it's kind of a problem."

Storey: You'd have to go back to Karachi, right?

Vernon: Yeah.

Storey: Okay.

Vernon: So we went on our leave, and I had a couple of things that I wanted to do while I was on leave. One particularly was that Pakistan had been talking about developing a nuclear energy program, and with the Eisenhower Administration, they'd been pumping [up] the export of nuclear-energy technology, if not actually the nuclear devices. I wanted to get up to date on what was going on with power plants fired by, or powered by, nuclear energy. So I got approval to visit Oak Ridge Laboratory, the

Began to brush up on nuclear power because Pakistan wanted a nuclear energy program

Dresden Power Station outside of Chicago, and the General Electric manufacturing plant of fuel rods in San Jose, plus a number of other places which I don't recall at the moment, but those were the three main ones, which I wanted to find out exactly what was involved in this nuclear energy.

Quite frankly, what little I knew of it, I was really concerned about the import, or shall I say export, of nuclear energy into these Third World countries, and I wanted to find out what level of technology was required. What I knew in my experience when I was in the Missouri Basin, I knew that it was *very* expensive power. It was literally cheap power repackaged in the form of nuclear energy, because it took a hell of a lot of electric power to process the uranium into plutonium into whatever and ultimately became the fuel rods to power the fuel cells.

Now, you want to remember that fundamentally, in a nuclear-powered station, the nuclear power does not have anything really to do with the electric power generation, except that it's a completely separate entity in a closed system which provides the heat, which converts the water or whatever medium that boils the water, or the medium, that runs the turbines, but it's a closed system. So that really the nuclear energy never gets into the "electricity," so to speak, but it's the means that provide – the same as if it were coal or oil or whatever, gas, whatever. It's just an alternate system of providing the steam, so to speak.

So I wanted to find out what was involved in that. So I did, I visited all these places, and the more I learned, the more concerned I became. And I recall going through that Dresden Power Station [out of Chicago.] ; ~~which~~ [We were staying at the house of] my

oldest son, you met last night, ~~was, at that time,~~
~~had been brought back into the military,~~ and he
was stationed at the Corps of Engineers Depot in
Granite City, Illinois, across the river from St.
Louis. ~~—, because~~ The unit that had been
stationed there had been sent over to the Berlin
Wall crisis and [his unit was] ~~they were~~ sent in
as a replacement unit to continue to prepare
equipment to be sent overseas, because no one
knew just exactly what this [Berlin Crisis] was
going to involve, ~~this Berlin crisis thing was~~
~~going to involve.~~

So I went up to Chicago, and then I was
met at the door the next morning at the hotel by
none less than a limousine. I was driven out to
the Dresden Power Plant, which is about an hour
away, by the limousine, and was given the
Cook's tour, the velvet glove treatment, and then
taken back to Chicago in the limousine.

But as I was going through this plant, I
noticed in each room we went into there was a
careful division, a controlled entry, and we were
given different patches to wear which would
indicate any degree of nuclear fusion, radiation,
that we were exposed to. And we were also
given protective clothing. And also on each wall
there were a whole list of instructions as to the
do's and the don'ts.

So I had an all-day tour. It was a very
interesting tour. And then along about three
o'clock in the afternoon, we held a round-table
conference, and they said, "Do you have any
questions you'd like to ask now about this tour?"

And I said, "Yes, indeed I do. And one
of the first things I want to ask you is, to what
level of education, what *minimum* level of
education do you think the people in your power
station, your power station operators and other

mechanics and such types, have to have in order to be considered, that could understand these (I mentioned these various instructions I'd seen and the do's and the don'ts and this and that). What minimum level of education before you could consider a candidate?"

"Oh," they said, "we don't really have any problem with that. We can get college graduates. We never go below a high school graduate. Even a mechanic is at least a high school graduate."

END OF SIDE 1, TAPE 5, APRIL 27, 1995.

BEGIN SIDE 2, TAPE 5, APRIL 27, 1995.

Vernon: We're talking about the quality of education, what education level people had to have to work in this nuclear power station.

"What would you say, if the people you had might have a maximum of a fourth grade education, and it would be somewhat questionable whether it would be really that level of understanding English, and could these complicated instructions be reduced to a local language? Would it be possible to reduce those instructions to some form of visual aid rather than language?"

Well, this was a completely new approach to them. They said, "We wouldn't know how to approach that, because we never had to face it, and we can see your concern."

And then I said, "I'm also concerned about the overall level of efficiency of the plant. Number one, fuel input versus electricity output; secondly, your efficiency of operation in the sense of downtime, how much time in the gross operating time is spent in downtime because of one thing and another."

"Well," they said, "we do have problems in those areas, and at the current time this particular plant, which is a pretty good one, is probably at a level of about 60 percent."

Storey: Efficiency.

Vernon: A lot of plants were much lower than that. A lot of time is spent more damn downtime than they were on line.

And so I said, "Well, I certainly appreciate you guys' frankness and showing me all these things, because I'm very fearful that our government is going to try to export, pressured by the fusion industry, to export fusion products, particularly for electric generating plants, and I want to know exactly what we're faced with. So with the knowledge I've gained in this trip, I'm going to resist that as much as I can, because, my God, in the first place, it's a *highly* expensive form of electric energy; in the second place, it's a very dangerous form of electric energy; and the third place is, nobody has come up with a scheme yet how to reprocess or de-process, whatever way you want to call it, of the spent fuel rods."

And Mr. Sisler of the Detroit Edison Company, who is one the large proponents, recently visited us promoting this activity, said, "Well, this method of reprocessing the fuel rods, we'll bring them back to the United States, and we'll reprocess them there." And in response to the question, do you have a process, "Well, we don't have it right now. We'll store them somewhere till we've worked out a reprocessing [system] ~~item~~." We're still trying to figure that out. We still don't know what to do with the spent fuel rods.

So at any rate, my overall report to

headquarters was that, for God's sakes, resist the effort to avoid the export of this nuclear fusion energy program, because, in the first place, the people don't have the technology to do it, and I would fear that there would be some form of – which later we saw happen in Chernoble in Russia – we'd have some form of a nuclear explosion.

And so I was able to avoid that, but the people in India, they grabbed onto it, and the Development Loan Fund, before it was passed out of existence, had agreed to finance such a plant in India, and one of my men in my group in the Engineering Division in Washington, after I became appointed in Washington, he was kind of herding that from our side. He was a well-experienced Power Engineer, but I have always had my fingers crossed as to whether it would be successful, and it was terribly expensive.

So anyway, we went on this leave, and during the middle of the leave I got a call from Mr. Bloom and [he] said, “Hey, Ken, the King of Saudi Arabia has just been visiting with President Kennedy, and the President is going to set up an investigation commission to go out and review certain things in Saudi Arabia.”

[The U.S.] We had been in Saudi Arabia politically [previously], but in 1954, for one reason or another, our efforts to give them assistance had been requested to leave the country, so we had had no support program. We had an embassy, all right, but we had no foreign operations support aid program in Saudi Arabia. So Kennedy was interested, if we could, to get back in there.

The King and his advisors apparently had considered that commercial interests in Europe were proposing things that were not always to

Sent to Saudi Arabia to see about reopening technical aid to the country

their advantage, and thought, perhaps, people from the U.S. government would not be trying to sell them something, so to speak.

So a group [of three] was set up, ~~three of us~~. While we were on leave, I got a telephone call from Jim Bloom, who told me about this commission being set up, and he said, "Would you be interested? We think that water resources would be an important element in the investigation, and would you be interested in going?"

And I said, "Well, yeah, Jim, I think I would, sure. So count me in."

After the telephone conversation was over, my wife said, "What was that all about?"

I told her.

And she said, "When would you be leaving?"

And I understand I'd be leaving pretty soon. By this time, it was late June.

And she says, "You agreed to go to Saudi Arabia in the middle of the summertime?"

Storey: In June.

Vernon: [She said,] "Are you crazy? Didn't [you] ~~we~~ get enough of that in Baghdad and Karachi?"

And I said, "Well, I think it would be an interesting exercise, something that I'd like to do. You won't have to go. You can stay in the States. And I think I'd like to."

Well she said, "How long are you going to be gone?"

I said, "I don't know. Maybe up to a month, I don't know."

So the next thing I knew, I got orders to report into Washington, and they had assembled a professor from Harvard, who was very active in oil affairs. He was a professor of economics of oil affairs in the Persian Gulf area, and he was known to many of the governments out there. As a matter of fact, we found that Yamani, who was the Oil Minister in Saudi Arabia, had been one of his students. So he had an in to all of that sort of thing.

I was the waters resources expert. And then Arthur Syran, S-Y-R-A-N, who had been head of previously ICA's, ~~he had been the head of the~~ Transportation Office, had been designated to be the commission member to examine ports, railroads, highways, that sort of thing. I think we had some other ancillary support, but they weren't really members of the commission. We were the three main members of the commission.

So we reported to – well, we met in, I think it was Athens, and had a sort of a get-together meeting to decide how we were going approach this thing, and then we reported into Jidda, in Saudi Arabia. And we visited with all the various ministries around there. I was gathering information on my part. Art Syran was investigating the adequacy of port facilities and so on. And the head of our mission was dealing directly with the Oil Ministry and the Economics Ministry and other industries which dealt with economic development.

Storey: Do you remember his name, the Harvard professor? That's the same person, right?

Vernon: I don't at that moment. Maybe it's one of those

things that will pop out all of a sudden, but right at the moment, I don't recall.

Storey: Okay.

Vernon: So then after we did our work in Jidda, then we went to Riyadh, which was the new capital, or they were trying to make it the new capital, which was out in the middle of the desert.

So we all went through our exercise there, and one of the things that I found was that the government was seriously considering development of groundwater resources. Now, ARAMCO, Arabian American Oil Company, which is a combination of Arab interests, Saudi interests, plus CALTEX, Standard Oil of California and Texaco, under the banner of ARAMCO, in their oil investigations, drilling investigations, they discovered there were large bodies of trapped water, groundwater. Some was pretty good quality.

So the first reaction of the government was, well, we can tap that water. So I got hold of a lot of ARAMCO records, since ARAMCO felt, while they were their records, they also belonged to the government, the government wanted them. So I was charting where all these bodies of water existed, the depths and so on.

We went over to Dhahran, which was the headquarters of ARAMCO, and again Art was looking at port facilities and so on and I was looking at water developments that were going on around over there around the Persian Gulf. Then we went back to Jidda, and then it was arranged that there was a mountain resort, Taif, T-A-I-F, which was on the high mesa ground, an elevation of about 5,000 feet, where the King had his summer palace. So we repaired up to Taif to have a round-up meeting with the King

and his immediate advisors.

Now, it turned out that the Ford Foundation had had a team in Jidda advising the government on various prospects for development, and the head of that team was Harold [Folk] ~~somebody. His name escapes me at the moment, but~~ He later came over to AID and headed up our effort in [the] capital development [division]. He was basically a financial [and economics] type, and he headed up our office of ~~capital help~~; Capital Development Finance, which had taken the place of the Development Loan Fund.

Any rate, we all reported to the King summaries of our investigations, and of course my investigations, I had said that I was somewhat concerned about the emphasis that was being placed on the development of these groundwater resources, because they were finite. This was geologic water, and it had a definite life, depending on the rate of extraction, and here you were tending to build this large city of Riyadh, and I was reminded of the efforts – I told him of my experience at the Iraq Development Board and the experience of one of the caliphs.

It was always very good to let the Arabs know you understood some of their history, and so I said, "One of the caliphs in Baghdad, somewhere along about 900 A.D., something like about 300 Anno Hegira, which was their calendar, had decided he didn't like Baghdad, and so he wanted to move his capital about sixty miles upstream to this place called Samarra, where we had built the Wadi Tharthar Diversion Project, the flood control project.

"And up there, buried in the desert, that you could see flying over in an airplane, you

could see the residuals of that city buried, and it was a very extensive city. It was buried in the dust of the desert. But the reason why they had to abandon that city after about fifty years was because they had no real ~~way of extracting~~, efficient way of extracting water at that elevation from the Tigris River. A lot of water was going by, but they had no efficient way of extracting that water from the river. And so finally that city had to be abandoned, and they retreated back to Baghdad.

"The same thing happened in India. One of the Mogul emperors got tired of Agra and decided to move out into the desert, and there's a very famous remnant of a very famous city[, Fatipur Sikri,] that he built somewhere around 1500, 1600, which existed about fifty years. They had expended the available water supplies, and so they had to abandon the city and move back to Agra, which was on the river.

"And so I'm concerned, Majesty, that this same kind of a future might occur for your development of the city of Riyadh unless some other form of water development would be considered for development."

He said, "Well, what are you talking about?"

And I said, "Well, this is in its infancy, but our Department of the Interior has an office called the Office of Saline Water, which is trying to develop means and methodology to extract the saline elements in brackish waters and make it drinkable, potable. Unfortunately, at the present time that has not developed to the stage where it's really economically feasible. It is possible, but it's very expensive. So there's a good deal of research work going on in the United States as to how this thing might be

improved. But this might be an alternative sometime in the future.” Well, I rested my report there.

I understand that Reclamation got involved in that and did some work with the government of Saudi Arabia and developed some desalinizing plants on the gulf coast and piped it into Riyadh, which is 400 miles out in the desert. Actually, after I became Director of Engineering, I had on my staff, I got a guy from the Office of Saline Water in Interior and had him on my staff, working and finding out and getting us up to date on things that were going on in the desalinizing industry.

But any way, to pick up the yarn in Saudi Arabia, so we made our report. ~~Then we went~~ to the King. and then we went down to – Syran and I went down to Yemen. We spent a few days in Yemen, because I had a couple of projects that I wanted to inspect in Yemen, and he was looking at the Port of Mocha to see what it might need.

And then from there we went over to Asmara in Eritrea, stayed a few days there. We got in connection with the – we had an unnamed, unidentified base in Asmara, which fundamentally was an intelligence-gathering station, and what later I learned was called ELENT, electronic intelligence, listening to all the various conversations going around the world in the airwaves.

And then from there we managed to go back to – we had parted ways at Riyadh [with] ~~This~~ this professor at Harvard [who] went off to some of his consultancies in the oil industry along the Arabian Gulf, some of the sultanates, and I think one of them particularly was Abu Dhabi. Then we agreed to meet in Athens again, where we would write our final report.

We wrote our technical aspect of the report. Then we wrote a confidential sort of eyes-only report, which was a political evaluation of the situation, as we saw it, in Saudi Arabia. And we felt that there was a good deal of opportunity and a good deal of need for foreign aid support, but we should be very careful in approaching it, because [Gamal Abdel-]Nasser at that time was thumping the airwaves and was raising a good deal of trouble [for] to the existing monarchies, and particularly such a conservative monarchy as ~~was~~ existed in Saudi Arabia. And so we weren't sure [that] at some point in time there might be an uprising there, which would overturn the monarchy, and then there would be whole new ball game, and so we ought to be careful in getting overly committed, shall we say, with a large operation in Saudi Arabia until this situation became clearer. So we reported that in.

Then I went back to the States and finished my leave, and then I went back into Washington. Helen was to accompany me. And by this time – and while we had been in Denver on our leave, I'd taken her out to the Fitzsimmons Hospital, and she spent about a week out there, in which they'd evaluated her situation, and they concluded that a large part of her problem was mental stress from the strain of living in Karachi and [in] ~~that they recommended~~, their report they recommended that she not be cleared for further overseas duty for some period of time, until her whole mental attitude was considerably improved.

So I reported back into Washington. I asked when they were discussing this, I said, "Well, if I have to go back to Karachi, could she go to some station in Europe, for example? Say, she loves Vienna or Rome. Would you permit her to, clear her to go there to stay, and then I

could visit her periodically while she lived there?"

"Oh," they said, "yeah, that would be all right, because that's an environment which she's accustomed to. And, yeah, she could go. But we don't recommend that she go into the kind of things you have been in up to this point. It's too stressful for her. It's affecting her health."

So anyway, I got back into Washington, and I reported in to Jim Bloom, and by this time my leave was about up. I'd been talking to Jim about what other opportunities might exist, if there were any, and I said, "Well, you know, if push comes to shove, I'll have to go back to Pakistan, because I got certain obligations that I [have] got to meet, and I [have] got to stay on somebody's payroll, and I'll have to go back alone. I'm not looking forward to it, but I'll have to go back alone."

He said, "Ken, I've been working on your problem, and I think I would like you to stay in, overstay your leave. I can get you cleared and assigned to me on TDY, and to continue to work on your problem."

**Assigned to
Washington, D.C.**

So I said, "Fine. What do you want me to do?"

"Well, he said, "stick around."

I said, "Well, give me a broom. I'll sweep the place out. I don't care, anything. I'm happy to stay here."

Well, I didn't know it at the time, but what was developing was that the then Chief Engineer of the Near East South Asia Bureau was a lush. By ten o'clock [or] ~~by~~ eleven o'clock in the morning, he'd fall off the stool

over in the speakeasy that he went to by 10:30. So he'd report in, and the next thing he did after he kind of cleared his desk, he'd rush over there and start tipping a few. And they had decided they had to get rid of him, because it just was an impossible situation. But they had to, under Civil Service regulations and so on, they had to create a case. So they had to be able to document what the problems were.

So this was why Jim couldn't say anything to me, but he had gone to personnel in Near East South Asia Bureau and said, "Who do we have that might take this joker's place?"

Well, they said, "You've been looking at him, Ken Vernon. He's in right here, sitting here. He's the best damn engineer in the agency."

And so that was why Jim Bloom said stick around. They had told him, "We can help arrange a slot for him in the manning table and get him assigned to it as TDY. We'll borrow it from somebody else."

Storey: What's a manning table?

Vernon: Well, that's a military term. Each unit's got a manning table. It's your organizational chart, with its position chart and its funded slots and so on. And so, "We'll borrow a slot from somebody else that isn't filled and assign it to you, and so you can assign Vernon to that on TDY."

I didn't know all this. They gradually kept working me more and more into the activities of the engineering group, and it finally got to the point where I was told that I was on more or less permanent TDY to Washington. I was not going to have to go back to Pakistan.

**Assigned to the
engineering group,
Technical Services
Division of the Near East
South Asia Bureau**

Then I was actually transferred into Washington to the engineering – they had developed the organization charts to the point where they actually had a place for me, and so then they could transfer me into Washington. So then I became a part of the engineering group in the Technical Services Division of the Near East South Asia Bureau.

More and more, I was assuming the functions of the Chief of Public Works. They kept assigning me new assignments, and so I was gradually gathering some of these guys that were in the Engineering Division and establishing a unit in Public Works, such as school buildings, the hospitals, airports, highways, railroads, etc., etc. Then later, at a later step, they had a minor reorganization, in which actually a Public Works Section was established with me as its chief.

All the time they were gathering this information, they needed to settle this other problem. So I went out to Pakistan on a field visit, and on the way back I stopped at Jordan, addressed some problems in Jordan, and by the time I got back to Washington, I was told that I was the new Chief Engineer of the Near East South Asia Engineering Division, that the former Chief Engineer had decided to resign. Apparently, they faced him down and said, “Look, this is what we know about you. We’ll give you the chance to resign, if you want to, gracefully, or we’ll nail your body to the cross. Take your pick.”

Apparently, they’d picked up some things in his history that were not very savory. I don’t know what they all were. He’d been in government for a long time and been involved in the War Plant Production Board, war plant industry or what not, and he had been also in the

**Assumed the functions
of Chief of Public Works**

**Returned from Karachi
and Jordan to find he
had been appointed
Chief Engineer of the
Near East South Asia
Engineering Division**

Development Loan Fund engineering activity and so on. Intrinsicly, he didn't fit in to the kind of operation that AID was operating, but he also had some things in his background, and also he had this weakness for the bottle. And so they faced him up with the information they'd gathered. He decided to gracefully retire. And then when I got back, I was announced as the new Chief Engineer of the Near East South Asia Bureau.

Storey: Before we go on, Mr. Vernon, who was the King of Saudi Arabia that you . . .

Vernon: King Farouk. He was the brother of King Ibn Saud. He was a brother of King Ibn Saud, [whose] ~~but~~ his health had deteriorated to the point where either he had been deposed or was sidelined in a health facility, or even may have died by that time, I'm not sure which. [Tape recorder turned off]

You asked me about the King of Saudi Arabia. Well, he was the brother of Ibn Saud, whose health had failed to the point he had become incapacitated, and may even by the time we were there have died. But any rate, King Farouk had taken over as King, and I was greatly struck by the man. He was a tall, slender man with a hawk visage. He reminded my of my father-in-law, who was a very tall man with a stern visage.

Now, King Farouk had his feet among the Bedouin tents. He was not a city man, he was a Bedouin, and believed in the desert tents, and that was his strength. Whereas Ibn Saud, his brother, was a sort of a dilettante and didn't care much about anything except having a good time. And it was rumored that it took three ladies a night to satisfy him.

Storey: Ibn Saud?

Vernon: Yeah, Ibn Saud, because he had a harem of God knows how many wives. But at any rate, King Farouk was [of] a much sterner metal, shall we say. And it was a pleasure to talk to him, although you had to talk to him through an interpreter, but he was very sharp. He knew what he was about.

As I told you previously, there was this head of the Ford Foundation team that was in there who accompanied us in our meeting with the King, and periodically someone would raise a question or raise a point in his report to the King, and the King would turn to the head of the Ford Foundation and say, literally say, "Why didn't you tell me about this? Why is this happening?"

Of course, the head of the Ford Foundation was kind of helpless, because he couldn't very well respond to the King [with] some realistic answer. He had to apologize, and sincerely he would promise to look into it, etc., etc. But he was being pilloried before the assembled multitude, and the King was gracefully getting the thing off of his back and blame it on this Ford Foundation guy if it was happening or wasn't happening or whatever.

END OF SIDE 2, TAPE 5, APRIL 27, 1995.

BEGIN SIDE 1, TAPE 6, APRIL 27, 1995.

Storey: This is tape six of an interview by Brit Storey with Kenneth Vernon on April the 27th, 1995.

Vernon: We've been discussing my appointment as Chief Engineer of the Near East South Asia Bureau. Well, prior to that appointment, I had been assigned to a very special project which dealt with a dam in India, related to this Indus Basin

replacement works project that I'd discussed earlier in my relationship with Pakistan.

During the closing days of the Eisenhower Administration, the World Bank and the Development Loan Fund had promised to provide India with the required foreign exchange to build the necessary works in India, so that they could then divert the waters from the rivers arising in India to lands to be irrigated in India to give them the agricultural base that they lost by the division of Pakistan [and] India ~~into Pakistan and the Punjab.~~

With the new legislation for the Agency for International Development, the Development Loan Fund had been – well, it ceased to exist, and its function had been wrapped into the Agency for International Development and [in]to an office of Capital Develop and Financing. But there was this problem relating to the Beas Dam in India,

Storey: B-I-A-S?

Vernon: B-E-A-S Dam in India on the Ravi River, on the headwaters of the Ravi River, R-A-V-I, which was one of the tributary rivers to the Indus Basin and which was one of the major tributaries providing irrigation water into Pakistan.

Beas Dam, Ravi River, India, had a monetary commitment from the United States, but also required a finding of feasibility

One of the first efforts of the Indian government to replace the lost agricultural development was to build a dam on the Ravi River at the Beas site. But one of the elements of the new Agency for International Development [law] ~~organization~~ was very similar to that of Section Nine of the 1939 Project Reclamation Act,³³ which required the finding of feasibility.

In a few introductory meetings with the

World Bank, we soon found out that the World Bank had decided that they were not going to get involved with the economics of the project. It had agreed, politically, to provide a \$23 million dollar loan to the government of India for foreign exchange purposes to the government of India, QED. They'd buy their way out. They'd provide it, and they wouldn't look again.

However, we were faced with the problem of a finding of feasibility. Where were the lands to be irrigated? Would they be irrigable? Would it be economic to irrigate them? We were to provide \$33 million to the government of India for foreign exchange purposes.

Storey: The United States? The State Department?
Who's "we"?

Vernon: Well, the we is the U.S. government. Through the Development Fund, it promised to provide a loan of \$33 million for these foreign exchange expenditures, which now was wrapped into the Agency for International Development, But now we were faced with the legislation which required a finding of feasibility.

Storey: Uh-huh.

Vernon: So the Assistant Administrator for the Near East South Asia Bureau – each geographic bureau in the Agency for International Development was headed up by an Assistant Administrator, responsible to the Administrator of Agency for International Development. And so the Assistant Administrator for the Near East South Asia Bureau was exploring this situation when he found out that the – it had been reported to him that the World Bank was not going to look into it, and we couldn't depend upon the World Bank to examine this and [make a] ~~find~~ a finding

of feasibility, that if ~~the AID agency~~, the A-I-D Agency was going to provide the money, somehow a finding a feasibility had to be created.

Well, everybody turned to me, because they knew of my experience in Reclamation. They knew of my experience in Iraq with the Development Board. They knew of my experience in Pakistan with the Water and Power Development authorities. The Assistant Administer turned to me and said, "Is there anything you can do about this, Vernon?"

I said, "Well, I don't know. But I know one thing right off the bat. I would first want to vet the plans of the Indians for the Beas Dam, because I know what happened in Pakistan with the dams which had been proposed, by then the government of India, on the rivers, and not necessarily the government of India, but the irrigation interest in Pakistan, who had all been Indian engineers, so *pro tanto*,³⁴ it was the government of Indian principals that governed the design of the dams on the tributaries in Pakistan. And so the first thing that the foreign engineers had to do when they started reviewing these plans was to completely redesign them because of the woeful inadequacy of the hydrologic data and the flood studies and the actual designs of the dams.

"So before we even talk about irrigation, I think the first thing we need to do is assemble a group which might review the plans that the Indian government has for this Beas dam."

Well, he says, "Who do you think might do that?"

Well, I said, "There are two groups that come to mind immediately in the United States

that we might draw on. There are others, but the two that I would nominate, first, would be the Corps of Engineers, their Civil Works Division at the Corps of Engineers, because it has a wide experience in the kind of dams that the Indians are proposing; or secondly, the Bureau of Reclamation, which has a little less experience in this kind of a project.

Well, he says, "You're authorized to make contact and find out what's possible."

So I immediately contacted some of my friends who were heading up the Civil Works Division in the Corps of Engineers in Washington, who I'd known from the Missouri Valley days, and had them come over and discuss with me. I had worked out what I thought would be an appropriate scope of work, which could be the basis of an interagency agreement. I worked that out, and I put that before them, and said, "This is what *we* think *we* need. Would your agency be interested in undertaking such a study?"

Well, they looked at it and said, "Well, yeah, we think we can do it, but we'll have to clear it with our management to see whether the Corps of Engineers would like to undertake it."

Well, the report came back from the Corps of Engineers for one reason or another that the Defense Department *did not want* to become involved in India. Because it had very strong relationships in Pakistan, they didn't want to jeopardize [those] by coming into a relationship with the government of India. It was a political decision, because of the politics in the Indian subcontinent.

Storey: Yeah, because of the tension between Pakistan and India.

Vernon: Over partition. And so defense-wise, the Defense Department felt that Pakistan was more important to us than some short-term association with the government of India, because they didn't want to jeopardize their association with the government of Pakistan, because as I told you earlier, we had a very large Military Assistance Group in Pakistan.

So the report came back that, unfortunately, the Civil Works Division of the Corps of Engineers couldn't undertake the assignment. So that meant, then, that I would have to go to the Bureau of Reclamation.

Barney Bellport was the Chief Engineer at that time, and he happened to be in Washington. So I went over to the Interior Department and asked for an interview with Barney and told him my problem and what we wanted to do, and would he make available a Bureau of Reclamation team that could undertake this study?

Storey: He was Chief Engineer at that time?

Vernon: Yeah, he was Chief Engineer at that time. Well, he said, "What kind of people are you talking about?"

Well, I said, "I'd like to have the group headed up by Oscar Rice." I think Oscar Rice was the Chief Design Engineer at that time. I said, "I think I'd like to have whomever you would provide, to be headed up by Oscar Rice, and then maybe one of your better construction engineers on earth-fill and rock-fill dam construction and some of your better economists, and so on." So we talked about a team of five or six people, headed up by Oscar Rice.

Well, he said, "Let me go back to Denver and talk it over with the guys and see what their reaction is."

So word came back through the Foreign Activities Office of Reclamation in Washington that, yeah, Barney agreed and that Oscar Rice would be interested in heading up – oh, yes, and I wanted particularly Herb Reisbol, R-E-I-S-B-O-L, who was the Chief Hydrologist at that time in the Bureau in Denver, because I wanted to get a handle on these hydrologic studies, because they had felt they were very important for flood studies. So I named a bunch of his stars to [make] head up this team.

**Bureau of Reclamation
agreed to do studies for
Beas Dam, India**

Well, Barney agreed, and so we assembled the team. I forgot. There was Oscar Rice, Herb Reisbol –

Storey: Carl Hoffman, maybe?

Vernon: No. A man from Glen Canyon Dam, who'd been a part of the construction crew, the field engineer at construction of Glen Canyon Dam. I can't think of his name for the moment. Another construction engineer who'd been associated with a dam down in Texas. Then an agricultural economist, but I forget whether he was located in Denver or Washington. So I think that was our team.

So then I took them to India, and we had a number of meetings with the Ministry of Irrigation in Delhi, and then we went up to the Beas Dam site. We reviewed the – they already had a large crew up there and a nice establishment already going up there, headed by a very intelligent Indian engineer who had been – he had trained under Harvey [Slocum, an American,], ~~begins with a B~~; at the, I think it was the Bhakra Dam or something like that, who

had been under contract to the government, but had been associated with either Morrison-Knudsen or Peter Kiewitt or one of our big dam building outfits, and had taught them how to build a dam. And so this doctor, he was a Sikh, S-I-K-H, wore the turban and the beard, he was the head of the project, and he was supported by a couple of assistants, and then, of course, the usual crew.

Well, Oscar and his gang set to work. I said, "Well, while you're doing your work here, I'm not intimately involved in this. I've got some other projects that I want to look into while I'm here in India. So I'll go back to Delhi, and then I'll go visit these other projects, and then I'll come back up to the dam here and we can finish up the conversations here."

Oscar told me what they had kind of gotten into and gave me kind of a quickie look-see. Then the head of the project said, "You know, this total project includes, upstream, a diversion from this river over into the Sutlej River," above this concrete dam I'd been talking about that this Sikh had been the assistant construction engineer, and this was to be a real piece of transmountain diversion in a very heavy earthquake area.

So I said to Oscar, "Well, you take your group and people from the project staff and go up and investigate what that looks like, because obviously we'll want to know your reactions to that proposal. And I'm going to ask the Project Engineer to have a private meeting with me, because I've got some questions that I want to address to him privately that I don't care to discuss in front of the assembled multitude, particularly personnel problems and government of India intentions."

So they all took off and went off. One afternoon I had a long private session with the Project Manager, and I propounded to him this question. I said, "I really am impressed with you as a person and your obvious knowledge and training, but I'm a little concerned as to the equivalent knowledge and training of a couple of your assistants, who might be your successors in interest should the government of India decide to call you back to Delhi."

Oh, he says, "No, no, they won't do that. I'm going to be staying here."

Well, I said, "No, you know over time these things happen, and my superiors will want to have my reaction as to what will be the project management over a period of time. So will you arrange for me to meet the First Secretary of the Ministry of Irrigation?"

So he did. So we all traipsed back down to Delhi, he and I, and had a long session with the then First Secretary of the Ministry of Irrigation. And I propounded this same question to him about my concerns, and what was the intent of the government of India of leaving the good doctor up there on the dam? Oh, he assured me that it was their full intention to leave him up there. I could rest assured that he'd be there through the full project period.

Then I said I had a second concern, which dealt with problems at your level. I said, "I've operated enough in ~~this government~~, your type of government, to know the dead hand of the Ministry of Finance, and even though we might provide the money to you, they would grab control of it and they would dole it out to you in accordance with their whims and not in accordance with your needs, of the project needs. There will be a critical time in the

construction of this project when it comes time to close off the river. There must ~~have been~~, and be on hand, adequate equipment to do— in one season, there's going to have to be a million yards of fill material placed in a very short period of time, so there has to be adequate equipment on hand, with a backlog and stockpile of materials, both as to the materials itself and the equipment to place it, and spare parts to keep them working.

Well, he said, “You know, the government has a way of solving these problems.”

“Yes,” I said, “I know. But it's burdensome and tiresome and time consuming, and I'm concerned if some kind of a mechanism could be set up, and I would like to say that you agree to set up such a mechanism that these funds, foreign exchange funds, would be made available *to you* rather than to the Ministry of Finance so that you can control their expenditure and dole them out in accordance with project needs.”

“Well,” he said, that will take a bit of study.” ~~He agreed that would take a bit of study.~~ As I told you [in] that form of government, the Ministry of Finance was designed to avoid the expenditure of money, and particularly foreign exchange.

Well any rate, shortly after I went back to Washington and started working on my report – no, wait a minute, that's getting ahead of the story. So I went back to Washington, and Oscar Rice finally went back to Denver with his group, and I started working on my report to the Assistant Administrator of this review, and waiting for Oscar's report, which finally came in, and it *was* exactly as I anticipated. They

The Reclamation team completely redesigned the Beas Dam

completely redesigned the dam, because they felt that it was inadequate.

They completely – Reisbol came up with a completely different flood study, very similar to what Harza had come up with on the Chenab River in Pakistan and what TAMS was coming up with on the Indus River for the dam on the Indus, because the Corps of Engineers and hydrologists in the United States had developed what they called the – oh, what the hell did they call it, the unit flood or something like that, which they could assign various values to, the hundred year, the 500 year. It doesn't mean it's going to take 500 years to produce it, but it's the probability of it occurring.

And they learned how to move the storms around over the basin to develop the highest flood intensity. This had been developed in the Corps of Engineers and in the Bureau of Reclamation, and Reisbol was very familiar with this situation. Harza had come up with this study for the Mangla Dam and TAMS was coming up with a similar study, and the first thing they did was about quadruple the spillway capacity of the dam.

Also, Oscar came up with the fact that, because of the size and shape of the rock in the river bed which was to be used in this rock-fill facing, was about the size and shape of about a foot in diameter just like [ball] roller bearings, so that all this rock facing which they proposed to put on the face of the dam, particularly the downstream face of the dam, as ballast, so to speak, and we were in earthquake country. Well, all that bloody rock would just immediately shift downstream and the dam would lose it's stability, and you were in trouble. Also, he agreed that the year that the river was to be closed off was going to be a very critical year

in the closing operations and that the supply of equipment, materials, manpower, and etc., would be very critical.

So, anyway, it was a good report. So I attached his report to my report, and his report, I paraphrased or condensed into my report, and commented on his particular points as to my point of view, whether I agreed or whether I had some questions about it, would require further examination, etc., etc.. But anyway, substantively I adopted his report, which would make a great difference in the amount of, particularly local currency, rather than foreign exchange, and it would increase – it about doubled the cost of the dam in terms of the particular local currency.

Then I came to the issue of, I got all that physical part of the dam out of the way, and then I had to come to the economic section as to where this water was going to be used. Now, they were going to divert this water through a series of canals to the Rajasthan Desert, R-A-J-A-S-T-H-A-N , Rajasthan Desert. And this was glossed over, which had not really been examined as to the quality of the land resources, but on the presumption that the Indians had been irrigating this type of land for some time, they probably knew how to handle it. But there was the question of farm size, which hadn't been studied, and then there was the question of manpower.

Well, in my economic analysis, I said I'd been experienced with the ability of great quantities of manpower to accomplish great things, and I had visited a number of projects in India while I was on this visit, and I had seen the effect of what gross manpower could do, rather than machinery. ~~but what gross manpower could do.~~ And so I said, instead of capital as

their resource, they've got manpower. Manpower is their resource. So that for a mere pittance of local expenditure, they could provide a great resource in manpower to do a lot of the canal and irrigation work, so that was a plus. In other words, the government was going to have to expend the money of upkeep of these families and manpower in any event, one way or another. It would be simply a matter of the government reassigning that expense and relocating these people to the project to carry out the project function, but it was at no difference in cost to the government, if you follow me.

Then there was the question of, at what rate would the lands be developed on the project. And I pointed out ~~that~~ our experience on the Columbia Basin Project, that it takes a long period of time to develop a large tract. ~~of area, that developing~~ In the United States, the development at the rate of, say, 40,000 to 50,000 acres a year, was a pretty high rate of development. But here we were talking about maybe a couple of million acres, and the question would be simply, how much land they wanted spread that water over, which was then another problem that would have to be addressed.

So I had a guy on my staff, an industrial engineer, who had come in from Iran, Tehran, John McReynolds, and I said, "John I want you to undertake an economic study, just as you would as an industrial project, and taking into account the length of time over the years that this project would be developed, take to develop, and the rate of expenditure that would be required to develop it. See if you can work out some charts and graphs and whatnot that might show that economic results might be parallel to the rate of expenditure of funds to develop, so that we might at least maintain a one-to-one

ratio, benefit-cost ratio, reminding everyone that, in terms of labor, it was really no cost to the government, because they were going to provide for these people one or another, anyway." [Tape recorder turned off]

So I came up finally with a quite a comprehensive report and submitted it through channels, and it got the agency off the hook. It now had a finding which met the test of the finding of feasibility, so we could now release the \$33 million that had been promised to the government of India in a development loan. And so the World Bank, then, made it's \$23 million available. We made our \$33 million available. So that provided the Indians with a fund of \$56 million worth of foreign exchange, which unfortunately went into the Ministry of Finance. They never were able to get the Ministry of Finance to let go of its dead hand.

And then right on top of all that, the [First Secretary of the Ministry] ~~Minister~~ of Irrigation had been appointed the governor of Goa, which it was a little Portuguese enclave on the west coast of India which had been taken over by India, and so now they needed a governor. They took the First Secretary of the Irrigation Ministry and made him the Governor of Goa, and they brought my damned project engineer down and made him the First Secretary of the Ministry of Irrigation. So the very thing that I was afraid of did happen.

Also in my report, and supplementary to the Bureau of Reclamation's report, I said, "I think we should enter into an interagency agreement with the Bureau of Reclamation to provide a number of skilled technicians to assist the government of India during the construction period of the dam," because there were certain periods of critical construction that our people

**Report on Beas Dam
submitted**

**Recommended
Reclamation technicians
assist in construction of
the Beas Dam**

would understand and be able to guide the Indians in its processing, particularly this matter of pore pressure, which I discussed with you yesterday, I believe, because during the time of the actual closure of the dam, the great quantities of material that would have to be placed in such a short time, there was a high probability that pore pressures would be developed and that the Bureau men could assist the Indian engineers in somehow avoiding that.

And if worst came to worst, we might have to actually put in the base of the dam, and then adequately protect it against the flood, and pass the flood over an open section of this earth-filled dam, because we couldn't possibly get it high enough to withstand the flood, given the capacity of the incoming flood and the outflow capacity of the diversion tunnels.

So the government of India agreed to that, because they were happy to have the Bureau of Reclamation tied into it. And the Bureau of Reclamation agreed to provide those people, through us, to the government of India. And so there was a Bureau of Reclamation team on that project during its heavy construction period, headed up by the son of who had been my Chief Engineer [in Baghdad].

END OF SIDE 1, TAPE 6. APRIL 27, 1995, APRIL 27, 1995.
BEGIN SIDE 2, TAPE 6. APRIL 27, 1995.

Vernon: As I said, it turned out that the Bureau had sent a team over there, and headed up by the son of my Chief Irrigation Engineer when I was with the Development Board in Iraq. But I didn't know his son at the time, either, then. I didn't know him or know that he was there. I didn't know who the Bureau of Reclamation provided. Because then the government of India also provided a liaison engineer who was assigned to

Denver, and he kept track of the activities of Denver regarding the design of the Beas Dam, and every time he'd pass through Washington, he'd stop and bring me up to date.

So that was a very heavy exercise that I carried on both before I became the Chief Engineer of the Near East South Asia Bureau, then immediately thereafter.

Of course, there were other activities I was gotten involved in. The A-I-D had a big program going on in Turkey, and I had mentioned, when I was discussing problems on the Tigris and Euphrates River, that I had learned that Turkey was considering the building of dams in the upper reaches of the Euphrates River at least, and they had employed a lot of people both to design such a dam, and to study the lands that might be irrigated.

There were also some other dams being built in Turkey, one of which had developed some serious foundation problems in one abutment, which I went out to visit. And then the Turks brought in a consulting engineer, which we financed, from the United States to examine the foundation problem and to recommend certain corrective activities.

By the time the big dam on the Euphrates got really active, I had been moved up to be Director of Engineering for the agency, and I was responsible to the Administrator for the standards and practices and adequacy of engineering activities in all the AID organizations. , throughout the AID organizations.

Made Director of engineering, Agency for International Development (AID)

Getting over into the other activities we had when I was still in the Near East South Asia Bureau, while I was in Pakistan I had gotten the

Oversaw intermodal transportation study in Pakistan

Pak government to agree to an intermodal transportation study, trying to get a measure of how investments should be made in highway, railroad, ports, what the priorities should be, even airlines. They agreed to have that done, so our Washington office asked the Corps of Engineers to assemble such a group and head up such an effort. I was basically opposed to that, but I was outvoted, because I didn't think we needed to call an overriding agency, such as the Cops of Engineers, to do it. We were perfectly capable of doing it ourselves – I mean, not ourselves, but managing it ourselves with the staff that *I* had.

It turned out, in my mind, that while the report was pretty good, they assembled a pretty good team, the Corps of Engineers, in its wisdom, managed the team and simply bought a report literally by the pound. In other words, it really didn't exercise any supervisory actions regarding the team, turned them loose, and said, "Give us a report." That seemed to be their way of doing business.

And, I had a great deal of difficulty selling that scheme to the Ministry of Public Works. With their assistance, we had worked out a pretty comprehensive scope of work, which we felt ought to be the basis of the study. But the Corps of Engineers simply threw that down the tube and told this group to go to work.

They assembled some pretty good people. There was an ex-president of the Pennsylvania Railroad, there was the ex-owner of one or more airlines, there was a gentleman who was well experienced in port work. They had a couple of good highway engineers in the group. So I must say that the group that they assembled was pretty good, and they studied both West Pakistan and East Pakistan, and the

problems were different in both places.

But I felt, and the government felt, that the way the study was handled by the Corps of Engineers, all they could do was sit and wait until they got handed five pounds of report. I was never sure what we were getting for the money being expended, because the Corps of Engineers completely blocked us out of the study. So to that extent, I don't know how valuable [it became], because then I left before any effect of that report was being put into effect. So I don't know how effective the report tended to be, although some good effort was put into it.

One of the problems we had ~~in the~~ inside the government [of Pakistan] ~~in Iraq~~ was, there was a feeling of contest or competition between the railroad administration – the railroad is ministered by the government – and the highway administration. The railroad didn't want highways to really be developed, because that [might] ~~would~~ take away traffic from them. The highways realized that [more] ~~much~~ modern transport was moving traffic more rapidly over highways, so a good highway network would be a large improvement over the availability of the railroad, because the railroad, its equipment was not all that great. I think their freight cars, for example, would haul about ten metric tons, whereas our freight cars, the lighter freight cars, would hold twenty metric tons. And it would have all the delays involved in moving traffic over a railroad, through the yards, etc., etc.. But if we could establish an adequate highway network, see, the fluidity of truck traffic would be as good there as it is in our country.

Also, what we had felt was that an adequate evaluation ought to be made of the – what's it called – piggyback operations, the

container ship being off-loaded through the port, not being tampered with in the port area, loaded onto a train or a trailer, loaded onto a train, hauled up country, off-loaded onto the ground, and then could be picked up by motor transport and moved around rapidly, just as is done in this country. This was in its early stages, and so Pakistan wasn't quite aware of what was going on in our country in the development of this piggyback operation. But if you'll note that a major part of traffic now, freight is being moved by piggyback operations, and the trains now are loaded, the freight trains are loaded primarily with piggyback trailers, piggyback cars carrying trailers, rather than closed box cars. So this was something that we had thought had to be addressed.

Also, in Pakistan before I left, the main road highway out of Karachi, leading up the Indus Valley, was too close to the river and was subject to closure during floods, flood stage. So I talked to the Mission Director, and I said, "What I would like to do, and with your permission, I'd like to ask the District Engineer of the Corps of Engineers stationed here to cooperate with us, to make a reconnaissance survey of a possible route out of Karachi and up to Hyderabad, at least, which would get away from the river, and then it wouldn't be subjected to flooding."

So he said, "Yeah, go ahead."

So we spent several days, Jim Campbell and I and Colonel Northrup, the Corps' District Engineer, and a couple of his guys, we scouted a route up through the back lands at a much higher elevation so it wouldn't be subject to the river floods, and found a feasible route. So then I asked the Mission Director for authority to hire some local Pak engineers to do some surveying

for us, so I employed some surveyors and some draftsmen. So we set about actually making detailed location surveys and detailed quantity maps, etc., etc.

This was approaching completion before I left, and it *was* presented to the government for its consideration. I had hoped that our side would get to finance that, because I felt it would be a feather in our cap as a very viable project. But unfortunately, the World Bank got wind of it. They also thought it was a viable project and they grabbed it, and so they agreed to finance it.

As it turned out over time, all the people that were wanting to finance projects were watching *my group*, what we were developing with the government of Pakistan, and they were grabbing all the good projects and we were being left with those of second, third, or fourth choice. In other words, we were being left with the dogs and the ones that were most difficult to complete.

So that was some of the efforts that we expended in Pakistan, and then I got involved in some stuff while I was in the Near East South Asia Bureau, some airports. It was decided that the Karachi Airport needed to be expanded. Well, the Corps of Engineers was pretty good at managing construction, so it was decided to turn supervision of construction of the Karachi Airport expansion over to the Corps of Engineers. So they assembled some contractors and got that job done.

Karachi airport expansion

There was also a similar study being made in East Pakistan for a modern airport at Dhaka. While I was in Washington as head of this Public Works Group, I received that report and was reviewing it, and I ran into a number of problems with it, such as ownership of the lands,

which would have to be sorted out before the land could be purchased. Also, since it was very low-lying land, the matter of bearing capacity of the soils, because at this time the 707 was just going into service and Dhaka was one of its stops, so the design would have to encompass service to the 707.

I've forgotten what the 707-320 weight was, but the wheel loading was very heavy at that time. So the question was, what kind of bearing pressures the soil would withstand to take care of that wheel load, because I had understood, for example, when the B-36 was built in the United States, and which was much larger than anything that existed at that time, it pulled into a particular military airport, which had given good service, and it was on a what we called the hard stands for overnight, and during the night it had sunk up "to its knees," through the pavement on the hard stand, and it sunk into the foundation. Up to that point, the design of the hard stands were inadequate. The criteria were not ready for those very heavy aircraft, and the 707 was much heavier than even the B-36.

This gave me some concern, and so I had a tendency to report that negatively. I thought that the U.S. ought not to try to finance that in East Pakistan, that perhaps someone else should.

Also, I got involved in some projects in Jordan.

Storey: In where?

Vernon: The Jordan River had long been a very difficult problem between Jordan and Israel and Syria. While I was in Pakistan, I'd received an order to report to Washington ASAP, first available transportation. The jets had just come into existence. I left Pakistan at five o'clock in the

Jordan River and issues among Jordan, Israel, and Syria

morning. It was daylight. I flew continuously for twenty-seven hours and arrived in Washington at eight o'clock that night, still in daylight, completely dead between the ears, a complete block of wood between the ears. I managed to grab a taxi and get to a hotel and died for a couple of days.

But at any rate, what the purpose was, was the Israelis had come up with a scheme to import water from the upper Jordan River, and they had submitted a report to the Development Loan Fund for financing. Some of the people in the Near East South Asia Bureau were familiar enough with the problem that this raised certain flags in their minds, and so they wanted a vetting of the Israeli report.

Storey: Now, this was after . . .

Vernon: This was [when] ~~while~~ I was [first] ~~still~~ in Pakistan this occurred [during the summer of 1959].

Storey: Back before 1962.

Vernon: Yeah, before I went to Washington.

Storey: Okay.

Vernon: But I got into it later when I was in Washington. But any rate, so I had to give you this background.

Storey: Okay. [Break in interview]

Vernon: So a noted water engineer, Wayne Criddle, C-R-I-D-D-L-E, with his headquarters in Utah, and I were assigned a room, and the door locked, and we were handed the Israeli report and requested to come up with our analysis of it.

Now, Mr. Criddle had been over time involved in various studies of the Jordan River water problem, so he was quite familiar with it. But I, personally, was not. However, we enjoyed a good working relationship, and as we got into this report, we found that the Israelis were proposing to build into this diversion system, which would come from the Sea of Galilee, or also known as the Sea of Tiberias, far more capacity than ever would be available from the Jordan River. So that raised the question, why were they proposing to build in this excess capacity? And I think some of our people sensed that, and that's why they wanted this independent review.

Well, there were two likely sources of water. One was the Yarmouk River, which came [to] ~~from~~ the Jordan River from the east and was a boundary between Jordan and Syria, and there was also the Litani River in southern Lebanon. And I was told by someone, who had been associated with the Johnston Mission [of] the Eisenhower Administration way back in 1954, that it became apparent to the Johnston Mission that the Israelis were ultimately, their strategic move was to get the resources of the Yarmouk River and the Litini River in southern Lebanon. That's why they were proposing to build this diversion system from Lake Tiberias with the capacity to take those waters.

This was a very touchy subject. And so we were struggling with what to say about this, because the Israelis were only asking for money to -- they were theoretically proposing to build this project by stages, and stage one was, if it was some kind of a permanent [structure] ~~thing~~, like a siphon or a pipeline or something like that, or a conduit, it would have a much larger capacity than they were proposing in their pumping stations, which would be limited to the

obvious quantity of water, which they could logically claim as their share of the Jordan River.

So we drew several charts which showed the disposition of all these waters and matched those up to the capacity they were proposing to build into this, what they called, their national water carrier. And our report was placed under lock and key, and it was sort of an eyes-only sort of thing, because you have to understand that there were contesting forces in our own government as between the various political entities in the Middle East, and it had been existing for a long time. Those [on] at our side that were interested in maintaining relationships with the Arabs because of the oil are on one side of that argument, and those that were interested in maintaining President Truman's promise to the Israelis of supporting the creation of Israel. This was the dichotomy which was not likely to be solved at any early date.

So that this report, I don't know, I don't remember exactly what its result was. I think the Israelis built their national water scheme in accordance, more or less in accordance with their plan, but I don't think we financed it. I don't think the Development Loan Fund decided that they wanted to get involved because of these other implications, and I don't think they decided that they [didn't] wanted to get involved, and I don't think our government financed that national water carrier.

What they were proposing was to serve the cities along the Mediterranean front with municipal water, and then provide irrigation water down into the Negev Desert, because they desperately needed an enlarged agricultural base because they didn't have enough water supply there to provide for an irrigated agriculture,

**Tensions within the
United States
government over the
Middle East**

expanded irrigation agriculture.

Then as a corollary to that, when I was still in the Near East South Asia Bureau, and [during] the Johnson Administration ~~was on board~~, a gentleman from the Interior Department, who ~~is now~~ heading up the Office of Saline Water in Interior, came over to visit me one day to find out what our attitudes were toward putting in a desalinizing plant, a large nuclear power plant to provide the energy to desalinize seawater for the Israelis.

Well, I said, "If you're asking me for my reaction, my reaction is negative for several reasons. Number one, it's highly uneconomic from my studies of desalinization and from my studies of nuclear energy, it's highly expensive and economically infeasible, and I'd be scared to death of placing a nuclear fission station out there, even as intelligent as the Ashkenazi Jew is, who is the European Jew, rather than the Sabra Jew, who is the Near East and North African Jew. I said I'd be fearful of the U.S. getting involved in that kind of an installation. So my reaction is negative."

Well, he says, "I'm here to tell you we're going to do it."

But our side never did decide to go into such thing, although a number of studies were made in Interior of what kind of a station that might be, and in Johnson's Water for Peace Program, which I've got a certificate up there [on the wall] which ~~I was~~ said [I was] to have made an important contribution, which probably was to turn ~~down~~ aside any arguments for such a desalinizing plant, and such a plant never did get built, because the technology for such a large plant wasn't yet developed.

But I did, when I became Director of Engineering, I did support an appropriation to Interior's, ~~the~~ Office of Saline Water, to go into some test bed studies of enlarged methods of the [multistage] flash distillation of seawater or other methodology to desalinize water.

So I think that about covers – the only thing left would be my experience as the Director of Engineering after I was – I'd like to tell you about that, but do you want to take a break now? And then, if we can conclude this tonight, because I think my experience as Director of Engineering will not take up a great deal of time, because, as I used to characterize myself, I was the vice president of broken pencils and bent paper clips. In other words, I was dealing with people. I wasn't dealing with things.

Storey: Why don't we take a little break and talk about it, and we can decide what to do then.

Vernon: Okay. [Tape recorder turned off]

I think that pretty well covers my general activities in the Near East South Asia Bureau. One day in the summer of 1964, I suffered a heart attack when I was visiting one of my people's place over in Annapolis, so I was *hors de combat* over in Annapolis for a couple of weeks. Fortunately, it was not a serious heart attack, but it meant that I was going to be on the shelf for a couple of months.

**Suffered a heart attack
in 1964**

And by this time the man who had been the Assistant Administrator for the Near East South Asia Bureau, he had been moved upstairs to become Deputy Administrator for the Agency, and also the D-C-M, the Deputy Chief of Mission, or the deputy ambassador in Pakistan, who I had worked with on several

projects, knew me, and he had been appointed Assistant Administrator for Administration in the A-I-D administration.

So he came over to my office one day in December and said, "Ken, Bill Gaud, the [Deputy] Administrator (G-A-U-D), wants you to take on the job of Director of Engineering for the Agency."

He said, "We've got a lot of problems. We've got five bureaus going in different directions. An outfit that's working in one bureau has been told to do it one way. They go over to a job in another bureau, and they were told if they do it that way, they will get fired. They've got to do it a completely different way. And so the Administrator is catching a lot of flack from the Hill and from the construction industry and from financing industry and from the consulting engineers industry and so on.

"The gentleman that is now the Director of Engineering is more of a political appointee, and the Deputy Administrator feels that it is time for him to move on. So the [Deputy] Administrator would like you to take on the job of the Director of Engineering for the Agency."

I said, "Oh, my God, I don't want that job. That's a dead-end job. I'm having fun down here in the trenches in Near East South Asia, because I'm dealing with things. I go out to projects. I can get things done, the things I've been doing all my life. To go and move into that job, I'll probably never see the light of day, and I'll be catching flack from everywhere for things that I'm not particularly interested in. No, I don't want that bloody job."

Well, he said, "I don't know how Bill's going to take it, but I'll tell him what your

reaction is.”

So they limped along. They got rid of the then Director of Engineering, and his deputy kind of took over as Acting Director. And periodically the Assistant Administrator for Administration would contact me and say, “Well, what's your attitude now, Ken? What's your attitude now?”

And I said, “No, it's still the same, Bill.”

Well, finally he came over one day and said, “Listen, it's time to fish or cut bait, or to break wind or get off the pot.”

END OF SIDE 2, TAPE 6. APRIL 27, 1995.
BEGIN SIDE 1, TAPE 7. APRIL 27, 1995.

Storey: This is tape seven of an interview by Brit Storey with Kenneth Vernon on April the 27th, 1995.

Vernon: We were discussing the Deputy Administrator of the Agency wanting me to take over the job.

Storey: And you had said he came to you, I believe, in November or December of which year?

Vernon: Yeah, of 1964. 1964. And I had told his emissary that I *really* wasn't interested in the job. He would keep contacting me during the year of 1965, wanting to know my attitude, and finally he came to me in the fall of 1965 and said, “Listen, boy, it's time for you to really fish or cut bait. Bill Gaud *wants* you in that job.”

Well, I said, “Bill, I can understand marching orders, *but* I've got some caveats that I want answered to, too. Our regional bureaus each have competent engineering staffs, and I want to be able to contact each of those Chief Engineers and discuss with them [if they] would

**Appointment as Director
of Engineering for the
State Department in
1965-1966**

they support me as Director of Engineering for the agency and would they work with me in trying to solve some of the problems that the Agency has?"

Well, he said, "That makes a lot of sense."

And I said, "I have another caveat, that if it's decided that I do take the job – oh, the reason I insisted on this, I explained to him the reason I insisted on this, is the reason that the current, or the one that has been the Director of Engineering is such – what's a good adjective? (laughter) I want to say the rear end of a horse going south.

Storey: Okay. You just said it.

Vernon: That no one will follow anything that he wants to do, because he's a political appointee. He's there more interested in what's going on up there in the Hill than solving some of the problems that we have. Because he had been appointed [after] ~~because~~ the man whom we all respected, who was the first Director of Engineering, and when AID, A-I-D, was formed, had suddenly died of a heart attack, and we were all willing to follow that man's guidance. But this bird, he was a complete nonentity, and he was more interested – he actually had a private line in his office up to the Hill, and one of the things when I ultimately got the job, my secretary said, "What do you want to do about that telephone?"

And I said, "Tear it out. I don't want anything like that around. Anything I do is on the record, and you get that straight."

She said, "Thank you."

Well at any rate, so I said, "Also, if I decide to take the job, then I want the

Administrator to have a laying on of hands so that the Agency knows that I'm his man, that I'm not some guy that's been plucked out of the sky and dropped into this job, but that I've been appointed with his desire and approval. It will be very important in my inter-bureau relationships.”

Well, he said, “That makes sense, too.”

So I talked to all the Chief Engineers, and they said, “Oh, for God's sakes, take that job. We'd be so happy to have you take that job. If one of us takes that job, we can get something done. We're glad to work with you.” So that was number one requirement.

And then I got word back that if I wanted to take the job, yes, the Administrator would arrange a formal induction ceremony, swearing-in ceremony. And also, he'd do better than that. He would award me the Distinguished Honor Award for services well beyond the call of duty, so to speak.

So I said, “Well, okay, I'll do it.”

So it was arranged that I would be sworn in, in February of 1966. But in January of 1966, he also held a formal session in his conference room, and I could invite all the friends that I wanted, to award me the Distinguished Honor Award, which was the highest award the agency had to award, which is the picture up there on the wall. So my requirements were met. And then in February, I was sworn in as Director of Engineering of the Agency, and I invited my good friend, Ellis Armstrong, [then Commissioner of Reclamation,] among others from the Corps of Engineers Civil Works Division and others around Washington whom I've been working with, to attend my swearing-in

**Sworn in as Director of
Engineering in 1966**

ceremony.

Storey: That was February of '66?

Vernon: Sixty-six. And then after my swearing-in ceremony, I said to Ellis, "Stay over. I'd like to take you to lunch after my swearing-in, so stick around."

So after we'd gone through the swearing ceremony, I took Ellis and my deputy and Helen – no, I don't think Helen was at the swearing-in ceremony. She was there at my award ceremony, but I don't think she was there at the swearing-in ceremony. I don't recall. But any rate, if she was there, she was a member of the party.

By this time now, I was such a rarefied person that I could go the Secretary's dining room up on the eighth floor, the executive dining room up on the eighth floor, and run an account up there. So I took Ellis up there, among others. We had a delightful lunch up there.

Storey: And Ellis at that time was the Commissioner.

Vernon: Was Commissioner of Reclamation. So I used to keep in touch with Ellis all the time, because I knew him from way back. ~~So that got me to be Director of Engineering.~~

Storey: And this is a good stopping point for today.

Vernon: Okay, let's do it.

Storey: Let me ask you again whether or not you're willing for the tapes and transcripts from this interview to use by researchers.

Vernon: Well, maybe I want to make a caveat on this one, providing you will excise some of my more

pungent remarks. (laughter)

Storey: That's a yes, with that caveat, right?

Vernon: Yeah. That's a yes.

Storey: And of course, you're going to see this before it ever becomes published.

Vernon: That's a joke, son. That's a joke. No, of course, I'm happy to make this, because I'm getting it out of my system, for God's sakes, and it becomes a part of the government's record that a lot of people don't know. Really, I was amazed at all the things I did during the course of my career, and the people that I was able to work with. Somebody asked me one time, one of my nephews asked me one time – you're not recording this, are you?

Storey: Yeah, it is being recorded. Do you want it not to be?

Vernon: Well, let's go.

Storey: Go ahead.

Vernon: He said, “Uncle Ken, what qualities do you attribute to your success?” He said, “You've had a remarkable career in government, a highly successful one, and one that not many people have really had the exposure that you've had.” He's involved in the educational business. He's an assistant superintendent in a school district up in the valley.

Storey: Here in California?

Vernon: Yeah, here in California. And he said, “What qualities do you think you have that contributed to your success?”

Well, I said, "Mark, I'll tell you. In the first place, I grew up on a farm, so I learned to respect hard work. The second thing is, I had to work my way through school, and so therefore I knew *why* I was in the university, and I got out of there with a flying record, top of my class. I got into the Bureau of Reclamation, and I was exposed to many activities in the Bureau of Reclamation, and I learned in that process that I knew how to work with people and how to bring people together and get them to work with me. And I think that my fundamental technical expertise, which made me equal to my peers, plus my ability to get things organized and get people to work with me, I attribute that as the basis, and get people that were superior to me to recognize that I was a dependable person and could get things done for them. I think that's what factors I attribute [to] whatever success I made in the process of my career.

Storey: Good. Thank you.

END TAPE 1, SIDE 1. APRIL 27, 1995.
BEGIN SIDE 1, TAPE 1. APRIL 28, 1995.

Storey: This is Brit Allan Storey, Senior Historian of the Bureau of Reclamation, interviewing Kenneth F. Vernon at his home in Fullerton, California, on April the 28th, 1995, at about 9:30 in the morning. This is tape one.

I was wondering if you could tell me the area that was covered by your bureau when you were the head [Chief Engineer] of the Near East South Asia Bureau.

**Area of responsibility
when Chief Engineer of
the near East South Asia
Bureau**

Vernon: The Near East South Asia Bureau covered the countries of Greece, Turkey, Lebanon, Syria, Iraq, Saudi Arabia, Iran, Afghanistan, Pakistan, both East and West Pakistan, India and Ceylon, and also all the Sultanates that were along the

Persian Gulf, also including the Yemen.

Some of those countries, particularly the Sultanates, we didn't have any real aid programs going on there. The Greece program was fading out. We were financing the construction of a couple of dams in Greece. But the heavier activity with Greece was more in the economic aid area, such as was carried out through the Marshall Plan, rather than our more technical and capital development program, which was carried out by AID and its predecessor agencies.

Storey: Let's see, we had gotten last time to your being sworn in as the Director of Engineering for AID, right?

Vernon: Yeah.

Storey: Would you like to tell me about your job as the Director there?

Vernon: Yeah. But before we get into that, I got a couple of items that I'd like to fill in the previous record that I've happened to think about since we ended our conversation yesterday, which I think is an important part of the record.

As I'd indicated, that I was somewhat reluctant to take on the job of Director of Engineering, and I indicated certain caveats before accepting ~~my appointment~~, that appointment.

I had a third caveat that I indicated and that was, since the Director of Engineering was what was nominally called a Schedule C job in the hierarchy of the government service, which required a Presidential appointment and, therefore, *could* be considered to be in the political area, and because of my experience as Regional Director when the Eisenhower

**Requested that as
Director of Engineering
he be non-political**

Administration came in, I indicated that, since I was a Foreign Service officer, I would like my appointment to the position of Director of Engineering, to be considered as just a nominal, rotational appointment of a Foreign Service officer to another position, which was a standard operation [in the Foreign Service]. Then I would not be considered as a political appointee. Since there was no increase in compensation, because I was already at the top level at the Foreign Service structure, I felt that it was important to me to maintain my base as a Foreign Service officer.

The then-Administrator of AID indicated he felt that would be no problem, and he would discuss it with the Secretary and over at the White House and get clearance for that kind of an appointment, which was done. [Tape recorder turned off]

Another couple of items that I thought of, before we leave the Near East South Asia Bureau operation was, reviewing my memories of their activities in Pakistan. We were involved in a couple of activities in the Public Works Division which I think is important to make a part of the record.

One morning I came to my desk, and there was a large stack of documentation which apparently had come from the Mission Director's office. It was something that I hadn't heard anything about previously in my review of activities. So I asked for an appointment with the Mission Director to find out what in the world this was all about.

**Refugee housing
program in Pakistan**

Well, it turned out this was something that he had been personally handling with government officials. It was a refugee housing program being financed through our large

amounts of local currency generated by the PL-480 program. But he felt that since I now had an operation that was effective, he could turn this activity over to me for further execution.

To begin with, a large number of refugees, both from the hinterlands of Pakistan but also primarily displaced Muslims from India which left India and settled in Pakistan at the time of the separation and establishment of Pakistan as a separate country from consolidated India, and they were living in horrible conditions of squalor and deprivation. So the government had started a sizeable program of refugee settlement, and a satellite city called Korangi, K-O-R-A-N-G-I, was being established south of Karachi, and up to more than 5,000 refugee families were to be relocated there.

Construction of the city of Korangi

And the firm of Doxiades Associates,³⁵ D-O-X-I-A-D-E-S, from Athens, Greece, who was a city planner, was the consulting engineer to the government of Pakistan, ~~was the consultant~~ establishing this new city. He was also arranging in his planning that industries could move into this new city area, which would find a ready access to labor force.

So I assigned our supervisory activities to my general engineering section. As they began, they said, "Well what is our function?"

I said, "You go out there and make sure that planning and execution of the construction areas, including the water supplies, sanitation, and the actual building of the structures, was carried out to a reasonable engineering standard."

Their first report came back was that these houses were small, but they were being constructed of concrete blocks, and that their

first examination of the construction process indicated that somewhere along the production process there seemed to be a diversion of the cement content placed in the construction of these concrete blocks and including a sort of a – [Tape recorder turned off] – deemed to be an adulteration in some of the materials that were going into the manufacture of these concrete blocks which appeared to look like dirt.

Cement was being diverted from construction of refugee housing

So I said, “Set up a testing process and find out what the strength of these concrete blocks are.”

The first test indicated it was doubtful that these blocks might go [last] through one or, at most, two winters. So I said, “Okay, lower the boom and tell the local authorities that we would withdraw our financing unless and until they institute a proper control over the manufacture of these concrete blocks.” So it wasn’t very long before the concrete blocks were meeting a reasonable standard of strength and would then, therefore, have a reasonable expectation of existing for some time into the future.

Storey: Let me ask you, based on your experience, what was going on? Was somebody skimming off money by adulterating the cement, or what do you think was going on?

Vernon: Well, I never did locate just where it was going, but it was pretty obvious that the cement had been allocated and the proper ingredients had been allocated to the project, but there were apparently what we might call a number of faucets or taps along the production line that were opened and finding their way, the products’ way, into the local market place rather than to the project products. This was sort of indigenous to the economy in Pakistan.

So the Korangi Project became highly successful, although it did suffer a problem, because many of the people that were moved to Karachi were employed in the Karachi city proper area, so that a transportation system then had to be set up to take several thousand employees to the local employment areas, particularly the port area, until industries could move out into the Korangi area and establish local employment areas.

Later in my tenure in Pakistan, a similar development was proposed and gotten under way in North Karachi area, which was to be a satellite city of approximately the same size, and a similar project was instituted in East Pakistan, so that this became a rather sizeable effort in social development of the U.S. mission and in cooperation with the Pakistani government.

Storey: Let me ask a question before you go on. Sort of all of the background that I have in India and Pakistan, imperfect though it may be, tells me that the masses of people live in *very* squalid conditions. Are you saying that these refugees were living in even worse conditions?

Vernon: Well, the same conditions. There was worse and worse, not any [real] level of difference.

Storey: Okay. That's all I was wondering about.

Vernon: I wanted to describe another activity that we were involved in in Pakistan, just to indicate the scope of our operations there, and that was, my group was deeply involved in the support of our Educational Division, who was supporting the creation of a University of Karachi, a University of the Punjab up at Lahore, and the University of Dhaka over in East Pakistan. The construction of the buildings that were planned for these institutions went far beyond the expertise of the

**Construction of
university buildings in
Pakistan**

learned professors in the Educational Division. However, they were interested in achieving buildings the like of which no educational board in the United States would ever approve.

Storey: Very nice ones, huh?

Vernon: Well, they approached monumental proportions, let us say. So my group, then, undertook the task of supporting the appropriate agencies of government, particularly the Public Works Division, which was assigned the job of construction of these buildings, to assure that these buildings, however they were to be built, were built properly to appropriate engineering standards.

We got into one interesting problem at Lahore. I knew that Lahore was subjected periodically to severe earthquake damage, and the initial design of the auditorium building, I felt, was rather inadequate, had inadequate structural provisions to avoid perhaps the dropping of the roof of the large auditorium onto an assembled audience if such an earthquake occurrence should happen.

**Problem of earthquakes
at Lahore**

We ran into considerable resistance with the Public Works Division, because they just said, well, they didn't think any earthquakes occurred in Lahore. Well, I showed them the record, going back into the British records, that that whole area was rather closely associated with the Himalaya Mountains and that the British had records of rather serious earthquake movement [occurrences].

Storey: And this was a Pakistani agency?

Vernon: Yeah. When I say the British, before partition were very strong in the administration of the subcontinent of India. The British had a number

of competent people, which was the colonial government of India, and they had established a good series of records there.

Storey: But the agency that was saying there aren't any [earthquakes]?

Vernon: Well, the Public Works engineers of the Department of Public Works in Pakistan didn't consider that perhaps – a serious earthquake hadn't occurred in, say, their lifetime, just as in the United States. But there were records of some pretty serious shakings occurring, even in the Lahore area, which was not immediately adjacent to the mountains. But as things happen ~~here~~ out in the plains area, a shaking in the mountains creates serious damage in the more distant areas.

So I called in Mr. Doxiades, who was, again, the engineering consultant and designer of these buildings, and I said to him, "Tinos, you're Greek, and certainly Greece is one of the more active seismic areas in the world, and you've had to face this problem in your building design in Greece."

He said, "Yeah, that's for sure."

And I said, "Well are you providing any real seismic protection in the buildings?"

"No," he said, "The Public Works Department has not asked us to do that."

Well, I said, "I'm particularly concerned about that auditorium building, because you're going to have a large roof structure being supported by bearing walls, and it seems to me that we ought to provide seismic protection, so in the case of a serious earthquake, that roof would not fall down and the walls collapse."

Give me a roundhouse estimate right now as to how much it might cost to provide that sort of protection over what you have now.”

Well, he said, “Certainly not less [more] than 10 percent, and possibly only 5 percent, because it would only include a minor increase of reinforcement.”

Storey: You mean not more than 10 percent? You said not less than 10 percent.

Vernon: Did I say? I’m sorry. Not more than 10 percent and possibly as little as 5 percent. So I said, “Okay, I’m going back to the government and tell them that I want your designs increased to include such protection.”

So I went back to the government. As I indicated, I ran into some resistance. I had already discussed this situation with our Mission Director and the indication that some additional financing might be required, and he told me to get tough. So I told the Paks that we would withdraw our financing for this structure unless and until that protection was included in the plans. They saw the wisdom of such an approach, and Mr. Doxiades went ahead and provided the appropriate protection, particularly in this auditorium structure.

I just simply wanted to add these items because it – oh, then, also, I wanted to say that when my boys went over to East Pakistan and got into the construction of the University of Dhaka, they returned with a horrendous report of the standards of construction being employed in the various buildings of the University of Dhaka. So again my instruction to them was, “get back over there and get tough, because we’ve got the whip of support financing, and if they don’t measure up, tell them we’ll withdraw our

**Construction issues at
the University of Dhaka**

financing, because I know I have the Mission Director's support.”

I wanted to add these as the elements to the program of Pakistan just to indicate the broad scope of our activities, not only the Indus Basin, but how my division was giving engineering support to other activities of the mission.

Storey: How large was your division?

Vernon: I had about ten to twelve American engineers. I had, oh, I forget how many local engineers we employed, but we had a sizeable group, particularly supporting this general engineering group which was involved in these support activities to our Educational Division, our Public Health Division, and so on. Our whole total mission, as I recall, totaled around 300 people, so it was a very sizeable mission. I had dollar financing approximately \$150 million a year in . . .

Storey: This is when you were in Pakistan?

Vernon: In Pakistan. I had a capital works financing of approximately \$150 million a year, plus any God's number [amount] of local currency up to perhaps a billion rupees which we were pumping into government, which previously had not been carefully followed as to how it was being expended. But I had discussed this with the Mission Director early on when I discovered what was going on and indicated I thought we should – this was ultimately U.S. taxpayer money, even though it was currently local currency. We ought to take a hand in making sure that U.S. money was providing reasonably good results, which he was glad to have somebody take that interest.

I accused some of my colleagues in the financial area that previously these local currencies. and what they euphemistically called budget support, literally they asked the government to bring trucks and back them up to the door, and they'd shovel out the local currency and say goodbye and forget it.

Storey: Now, when you were the head [Chief Engineer] of the Near East South Asia Bureau, how many staff were involved there?

Vernon: Well, my group there – let's see. Again, there was a group of eight to ten engineers. Previous to my being the Chief Engineer of the Near East South Asia Bureau, and I was Chief of the Public Works Group, I had approximately six engineers in that group, but it would change from time to time. Sometimes engineers would come into the field and were entitled to a rotation program. In the Foreign Service, normally your field assignment was of two years, and after two tours of two years, you tried to rotate to Washington to sort of get a refresher. So the number would change from time to time, and the specific personnel would change from time to time.

Storey: What was the difference in the responsibilities of a mission, say, in Pakistan or Iraq and the Near East South Asia Bureau?

Vernon: Well, again the, as I indicated earlier, in the missions you tried to provide engineers particularly that would be involved in projects. The regional bureau office[s] were associated with program control, program content, the adequacy of engineering operations and policies which were being followed out in the various missions, as well as providing additional expertise to the missions on particular projects.

It was sort of the same type of operation which I had established in the regional office in Billings that some were involved in specific project areas, but not mainly. There [was] mainly ~~was~~ overview and seeing to it that engineering operations were carried out to a satisfactory standard in the field and giving support to those activities in special areas, as required. If a mission indicated that it needed some additional support, my group would then go out into the commercial world, such as a consulting firm or something on that order, and enter into an agreement, or negotiate with another government agency, such as the Bureau of Reclamation or whatever, to get support, enter into an agreement with that agency to provide support to the mission.

Storey: You mentioned going to Mr. Rice, for instance, yesterday on one of the projects. Did you do that often with the Bureau of Reclamation?

Vernon: Yes. We called upon, and particularly in the water development area, we called upon the Bureau of Reclamation quite extensively, and the Bureau of Reclamation was interested through its Foreign Operations Division. Mr. Strauss, during his tenure as Commissioner of Reclamation, wanted to establish the Bureau of Reclamation as a premier agency in reclamation developments around the world, and so he had established this Office of Foreign Operations. Then it provided a great deal of support to the field operations through the Technical Assistance Program of the various foreign aid agencies. So AID and its predecessor agencies had around the world a great many Bureau of Reclamation employees.

**Use of the Bureau of
Reclamation by AID**

Storey: For instance, when you were Director of Engineering, did you have any contact with the Bureau of Reclamation for specific projects?

Vernon: No, because – I think I can get into that better as I describe my functions as the Director of Engineering, because again, our relationships with the Bureau of Reclamation were primarily project oriented. A specific person or a specific kind of expertise was required somewhere in the field, and so the regional bureaus would undertake that direct negotiation.

I think now we are ready to take up my approach to the directorship of Engineering, which was a completely different type of operation. I was now removed from, in the main, direct project activities, and my main function now was one of overview and establishing policies, standards, basic procedures, and coordinated approach to problems among the several regional bureaus, which was one of the problems which the Administrator had laid on me as being necessary of achievement, as I'll get into.

We did also manage a number of what we called standby contracts with consulting engineering firms or other resources of expertise which we negotiated and had what we called open-ended contracts. Periodically, we would go out for what we would call RFPs, Requests for Proposals, and we would indicate the various areas we needed this expertise, or thought we might need this expertise, and then we would negotiate a series of what we called open-ended contracts, whereby particular firms or entities would agree to provide, on-call, at stated prices, what might be needed.

These were negotiated, and as, say, a regional bureau might indicate that it needed, it had a request from one of their project areas, some particular expertise, we could then issue a work order to one of these standby contractors, and he could have somebody on a plane within a

**Approach to work of
Director of Engineering**

**Functioned away from
project operations, and
provided overview and
established policies**

**Managed "standby
contracts"**

couple of days, because they would have staffs which had all their visas, all their passports and their inoculations and everything in order, and under the agreement they had agreed to, on receiving a work order, literally put them on an airplane and have them on the way the next day.

So I had, again, organized a small staff, which I had possibly, at times, a maximum of eight engineers.

END SIDE 1, TAPE 1. APRIL 28, 1995.

BEGIN SIDE 2, TAPE 1. APRIL 28, 1995

Vernon: So I had a staff of about, usually a base staff of about six engineers, highly qualified engineers. Then at times we would be, ~~as again,~~ [augmented] by engineers who were tied into a rotation program, we'd feed them into the program. But our primary function was to give overview to the Agency's engineering program. I was directly responsible to the Administrator, and I attended the Administrator's executive staff meetings.

As Director of Engineering had a staff of about six engineers

First, I want to describe the staff that I had. I had a Deputy Engineer, who had had experience in water developments, but not particularly reclamation developments. His latest experience had been as a Design and Construction Engineer on the St. Lawrence Seaway. I had a Transportation Engineer, who was an Army Colonel, a retired Army Colonel, but had had great experience in logistics of highways and other areas of construction in the Corps of Engineers. I had a highly experienced Electrical Engineer, who had done a lot of work in the Department of Agriculture with rural electrification and other electrical developments, electric power developments, around the states.

I had a Water Engineer, Water Resources

Engineer, who I had known previously many years ago in the Bureau of Reclamation, who had left the government service and had been involved with the United Nations with water resources developments involved in the FAO [Food and Agriculture Organization] in the United Nations in New York. Then he wanted to come back to the government service, and he had – correction. When I entered the Foreign Service back in 1954, he, then, was the Water Resources Engineer in the Near East South Asia Bureau. Then he left to go to his association with the United Nations. Then he wanted to come back, and so I employed him then, because I needed a Water Resources Engineer in my staff because our bureaus were heavily involved in water resources.

Storey: You said he went to the FAO?

Vernon: It was the United Nations, and I believe it was the FAO.

Storey: What's the FAO?

Vernon: [Food and] Foreign Agricultural Organization. Its headquarters were in Rome, but I believe he was stationed in New York.

I had a general engineer, a young general engineer, who was a sort of a guy who, shall we say, he was the utility player. He could do a lot of things. We would send him to the field if a project required some general expertise on general construction. He had been employed by consulting engineers and had some experience in road construction and port construction and building construction. And, incidentally, he ultimately became Director of Engineering in some later generation after I retired.

I also had an Industrial Engineer, who

had had a large experience in the Foreign Aid Organization and in industrial projects. But he had a lot of experience with fertilizer plants that AID was financing and other industrial plants, including one very interesting project which I sent him out to in Indonesia.

There had been discovered a great lode of high [grade] ~~degree~~ of copper ore, but it was a very isolated area. And the Government of Indonesia was wanting to develop that and was employing various organizations around the world to plan and get into the development, so they were coming to us for financing. I sent him out there to give an evaluation of what was going on and what might be done and how it might be carried out and so on. But this was the sort of thing my office might get into, was providing special expertise to a particular field project.

I also had a former Mission Director in from Central America, who had been involved in the large effort in Central America of village water supplies. So he was basically what we might call a Sanitary Engineer in municipal water supplies of the less intense but highly important village water supplies.

So that was my general makeup, and then it would change from time to time, depending on who might be available. I did employ at one time a very special guy, who was a retired Vice President of the American Telegraph and Telephone Company, because AID was supporting the effort in Vietnam during the late 1960s of creating a highly developed telecommunications system, not only to improve the telecommunications systems within the country, but also to provide connection to the United States to be used both by the military and by the lower-ranking military personnel to have

better access to their families within the United States. So this was the level of expertise which was located in my office.

As I'd indicated earlier, the Administrator had given me the charge of bringing coordination among the various bureaus, so I established a practice of taking the Regional [Chief] Engineers up to the executive dining room on the eighth floor to lunch every Thursday, which then we would have a roundtable discussion of various activities within the regions, which would prime me to be aware of any problems which might come up at the Administrator's Friday executive luncheon.

This then gave the Chief Engineers of the regional bureaus an opportunity to interplay among themselves and become – [develop] a feeling of a more cohesive unit, although they were administratively responsible to their ~~Regional Administrator, their~~ Regional Assistant Administrator, but technically there was never a really defined extent to which I had even technical direction of them because of the way their positions were set up, which was one of the problems which had been created earlier when a previous Director of Engineering was unable to establish a real rapport with and among the Regional Engineers, although it never became to open revolt. So this was one of the problems which I wanted to quickly get a handle on, and it worked out very well.

Just as a side indication, I took them to lunch. I hosted the luncheon, except that they had to pay for their lunches. I would make my secretary, when we'd get the bill from the executive dining room, she'd have to collect the money. She said, "Now, what a job. Is that in my job sheet?" (laughter) But any rate, it worked out very well. These guys were really

Took Regional Chief Engineers to the executive dining room for lunch each Thursday

Director of Engineering did not have supervisory responsibilities for the Regional Engineers

happy, because it gave them a feeling that they were part of a family and that they could discuss mutual problems.

Also, while I didn't have any direct authority over their appointments, the Regional Administrators would come to me and request suggestions as to who might be new candidates for the Regional Engineer positions. It was somewhat akin to the same kind of a fuzzy relationship that the General Counsel had ~~of the agency, the General Counsel of the Agency~~ had with the counsels assigned to the regional bureaus, although his line of control was perhaps a little stronger because of the nature of attorney appointments. The Regional Administrators would come to me, and I could make recommendations to them for selection of the candidates for the positions of Regional Engineers.

Another major charge that the Administrator laid on me was to bring coordination ~~in~~ among the bureaus ~~as the~~ ~~approach~~ of [regarding] preparation of feasibility reports, which was required by a particular section of our legislation, and the approach to the administration of contracts that was spread around between contracting officers, legal officers and assorted others, including determination by engineers. So I instituted a study program composed of representatives of the regional engineering offices, the Regional Capital Development Finance Officers, who were literally the loan officers, and the Legal Department and any others who felt they might have an interest in this, to establish some ground rules as to how the bureaus, the various bureaus, would approach meeting the requirements of our legislation regarding feasibility reports.

This had been one of the major bones of

contention, and there were no real ground rules on it. The Administrator at that time was a lawyer, and he liked to have the security of regulations which had the force of law. But my concern was that the rigidity of published regulations in the Federal Register would then subject us possibly to lawsuits and whatever because one of the bureaus did not follow regulation .9.7.2 or whatever as the basis of a lawsuit.

I suggested, and finally got his approval, that we would develop what we might call a series of guidelines, a publication of guidelines, which basically said, "Look if you do it this way, it will make it much easier to consider project proposals. But we are flexible enough to consider other reasonable approaches. We're not frozen in our approach, but we tell you, if you'll do it this way, it's going to be easier for all of us." Then we established a whole series of various chapters as how to approach various things and what might be required and so on and so on. So this became a series of five, as I recall, five documents which were then issued. We published them, but we maintained them as guidelines rather than regulations.

Also, it became necessary to arrive at some standardization of contracting with construction organizations. The AID organization, because of legislation, was required to approve the employment of consulting engineers and other contracting organizations that ~~the governments might employ~~, the foreign governments might employ in the execution of a project which we were financing. The Agency had to approve the contract requirements, the eligibility of contractors to submit proposals to make sure that they had adequate personnel, that they had experience in the field of endeavor, etc. and etc..

Developed guidelines for review of project proposals

AID review of contracts by foreign government and hiring of consulting engineers

This had been an area which our contracting officers in the Agency, many of whom were experienced with the ASPERs, the A-S-P-E-R's. That was the colloquial name for the Armed Services Procurement Regulations, which were literally frozen in stone and gave great rise to many arguments as to the application of those multifarious, multitudinous detailed regulations and which produced \$500 toilet seats in the aircraft [and 150 dollar screwdrivers, etc.]. So this was of a considerable concern to the Administrator.

So I, again, instituted another group which would consider arriving at some kind of a coordinated approach and clarification of our contracting procedures, although being Director of Engineering, I really wasn't in control of that operation. The Senior Contracting Officer was, the Senior Procurement Officer ~~was, although~~ [and] he agreed with me that we did need to arrive at some conclusions, general coordinated conclusions.

One of the very difficult areas was that the administrative types felt very secure in accepting the lowest price bid, whereas we in the engineering fraternity wanted to make sure that the contracts would be awarded to really qualified contractors who had the expertise, the personnel, and the knowledge of working overseas before that engineering contract would be awarded to them. So a long and difficult series of discussions were held between the Contracting Officer on the one hand and the engineering fraternity on the other hand as to whether we would advertise proposed engineering contracts on a price basis.

Engineers wanted to assure the quality of the contractors as well as a good price

The engineering fraternity outside of the agency was very concerned about this, also, and this was one of the areas which the agency had

been receiving a good deal of criticism from among the engineering fraternity, such as the American Society of Civil Engineers, the Associated General Contractors, the Consulting Engineers Council, and other associated organizations.

Unfortunately, that problem was never really satisfactorily settled during my tenure, because we held out staunchly that we first had to know whether an engineering organization had that competence to perform and that price was secondary, although we also recognized that price was a consideration, but we also felt that there was a matter of value to be received for the price paid.

At times, that discussion became rather strenuous, but the Contracting Officers, because of their backgrounds, disliked to lose the security in their parlance on a low price bid. We often pointed out that we wondered how the astronauts felt enclosed in their little capsule on the way to the moon that, my God, we wondered just how secure they were ~~having~~ being subject to the whims of the lowest-price contractor in building their capsule. Any rate, it was one of serious concern. But at any rate, we finally found a method of operation by which price did not become the primary basis of consideration, although it was a matter of consideration during the ultimate decisions.

Another area of concern was the matter of level of detail in cost estimating for projects being proposed and to the degree of investigation which would be required to come up with the amount of information upon which cost estimating of projects could be based. So there again I set up a group, and we employed one or more of our standby contractors and drawing upon their expertise, and produced a

Attempted to set up norms for planning and development

manual of approximately three volumes, which attempted to codify the various elements involved in project development and then establish norms and standards for the amount of information which would be required in producing cost estimates at various levels in terms of consideration of project financing and development.

This was in process. The initial draft of that particular project was being circulated when I retired. So I don't know the degree to which that manual became widely used, although it was agreed that it was ~~accepted~~ [needed], because among the various bureaus, there was a wide variety of validity of contract estimates. , ~~and then~~ There was also then later concerns as to why cost estimates upon which project financing was based were proving to be inadequate in the later stages of the project's development.

At the time when I was Director of Engineering, it became apparent that environmental protection was becoming a considerable area of interest, and that the U.S. government was going into it seriously. So I charged my Deputy Director to become very closely associated with the Environmental Protection Agency, or whatever agency it was that ultimately became the Environmental Protection Agency.

**Had to deal with
environmental issues**

Again, there was a wide variety of approaches to this problem. In one of my last efforts, I came to the office one day and I announced that I was going to prepare a directive for the Administrator's signature which would declare that the agency would have to become intimately involved in environmental considerations of projects, even though many of the areas where we were working were underdeveloped and environmental protection

was the least of their concerns. But still, they were important in terms of the U.S. approach to those projects and would be important in the later stages of the development of the country.

I wanted to prepare just a simple statement which might not encompass more than one or two pages, which would simply have the Administrator declare that environmental considerations were henceforth a matter of general importance and that the ultimate instructions on how these were to be approached would be issued at a later date. So with the help of my immediate staff, we put together, let us say, approximately a two-page document.

Incidentally, I ought to say that when I was in Interior, at the Commissioner's staff in Interior, any document which we prepared for Secretary Ickes' signature had to be covered with a document *not more* than a half a page which summarized the content of whatever document was being prepared for his signature. So this was the approach that I took to this environmental statement that I wanted to prepare, that it would be a simple statement of policy, a declaration by the Administrator that this now had become a concern and had to be taken into account, the details of which would be left to a later date.

So this was then circulated ~~to the agencies. It was~~ [throughout the agency before] going to the Administrator for signature. Then it was submitted to the various elements of the agency. When I left, it was approaching something like forty or fifty pages by the various additions by the various elements of the agency. They all wanted to get their cracks ~~into~~ [at] it [— an exercise of micro-management].

So we kind of just kept that on the back

burner and would stimulate discussion of it periodically. But I did, through my Deputy Director, keep in close touch with the developments of considerations ~~and~~ [with] the Environmental Protection Agency, and then we would work through our contacts with the regional bureaus to get these considerations worked in, even though we did not have [a] *de jure* announcement by the Administrator that it was of considerable importance. (laughter) Oh, what a rat race.

This was a problem of bureaucratic approach to things, because everybody had something to say about it, and this is why things got lost within the wheels, the interminable wheels, of bureaucracy. It was very difficult to get a simple statement of policy issued, unless the particular policy official just issued it on his own.

I then was also instructed to, or given the charge, of creating a better relationship, an external relationship of the various commercial interests that the Agency was involved with, such as the agencies which we might draw upon, [such as] the governmental agencies which we might draw upon for expertise; the engineering organizations upon which we might draw for expertise; the Associated General Contractors so they would better understand. [The AGC} They had developed a Foreign Activities Division among the general contractors, so there had been developed a group of construction contractors who were active in construction of foreign projects, and keep them apprised of the requirements of our legislation and [also] of the so-called Consulting Engineers Council.

There was another group that I can't recall, but it became a sort of a forum which brought all these entities together to discuss

these common problems. Among that was this Institute of International Engineering, the first meeting of which, and several others, were held under the auspices of the University of Colorado. Then it sort of branched out and became more broadly supported . . .

END OF SIDE 2, TAPE 1. APRIL 28, 1995.

BEGIN SIDE 1, TAPE 2. April 28, 1995.

Storey: This is tape two of an interview by Brit Storey with Kenneth F. Vernon on April the 28th, 1995.

Vernon: This Institute of International Engineering was originally supported by the University of Colorado, but later it became more broad than that, ~~and~~ I don't know [who all was involved, but] it was supported more broadly. Meetings were held in different places. The last meeting I attended, just before my retirement, was held at Hershey, Pennsylvania, which was the site of the Hershey Chocolate Factory.

At that time, there was grave concern among the various parties as to the future of the Foreign Aid Program. I tried to explain to them some of the strictures which were being placed upon the Agency through various legislation and other elements, that it looked like the Foreign Aid Program was perhaps going to be less project oriented and possibly [oriented] more [toward] economic and financial support, such as import programs and that sort of thing, because there was considerable talk in the agency of what was called sector approaches to foreign aid, which was largely support of import programs. An explanation in modern-day parlance, it might be considered similar to Mr. [Newt] Gingrich's approach to making block allocations to states to administer rather than individual allocations by item by the government and supervision.

So this would create problems for them in the future and perhaps even create less opportunity for their activities. They would have to watch this carefully so they could properly gauge their future activities. [Tape recorder turned off]

One of the few field trips that I personally took was during the fall of 1957 – no, '67 – when the Vietnam War was going on at its height. We were instituting a new Chief Engineer and a new Director of Capital Development Finance into the Foreign Aid Program in Vietnam, and the Vietnam Bureau asked me to accompany the group, and they would assess the program [in] which the Aid Program was involved.

**Visits Vietnam to review
AID programs there**

The previous Capital Development Finance Officer and Chief Engineer out in Saigon was one of my old associates from Reclamation and had been my Deputy in my tenure as Chief, Public Works in Karachi. But he was suffering from considerable stress and strain of having the problems of the Vietnam program, and so it was felt that he ought to be returned to the United States for rest and recreation. So if he wanted to retire, he would be permitted to retire. So we were installing a sort of a new administration there.

While I was there, we traveled the country by plane and auto all the way from the DMZ in the north to the Delta in the south, examining not only water development programs, [but also] electric power programs, [and] railroad programs. There was an effort to restore the railroad from Saigon north. All the activities, the usual and unusual activities that the Foreign Aid Program was involved in in Vietnam. I found there a number of my old associates from Reclamation there involved in

various aspects of water developments and so on and engineering developments in Vietnam.

On my return, one of my recommendations ~~and report, my report and recommendations~~ to the Administrator was that it seemed to me that the situation in Saigon was stabilizing and that one of the things that Vietnam would need to do would be to improve their electric power, to restore and improve their electric power distribution system, generation and distribution system, because it would be important in the economic recovery of the country. This was just prior to the unfortunate occurrence of the Tet Offensive.

Wanted to restore and improve Vietnam's electric power system

In discussing this with the regional bureau, I had sent my Electric Power Engineer out ~~there~~ [to Vietnam] to survey the situation, since he had experience through our REA [Rural Electrification Administration] Developments in the United States and local power distributions, to survey the situation and come up with a plan that might be carried out as the stabilization of the country occurred. Fortunately, he returned prior to the Tet Offensive, so he was not exposed to the situation. He was developing such a plan in combination with the people of the Vietnam Bureau. Unfortunately, the Tet Offensive occurred, and this put things of local developments back for many years, if ever.

I think that pretty well covers the sort of activities that I was engaged in as Director of Engineering. It had some senses of accomplishment, because I was able to accomplish some degree of better coordination among the efforts of the various bureaus. I was able to establish some better external relationships with the Agency and the commercial community. But again, to me personally, having a long lifetime of experience

in detailed project operations and actual direction of operations, it was somewhat less satisfying than that particular activity. But again, it had its rewards.

Because of the then-deteriorating health of my wife, I requested in 1970, I went to the Administrator and said that, since my tenure as a Foreign Service officer had been extended a number of times and had required a number of special dispensations to cover eight years in Washington and to go on any further would require I don't know what kind of special dispensation, and I did *not want* to return to the field because of my wife's deteriorating health, I thought perhaps I should put in a request for resignation [retirement].

In 1970 began to move toward retiring

Well Dr. Hannah³⁶ at that time, who was the Administrator, had been the President of the State College of Michigan, not the University of Michigan, but its parallel. I believe it's the State College of Michigan. He had been broadly involved in the Foreign Aid Program, providing expertise in the educational area. He was approaching seventy years of age. He challenged me and said, "Well, you're a relatively young man (because I was only sixty years of age). "Why do you want to retire? You've got a wealth of experience that this agency continues to need."

I told him my problem, that the deteriorating health of my wife and all. I felt that since I dragged her around the world a number of places, and in some difficult places, well I kind of owed it to her to have some enjoyment in our later years. Well, he persuaded me to take an extension of another year. He said, "Well, take another year. We'll talk about it again." So I agreed to extend for another year.

Then in the spring of 1971, I went to the then-Deputy Administrator and told him the situation and said that I felt it really necessary that I leave the agency, take my wife back to California where she could have some years with her family and so on, and that I would like to be permitted to submit a request for resignation to the Administrator. Well, he agreed, but he said, "Also, in that process, in your letter of resignation, indicate that you might be available for consulting assignments, that this agency could draw upon you for consulting assignments, so that he could direct the Personnel Department or whomever to make arrangements for you to be a consultant on a when-employed basis, WAE [when actually employed] basis, at a rate commensurate with your existing salary arrangements," which I set up [in] the appropriate documentation, sent it up through him to the Administrator, which the Administrator approved and sent on to Personnel. So I retired as of, I believe, May 31st, 1971, after some thirty-seven years of federal employment.

**Retired in 1971 with 37
years of Federal service**

Storey: Did you actually do any consulting with them?

Vernon: Not a great deal. I wasn't really anxious to do very much consulting, because I felt that I was on-call, and if they wanted me, fine. But still, if I really wanted to work, I should have stayed with the Agency. But they called on me a few times. I would go into the Washington office and discuss particular problems.

One of the other arrangements we made was the overseas – one of the more interesting assignments that I had as a consultant was the Overseas Private Investment Corporation which was set up as an adjunct to the AID agency, and so a contract was entered into similar to the one I had with AID.

**Worked with Overseas
Private Investment
Corporation to try to
protect contracts from
changes by
governments**

One of the interesting problems they contacted me about was, contractors would get into difficulties in foreign countries because of the ~~changes~~, rapid changes of government of, let us say, an unconstitutional change of government, and therefore all of the arrangements with previous governments would be in jeopardy and oftentimes would result in the sequestering of funds that had been previously earned by the contractor and even the sequestering of equipment that might be owned by that contractor and therefore put them in serious financial jeopardy.

When I had been Director of Engineering, such a problem had developed in Peru. Our Inter-American Bureau had asked me to participate in attempting to solve that problem of a couple of American contractors who were in serious financial trouble because a new government in Peru had sequestered not only their financing, but their equipment. So it was a very difficult problem, and at one time they thought maybe I should go to Peru and help solve the problem, but a former diplomat was finally assigned that assignment. But I assisted the engineer in the Latin American Bureau to provide him staff assistance and help to conduct some of the studies which could underlie his approach to the Peruvian government.

So the OPIC, this new organization, O-P-I-C [Overseas Private Investment Corporation], asked me to participate in a study in which they wanted to see if an insurance program could be set up whereby these contractors could contribute to an insurance fund which might give them some protection against this expropriation of equipment or sequestering of funds or whatever situation might develop. So I worked with them several weeks on that program, in which we did develop such a

program and which was put into effect.

One of the interesting aspects of that [consultation assignment], where my experience was of importance, was how to evaluate the value of the contractors' construction equipment. I indicated that through my experience I knew that when contractors were in such difficulties ~~and~~ [they] would evaluate their equipment, [very highly] although they may have depreciated the value of that equipment many times for purposes of Internal Revenue reports, they would probably evaluate it at a very high residual value [for insurance purposes], even though its literal book value [for Internal Revenue purposes] had been reduced many times to more than zero. So I said, "One of the elements you should put into your program is to insist that a contractor, when he's setting up his indemnity values, he would have to submit several reports that he had submitted to the IRS on his depreciation values of the equipment."

That really drew some concern among the contracting community, but they understood what our problem was, that there was no free lunch anywhere. We would attempt to evaluate their sequestered earnings to their full value, of course, but that their equipment could not be put in as an overly inflated value, because usually in evaluating a contractor, you took into account what equipment he had and what equipment he had available and what equipment of his existing plant would be imported to the country and to what new equipment that he might purchase. So he'd have a mixture of old plant and new plant. So ~~this~~ [there] had to be established as an overriding value in the ultimate insurance to be bought.

Then I also, with the OPIC, reviewed a number of industrial plants that they were

considering being involved in. ~~But it was, I think that existed,~~ Since I departed from Washington and moved back to California in the summer of 1972, that consulting assignment was terminated, and I didn't receive any more assignments from them.

Moved back to California in 1972

Later, through one of my associations with a contracting organization when I was Director of Engineering, a consulting firm in Baltimore, Lyons Associates, L-Y-O-N-S, was involved in activities associated with the Mekong Committee, M-E-K-O-N-G, Mekong Committee out in Southeast Asia. I believe it was financed through United Nations. I'm not quite sure its parentage, but I believe it was some element of the United Nations.

Prior to the Vietnam War, a gentleman named Mr. Sessions, S-E-S-S-I-O-N-S, had in the Eisenhower Administration been appointed Ambassador to either Thailand or Cambodia or perhaps even Vietnam. I'm not quite sure just exactly where he had been an ambassador, but he had been in that area. Being an engineer himself and owning the Sessions Engineering Company in Chicago, he got interested in the development of the Mekong River.

Under consideration was a possible dam known as the Pa Mong, capital P-A, capital M-O-N-G.

Set up study of Pa Mong Dam on the Mekong River

Storey: All one word?

Vernon: No, it's two words, Pa Mong, the Pa Mong dam site. There were a couple of other dam sites in the Mekong River basin, one of which had been built by the Japanese as a part of their reparations for World War II.

So this Mekong Committee wanted to

establish a review of plans for the Mekong dam, Pa Mong Dam, and also they wanted to examine the effect of certain tributaries and could they be dammed and developed, such as similar to the one that the Japanese had developed. So the Lyons Associates in Baltimore, who was very active out through the Far East, being heavily engaged with activities with the Corps of Engineers, the military, and were already located in Bangkok, received this assignment, which was the headquarters of this Mekong Committee group.

One of the men who used to visit our office regularly representing Lyons Associates, and we had employed Lyons Associates for some of our activities, contacted me and asked me if I would be interested in being a part of their effort in undertaking this study. So it resulted that another man from A-I-D, who had also ~~been~~ previously been associated with the Bureau of Reclamation, and myself were sent out to Bangkok to undertake this study. My effort was to be mainly to set up the study and establish the degree to which we could carry it out and the success of available financing, and the other gentleman was to complete the study, spend more time and complete the study and then bring it back and follow up on the completion of the report. So I stayed out there about a month, setting up the study.

One of the interesting elements I ran into in studying whether one of the various tributaries, ~~how it could be,~~ if it could be diverted so that it would not put its flood into the Mekong Reservoir, which could be brought into below the Pa Mong Reservoir, we ran into the question of the basis of the elevation surveys that had been done by the various agencies that had been involved in all the various studies that had gone on out there.

We were provided with a series of aerial photo maps, and right off the bat it became a question of whether the topographic mapping which had been reduced from aerial photographs was actually producing elevations on the ground or the top of the trees. The rain forest was some eighty to a hundred feet high. The relative elevations became very important in terms of what kind of diversionary structures we might [need] ~~be able to create~~.

So after I got into this, we then asked for a meeting with the Mekong Committee and its various elements to discuss this problem and what they thought they wanted to do about it. We demonstrated to them this difficulty, and they would have to tell us what they wanted us to adopt as the datum which we could base our considerations on.

Well, we were like a skunk at the party. We weren't very welcome when we produced that problem, because they didn't know either. But, any rate, we had to have some kind of a solution. So a solution was adopted, and they told us what datum we should base our considerations on.

Before I left Bangkok, the study was progressing well. The head of the Lyons Associate group seemed to be well satisfied with the effort we were putting together and the details that we were developing and so on. And so I left. I was there approximately a month, and then my colleague was there possibly a month or two more. In his later studies, he made some changes in some of the ideas that I had proposed because of later developments and improvements in elevations and so on.

For instance, we were proposing – first off, we had a great paucity of data as to

development of floods, so I had to revert back into some very general, worldwide formula to cover in very general terms what floods might occur over various geographic areas of the world. So we had come up with certain basic considerations to develop that. Then the consideration was, could we divert that river over into [another basin] and prevent it from entering the Pa Mong Reservoir and divert it down to the reservoir that the Japanese dam had created, which then what elements we might have to revise on the Japanese dam to be able to handle this increased flow from this tributary we were considering, or whether we would simply pass that water through and find another area which we could create a spillway through a divide and discharge it back into the Mekong River below both the Pa Mong Dam and the Japanese dam. In a sense, we were creating a transbasin diversion similar to which the Bureau of Reclamation was involved in and in which I was involved in the Central Valley.

Storey: Now, this Mekong was in Vietnam?

Vernon: The Mekong River arose somewhere in the Himalayas. It may have arose in South China. It traveled through Burma, and particularly Laos, Cambodia, and Vietnam. I don't know whether it – I think it was a boundary to Thailand. And Cambodia had had a very interesting operation on the Mekong in which was the – no, I can't think of its name at the moment, but it was a side diversion of the floods of the Mekong very similar to what the Iraq development used in diverting floods from the Tigris and the Euphrates Rivers.

Storey: But this dam site was in which country?

Vernon: I believe the dam site was in Laos, as I recall. Yes, the dam site was in Laos, because it created

a problem for us in our considerations. We first thought that we would be able to visit Vientiane, whatever the capital of Laos was, but we learned then that we were not going to be able to, for one reason or another, we were not going to be able to go to Laos and get any data from Laos. So we would have to base our considerations from what general information was available, but we couldn't develop any detailed information and discussions in Laos. So the dam site was actually in Laos. Yeah.

Then, from time to time, Lyons would refer to me for consideration, while I was living in California, RFPs they were receiving. I'd review them and offer suggestions and write a report to them, which they could crank into their considerations for their response to the request for proposals.

Reviewed RFPs for contracts

I remember one interesting one I received was a proposal in one of the islands of Hawaii. It was in an area on this island which had a lot of pineapple and other developments. One side of the island had . . .

END SIDE 1, TAPE 2. APRIL 28, 1995.

BEGIN SIDE 2, TAPE 2. APRIL 28, 1995.

Vernon: This was a proposal to see if there could be some kind of a transbasin diversion set up which we could trap water in a reservoir or reservoirs on the wet side of the island and divert the water over into the dry side of the island.

My first reaction to the financing which was indicated to be available for this feasibility study was of great concern to me, and I sent this back in my report to Lyons, that because now we were [not] dealing with ~~not~~ the continental United States but an entity of the United States, a state of the United States, [so] ~~the full force~~

effect of the all the Environmental Protection Agency laws and regulations would be in full force and effect, and that such a feasibility study would also have to take [into account] and give grave consideration to environmental effects of any project development, which often entailed the examination of two or three different alternatives in your project development report, which is very expensive.

Likewise, the financing that was indicated was not adequate to include any dam site drilling investigations. ~~because~~ It was well known that because the Hawaiian Islands were of volcanic origin and they had many tubes and tunnels and various levels of openings that leaked water, such as we ran into in the Columbia Basin and in the Snake River Basin with the various levels of the lava layers in that Northwest area, that any feasibility report would at least require some dam site drilling to evaluate whether you *did* have a dam site. So that I voiced grave concern about the adequacy of the indicated financing, the problems that would have to be addressed of the environmental elements, and the inadequacy of any dam site investigations.

So my basic recommendation was that they approach making a response to the Request for Proposals very carefully. ~~Then later I~~ received a Request for Proposal. I don't know whether that project ever proceeded beyond that point.

Later, I received another Request for Proposal to review which dealt with a rather comprehensive development in Ceylon. And, since I had visited Ceylon, both for R&R and as an official, I was somewhat familiar with the problems in Ceylon, primarily when I was in the Near East South Asia Bureau and in Pakistan. I

sensed that this Request for Proposals was directed more toward ~~an adequate~~ [a] response from Dutch agencies, who had a great background in Indonesia and in that particular area of the Indian Ocean. ~~and that~~ It had apparently been developed by the Ceylonese government, which was now called Sri Lanka, had been developed more aimed at the general expertise of the Dutch agencies, and that Lyons Associates might have difficulty finding the expertise in their organization to adequately respond to that RFP and that they would undoubtedly have to go outside of their organization to provide the necessary expertise, and I would question whether that expertise would be found within the United States, even though the closest thing we had to it would be people experienced in our Southern states where there was rice cultivation ~~was~~ and ~~the~~ heavy flooding ~~was exercised~~ [occurred].

Again, I recommended a careful approach to any response they might make. I did, however, make some suggestions as to how they might respond to it and what agencies I thought in the United States *might* provide them as close to the expertise that seemed to be indicated. I don't know whether Lyons responded to that RFP, but I do know that the Sri Lanka government did undertake some of the elements of that development, I think financed primarily through either the World Bank or even the United Nations.

So that was the basic extent of my consulting career, although I did have a few minor consultancies while I was in still with AID. While I was in Baghdad, I was sent over to Jordan. It had recently established a development organization similar to the Iraq Development Board. It was trying to establish what elements might be required and how it

would approach the program of the developments in Jordan, of the Jordan River in Jordan.

So I spent a couple of weeks over there consulting with the various elements of our mission in Jordan and the various elements of the Jordanian government, meeting with the Prime Minister of Jordan and meeting with the Chairman of this new Development Board which they had established and meeting with the head of another agency, which would be operating in parallel with this new development board, called the Central Water Authority, in which my old colleague, Mr. Oliver Folsom, from Reclamation days, had been sent by the then Foreign Aid Agency in the United States to be head of the Central Water Authority, similar to my being head of the First Technical Section in the Development Board in Iraq.

So I prepared a report back to this new Director of the Development Board, outlining what I thought might be the elements of his organization and where he might seek assistance outside of Jordan to support their activities and cautioning him that he should maintain a continuous relationship with his activities and strengthening the agencies of government, such as we did in Iraq, so that his agency would not become involved in hoping to establish itself in the future of operating days, but ultimately revert their programs and projects into feeding it back into the various elements of governments, which would have better legislation to cover the continuing activities.

That was well received, and I also recommended in my report sources of expertise where they might go to get sources for expertise to man the original requirements of their manning requirements, such as the Bureau of

Reclamation and agencies in the U.S., agencies around the world where they might seek. I recommended strongly for their water development that they seek expertise from the Bureau of Reclamation.

Then also, I was involved in very generally through the FAO³⁷ in Rome [in] what was called their Mediterranean Regional Project, which was an examination of irrigation practices around through the Mediterranean region and organizations which managed irrigation developments around the region. They were trying to establish some kind of a general overview which might govern the United Nation agencies in their agricultural approaches to developments in the Mediterranean region. That was only of a very general nature, and I did not submit a formal report. I simply was involved in a number of consultations and meetings and did not submit a formal report.

So that pretty much covers my activities in the consulting area.

Storey: Why don't you briefly tell me about where you've lived after retiring.

Vernon: Well, as I've indicated, in my earlier years my family had moved to California. My wife's family were Californians. We started our career in California, and then started moving about. So after deciding to terminate my government career, I said, "Well, I think we ought to go back to California, because that's where we come from. While we do like living in Washington, really, because it's a very interesting place to live and we had a beautiful house and all the rest of it, your health is not the strongest. So let's go back where you'll be a little happier and be close to your family."

**Moved back to California
after retirement**

So we moved to Castro Valley, California, which was a bedroom community across the bay from San Francisco. It was immediately adjacent to the city of San Leandro. So we purchased a home up on one of the mountaintops of the bay area in the east bay hills. We located there in the fall of 1972, and enjoyed life in California. This is where I conducted some of my consulting operations that I indicated.

Then in 1986, in the spring of 1986, while we were visiting my wife's sister in the city of Turlock, my wife suffered a heart attack, from which she never really recovered. And so I indicated to her I thought that for her protection we ought to move to southern California to be closer to ~~my son~~, our oldest son, who was now working for McDonnell, the aircraft company, McDonnell Douglas, in Long Beach, so in case something should happen to me, get knocked off on the way to the store or whatever, because we were living in a relatively isolated location on the top of one of these mountaintops and she no longer was able to drive, and nobody delivered anything anymore, that we ought to move to southern California.

She was not very happy about such a suggestion, but she finally agreed. We had such a lovely home there that the first people that saw it made a satisfactory offer to purchase it. So whereas we thought we might have time to find a relocation area in southern California at our leisure, we were literally forced out the door to find a place to live in southern California.

So we did make a satisfactory sales arrangement on that house in northern California, and we bought into a mobile home park in the city of Brea, California. Now, mobile home parks in southern California are

quite upscale.

Storey: Or at least some of them are. (laughter)

Vernon: Some of them are. Some of them are. Some of them are upscale. It so happens that Norma Zimmer, who was Lawrence Welk's champagne lady, together with her husband, had developed a series of upscale mobile home parks in Orange County. My daughter-in-law's mother had moved into one of the mobile home parks. I was well impressed with what was available, and so I suggested that we find at least initial settlement in one of those mobile home parks. We found a satisfactory mobile home in the latest of the Lake Parks, because they all had a lake and they were labeled Lake Parks. So we found a satisfactory, lovely mobile home in Lake Park, Brea.

We had the proceeds of our house up north. I was able to purchase the house outright and move directly in. So we moved directly into that house, although my wife was never completely satisfied with living in the mobile home park. It was nice. So I said, "Okay, we'll look around. Now we're settled, we can decide what to do permanently." And because we had so much furniture out of the house from up north, I had to rent storage facilities in one of the local storage facilities for much of our overflow furniture.

So we continued to look around at homes available on the market. This was at the very peak of the Orange County real estate market. A for-sale sign would go up one day and come down the next day, and they'd have three back-up contracts on it, offers for purchase.

Unfortunately, while we were living at the mobile home park, my wife had begun to

suffer from blackouts. One morning she was taking her shower, and I had gone downtown to run an errand. When I had come back, I found she had fallen in the shower and had suffered an injury to her foot. I didn't know the extent of it, but she wasn't able to stand. So I called for the paramedics and an ambulance, in which we took her to the local hospital. They found that she had broken the bones in the arch of her foot, because as she fell, she doubled it under her foot and had broken it. So she couldn't stand on it. But they fit her up with a cast and all the rest of it. And this was *more* reason why she didn't like living in the mobile home park. She said, "these people are all too old." (laughter) For us, that is, even though we were well retired by this time.

She was a real going machine. So I said, "Okay, that's all right. We'll continue to look."

Shortly after that, the real estate person with whom we were working called us and said she had found a house which she thought met our requirements and we should immediately come see it and see if we were interested. So we left that afternoon and picked our real estate person up, and we came over and looked at this residence you now are ~~living~~ [sitting] in.

Storey: Sitting in, anyway. (laughter)

Vernon: Sitting in. Sitting in, that is, visiting or whatever. And decided that it met our requirements. And fortunately, it was close to our son's house, so I felt secure that my wife could get support from them in case something should happen to me. And so we purchased this house.

Storey: When was that?

Vernon: Pardon me?

Storey: When was that?

Vernon: We made the deal – this was very interesting. We made the deal in October of 1987. Since the previous owner was retiring from his active insurance business and he was building a house in Arizona, which he thought wouldn't be available until after the first of the year, we set up a closure of escrow. I said, "Well I'll give you ninety days. We're in no hurry. We're settled over there. We're in no great hurry to rush. So we'll set up a closure of ninety days, closure of escrow in ninety days. This will give you a chance to get your things organized."

So we set up a date of closure for ninety days – let's say, January 20th. I said, "It will also take me some time, because in my offer I've indicated I'm willing to make a sizeable cash payment. I've also talked to a mortgaging organization, and I know the extent to which I can obtain mortgaging financing. So I have a financial plan that can be worked out, but it will take its usual times to work this out. So the ninety day works out adequately for me."

Well, apparently somewhere along the line one of his friends must have talked to him and said, "Hey, wait a minute. You know, there's going to be a change in the IRS laws come January 1, and that if at all possible, you ought to move up that closure date before December 31st, because then you will gain considerable benefit in your taxation position, because you are going to get an exceedingly beneficial reward out of the sale of your house, as it had been purchased many years before at a much lower price." He was going to reap a good profit, such as I had done up in Castro Valley.

Well I said, "Sir, this is going to give me a problem. It's going to take me a little time to arrange the financing, as I had indicated."

Oh, yes, and in his proposal to me he said, "My house won't be ready in Arizona, so what I propose to do is, if you can do it, we'll close the escrow in December, and then you rent the house back to me."

And I responded, "No way am I going to get into the business of renting a house to you, because in today's world a renter, as long as he's willing to pay his rent, you never can get him out. My wife wants to get out of the mobile home park, and I want you out of that house. If I buy it, I'm going to be able to move into it."

So I wrote an amendment to the sales contract in which I said, among other things, there was to be no rent-back provision, that if he could not vacate the premises by December 31st, I would assess a liquidated damage award of \$200 a day for every day he stayed beyond December 31st. And I would make every effort to make financing available to complete the sale. If this was agreeable to him, I would make every effort to make the financing available to close the escrow before December 31st."

Well this gave him to sweat. But somebody told him, "Look, you're going to make enough money. If you have to go and rent a hotel, you can live in a hotel for a while while your house is being completed in Tempe, Arizona," or wherever it was in Arizona. I wasn't sure exactly when his house was to be completed, and I also had picked up a feeling that his wife was not completely happy about moving to Arizona and leaving all of her friends in California. So that's why I did not want any rent-back provision.

At any rate, he did accept it, with much grunting and groaning. We happened to come by the house – oh, yes. One reason why we'd agreed on the January 20th date was he said that his wife would like to hold Christmas with the family here in this house. Well, that was okay with us. So we kept track of them to see how well they were doing. Through the assistance of my bank, I was able to get wire transfers of money. I had invested a number of funds in tax-free bonds and that sort of thing, and so I was able to get those converted to cash and so on. But it was going to take right up to the end of December to get all those funds transferred into *my* account so I could make the cash payments.

So we kept track of what they were doing, and we noted that on the night of December 31st, they were still packing out and the moving vans were still here. I don't know, the morning of January 1st, they were gone. They were right down to the wire in getting out.

Storey: So you moved in . . .

Vernon: As I indicated, we were in no great rush to move in, but I didn't want to get at that rent-back provision. So there were certain things I wanted to do in the house. There were certain rooms that needed renovation. My wife wanted certain additions made to the laundry room and so on and so on. So we were in no great rush. We did all those things.

Then we decided that – and we had put our mobile home up for sale in the park. In making the deal here on this house, I had not made the purchase of this house contingent on the sale of the mobile home. In the general movement of people in today's world, a sale is usually contingent on the sale of some other property. But I said, "No, this is a completely

clean deal, because I own that outright, and I don't need that money to make this deal."

We then took our time in getting this house into the shape we wanted it and ultimately moved in on March 20th.

Storey: In 19 . . .

Vernon: In 1988. Then one of the first things we did was call in landscapers to re-landscape the yard and do a number of other things which needed repair in the house, because they knew they were going to move, and I knew I was going to have to invest maybe \$20,000 in the house to get it up to what we wanted, because these people had let it kind of slide.

They got out at just the right time. The first day I turned full pressure on the water system, the hot water heater blew up. We found the next summer that the air-conditioner had long since passed its life. The air coming out of the air vents was warmer than the ambient temperature outside because of the heat under the roof, etc.. So I had to replace that, etc. etc. So he got out at the right time and pocketed a nice profit. We bought a comfortable house. It well met our needs.

So that's the life and times of one Ken Vernon.

Storey: Well, I appreciate it. Once again, are you willing for researchers to use the tapes and transcripts from this interview in doing research?

Vernon: Yeah. Of course, I'm happy to it. I hope whatever people review this record find out that the life and times of an engineer and his family are not all peaches and cream, nor is the life and

times of a government employee, feeding at the public trough, all that it's touted to be by the general public.

Storey: People who don't understand.

Vernon: I might make one summary statement, I think, that future reviewers might make in reviewing my career. It's been a very interesting career and very fulfilling one, really. I was exposed to a number of various elements of government and government activities, and I'm truly thankful for the opportunity that the government gave me to help the development of people around both the United States and the world in the development of their resources and better their living conditions.

Storey: Okay. Good.

Vernon: Thank you, Mr. Storey.

Storey: Well, thank you. I really appreciate it.

END SIDE 2, TAPE 2. APRIL 28, 1995.
END OF INTERVIEWS.

Endnotes

1. Note that 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.
- 2.. The Key System was established in 1902 as the San Francisco, Oakland, and San Jose Railway. It had several legal names, but in 1936, it became the "Key System." The Key System crossed from Oakland to San Francisco on the bridge and was abandoned in 1958.
3. Bernard Alfred Etcheverry (1881-1954), except for two years, served at the University of California-Berkeley from 1902 until 1951. He was Professor of Irrigation and Drainage when he retired as well as chairman of his department.
4. Mr. Vernon's correction is accurate. Reclamation built Parker Dam in the period 1934-1938 while it built Davis Dam in the 1940s.
5. Bernard (Barney) P. Bellport subsequently served as Director, Office of Design and Construction from February 1963 until April of 1972. This position also officially carried the title of "Chief Engineer" until April of 1972, but subsequent persons in this position were still known popularly in Reclamation as the "Chief Engineer."
6. This canal later came to be known as the Peripheral Canal and was quite controversial.
7. Said on tape as "Region Five," regions will be referred to throughout this transcript by Roman Numerals – the standard reference at Reclamation.
8. Eugene Donald Millikin, a Republican, represented Colorado in the U. S. Senate from December 20, 1941, to January 3, 1957. Joseph Christopher O'Mahoney, a Democrat, represented Wyoming in the U. S. Senate from January 1, 1934, to January 3, 1953.
9. Walker Young served as Chief Engineer from 1945 to 1948. Charles E. Carey was the first regional director in Region II from 1943 to 1947.
10. North Dakota State University.
11. Editor's note – From 1937 to 1939 J. D. Ross, formerly Superintendent of Seattle City Light, served as the first administrator of the Bonneville Power Administration. He was succeeded by Dr. Paul J. Raver in 1939.

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12. Note that this is not chronologically strictly accurate. As early as 1925, the River and Harbor Act of March 3 authorized and directed the U. S. Army Corps of Engineers and the Federal Power Commission to jointly prepare cost estimates for comprehensive surveys of all navigable streams and their tributaries where hydroelectric power appears practical. In a letter report (House Document 308) of April 7, 1926, Corps developed detailed cost estimates. The result was the 308 Reports of the Corps. This set the stage for multipurpose dams through its focus on river basins and both hydropower and navigation. The surveys were written into law in 1927 and 1928. The great floods on the Mississippi occurred in 1927.
 13. The correct spelling of the name is Fred G. Aandahl.
 14. James Edward Murray was born in Ontario, Canada, in 1876, naturalized as a United States citizen in 1900, and served in the U. S. Senate from November 7, 1934, to January 3, 1961. He died March 23, 1961, in Butte, Montana, where he had practiced law.
 15. Julius A. Krug served as Secretary of the Interior from March 18, 1946, until December 1, 1949.
 16. Oscar L. Chapman served as Assistant Secretary of the Interior and Undersecretary of the Interior from 1933-1949. He served as Secretary of the Interior from December 1, 1949, until January 20, 1953.
 17. This should be “bureaus” rather than “agencies.” This is common terminology, even in the Federal Government, but the Department of the Interior is an “agency” while all the other major subdivisions of Interior are “bureaus.”
 18. Senator Kenneth Spicer Wherry (1892-1951) (R) from Nebraska served in the Senate from January 3, 1943, until his death on November 29, 1951.
 19. Joseph Christopher O’Mahoney (1884-1962) (D) from Wyoming served in the Senate from December 31, 1933, to January 3, 1953, and again November 29, 1954, to January 3, 1961.
 20. Congressman Wesley Abner D’Ewart (1889-1973) (R) from Montana served in the House of Representatives from June 5, 1945, to January 3, 1955.
 21. Francis Higbee Case (1896-1962) (R) from South Dakota served in the House of Representatives from January 3, 1937, until January 3, 1951 and in the Senate from January 3, 1951, until his death on June 22, 1962.
 22. William Lemke (1878-1950) from North Dakota served in the house of Representatives March 4, 1933, to January 3, 1941, and January 3, 1943, to his death on May

30, 1950. He was the Union Party candidate for President in 1936.

23. Lieutenant General Samuel D. Sturgis, Jr., was the Chief of Engineers March 17, 1953 to September 30, 1956. Born in 1897, he died in 1964. He came from a military family, graduated from Westpoint in 1918, served in the Pacific in World War II after serving as district engineer in Vicksburg from 1939-1942. He served as senior engineer for the nation's air forces in 1946-48, and he was Missouri River Division Engineer in 1949-51. In 1951 he became the Commanding General of the 6th Armored Division and Fort Leonard Wood. 1952-3 he served in Europe. He then became Chief of Engineers.

24. This reference is to American earthmoving equipment manufacturer, R. G. LeTourneau, Inc. Robert Gilmour LeTourneau created his first electric controlled scraper in Stockton, California. The company gained strength in the late 1920s and expanded to become R. G. LeTourneau, Inc., with four factories in the USA and one in Australia. In 1953 R. G. LeTourneau, Inc., sold its earthmoving business to Westinghouse which created the LeTourneau-Westinghouse Company. R. G. LeTourneau, Inc., continued to manufacture large machinery, oil drilling platforms, and other activities until absorbed by the Marathon Manufacturing Company in 1970. R. G. LeTourneau died in 1969.

25. André Coyne designed Malpassat Dam, which failed in 1959 due to the geology in one of its abutments. The dam was filling for the first time when it failed.

26. On July 14, 1958, a military coup led by Gen. Abd al-Kareem Qasim overthrew the monarchy in Iraq. King Faisal II, who had reigned from 1953 - 1958, the crown prince, and Nuri al-Said were executed. This was the Iraqi "Revolution" of 1958 which overthrew the Hashemite monarchy.

27. Note that Mr. Vernon confused the placement of the vowels in the name of this town. The correct spelling is M-O-S-U-L (ed.). While Mosul gained prominence in the 8th century, settlement in the immediate area is as old as the ancient site of Nineveh on the east bank of the Tigris, the capital of the ancient Assyrian Empire from 705 to 612 BC..

28. As earlier referenced, on July 14, 1958, a military coup led by Gen. Abd al-Kareem Qasim overthrew the monarchy in Iraq.

29. The current spelling of this river's name is Karnafuli with an alternate spelling of Karnaphuli. (ed.)

30. Roger Revelle, 1909-1991, was an geologist who worked at Scripps Institute of Oceanography in La Jolla, California, as an oceanographer. He was one of the earliest persons to become concerned about increasing carbon dioxide in the atmosphere.

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31. This was originally spelled out as B-I-E-R-C-H but was corrected in the transcripts by the interviewee.
32. Public Law 480 is a government program designed to use surplus United States commodities to aid developing countries through several components including the Food for Progress and the Food for Peace programs. The Foreign Agricultural Service (FAS) of the U. S. Department of Agriculture provides commodities to countries in need of food assistance. The U. S. Agency for International Development is also involved in the program. This initiative was passed by the 83rd congress in 1954 and provides U.S. government financing of sales of U.S. agricultural products to developing countries on specific credit terms.
33. Officially the Reclamation Project Act of 1939, passed on August 4, 1939. 53 Stat. 1187.
34. The Latin legal term *pro tanto* means "so far, to that extent." It also carries the connotation of an installment, good enough as far as it goes, but not final.
35. The principle in this firm was Constantinos Doxiades (1913–75), a Greek urban planner, designer, and consultant on settlements. Doxiades held official and academic positions in town planning and housing in Greece. He designed many projects in Greece as well as projects in Pakistan and Philadelphia.
36. John A. Hannah (1902-1991) served as president of Michigan State University 1941-1969. Upon retirement he accepted the position of administrator of the U. S. Agency for International Development in 1969.
37. Food and Agriculture Organization of the United Nations.