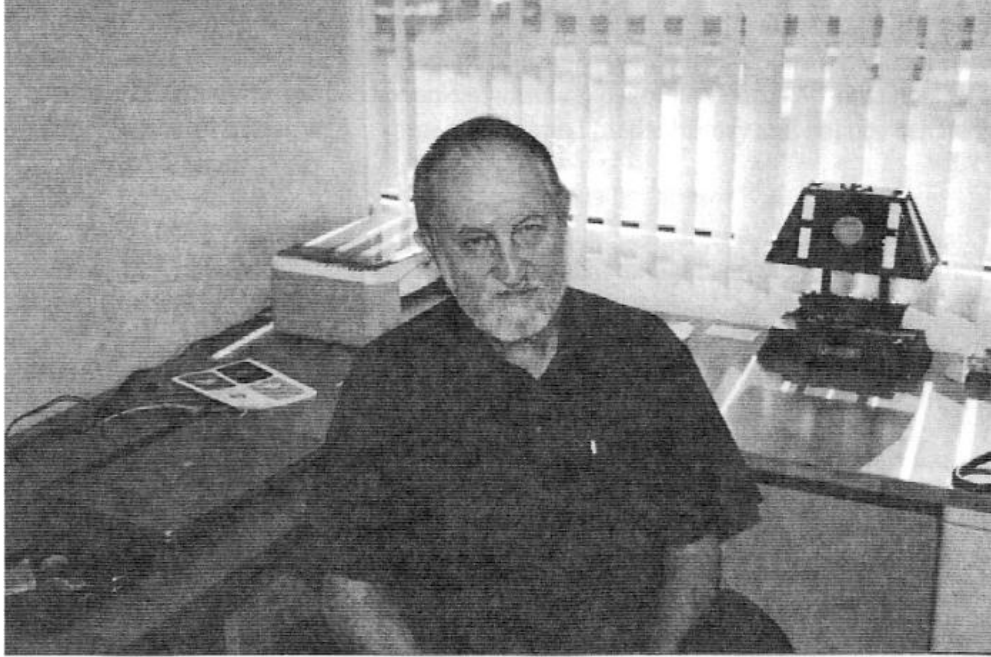


An Interview with  
TROY  
WADE

An Oral History produced by  
Robert D. McCracken

Nye County Town History Project  
Nye County, Nevada  
Tonopah  
2009

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89049



Troy Wade  
2008

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## PREFACE

The Nye County Town History Project (NCTHP) engages in interviewing people who can provide firsthand descriptions of the individuals, events, and places that give history its substance. The products of this research are the tapes of the interviews and their transcriptions.

In themselves, oral history interviews are not history. However, they often contain valuable primary source material, as useful in the process of historiography as the written sources to which historians have customarily turned. Verifying the accuracy of all of the statements made in the course of an interview would require more time and money than the NCTHP's operating budget permits. The program can vouch that the statements were made, but it cannot attest that they are free of error. Accordingly, oral histories should be read with the same prudence that the reader exercises when consulting government records, newspaper accounts, diaries, and other sources of historical information.

It is the policy of the NCTHP to produce transcripts that are as close to verbatim as possible, but some alteration of the text is generally both unavoidable and desirable. When human speech is captured in print the result can be a morass of tangled syntax, false starts, and incomplete sentences, sometimes verging on incoherence. The type font contains no symbols for the physical gestures and the diverse vocal modulations that are integral parts of communication through speech. Experience shows that totally verbatim transcripts are often largely unreadable and therefore a waste of the resources expended in their production. While keeping alterations to a minimum the NCTHP will, in preparing a text:

- a. generally delete false starts, redundancies and the uhs, ahs and other noises with which speech is often sprinkled;
- b. occasionally compress language that would be confusing to the reader in unaltered form:
  - c. rarely shift a portion of a transcript to place it in its proper context;
  - d. enclose in [brackets] explanatory information or words that were not uttered but have been added to render the text intelligible; and
  - e. make every effort to correctly spell the names of all individuals and places, recognizing that an occasional word may be misspelled because no authoritative source on its correct spelling was found.

## ACKNOWLEDGMENTS

As project director, I would like to express my deep appreciation to those who participated in the Nye County Town History Project (NCTHP). It was an honor and a privilege to have the opportunity to obtain oral histories from so many wonderful individuals. I was welcomed into many homes—in many cases as a stranger—and was allowed to share in the recollection of local history. In a number of cases I had the opportunity to interview Nye County residents whom I have long known and admired; these experiences were especially gratifying. I thank the residents throughout Nye County and Nevada—too numerous to mention by name—who provided assistance, information, and photographs. They helped make the successful completion of this project possible.

Appreciation goes to Chairman Joe S. Garcia, Jr., Robert N. "Bobby" Revert, and Patricia S. Mankins, the Nye County commissioners who initiated this project in 1987. Subsequently, Commissioners Richard L. Carver, Dave Hannigan, and Barbara J. Raper provided support. In this current round of interviews, Nye County Commissioners Andrew Borasky, Roberta "Midge" Carver, Joni Eastley, Gary Hollis, and Peter Liakopoulos provided unyielding support. Stephen T. Bradhurst, Jr., planning consultant for Nye County, gave unwavering support and advocacy of the program within Nye County in its first years. More recently, Darrell Lacy, Director, Nye County Nuclear Waste Repository Project Office, gave his unwavering support. The United States Department of Energy, through Mr. Lacy's office, provided funds for this round of interviews. Thanks are extended to Commissioner Eastley, Gary Hollis, and Mr. Lacy for their input regarding the conduct of this research and for serving as a sounding board when methodological problems were worked out. These interviews would never have become a reality without the enthusiastic support of the Nye County commissioners and Mr. Lacy.

Jean Charney served as editor and administrative assistant throughout the project; her services have been indispensable. Kimberley Dickey provided considerable assistance in transcribing many of the oral histories; Jean Charney, Julie Lancaster, and Darlene Morse also transcribed a number of interviews. Proofreading, editing, and indexing were provided at various times by Marilyn Anderson, Joni Eastley, Julie Lancaster, Teri Jurgens Lefever, and Darlene Morse. Joni Eastley proofed all the manuscripts and often double-checked, as best as possible, the spelling of people's names and the names of their children and other relatives. Jeanne Sharp Howerton provided digital services and consultation. Long-time Pahrump resident Harry Ford, founder and director of the Pahrump Valley Museum, served as a consultant throughout the project; his participation was essential. Much deserved thanks are extended to all these persons.

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—Robert D. McCracken

2009

## INTRODUCTION

Historians generally consider the year 1890 as the close of the American frontier. By then, most of the western United States had been settled, ranches and farms developed, communities established, and roads and railroads constructed. The mining boomtowns, based on the lure of overnight riches from newly developed lodes, were but a memory.

Although Nevada was granted statehood in 1864, examination of any map of the state from the late 1800s shows that while most of the state was mapped and its geographical features named, a vast region—stretching from Belmont south to the Las Vegas meadows, comprising most of Nye County—remained largely unsettled and unmapped. In 1890, most of southcentral Nevada remained very much a frontier, and it continued to be so for at least another twenty years.

The spectacular mining booms at Tonopah (1900), Goldfield (1902), Rhyolite (1904), Manhattan (1905), and Round Mountain (1906) represent the last major flowering of what might be called the Old West in the United States. Consequently, southcentral Nevada, notably Nye County, remains close to the American frontier; closer, perhaps, than any other region of the American West. In a real sense, a significant part of the frontier can still be found in southcentral Nevada. It exists in the attitudes, values, lifestyles, and memories of area residents. The frontier-like character of the area also is visible in the relatively undisturbed quality of the natural environment, much of it essentially untouched by humans.

A survey of written sources on southcentral Nevada's history reveals some material from the boomtown period from 1900 to about 1915, but very little on the area after around 1920. The volume of available sources varies from town to town: A fair amount of literature, for instance, can be found covering Tonopah's first two decades of existence, and the town has had a newspaper continuously since its first year. In contrast, relatively little is known about the early days of Gabbs, Round Mountain, Manhattan, Beatty, Amargosa Valley, and Pahrump. Gabbs's only newspaper was published intermittently between 1974 and 1976. Round Mountain's only newspaper, the Round Mountain Nugget, was published between 1906 and 1910. Manhattan had newspaper coverage for most of the years between 1906 and 1922. The Rhyolite Herald, longest surviving of Rhyolite/Bullfrog's three newspapers, lasted from 1905 to 1912. The Beatty Bullfrog Miner was in business from 1905 to 1906. Amargosa Valley has never had a newspaper. Pahrump's first newspaper did not appear until 1971. All these communities received only spotty coverage in the newspapers of other communities once their own newspapers folded, although Beatty was served by the Beatty Bulletin, published as part of the Goldfield News between 1947 and 1956. Consequently, most information on the history of southcentral Nevada after 1920 resides in the memories of individuals who are still living.

Aware of Nye County's close ties to our nation's frontier past, and recognizing that few written sources on local history are available, especially after about 1920, the Nye County Commissioners initiated the Nye County Town History Project (NCTHP) in 1987. The NCTHP represents an effort to systematically collect and preserve information on the history of Nye County. The centerpiece of the NCTHP is a large set of interviews conducted with individuals who had knowledge of local history. Each interview was recorded, transcribed, and then edited lightly to preserve the language and speech patterns of those interviewed. All oral history interviews have been printed on acid-free paper and bound and archived in Nye County

libraries, Special Collections in the Lied Library at the University of Nevada at Las Vegas, and at other archival sites located throughout Nevada. The interviews vary in length and detail, but together they form a never-before-available composite picture of each community's life and development. The collection of interviews for each community can be compared to a bouquet: Each flower in the bouquet is unique—some are large, others are small—yet each adds to the total image. In sum, the interviews provide a composite view of community and county history, revealing the flow of life and events for a part of Nevada that has heretofore been largely neglected by historians.

Collection of the oral histories has been accompanied by the assembling of a set of photographs depicting each community's history. These pictures have been obtained from participants in the oral history interviews and other present and past Nye County residents. In all, more than 700 photos have been collected and carefully identified. Complete sets of the photographs have been archived along with the oral histories.

On the basis of the oral histories as well as existing written sources, histories have been prepared for the major communities in Nye County. These histories have also been archived.

The town history project is one component of a Nye County program to determine the socioeconomic impact of a federal proposal to build and operate a nuclear waste repository in southcentral Nye County. The repository, which would be located inside a mountain (Yucca Mountain), would be the nation's first, and possibly only, permanent disposal site for high-level radioactive waste. The Nye County Board of County Commissioners initiated the NCTHP in 1987 in order to collect information on the origin, history, traditions and quality of life of Nye County communities that may be impacted by the repository. If the repository is constructed, it will remain a source of interest for a long time and future generations will likely want to know more about the people who once resided at the site. And in the event that government policy changes and a high-level nuclear waste repository is not constructed in Nye County, material compiled by the NCTHP will remain for the use and enjoyment of all.

—R.D.M.



Interview with Troy Wade and Robert McCracken at Mr. Wade's office at the Desert Research Institute in Las Vegas, Nevada, November 18, 2008.

## CHAPTER ONE

RM: Troy, why don't we start by you giving your name as it reads on your birth certificate, and your birth date and place.

TW: My name is Troy Ernest Wade II and I was born July 18, 1934, in Cripple Creek, Colorado. I actually was named "the second" because my dad's name was Troy Wade but my mother didn't want anybody to call me "Junior."

RM: What were your dad's name and birthplace and date?

TW: My dad was Troy Wade. He was born in Waubleau, Missouri, in 1904, and came west from Missouri with his mother and father. His mother had asthma problems and had to leave the farming country in Missouri and get to a higher altitude.

RM: When did they land in Cripple Creek—or did they?

TW: They actually landed in Victor. As you know, there are two little towns that comprise the Cripple Creek District, Cripple Creek and Victor. An interesting political sidelight of our family was that my mother was born and raised in Cripple Creek and my father was raised in Victor. And that's like the North and the South [chuckles], or Reno and Las Vegas.

RM: That's right. What was your mother's full name, and when and where was she born?

TW: My mother's name was Grace Patricia Hill, and she was born in Cripple Creek in 1910. She was born and raised there. My grandfather Hill was a mining engineer of some repute, apparently, and my grandparents came to Cripple Creek right after the turn of the century, and then spent most of the rest of their lives there.

My paternal grandfather and grandmother lived in Victor. My grandfather ran an organization called the Colorado Trading and Transfer Company, which at that time hauled ore by wagon and horses and later by trucks. Grandfather Wade got to the point where he couldn't stay at that altitude anymore, so he and Grandmother Wade moved to Colorado Springs and they spent the rest of their lives there.

RM: Were your father or his father miners at any time?

TW: No. Grandfather Wade was a teamster and ran his company that hauled ore. My dad never worked in the mines; he went off to Colorado College and got a degree in business and then came back to Cripple Creek, where he did a whole variety of things. He sold insurance; he actually took over the operation of the Colorado Trading and Transfer Company from his dad.

My dad was involved in several mining ventures where he sort of put up the money. In fact, you're looking at a ring that has a "W" on it. On the inside of this ring it says, "Gold Coin Mine, 19-". . . I think it's '36. My grandfather and my father and two other gentlemen were involved on a lease in the Gold Coin Mine in Victor that did very, very well. One of the things they did was take some gold ore from that mine to a jeweler in Colorado Springs who made four rings; this is my grandfather's.

RM: So that whole ring is Cripple Creek gold.

TW: It's Cripple Creek gold and it's quite pure. My grandfather died young, in his 50s, and my grandmother Wade kept this ring for a long time and then gave it to me. When my father died my brother Bill got his ring, and it's much smaller and rounder from the wear, because the gold is quite soft. It came from the Gold Coin Mine in Victor.

RM: Did you grow up in Victor?

TW: I grew up in Cripple Creek

RM: And then, graduated from Cripple Creek High? What did you do then?

TW: I went to the University of Colorado.

RM: So did I. [Laughs] We're almost blood brothers. (As I told you earlier, my maternal grandparents lived in Victor for many years and my grandfather was at the mine there.)

TW: It seems like it. I left CU with my degree in engineering not quite finished at the time they discovered uranium in the Western Slope of Colorado. By that time I was married and I decided that the thing to do was to go over and make a few million dollars mining uranium like Charlie Steen and a bunch of others. For me, it didn't quite work out that way. But that was the intent, and so I worked in the uranium mines Then I went back to Cripple Creek and I also spent a few months in Georgetown, a little mining town on the side of Loveland Pass.

RM: Really? My brother, Mike, was born in Empire, very near Georgetown.

TW: Is that right? And then I ended up in the Four Corners area in a mine. I was actually there when I got a very strange message—over the company's radio network, as a matter of fact, because of course there weren't phones—that said I should get to a telephone at my earliest convenience and call a fellow at Reynolds Electric in Las Vegas, Nevada.

RM: What year was that?

TW: That would have been '57, I guess. It took me several days because I had to drive to Blanding, Utah, from the Four Corners area. I called this number and talked to a fellow named Johnny Elmgren. He had gotten my name from his nephew who lived in Cripple Creek and he

said to me over the telephone, "We need some people to show us how to do underground mining at the Nevada Test Site. Do you know anything about the Nevada Test Site?"

I said, "No, I don't."

He said, "I work for a company called REECo, Reynolds Electric. We're a contractor at the Test Site and we're looking for some miners. My nephew told me where you were good at what you do. We would like to meet you in Denver and interview you and, if that works out, offer you a job."

So a few weeks later, I went to Denver and met with this fellow and a couple of other guys from REECo. There were half a dozen of us from Cripple Creek; I was the youngest by far. They offered us all jobs and I arrived at the Nevada Test Site in April of 1958 and have been there ever since.

RM: My dad, Robert G. McCracken, and I arrived at the Test Site the first of July in '58 at Area 12, E-tunnel. [Laughs] He spent 20 years there and I got enough money to go back to the University of Colorado.

TW: One of the first jobs I had was portaling in E-tunnel.

RM: You mean, putting in the heading.

TW: Yes, actually. An amazing coincidence, isn't it?

RM: It certainly is. The tunnel was probably in 150 to 200 feet when my dad and I started there. And there was another tunnel—was it F-tunnel?—up above?

TW: B was up above; it was the largest operation.

RM: He worked at that and I worked at E-tunnel.

TW: F-tunnel was also up there.

RM: Yes, he also worked at F. So how did your career progress at the Test Site?

TW: Well, it's an amazing story. I started off as a mining superintendent for REECo; this was in 1958. I didn't understand the politics of the day; I didn't understand that this country, the decision-makers of this country, had made a decision to move nuclear testing underground, and that what we were doing was trying to learn how to do that. All I knew was that we had to drive these tunnels and then, early in 1958, about the time I got to the Test Site, President Eisenhower and the Soviet Premier Khrushchev shook hands on a nuclear testing moratorium that was to begin the end of October of 1958.

At that time, there was nuclear testing activity at the Test Site, some that was brought from the Pacific and some that the labs did. And I remember it was . . . I don't want to say casual, but it was remarkable to be in the heading in E-tunnel, for example, or B-tunnel, or F-tunnel, and they'd call us out and say, "We want everybody out from underground because

we're going to do a nuclear test." You'd go out there on the side of the mountain and look towards Yucca Flat, and we all had goggles and things like that, and all of a sudden, there'd be the famous mushroom cloud. We would be held there until it was clear which direction the cloud was going, then we'd go back to work. There was a lot of amazing activity, as I think back on it, that I saw in '58.

Then all of a sudden, with the meeting between Eisenhower and Khrushchev, it was over, with one device still hanging under a balloon down on Yucca Flat that they didn't get a chance to detonate because of the weather. This was October 30, 1958, and the REECo tunnel department had about 2,000 people. By February of 1959, the REECo tunnel department was about 50 people. The whole Test Site was just empty because of the testing moratorium.

There was no testing. And the United States' response to that was to shut down everything and walk away. People went back to the labs. They found REECo vehicles in Louisiana and Alabama, where Test Site workers had just taken off.

But in 1961, with three days' notice to the United States, the Soviet Union abrogated the treaty and started testing. And in the first six months they tested 50 times, which meant they'd spent the entire period of that moratorium developing their systems and getting ready, and we hadn't done anything. It was at that period of time that the Soviets caught up to us, technically. They were never quite as good or fancy as we, but they caught us in numbers.

I was one of the people that REECo kept. I had security clearance. In those days, you could get a security clearance if you were, as I was, young and had a reasonably clean record. You could get a security clearance in a matter of a couple of months; now it's a couple of years minimum, sometimes longer. I was one of about a dozen people who stayed. We started doing reentries in E-tunnel, where nuclear tests had been conducted in '58, to see what had happened. Which was, as I think back on it, a pretty dicey thing to do.

RM: I think my dad was a worker on that. I'm sure that you and I crossed paths in the summer of '58. I was just the lowest of the laborers—a chuck-tender—and you would have been an engineer, both of us walking in and out of E-tunnel.

How did you move up in the ranks—ultimately, you ended up in Secretary Herrington's office, didn't you?

TW: Yes. During this moratorium, when I was part of the crew that was doing a reentry on B-tunnel, I got a phone call from my REECo boss in Mercury that said, "Tomorrow, Troy, don't go to Area 12. Come to Mercury, because you're being reassigned to Area 410."

I said, "Where the hell's Area 410?" I'd never heard of it. So I showed up the next morning, and it turns out Area 410 is Area 27 on the great map of the Test Site.

RM: And where would that be?

TW: It's west-northwest of Mercury just a little bit and it's where Livermore was putting in all of their classified explosive facilities. I was sent over there, and I spent several months working for REECo. One day, a guy from Livermore said, "Hey, why don't you come to work for us? We're building this huge new building where we're going to do all of our high-explosive stuff, and we'd like you to come to work for Livermore."

So I quit REECo and went to work for Livermore, which was, in fact, a reduction in pay, because I was going from being a craftsman for REECo to a science technician for Livermore.

RM: But it was higher status, probably, wasn't it?

TW: Well, what it looked like to me was stability. I'd been around the construction business enough years to know there's not a lot of stability there, and this looked like stability. I worked for Livermore from 1962 until 1968, all out at the Test Site. I ended up being in charge of Livermore's Nuclear Test Device Assembly facilities, which were in Area 410. And of course, if you think back to that period of time, the '60s, that was really smack dab in the Cold War and there was a lot of stuff going on.

In 1967, there was a safety issue that had come up having to do with the safety of test devices being handled at the Test Site. Livermore assigned me to the Atomic Energy Commission in downtown Las Vegas for several months to help put together the regulations that would cover handling these things we'd been doing but were now covered by new federal regulations. The local office of the AEC was trying to comply with these federal regulations in a way that could be done at the Test Site.

So I went to the AEC as a Livermore employee and one day a guy at the AEC said, "Why don't you come to work for us?" And again, it was a cut in pay because I lost all the per diem and things associated with the Test Site. But it looked like stability.

I remember talking to my dad at the time and he said, "Let me make sure I understand it. You worked for REECo and you took a cut in pay to go to Livermore; and now you're taking another cut in pay. Where did I mislead you? You're going the wrong direction." [Laughter]

Anyway, in 1968 I went to work for the Atomic Energy Commission as a GS-13 Technical Specialist or something like that to be responsible for the nuclear test device safety effort on behalf of this office of the government. I just kept moving up and I became a branch chief and a division director and then I became one of the assistant managers for all of the defense things that were going on at the Test Site. I ended up being the federal official out there when there was a test as the person who had all of the federal responsibilities, sort of the guy with the finger on the button. (I couldn't actually push a button to set it off; computer systems were running it.)

Anyway, I then became deputy manager of this Atomic Energy Commission office, which then became ERDA, the Energy Research and Development Administration. That was, I think, a Gerald Ford creation. We went from being the Atomic Energy Commission to the Energy Research and Development Administration to the Department of Energy. I lived through all three of those changes and I got to be deputy manager of this office. My principal responsibility as the deputy was the test program. We were very busy at the Test Site. As you know, we were doing lots of tests; lots of things were going on. My boss was a fellow named Ink Gates, Mahlon Gates, who just died a few days ago. He was a retired army general.

This office of the Atomic Energy Commission had lots of responsibilities. It had everything that was going on in the Pacific—the cleanup of Bikini and Anawetok, the technical programs that were going on at Johnson Atoll and a lot of responsibilities elsewhere. I sort of looked after the test program and Ink looked after everything else.

I'd gone from miner to deputy director of the agency office. And then in 1981, when President Reagan was elected, the fellow who ran the huge AEC office in Albuquerque, Herman Roser, was appointed the Assistant Secretary of Energy for Defense Programs. That was the guy who ran the whole complex, the complex being the three labs and the Test Site and Pantex and Hanford and Oak Ridge and Savannah River and Rocky Flats; he ran all of it. Roser asked me to be his principal deputy so in 1981, we moved to Washington. We kept our house here because we believed we would be coming back. I was Herman's deputy until 1983.

And in 1983, the then-Secretary of Energy, a fellow named Don Hodel, called me to his office in the Forrestal Building in Washington and he said, "Troy, what do you know about the Idaho National Engineering Laboratory?"

I said, "Not very much. I've been up there a couple of times; I know the guy who runs the place; I know a little bit about the programs, but I really don't know very much. Why?" He said, "Because one month from now, you take it over."

And I said, "But sir, the deal was, I was going to go back to Nevada, not to Idaho." We talked about that for a little bit and I argued that I should go back to Nevada. Of course, I had a house here and I was making dual payments; I should go back to Nevada.

And I never will forget this—he said, "Your logic is just fine, Troy, except you're missing one thing."

I said, "What's that, sir?"

He said, "I'm the Secretary and you're not."

I said, "I understand that." So in '83, we moved from where we lived in Virginia to Idaho Falls, Idaho, where I became Director of the Idaho National Engineering Laboratory.

RM: When you started, you were actually down on the drills, and the mucking machines or whatever.

TW: Mucking machine—EIMCO mucking machine. So I went to Idaho, which I thoroughly enjoyed. When we went to Idaho in 1983, there were 14 operating nuclear reactors there; there was a lot of stuff going on. Today, I think there are two. But there was a lot of activity; it was a different kind of experience for me altogether. I learned about the fuel cycle, I learned about reactors, reactor safety. I learned about nuclear waste, which I knew nothing about up to that point.

And then in 1986, John Herrington was Secretary of Energy. His office called me and said, "The Secretary would like to talk to you." John Herrington said, "Troy, I'd like you to come back here and run the defense program for the balance of the Reagan Administration." He said Bob Foley, who was then the Assistant Secretary for Defense Programs, wanted to leave, "and I'd like you to come back—there's two years left in the Reagan Administration—and run this operation for the rest of it."

So off I went; and all of a sudden, I had a \$5 billion budget and three national laboratories and 18 facilities in 14 states and 80,000 employees or something like that.

RM: That's quite a success story for a guy from Cripple Creek.

TW: I've been very, very lucky.

RM: I'm sure it wasn't all luck. You must be a really good manager.

TW: Well, some people must have thought so. The other thing that is so unique about my career is that it gave me a view of this nation's nuclear programs that few people have. I saw it from the bottom and I saw it from the top. It's pretty amazing.

## CHAPTER TWO

RM: Let's branch into a discussion of Yucca Mountain. In 1975, Gerald Ford, in his State of the Union Address, called for 200 reactors in this country. The idea, I think, would be to reprocess the spent fuel. Jimmy Carter came along in '77 and said, "No more reprocessing for fear of proliferation of nuclear weapons." So that eliminated the reprocessing option.

TW: Yes, it did.

RM: Then they had to have another means of disposing of the spent fuel.

TW: And the Carter policy is still in effect today.

RM: That's right. They could put it in the ocean, which wasn't practical, or they could put it in some geological site. Tell me about when you first heard about the problem of storage of waste and how that evolved.

TW: The first I really remember getting involved in it was here in Nevada in the late '70s, when I was deputy manager, the No. 2 guy at the Test Site, and people came out from Washington to talk to us about monitored retrievable storage. This was one of the concepts, as you know, that would bring spent reactor fuel to many proposed locations around the United States for storage until somebody figured out what the appropriate long-term answer was going to be. The nuclear waste program in Washington came here and talked to us about monitored retrievable storage at the Test Site.

We actually looked at places where we could do that, and we went with the Washington people to Carson City and talked to the legislature. If you go back to that piece of history, you will find a resolution of the Nevada legislature supporting monitored retrievable storage.

That was my first association, and it was a really close-up one. Then I went to Washington, and one of the things that defense programs was doing at the time as a national program was trying to get the waste isolation pilot plant defined and started. So suddenly, I was right smack dab in the middle of WIPP and how to do it. That was a defense waste project, and there was a lot of dialog between the civilian waste people and us about whether WIPP ought to be a repository for both civilian waste and defense waste, defense waste being stuff from Savannah River and Hanford.

RM: It was high-level waste; it wasn't low-level?

TW: Well, it was high specific content; lots of plutonium in it because it was material from the reactors at Savannah River and Hanford. In terms of high residual radiation and long-lived half-lives, it was different from normal commercial fuel coming out of a nuclear power reactor. So in the early '80s, I was in the midst of the WIPP project.

Then when I went to Idaho, I learned a lot about what waste is. We had a reprocessing plant there; we reprocessed navy fuel from the submarines so we had huge facilities. So I learned about that and I learned about the different forms of waste.



Idaho was also responsible for D&D facilities; for example, the big reprocessing plant in West Valley, New York. The West Valley plant had been one of the private enterprise reprocessing plants that was under construction when Carter changed things. There was a lot of spent fuel in this facility at West Valley and we had to go there from Idaho and turn the fuel into glass logs and ship them to Savannah River for storage until there was some other solution. I learned a lot about cleanup.

When I went back to Washington in '86 as the Assistant Secretary, of course by then they had passed the Nuclear Waste Act of 1982. I wasn't involved, but as you said, they looked at deep sea disposal; they looked at launching a rocket and sending it to the sun as a disposal method. People were looking at different kinds of reprocessing, and the defense side was looking at how to secure these defense fuel elements, which had a lot of plutonium in them, because that was part of Carter's concern.

Geologic storage looked like an answer, so the '82 Act provided for exploration at different locations around the United States in different geologic media—Hanford and Nevada in tuff, and what ended up in Deaf Smith County, Texas, looking at salt. So you had three different geologic media and huge operations going on.

RM: That was after they had narrowed it from seven sites or something to three.

TW: Yes, they'd narrowed it from many sites. Interestingly enough, there were no candidate sites in the Eastern part of the United States; they were all out West.

RM: Do you think that's political?

TW: Yes, because I don't think people knew what they were dealing with and it was much easier to say "Put it somewhere else," although they weren't as sure then about why they wanted it somewhere else as they seem to be now.

And of course, then there was the 1987 amendment, the Bennet Johnson Amendment, which summarily cancelled the Hanford project and the Texas project and said it's Yucca Mountain. And it's permanent, nonretrievable storage. And of course, the politicians in Nevada just went crazy.

RM: As the bill was originally written in the '82 legislation, was that nonretrievable storage, too?

TW: I could be wrong, but my memory is that the original concept was for permanent storage; permanent nonretrievable disposal. So after other candidate sites were eliminated and the final two eliminated sort of by Senate vote, suddenly you've got the Yucca Mountain site left for permanent disposal of commercial reactor fuel and high-level defense waste.

RM: Was the singling-out of Nevada as the sole candidate a political decision, as the opponents would contend, or was it a little more objective, based on the fact, "Well, there aren't that many people here, and tuff is pretty good. It's right next to the Test Site," and so on?

TW: I think it was a little of each. I think a factor that played into it was that because of the test program, this country knew more about the geology and the hydrology of the Nevada Test Site than any other place in the United States. Part of the program at Hanford was to answer some of those questions; similarly, part of the program in Texas was to answer questions. But we had the answers here and there was already a very large source term at the Test Site; there was a lot of nuclear material buried underground as a result of the testing, nonrecoverable.

And people thought they knew, and I think correctly so, a lot about those test residues and that the probability of any path of radionuclides from the results of those tests to the general population was . . . I'm not sure anything's ever zero, but awfully close to zero.

All of this was because we knew, as a nation, a lot about the geology and the hydrology and the weather. I think the staff of the energy and water subcommittee in the United States Senate, under the guidance of Louisiana Senator Bennet Johnson, in the dark of the night, picked Nevada and put it in a bill that they took to the floor as an amendment to the '82 Act, and it passed the Senate 48 votes to two.

RM: Where was the Nevada delegation on that—were they the two?

TW: They were the two—Reid and Bryan.

RM: I was at the first meeting held at UNLV on Yucca Mountain in March or something of '83. It was the presentation of the program to the community. Don Veith, who was in charge of the project out there at that time, was there. The first speaker was Governor Bryan. He came in with a lot of pomp and announced that he was unalterably opposed to the project and then marched out with a flourish. And then a surrogate for Harry Reid, who was a congressman then, came in and announced Reid's opposition. Now, why were they against it? To me, that is one of the essential questions.

TW: I think they both opposed it from the outset because of the way it was done.

RM: And this was in '83—their initial opposition. Bryan used the word "unalterably" opposed. I took note—no open mind at all. I wondered why, at the time, he was unalterably opposed because the issue hadn't been fully explored.

TW: I don't really understand it. I think Dick Bryan—this is Troy Wade's personal opinion—supported the nuclear testing program because it was an effort important to the national defense, but he didn't like it. Nuclear waste had an evil connotation in people's minds, and certainly in Senator Bryan's mind.

I have to say, I really don't think the government handled the whole thing very well, either, because you never saw anything that looked much like a cooperative effort. The DOE just sort of said, "This is the program, and this is how we're going to do it. And Nevada citizens, we kind of hope you like it, but here it comes." There were serious discussions, ranging all the way from '83, as you will remember, well up to today, about compensation to the state for Yucca Mountain activities. But this unalterably opposed position always stood in the way of any

really significant conversations about benefits or quid pro quos, or whatever you want to call them.

RM: Well, along about in 1985 or '87, I had a conversation with Bob Loux. I was out in the communities in rural southern Nevada, and people were not opposed to Yucca Mountain. They weren't for it, either; they were basically neutral. I said to Loux, "You know, Governor Bryan is on the wrong side of this issue."

And he looked at me and gasped and said, "Are you kidding? It's the best political issue he's got."

About a year before Chic Hecht died, I interviewed him on this issue. I said, "How did Bryan and Reid know?" He said their opposition was political. I said, "How did they know that this was going to be a hot political issue?" Because it wasn't in the beginning.

And he said, "Fear always makes a great issue for a politician." Can you talk about that? Were they exploiting fear?

TW: I never heard either of them use the word "fear," but there were a lot of unknowns. And you had this whole spectrum of descriptions of what all of this meant. Waste, to a lot of people, meant a waste dump, and we all saw lots of pictures of trenches at Hanford where they literally backed up dump trucks and dumped radioactive material into trenches. That's waste, and people said, "Boy, I don't think I like that coming in my back yard." Then all of a sudden you're talking about a 44,000-year half-life (Plutonium-239). Well, the public didn't understand that. And it's pretty easy, whether you're a constitutional politician or a shade tree politician—you can describe long-lived isotopes in horrible terms. And they started to do that.

I honestly believe that the initial opposition was because Reid, and Bryan in particular, saw this as just a marvelous political issue that they could ride to reelection as long as they could make it an issue. I think it was mainly Dick Bryan I think Reid saw it after Bryan did, but it was Dick Bryan who seized upon this as an opportunity.

Bryan is a very good friend, he's been a big supporter of the Atomic Testing Museum, and we've talked a lot about this problem. He sort of went from understanding this whole issue when monitored retrievable storage was presented to the Nevada Legislature, which he supported. Then he withdrew his support and used the issue to become governor and he used the same issue in the United States Senate. In the great histories of people who have seized upon unique political opportunities for gain, I think that's going to go down in history as a very unique thing he did. And pretty soon, Harry Reid took the same position. One of the reasons I got defeated in my one run for political office, when I ran for Regent in '86, was because I was a pro-Yucca Mountain guy.

I can't tell you how many Nevada politicians I've talked to over the last 25 years—a lot, in a whole variety of different levels of Nevada politics—who have said, "Troy, I'm not really sure that I fear it or think it's the wrong thing, but I don't have any choice but to sign on to the opposition list or I won't get elected, or reelected."

I've watched people get elected to high offices in this state who have said, "By God, when I'm elected, I'm going to fix this, because I know the opposition is wrong." And they get elected and then all of a sudden, they change.

RM: Why do they change?

TW: I don't think you can overcome politics. And at the same time, the demographics were changing so rapidly that all the people who were moving to Las Vegas didn't have any defense background or any history with defense. This is a minimum wage town and minimum wage people. I'm not putting them down at all but it's hard for them to understand what you're talking about when you're saying a half-life of a radionuclide. So it's very easy if somebody says, "Oppose that because it's bad." That's good enough for them. The number of people who signed on to opposing Yucca Mountain has just increased exponentially because of the population coming in here.

RM: So you had that initial opposition from Bryan and Reid and so on, and that set the political climate?

TW: And you had Bob Miller back here as governor. He was also absolutely unalterably opposed.

RM: And then you've got a guy like Senator John Ensign. I have thought that he's pretty lukewarm on it, but that he had to go antinuclear in order to survive politically. And Barbara Vucanovich was not opposed to it, in my memory.

TW: I think that's right. I don't think Kenny Guinn was unalterably opposed, but he had to oppose it. At the beginning of his career, I don't think Harry Reid was unalterably opposed. I think he now opposes it because he has to; and certainly as the majority leader, I think he's been forced further out on the limb than he ever intended. But nonetheless, he's there. I don't think Jim Gibbons is unalterably opposed.

RM: But it would be political suicide to come out for it, wouldn't it?

TW: Well, that may be changing. It certainly has been political suicide up to now to support it. I remember when I first came back here from Washington, in the early '90s—Bob Miller was still governor. I stood with Bill Lee, who was Chairman of Duke Power, at one of the big national conferences about waste management and waste storage that they have here. (At least, they used to have it; I'm not really sure whether they do anymore.) Every year, there was a conference where people would come from all over the world to talk about the storage of high-level waste. At the one I'm talking about, Bob Miller was going to make the opening address, and I helped orchestrate a private discussion between him and Bill Lee, who was one of the most powerful and well-respected reactor guys in the country. Lee said, and I'm paraphrasing now, something like the following—"Governor, if you will support Yucca Mountain, I'll deliver 35 senators tomorrow who will sign a bill to put two more lanes on each side of the highway between Las Vegas and Anaheim." And Bob Miller said no deal.

RM: That takes me to the next point I wanted to raise—the things Nevada has lost because of the position it took on Yucca Mountain. Chic Hecht told me that Secretary Herrington called

him into his office when he was senator and said, "If Nevada will take the repository, I will build a multi-billion-dollar nuclear research facility on the Test Site to be associated with UNLV." And he said, "In a few years, it will have more Nobel Prize winners there than any institution on earth."

Chic took that message to Bob Maxim, then the President of UNLV. And Bob Maxim said, "If I supported that, I would be out of here tomorrow. No deal." Chic said it was dead on arrival. What is your reaction to that story?

TW: I don't remember details as well as you do. I certainly remember that the discussion took place between Chic and Herrington. I wasn't present, but both told me about it. Chic, in his own way, I think embellished it a little bit. He heard some things about Nobel Prize winners that Herrington didn't really say. (That was vintage Chic Hecht, by the way.)

But I think there have been lots of instances where the state passed up an opportunity to get everything from research facilities to just a bigger chunk of money that would be given to the general fund of the state of Nevada.

## CHAPTER THREE

TW: Let me talk about Troy Wade's position for a moment, because that's been very controversial, also. I am identified in the minds of most who don't know me well or don't know differently as being very pro-Yucca Mountain. That's not quite true. I have publicly stated that bringing spent reactor fuel to a mountain and sticking it in the mountain and then pumping the mountain full of cement was not the right answer for this country, whether it was Yucca Mountain or Hanford or the salt in Texas; it was the wrong answer for this country. Instead, we needed to be finding a way to reprocess.

I have argued that there needed to be an interim solution, and that storage of spent fuel, all the way back to the old discussions about monitored retrievable storage, was okay. but putting it in a mountain was not. That was my No. 1 big objection.

And my No. 2 big objection was that the State of Nevada has approached this thing the wrong way. You can't oppose anything logically by sticking your head in the sand and hoping it will go away. And I have said to senators and congressmen and governors and state legislators that the state ought to be involved in these discussions and that the university system ought to be part of all of the safety reviews that are going on.

You can still oppose bringing it here; but you ought to be participating in the discussions that are going on. Because if it ultimately ends up here, my kids and grandkids and great-grandkids and great-great-grandkids are going to have to live with the result. It ought to be an ordered decision in which Nevada participates; and we've never done that.

So my two big objections have always been that it was the wrong answer for the nation. And that rightly or wrongly, Nevada ought to be participating in all of the discussions that go on. I still believe that.

Now we've gone from permanent disposable to monitored retrievable storage, which is a move in the right direction. I applaud that move. I think spent fuel can come here and be stored temporarily at Yucca Mountain. Of course, you can't do that without changing the law, and the majority leader may not want to change the law. But what I am hoping happens is that one of the things this state will do is kind of a variant of what you talked about. I've been talking to a lot of people. We'll see what Mr. Obama and his people want to do, but I'd like to see the Nevada system of higher education take an international lead in determining what the status of reprocessing technology around the world is, and make this the focal point of research.

I believe that Senator Reid would support that; I'm pretty sure Senator Ensign would support it. Senator Reid has said, however, "I will have nothing to do with a reprocessing facility."

And I have said to him, "I'm not sure you and I, Senator, are going to live long enough to see a reprocessing facility built. But we can certainly be the lead in this country for the technology." And I think we can do that. People are already talking with university people and federal people and Test Site contractor people about that.

RM: That's wonderful. There's a beginning of that with Tony Hechanova's operation here, isn't there?

TW: Yes, that's a piece of it. And the university has just reorganized the Harry Reid Center. The fellow who was running it, Klaus Stetzenbach, has retired. They've reorganized and they're going to make the Harry Reid Center a true operating part of the research at UNLV, which it hasn't been; it's kind of been off to the side. Tony's been viewed by some as good and viewed by others as bad, but Dr. Ashley, Provost Neil Smatresk, and Vice President for Research Ron Smith want to move the Harry Reid Center back into the mainstream of UNLV research, and that's perfect.

RM: So you think we have a shot at making this an international center for research of this kind?

TW: Well, I hope so. Bob, I tell people that if the President of the United States said today, "Look, I'm changing the policy. We are going to reprocess and I want us to begin today on a reprocessing plant," as a nation, we have no idea what to build. I ran this nation's last reprocessing technology facility in Idaho in '83, which was 1970s technology. We need to go see what the French are doing, what the United Kingdom is doing, what the Japanese are getting ready to build, what the Soviets have built, and what the Chinese have built. We need to find out what's the best of that.

Identify the technology and then do some bench kind of experiments. If that works, then go out to the Test Site and do pilot plant kinds of experiments with the real material, because you can do that at the Test Site. And then build a reprocessing plant in downtown Chicago, if you want. But at least, we will have been part of all of the technology development.

RM: And Reid isn't going to stay in power forever.

TW: No. And I think he would support that.

RM: Is there a pilot program for reprocessing at Oak Ridge now? It seems that somebody told me they got \$4 million to build a little model or something. Am I right on that?

TW: People are fiddling with it all over. The Las Vegas paper this morning said that UNR just got \$2 million to look at the performance of a particular constituent of a reprocessing technology. Tony's getting a little money. Argonne Lab thinks they've got a technology. I'm not sure about Oak Ridge, but I wouldn't be surprised. Everybody's got one.

RM: Well, we need to be drawing this together, as you say, don't we—internationally?

TW: Yes, we need to find out what's the state of the art and we don't know that. There are people that will tell you that I'm wrong—that we do know the state of the art. I've got to see it, and I want Nevada to participate. I want UNLV to be a leader I think almost any reasonable elected official knows that we have to build some reactors. As a country, we have no choice. They do a lot of arm-waving about solar and windmills, but deep down in everybody's heart, deep down in Harry Reid's heart, he knows that that's not the answer to the national problem.

There is only one answer, and that's reactors. There are some 60 applications lying on the NRC's desk to build new reactors.

RM: And not even one from Nevada; that's what upsets me. We ought to be talking about at least one damn reactor here.

TW: I think part of the problem here is we don't have enough water for it.

RM: General Atomic has a water-free one, supposedly.

TW: It's a gas reactor, yes. Today's big problem is that, literally interpreted, as I understand it—and I'm certainly not a lawyer—the Nuclear Waste Policy Act as amended prohibits licensing nuclear plants unless there is a clear plan for that plant's handling of spent fuel.

RM: They're talking 30 new plants now. How are they going to build them?

TW: I think you can go to regional storage. And I think part of the answer is to make Yucca Mountain a major interim storage facility. Now, to do that the quid pro quo is this big research center that I want built.

RM: My ultimate focus and my deepest love for Nevada is in Nye County, because that's where a lot of my roots are and so on. I'm trying to think of ways to make Nye County a place where people's kids don't have to go somewhere else to earn a living, basically, without urbanizing the place. Can Nye County play a role in this? To me, the Test Site is a perfect place for reprocessing.

TW: If you take the steps that go from calculations on the blackboard to bench scale to pilot plant, it's not a much bigger step to the reprocessing plant. If we can get through the first three steps, Senator Reid will be gone; I'll be gone. . . .

RM: And I'll be gone.

TW: You'll be gone. But you don't have to be a famous rocket scientist to say, "Here's the place." [Chuckles] If you turn Yucca Mountain into an interim storage thing, you have to have the railroad and that's where Nye County comes in. There was a time a couple of years ago when my son was responsible for planning all of the facilities associated with the repository. And there are lots of railroad facilities that could be built in Nye County; there are railroad repair facilities; there are truck facilities.

Also, I've been working with Bob Swadell and Vicki Hafen-Scott on the educational center in Nye County that would train all of the radiation technicians you would need. You could train everything from cooks to locomotive engineers if you wanted, all in Nye County. But we've got to find a way to move it ahead, first.



I think Obama may be the right guy. I don't know if the system will support him, but he's the right guy to say, "Look, we've got to go solve this problem." There're 17 reactors in Illinois so his state is one of the ones that has this problem sitting right in their back yard.

RM: Yes, that's a hopeful sign, I think. Because there is all this storage on some 50 sites around the country where the fuel is sitting out. To me, talk about hazard!

TW: There are 103 reactors, which are all targets of some kind, or potential targets. I don't know if the number's 50, but there are certainly sites around the country that have reactors that have lots of fuel that's just in storage out on the surface. One of the solutions people are talking about are regional interim storage centers. Still, you can make an argument that having 15 or 20 locations around the United States where you're storing spent nuclear fuel presents a greater hazard to the general public than having it all underground at Yucca Mountain.

RM: Oh, I don't think there's any comparison.

TW: Whether that will play or not, I don't know, Bob.

RM: I think there's a natural constituency out there of the politicians in the states where the fuel is currently in temporary storage that can't be happy with that situation. If you've got a big temporary storage site near Chicago, let's say, that, to me, is a heck of a lot more vulnerable than Yucca Mountain would be in terms of terrorists and whatnot. And the politicians from those states ought to be a natural constituency to bring forward the kind of thing you're talking about.

TW: Well, I hope they are. But the President of the United States has to say, "This is something that we need to do as a national commitment." By the way, I'm a Republican, but I think Obama could probably deal with this problem nationally almost better than McCain could have. I think the President of the United States is going to have to say, "Look, we have a national crisis looming in energy requirements and we sure can't solve it by buying more Saudi Arabian oil. So let's go deal with this nuclear waste issue straightaway head on." Maybe it's regional storage, but the ultimate answer has got to be reprocessing.

RM: I would like to return to President Ford's suggestion of 200 reactors. I'm not sure if he was talking about 200 total or 200 more in '75, but I think we need 300 reactors in this country, and that way we'd be getting about 60 percent of our power from nuclear.

TW: I hope one of the positive things that happens out of this economic disaster that we're all living through, is that . . . you and I grew up as Depression kids; certainly I wasn't adversely affected by it—my family wasn't standing in the breadlines in Chicago—but one of the things that Mr. Obama's administration could do is a WPA-like thing.

Another one of our problems is transmission capability. You can't build 200 plants if you don't have any way to "wheel" the power. I'd like to see a WPA-like project that says, "Hey,

we're going to go along the interstate highway system and build government-owned transmission systems, high-voltage transmission systems, all across the country."

RM: Yes. Has Nevada gained anything from its opposition? Just to present both sides of the story, what have we gained, if anything, in your view?

TW: I don't know that we've gained anything at all. I regret that, but I don't think we have. There are a few bucks that go to the university system—DRI has some of it to do Yucca Mountain-related research. I supposed you could view that as a positive, but it's so small it's insignificant.

RM: Nye County and some of the other counties get a little money, but it's chickenfeed compared to what we could have. As we wind up this discussion, how do you see the future of nuclear power? You've kind of touched on it, but. . . .

TW: I think we, as a country, are going to have to rely on nuclear power as the next generation of electrical energy supply. It's not coal-fired plants because of the pollution; it certainly shouldn't be foreign oil. But somehow, we've got to convince the American public that we know how to build nuclear plants safely and we know how to store spent fuel safely.

And we do, but we're not going to tell that story, I don't think, unless this whole thing becomes a presidential initiative that sort of forces the country to look at it and understand what reactors are. There's an existing nuclear facility in Texas that's very likely to be the first to have additional plants licensed. And along with that license needs to be a great national educational program. I've talked about that with NEI. Nobody quite knows how to do it, but everybody knows that it's not going to be done unless the President says it needs to be done.

RM: Aside from just saying it, what would be the President's thoughts on how to educate the public? To me, that was the great failure of DOE, that they didn't educate Nevadans on Yucca Mountain.

TW: In fact, they did the wrong thing. The whole big public relations thing they did here where they had people on television holding what they said was a piece of plutonium and saying it was okay, and it was a disaster. It did more damage than it did good.

RM: If you were given the authority now, what would you do to initiate an education program?

TW: I'd start putting out a lot of data on what's happening at the existing plants in the United States. Look at the safety record of those plants and look at the problems—and they've had very, very few problems. They're all running well and they're all running efficiently, and nobody knows that. There's a huge set of data that you could begin to use that says nuclear power is safe, and here's the proof NEI could do that if they wanted to.

RM: Maybe they could be convinced by a contractor or something

TW: I think they are convinced I think they knew that George Bush's interest was elsewhere, and there was no use in talking to Cheney about this problem. NEI is supposed to be the voice of the industry, and they haven't been. They've got the right people and they know how to do it.

RM: We need to point to the French, too. And there was a wonderful article in the New York Times this Sunday on the big plant being built on an island off Finland. They've already got two reactors there and most people like it; the program is very successful.

TW: One of the principals in the new Yucca Mountain contractor is Areva, the French company. They're one of the three participants in the joint venture. It's URS and Shaw and Areva. So we have the French here.

RM: Is that right? Well, thank you very much for this interview.

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