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Western Mining in the Twentieth Century Oral History Series

HOMESTAKE MINE WORKERS, LEAD, SOUTH DAKOTA, 1929-1993

Interviews with
Clarence Kravig,
Wayne Harford,
and Kenneth Kinghorn

Interviews Conducted by
Eleanor Swent
in 1993

Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the Nation. Oral history is a modern research technique involving an interviewee and an informed interviewer in spontaneous conversation. The taped record is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The resulting manuscript is typed in final form, indexed, bound with photographs and illustrative materials, and placed in The Bancroft Library at the University of California, Berkeley, and other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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HOMESTAKE MINE WORKERS, LEAD, SOUTH DAKOTA, 1929-1993, 1995, xi, 131 pp.

Clarence Kravig (1906-1994), Homestake Mine geologist, 1929-1941, discusses geologic planning, superintendency of the mine, 1941-1962, impact of WWII; modernizing the mining system as assistant general manager, 1963-1971: introducing Atlas-Copco drills, unionization, home ownership in Lead, reclaiming Gold Run Creek, developing bacteria to remove cyanide, Ku Klux Klan and Anti-Catholicism. Wayne Harford (b. 1930), discusses cage hoist operation, safety and maintenance issues, and substance abuse, 1949-1990. Kenneth Kinghorn (b. 1947), miner, electrician, member mine rescue team, drift supervisor, discusses mining methods and practice, safety, equipment, 1966-1993.

Interviewed in 1993 by Eleanor Swent for Western Mining in the Twentieth Century Oral History Series. The Regional Oral History Office, The Bancroft Library, University of California, Berkeley.

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PREFACE

The oral history series on Western Mining in the Twentieth Century documents the lives of leaders in mining, metallurgy, geology, education in the earth and materials sciences, mining law, and the pertinent government bodies. The field includes metal, non-metal, and industrial minerals, but not petroleum.

Mining has changed greatly in this century: in the technology and technical education; in the organization of corporations; in the perception of the national strategic importance of minerals; in the labor movement; and in consideration of health and environmental effects of mining.

The idea of an oral history series to document these developments in twentieth century mining had been on the drawing board of the Regional Oral History Office for more than twenty years. The project finally got underway on January 25, 1986, when Mrs. Willa Baum, Mr. and Mrs. Philip Bradley, Professor and Mrs. Douglas Fuerstenau, Mr. and Mrs. Clifford Heimbucher, Mrs. Donald McLaughlin, and Mr. and Mrs. Langan Swent met at the Swent home to plan the project, and Professor Fuerstenau agreed to serve as Principal Investigator.

An advisory committee was selected which included representatives from the materials science and mineral engineering faculty and a professor of history of science at the University of California at Berkeley; a professor emeritus of history from the California Institute of Technology; and executives of mining companies.

We note with much regret the death of three members of the original advisory committee, all of whom were very much interested in the project. Rodman Paul, Professor Emeritus of History, California Institute of Technology, sent a hand-written note of encouragement just a few weeks before his death from cancer. Charles Meyer, Professor Emeritus of Geology, University of California at Berkeley, was not only an advisor but was also on the list of people to be interviewed, because of the significance of his recognition of the importance of plate tectonics in the genesis of copper deposits. His death in 1987 ended both roles. Langan Swent delighted in referring to himself as "chief technical advisor" to the series. He abetted the project from its beginning, directly with his wise counsel and store of information, and indirectly by his patience as the oral histories took more and more of his wife's time and attention. He completed the review of his own oral history transcript when he was in the hospital just before his death in 1992.

Thanks are due to other members of the advisory committee who have helped in selecting interviewees, suggesting research topics, and raising funds.

Unfortunately, by the time the project was organized several of the original list of interviewees were no longer available and others were in failing health; therefore, arrangements for interviews were begun even without established funding.

The project was presented to the San Francisco section of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) on "Old-timers Night," March 10, 1986, when Philip Read Bradley, Jr., was the speaker. This section and the Southern California section provided initial funding and organizational sponsorship.

The Northern and Southern California sections of the Woman's Auxiliary to the AIME (WAAIME), the California Mining Association, and the Mining and Metallurgical Society of America (MMSA) were early supporters. Several alumni of the University of California College of Engineering donated in response to a letter from Professor James Evans, the chairman of the Department of Materials Science and Mineral Engineering. Other individual and corporate donors are listed in the volumes. The project is ongoing, and funds continue to be sought.

Some members of the AIME, WAAIME, and MMSA have been particularly helpful: Ray Beebe, Katherine Bradley, Henry Colen, Ward Downey, David Huggins, John Kiely, Noel Kirshenbaum, and Cole McFarland.

The first five interviewees were all born in 1904 or earlier. Horace Albright, mining lawyer and president of United States Potash Company, was ninety-six years old when interviewed. Although brief, this interview will add another dimension to the many publications about a man known primarily as a conservationist.

James Boyd was director of the industry division of the military government of Germany after World War II, director of the U.S. Bureau of Mines, dean of the Colorado School of Mines, vice president of Kennecott Copper Corporation, president of Copper Range, and executive director of the National Commission on Materials Policy. He had reviewed the transcript of his lengthy oral history just before his death in November, 1987. In 1990, he was inducted into the National Mining Hall of Fame, Leadville, Colorado.

Philip Bradley, Jr., mining engineer, was a member of the California Mining Board for thirty-two years, most of them as chairman. He also founded the parent organization of the California Mining Association, as well as the Western Governors Mining Advisory Council. His uncle, Frederick Worthen Bradley, who figures in the oral history, was in the

first group inducted into the National Mining Hall of Fame, Leadville, Colorado, in 1988.

Frank McQuiston, metallurgist, vice president of Newmont Mining Corporation, died before his oral history was complete; thirteen hours of taped interviews with him were supplemented by three hours with his friend and associate, Robert Shoemaker.

Gordon Oakeshott, geologist, was president of the National Association of Geology Teachers and chief of the California Division of Mines and Geology.

These oral histories establish the framework for the series; subsequent oral histories amplify the basic themes.

Future researchers will turn to these oral histories to learn how decisions were made which led to changes in mining engineering education, corporate structures, and technology, as well as public policy regarding minerals. In addition, the interviews stimulate the deposit, by interviewees and others, of a number of documents, photographs, memoirs, and other materials related to twentieth century mining in the West. This collection is being added to The Bancroft Library's extensive holdings.

The Regional Oral History Office is under the direction of Willa Baum, division head, and under the administrative direction of The Bancroft Library.

Interviews were conducted by Malca Chall and Eleanor Swent.

Willa K. Baum, Division Head
Regional Oral History Office

Eleanor Swent, Project Director
Western Mining in the Twentieth
Century Series

December 1993
Regional Oral History Office
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Interviews Completed, December 1994

- Horace Albright, Mining Lawyer and Executive. U.S. Potash Company. U.S. Borax. 1933-1962, 1989
- Samuel S. Arentz, Jr., Mining Engineer. Consultant. and Entrepreneur in Nevada and Utah. 1934-1992, 1993
- James Boyd, Minerals and Critical Materials Management: Military and Government Administrator and Mining Executive. 1941-1987, 1988
- Philip Read Bradley, Jr., A Mining Engineer in Alaska. Canada. the Western United States. Latin America. and Southeast Asia, 1988
- Catherine C. Campbell, Ian and Catherine Campbell. Geologists: Teaching. Government Service. Editing, 1989
- William Clark, Reporting on California's Gold Mines for the State Division of Mines and Geology. 1951-1979, 1993
- James T. Curry, Sr., Metallurgist for Empire Star Mine and Newmont Exploration. 1932-1955: Plant Manager for Calaveras Cement Company. 1956-1975, 1990
- J. Ward Downey, Mining and Construction Engineer. Industrial Management Consultant. 1936 to the 1990s, 1992
- Hedley S. "Pete" Fowler, Mining Engineer in the Americas. India. and Africa. 1933-1983, 1992
- James Mack Gerstley, Executive. U.S. Borax & Chemical Corporation: Trustee. Pomona College: Civic Leader. San Francisco Asian Art Museum, 1991
- John F. Havard, Mining Engineer and Executive. 1935-1981, 1992
- George Heikes, Mining Geologist on Four Continents. 1924-1974, 1992
- Helen R. Henshaw, Recollections of Life with Paul Henshaw: Latin America. Homestake Mining Company, 1988
- Homestake Mine Workers. Lead. South Dakota. 1929-1993, interviews with Clarence Kravig, Wayne Harford, and Kenneth Kinghorn, 1995
- Lewis L. Huelsdonk, Manager of Gold and Chrome Mines. Spokesman for Gold Mining. 1935-1974, 1988
- James Jensen, Chemical and Metallurgical Process Engineer: Making Deuterium. Extracting Salines and Base and Heavy Metals. 1938-1990s, 1993

- Arthur I. Johnson, Mining and Metallurgical Engineer in the Black Hills: Pegmatites and Rare Minerals. 1922 to the 1990s, 1990
- Evan Just, Geologist: Engineering and Mining Journal, Marshall Plan, Cyprus Mines Corporation, and Stanford University. 1922-1980, 1989
- Robert Kendall, Mining Borax. Shaft-Freezing in Potash Miners. U.S. Borax, Inc.. 1954-1988, 1994
- Clarence Kravig, Wayne Harford, Kenneth Kinghorn, Homestake Mine Workers. 1929-1993, 1994
- Plato Malozemoff, A Life in Mining: Siberia to Chairman of Newmont Mining Corporation. 1909-1985, 1990
- James and Malcolm McPherson, Brothers in Mining, 1992
- Frank Woods McQuiston, Jr., Metallurgist for Newmont Mining Corporation and U.S. Atomic Energy Commission. 1934-1982, 1989
- Gordon B. Oakeshott, The California Division of Mines and Geology. 1948-1974, 1988
- Vincent D. Perry, A Half Century as Mining and Exploration Geologist with the Anaconda Company, 1991
- Carl Randolph, Research Manager to President. U.S. Borax & Chemical Corporation. 1957-1986, 1992
- John Reed, Pioneer in Applied Rock Mechanics. Braden Mine, Chile. 1944-1950; St. Joseph Lead Company. 1955-1960; Colorado School of Mines. 1960-1972, 1993
- Joseph Rosenblatt, EIMCO. Pioneer in Underground Mining Machinery and Process Equipment. 1926-1963, 1992
- Eugene David Smith, Working on the Twenty-Mule Team: Laborer to Vice President. U.S. Borax & Chemical Corporation. 1941-1989, 1993
- James V. Thompson, Mining and Metallurgical Engineer: the Philippine Islands: Dorr, Humphreys, Kaiser Engineers Companies: 1940-1990s, 1992

Interviews In Process

Donald Dickey, Oriental Mine
 Robert Haldeman, Braden Copper Company, Chile
 Wayne Hazen, metallurgical research
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INTERVIEW HISTORY--Homestake Mine Workers

Clarence Kravig, Wayne Harford, and Kenneth Kinghorn were selected for the series on Western Mining in the Twentieth Century because of their long-term employment in key jobs at the Homestake Mine in Lead, South Dakota. They were also chosen because I had known them well for many years and realized that they enjoyed their work and appreciated its importance. In many of the years when Kravig was superintendent, Harford was hoist operator, and Kinghorn was a top miner, the Homestake Mine, already nearing one hundred years of production, was billed as the largest gold mine in North America. (The Bingham Canyon Mine in Utah sometimes produced more gold, but it was considered a by-product of copper.) As Homestake extended downward, it became the deepest mine. Under the leadership of such men as Kravig and Kinghorn, it also had an exemplary safety record.

During the sixty-four years covered by these interviews, 1929-1993, the company passed from the era of extreme paternalism to unionization. Both Harford and Kinghorn belonged to the United Steelworkers union. Clarence Kravig's care for the men who worked for him is evident in his account of introducing new equipment and mining methods. Attitudes toward training also changed in this period. Whereas Kravig struggled to prove to self-taught bosses that a university education could have practical benefits underground, by the 1980s Kinghorn's college education did not subject him to ridicule in the mine.

Clarence Kravig came to Lead in 1929 as a young geologist, and later married my teacher, Myrtle Larson, who became my mother's lifelong friend. Myrtle also became a recognized expert on Black Hills botany, publishing books on the subject, and in much demand as a speaker on native plants. Clarence taught me to ski when I was a child. In time he became mine superintendent and assistant general manager of the mine, a friend and colleague of both my father and my husband.

Kravig had access to early papers of George Hearst, and wrote to me in a letter, "I just re-read the George Hearst letters but I find little to quote. The letters told of the problems acquiring mining property and water rights and they clearly show his faith in the future of the Homestake ore deposit. I'll just quote one comment as it indicates the difficulty of doing business in a lawless mining camp. [The Homestake claim dated from 1776.] 'But you can bet your life I have made up my mind to fight the thing out and the old line at all hazards as it shows the most damnable frauds ever perpetuated in any country. I will hurt a good many people as I wrote you if we succeed in finding out the fraud and maintain our rights there would be more squealing than ever was heard of before. And it is quite possible that I may get killed but if I should, I can't but lose a few years and all I ask of you is to see that

my wife and child gets all that is due them from all sources and that I am not buried in this place.' Ah, yes, I used to play chess with Chambers Kellar; and yes, what a chess game I have played with Homestake Mining Company."

Wayne Harford retired in 1990 after forty-one years with Homestake, including his military service with the South Dakota National Guard during the Korean war. He was born in eastern South Dakota, and came to Lead looking for a job after graduating from high school. Most of his career was as a hoist operator, raising and lowering men, materials, and ore in the mine. For sixteen years, 1962 to 1978, he was cage hoist operator at the Yates shaft. I first met him in 1955 when we both lived in Lead, and our children attended Sunday School together. I moved away after a few years, but my mother continued to live in Lead until her death in 1991 at the age of ninety-five, so I visited there often and continued my friendship with the Harford family.

I met Kenneth Kinghorn in 1980 when he bought the house next door to my mother. Her successful long life in her own home was in large part due to the care given to her by the Harfords and the Kinghorns. Kenneth Kinghorn's employment with Homestake began in 1966 when he was a full-time college student in addition to working thirty-two hours a week as a laborer. His father Alvin and brother Patrick were also among Homestake's most valued mine workers. Both brothers have won awards as mine rescue team members. After more than ten years as a contract miner, Kenneth worked for four years as an electrician, for a year and a half in the safety department, and most recently was supervisor of a major exploratory extension of the mine known as the North Drift.

It was a deep personal pleasure for me to document the work of these three men. Their jobs demanded strength, skill, and judgment; above all, bearing the responsibility of many other lives. All three men merited the trust given to them. Outsiders often find it difficult to understand why people are attracted to mining. I believe that one reason is the feeling of fraternity and vital interdependence. These men, with their varied backgrounds and personalities, share a fundamental integrity which I hope comes through as they describe their work.

The interviews were conducted in the fall of 1993 when I was in Lead to attend a high school class reunion. I interviewed Wayne Harford at his beautiful home near Nemo, South Dakota, set in woods of spruce and birch, overlooking a pond where deer and wild turkeys come to drink. I interviewed Kenneth Kinghorn in the kitchen of his home which had happy memories for me dating back some fifty years. I interviewed Clarence Kravig in the apartment of dear mutual friends.

Harford and Kinghorn reviewed their transcripts and returned them with a few helpful corrections. Kravig, in reviewing his transcript,

took the opportunity to research the Ku Klux Klan in Lead, consulting his friend, retired South Dakota Supreme Court Justice Alex Rentto, and local documents. He also added important information on changes in mining to improve production and safety. The two photographs of Homestake officials were supplied by him. To my great regret, he died of a heart attack on 7 November 1994, before the formal presentation of the oral history at the meeting of the San Francisco section of SME-AIME on 11 January 1995.

The tapes of the interviews are deposited and available for study in The Bancroft Library, University of California at Berkeley.

Eleanor Swent, Interviewer/Editor
Western Mining in the Twentieth
Century Oral History Series

May 1994
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Homestake Mine Workers, Lead South Dakota, 1929-1993

Clarence Kravig

FROM GEOLOGIST TO ASSISTANT MANAGER, 1929-1971

Interview Conducted by
Eleanor Swent
in 1993

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Homestake directors underground trip, October 2, 1964, photograph taken at Yates Shaft. Back row: Directors John R. Kiely, James O. Harder, John K. Gustafson, Ira Joralemon, James O. Salisbury. Second row: Directors Robert Mulvaney, Kenneth Kellar, Donald H. McLaughlin, Dimitri Vedensky, Charles Park. Front row: mine staff members Donald Delicate, Archie Slaughter, Joel Waterland, Clarence Kravig.



At the Ellison Shaft, Homestake Mine, Lead, South, c. 1931. Donald H. McLaughlin, consulting geologist; Edward H. Clark, president, Homestake Mining Company; Alexander J. M. Ross, mine superintendent; Clarence N. Kravig, geologist.

I EARLY YEARS; GEOLOGY STUDENT AT UNIVERSITY OF MINNESOTA

[Date of Interview: September 18, 1993]###¹

Swent: Let's begin with where and when you were born, where you went to college, and how you came to work for Homestake.

Kravig: I was born and raised on a farm in Minnesota. I was born back in March 1906, so I'm eighty-seven-and-a-half years old. I'm getting to be one of the old-timers around now.

Swent: You certainly don't look it.

Kravig: I graduated from the university in Minnesota as a geologist.

Swent: How did you happen to study geology?

Kravig: I started out to take business, but some of my professors had frayed suits, and I didn't see that they were too prosperous. A good friend of mine was in geology, and he talked me into changing; so I changed to a geology course. It took me a little extra time that way, because I lost a little time changing courses.

Swent: When did you finish?

Kravig: I finished in 1929. The last six weeks of my senior year was a field trip to the Black Hills.

Swent: Who were the teachers who accompanied you on the field trip?

¹### This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

Kravig: William Emmons was the dean of the geology department at the University of Minnesota. He accompanied us on the field trip for the first few days, and Professor George Schwartz was another professor.

Swent: Some of your professors were quite famous, weren't they?

Kravig: Oh, yes, especially Dr. Emmons, both in ore deposits and petroleum geology. We came out here on the field trip on May 1, 1929. Amongst other things I was mapping some structural geology in the Bingham Tunnel, sometimes known as the Hidden Fortune Mine. This was an underground mine called the Bingham Tunnel, and I was mapping structural geology. Professor Schwartz came up to me one day and said, "I guess you'll be doing a lot of this from now on."

I said, "How so?"

He said, "You have a job with Homestake if you want it."

Did I want it? Of course! In summer of 1929, jobs were pretty hard to get, even though the stock market crash didn't occur until October. There were seventeen in my geology class, and only half of them got a job that year. So I was very happy to take the job. I was told to report to Lawrence Wright, the chief geologist, as soon as the field trip was over.

When the field trip was over on June 9, I was told to report to the employment office. Bill Royce was the employment manager. In those days most mines, not only Homestake, ran like little kingdoms; each department head was a czar unto himself. The mine department made all the decisions that he pleased in the mine, the mechanical department made all the decisions in the mechanical department, and metallurgy made all the decisions there, without much consulting with anybody. They kept the general manager informed. This was true of Homestake, but not only Homestake. It was true in Calumet, Michigan, and it is my understanding that it was true that all of the mining camps operated that way. Each department was sort of a kingdom of its own, and it caused schisms once in a while between departments, because there certainly was a lack of cooperation at Homestake.

At any rate, Bill Royce was the employment manager, and he liked to act like the king of his department. On June 10 I came in to report for work, and he said, "Why weren't you here rustling?" There used to be men rustling every day by the hundreds, and if you weren't there at a certain time of the day, you were out of luck. You had to be there at rustling time. Well, here I came at 10 o'clock in the morning, which wasn't rustling time, since I had never even heard of "rustling time". I

said that I already had a job and explained that Lawrence Wright told me to come in and get on the payroll and get the paperwork done. Royce turned on his heel and walked out of the office and let his assistant, Mrs. Stoner, take care of me. She got the paperwork done.

II HOMESTAKE MINE GEOLOGIST, 1929-1941

Surveyor's Helper

Kravig: At the time, Lawrence Wright, the chief geologist, was on an exploration trip in California, so I was told to report to the mine survey to work so that I could learn my way around the mine. I worked as a surveyor's helper for several months.

Swent: What were you paid?

Kravig: I got the sum of \$125 a month, which was pretty good pay for an engineer at that time.

Swent: Do you remember what you paid for board and room?

Kravig: Oh, yes. I ate at Susie Jorgensen's boarding house, \$30 a month for board. I and seven or eight of my classmates stayed at Mrs. Regan's for \$10 a month for a room. Jane Seely, the wife of Charlie Seely, owner of the Seely drugstore, took the rest of my classmates. Mrs. Regan was a daughter of a former assistant general manager, Richard Blackstone, and she married Dan Regan. Mrs. Regan and Mrs. Seely were quite socialized, and they didn't need the money. They each took about half of the class of Minnesota students as roomers. Seven or eight of us stayed at Regan's, and another seven or eight stayed at Seely's.

Swent: You were all hired by Homestake?

Kravig: No, this was during the field trip. I was the only one hired by Homestake; after the field trip was over I still stayed at the boarding house and had room and board.

Swent: Who was your boss then?

Kravig: Ted Houston was chief underground instrument man. He was the transit man. Another one was Alfred Rogers. Of course, they had to have helpers to hold one end of the tape, et cetera. Surveyors' helpers had to do all the climbing of ladders and do the leg work, so to speak, while the instrument men ran the transits. But I learned the mine.

Swent: These people that you were working under were not as well trained as you were, then?

Kravig: No. I learned from my geology courses at the University of Minnesota and mining magazines that Homestake was a famous low-grade gold mining operation, but when I came here I found out that just wasn't true. It was a very high-grade mine, but they knew so little about geology that they mined as much waste rock as they did ore, and you had about 100 percent dilution. So the grade added up very low for all publications. Actually, the gold was selling for \$20.67 an ounce at that time, and average grade was about \$4 a ton. So that would be about a fifth of an ounce per ton, which was considered quite low grade. But actually the individual samples contained a half ounce to one ounce gold and quite often high grade free gold specimens were encountered, but it was diluted with so much waste rock. George Hearst reported in several of his letters that they recovered gold at the rate of \$14 to \$15 per ton, which was well over one-half ounce per ton. It was quite obvious to me that they were certainly lacking in technology, certainly in geology.

Schism with the "Alaska Crowd"

Swent: What about Lawrence Wright?

Kravig: Lawrence Wright was hired in 1919 as a laborer in the mine. But there seemed to be a schism between the mine and what was called the "Alaska crowd". I was told that once when master mechanic Royal R. Pullen and Alec Ross met, Mr. Pullen was headed for the shaft, and Alec Ross informed him, "When I need you, I'll call for you." That was quite blunt talk. Hardly on speaking terms between certain departments.

[added later]

Following is a quotation from Mr. Wright's book Fifty Years of Exploration, 1975, page 36: My introduction to Homestake came late in 1919 and it wasn't a pleasant one. In order to get on the payroll at all I had to

take a menial job in the mine; that was all that Russ Wayland (assistant general manager) had promised me since there were many local young men returned from the war who filled local jobs. On my first day at the head of the Ellison shaft, ready to go underground, I overheard this remark, "There's another son-of-a-bitch from Alaska." I judiciously held my fire and wondered why such a remark should be made. Then it occurred to me that Russell Wayland as assistant general manager, J.D. Johnson (my classmate) as chief engineer, Royal R. Pullen (classmate) as chief mechanic, and Guy Johnson (classmate) as safety engineer, all now employed at Homestake, all University of Washington and ex-Treadwell men were suddenly on the Homestake staff! My conclusion was that they resented this invasion of "foreigners".

Swent: Royal Pullen was one of the Alaska people?

Kravig: Yes. Pullen was the master mechanic. They call them mechanical engineers now, but at that time they called them master mechanics. He was running the mechanical department. Lawrence Wright was chief geologist, and Jack Johnson was chief engineer. When I went to work in 1929, Guy Johnson had already left; he was the safety engineer.

Swent: You'll have to explain what you mean by the "Alaska crowd."

Kravig: The Alaska Treadwell mine was flooded by the ocean in 1917. They mined underneath the Gastineau Channel. They had left some pillars to support the ground; they knew they were mining underneath the ocean. There were some high-grade pillars there, and as I understand it they mined the pillars and did not replace them with adequate supports. The mine caved in and filled the mine with sea water in just a matter of a few hours. Actually, the men all got out without a loss of life. Mr. Russell G. Wayland was manager at that time out there, and I understand he was on the last cage coming out of the Alaska Treadwell.¹

Of course, that shut the mine down, and Mr. Wayland got a job as assistant general manager here for Homestake. Obviously he recognized the need for technology, and he must have been responsible for getting the other Alaska people jobs at Homestake:

¹For further information on the Alaska Treadwell Mine, see the oral history of Philip Read Bradley, Jr., A Mining Engineer in Alaska, Canada, The Western United States, Latin America, and Southeast Asia, Regional Oral History Office, University of California, Berkeley, 1988.

Lawrence Wright who later became chief geologist, Jack Johnson as chief engineer, Royal Pullen as master mechanic, Guy Johnson as safety engineer, and a fellow by the name of Peterson, who was a mine foreman. They became known as the Alaska crowd to the local mining people here.

Swent: Were these all people who had some university training?

Kravig: They were all university graduates excepting Peterson, the mine foreman. Pullen, Johnson, and Wright were graduates of the University of Washington, but I don't know what university Wayland had attended.

It was obvious to me, and it must have been obvious to Wayland, that Homestake was weak in technology.

Swent: They did have university graduates in the metallurgical department.

Kravig: Yes, before Wayland's arrival they did have college graduates in charge of the metallurgical department, Mr. Allen J. Clark, chief metallurgist, and chief chemist Mr. Nathaniel Herz. They were the only two college graduates up until the time Wayland arrived, to the best of my knowledge.

[added later]

On July 10, 1930, a fire occurred in the Ellison shaft headframe. I was a geologist at that time so I had no part in it but I must congratulate Mr. A.J.M. Ross for his prompt action in reversing the air shaft fans to make the shafts upcast instead of downcast which averted the possibility that the miners might have been killed had the smoke from the fire continued to be downcast.

Lawrence Wright mapped the geology, but it was quite technical, and apparently he couldn't sell it to the mine department. They were detailed geologic maps put on tracing cloth. Tracing cloth goes to pieces pretty fast if it is handled much. They were lying in the mine office drawers, just as fresh and clean as the day they were made; nobody in the mine department ever looked at them. [laughter]

In my association I had to go around to the various foremen of the mine and sometimes shift bosses. I was told by Mr. Albert Pendo, one of the foremen (whose father-in-law was one of the Alaska crowd, Mr. Peterson) that the mine department wouldn't take any cognizance of geology--wouldn't recognize the geologists

whatsoever. They went their own way as hard-rock miners, and as some of them said, "I graduated from the school of hard knocks."

Introducing Geologic Planning to the Mine Staff

Kravig: One day I was going around with foreman Albert Pendo, and he said they were on the last stope of a certain pillar. Now, Homestake is a highly folded, complicated geologic structure, and the various limbs of the folds were not understood by the local people until geology came on the scene. They called them ledges, and they labeled them one, two, three, four, five, six, and seven, which were really essentially different folds of the Homestake formation.

Mr. Pendo said he was on the last stope in a certain pillar, and I said, "Wait a minute. Aren't they going to mine 3 ledge?"

"No, we're through; this is the last stope."

I said, "Step it off--step it off on the 1,100 level, and then step it off on the 1,250 level, and you can see that 3 ledge hasn't been touched in this pillar."

I finally drew a picture of it in chalk on a piece of timber. "Now why don't you tell Alec Ross that 3 ledge is still to be mined?"

He said, "Oh, it would never do for me to bring that up to Alec Ross. I would be admitting I had talked to a geologist, and that's taboo." [laughter]

Here I was, a fairly young kid, and Mr. Wright was gone on an exploration trip. I decided to draw a cross section of the pillar to show it was the synclinal fold of 3 ledge, which had been mined on the 1,100 level but didn't quite reach to the 1,250 level. I made this cross section, and I thought about it for a few days; how could I diplomatically bring that to the attention of Alec Ross?

I took the cross section to him and said, "What do you think about drilling a diamond drill hole up through there? I think there is ore left in 3 ledge."

"Hmmm, Hmmm," he hummed and looked at it. "Let's drill a diamond drill hole here," he said. You know, now it was kind of his idea. We drilled a drill hole, and here was about a hundred

feet of better than one-half ounce per ton gold. They drove a sublevel drift over there and mined it out, and I figured at the time that it was three quarters of a million dollars that they were about to walk away from if that cross section hadn't been brought to their attention.

Well, you know, Alec Ross was not stupid. He was a hard-rock miner, and he was a pretty smart fellow. I'm not taking anything away from him. He certainly recognized that I knew what I was talking about, but he never said, "Ah, yes," "No," or "Thank you," but he went ahead and mined this part of 3 ledge that they hadn't planned on mining.

III ASSISTANT SUPERINTENDENT AND SUPERINTENDENT OF THE MINE, 1941-1962

Kravig: The next year he took an extended trip to Europe, and his brother, Ed Ross, was acting mine superintendent. I was asked to be Ed's assistant. I know just as well as I'm sitting here that they wouldn't have asked the geologist to be assistant if they hadn't recognized there was some value in what geology I knew.
[laughter]

Swent: So that was your thanks.

Kravig: When Alec retired on January 1, 1941, Ed Ross became mine superintendent, and I was given the job of assistant mine superintendent. In 1951, when Ed Ross retired, I became mine superintendent.

Lawrence Wright, Chief Geologist

Swent: Were you ever chief geologist?

Kravig: No. In 1919, before my time, Lawrence Wright came as part of the Alaska crowd late in 1919. There was a fire in the mine, and Homestake owned some oxygen-breathing apparatus called Draeger self-contained oxygen apparatus. People who operated these were called Draeger men. But these Draeger apparatuses had never been opened out of their boxes yet; Homestake owned them, but they had never been opened or used. Lawrence Wright had been trained in mine rescue work in the Alaska Treadwell mine, so he and Guy Johnson, the safety engineer, who had also been trained in mine rescue work, were assigned to operate the Draeger apparatus and teach others how to use it.

So they became Draeger men, trying to fight the fire. Oh, they tried to introduce water in various places to no avail, and they ended up flooding the mine to put the fire out. But apparently Lawrence Wright was recognized for his services as a Draeger man during the fire, and Bruce C. Yates, the general manager--according to Lawrence Wright's story--asked him what kind of a job he would like with Homestake. Lawrence Wright said, "I would like to map the geology of Homestake," and was named chief geologist at the time. That's the first time any geology existed at Homestake. That must have been in about 1920 or thereabouts.

In 1926 Donald H. McLaughlin was named consulting geologist. He was a professor at Harvard. He later became dean of the geology department, but I think at that time he was a professor of geology and a protégé of Edward Clark, the president of Homestake.¹

That kind of posed another problem around here. The mine department under Alec Ross did not like to recognize geologists, but they had to respect the presence of the consulting geologist, who was named by the president of Homestake. Donald McLaughlin was a very smooth gentleman who obviously knew his geology. But Lawrence Wright and McLaughlin became cross-threaded over an argument about the origin of the Homestake ores: was it tertiary or pre-Cambrian in age? Lawrence Wright finally resigned under pressure, I think. He did not get along too well with the consulting geologist.

So I was the only geologist when Lawrence Wright handed in his resignation. Well, I didn't get promoted to chief geologist. I only had a bachelor's degree in geology, and they named James A. Noble, who had a master's degree from Harvard, as chief geologist.

Swent: When did he come in?

Kravig: In the early thirties--1932 or thereabouts.

Swent: He was put in over you, then?

Kravig: Yes.

I have to tell you a little humorous story that has nothing to do with geology. Jim Noble came here as a geologist, but his

¹For further information, see the oral history of Donald H. McLaughlin, Careers in Mining Geology and Management. University Governance and Teaching, Regional Oral History Office, University of California, Berkeley, 1975.

wife, Marion, hadn't arrived on the scene yet. When she came, the Homestake staff decided to have a party for her at the Rocky Cove restaurant, which was famous for its big steaks. They were great huge steaks--chateaubriands that covered the entire hot platter. Marion Noble was from Boston, and since she was the hostess, she was served first. They brought out this big plate covered with a huge steak and put it in front of her. She looked at the guests and said, "Am I supposed to carve?" And in her Boston pronunciation, she said "cahve". [laughter]

Swent: I guess she had never seen a real Old-West-style steak before. Having a senior geologist put in over you must have been a little awkward for you.

Kravig: Oh, not particularly. I realized that I only had a bachelor's degree, and I was pretty young. I assumed Harvard graduates had precedence over everybody else. Certainly Noble had more training and experience than I had, and was a Harvard graduate with a master's degree under the tutelage of Donald McLaughlin.

I was alone again in the geology department for a while when Noble went back to Harvard to get his doctor's degree.

John K. Gustafson

Kravig: In 1931, John K. Gustafson, who later became president of Homestake, came to Lead under the direction of Donald H. McLaughlin to work on his doctor's thesis, which was the Homestake formation. I was assigned to Dr. Gustafson as his helper. We did some mapping with a plane table--

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Kravig: I ran the plane table and plotted the notes on the map while he geologized the Homestake formation, all the way from Maitland on the north, through Lead, and as far south as Rochford on the south.

Swent: This is on the surface?

Kravig: Yes. Most of this time I spent in the Lead area, but the Homestake formation is outcropped at Rochford. We had a company car and went out to Rochford studying, and we didn't finish up on a Friday night. John asked me if I minded whether I stayed in Rochford overnight and finished our work on Saturday. Well, I

wasn't married, and I didn't have any problem with that. I said, "Sure, I'll stay overnight."

So we stayed at the Rochford Hotel. It was not what they call first class [laughter]. The stairs had rotted out, so we had to climb up to the second floor by way of a ladder through a window. Here was the room, furnished complete with ceramic thunder mug under the bed, a ceramic water pitcher on the washstand, and a wash bowl. We had all the amenities of a first-class hotel in Rochford.

In the morning we climbed down the ladder and finished our business.

Swent: Was John Gustafson a student at Harvard also?

Kravig: Yes, he got his doctorate degree on the Homestake formation from Harvard. He became quite famous because of his discovery of a continuing ore body in the Broken Hill area of Australia.

I had quite a close association with Dr. McLaughlin, who later became president and chief executive officer at Homestake, and Gustafson, who was also president and chief executive officer.

Swent: Is it tertiary or pre-Cambrian?

Kravig: They're still arguing. [laughter] Actually there is both. There's ore in the Cambrian formation which obviously is tertiary in age; that's the only intrusive source of gold since the Cambrian was laid down. But there is also irrefutable evidence that Homestake has pre-Cambrian gold, because they find gold nuggets in the conglomerate at the base of the Cambrian formation, before Cambrian was laid down.

Swent: From a practical point of view, when you are doing mine geology does it matter?

Kravig: It really has nothing to do with the practice of mining.

Swent: You find it where you find it.

Kravig: You have to map it to work out the structure. It has something to do with your exploration philosophy, of course, which is another story.

Swent: How does it affect that?

Kravig: If it is all tertiary, you would only explore in the neighborhood of tertiary-intrusive rocks. If it's pre-Cambrian, you can look

all over the Black Hills, because you have pre-Cambrian rocks all over the Black Hills. There has been a lot of prospecting done, and they haven't found another Homestake yet in the pre-Cambrian formation. They're still looking.

Swent: Were there any changes in the mapping while you were working?

Kravig: No, not really. I recognized that you had to look at the technical aspects of geology, but I also recognized that you had to sell it to the mine department in a most practical way possible. So I drew up cross sections of every stope and pillar in the mine, and I actually ended up making the first ore estimate made by a geologist. Before that it was made by the mine survey crew.

Swent: You were assistant mine superintendent in 1939?

Kravig: No, I became assistant mine superintendent on January 1, 1940, mine superintendent in October 1951, and full-time assistant general manager in 1963.

The Impact of World War II

Swent: What did you do during the war?

Kravig: I was a lieutenant in the National Guard, Company E, 109th Engineers. As such I had to go to camp every June.

Swent: When did you join the Guard?

Kravig: In the middle thirties--'36 or '37. I had to go to camp every year, and my boss, Ed Ross, hated that; I should take my vacation when it was convenient for the mine, not every June. So I resigned from the Guard. Within a year the National Guard company was federalized and went to war. So I escaped the war entirely, with no premeditated thoughts. [laughs]

That brings up another episode. Homestake mine was shut down by federal order L-208, saying gold mining was unnecessary. The gold miners were supposed to go to the copper mines and mine copper, because the copper miners had already left the copper mines to go to the shipyards. We argued, "What about saloonkeepers or bartenders? Are they essential and Homestake is not?"

Well, they didn't listen to us, and Homestake was shut down as nonessential. We had a little over a thousand men working in the mine, and we had to lay off all of them excepting 150; we were allowed 150 people to maintain the safety of the mine and keep it unwatered.

Homestake sued the government: why should they shut down gold miners when they didn't shut down bartenders, et cetera. The lawsuit came up at the court of claims in Washington, D.C. Mr. Guy N. Bjorge was general manager, and he took with him to Washington Mr. Herz, who was chief metallurgist at that time, and me as mine superintendent. So in case we had to testify concerning metallurgy, Mr. Herz would be called on; and if there was something particular to the mine, I would have to testify. Actually, Mr. Bjorge did all the testifying. However, we lost the case.

Mr. Herz and I stayed at the Shoreham Hotel--a pretty plush hotel, by the way. I personally knew Mr. Herz as a first-class gentleman, and of course very intelligent. He was born and raised in the East, and he suggested we go out to dinner to a seafood place. That was fine with me; I wasn't acquainted with good seafood restaurants in Washington. We had a fine dinner, and he suggested that the best way to eat Bluepoint oysters on the half shell was to put just lemon juice on them; so I ate my first Bluepoint oysters with lemon juice, and it was very good. He also suggested the best kind of wine to go with the seafood, and I enjoyed a nice glass of wine. I was no connoisseur of wine; I took his word for it. But we had a fine dinner. Needless to say, I never mentioned that to anyone else until now. [laughs]

Swent: Wine drinking wasn't very big in Lead.

Kravig: I know your mother was dead-set against liquor.

Swent: Absolutely.

Kravig: And I respect her right to that, but she was also pretty hard-nosed about anybody else serving it anyplace, anywhere, any way. Myrtle [Kravig] was a teetotaller, too; she didn't touch it, and I respected her rights, but she respected my right to take a drink. She wouldn't have respected me if I had gotten drunk, and I wouldn't have respected myself if I had.

Anyway, we had a fine time.

Swent: Mr. Bjorge didn't join you?

Kravig: No, he stayed at another hotel.

Swent: A little class distinction there?

Kravig: Yes, perhaps. [laughter]

Swent: Did you stay here in Lead all through the war?

Kravig: I was part of the 150 who stayed in Lead during the war. There was a lot of maintenance, and we were allowed to pull some of the ore out in stopes that had already been mined. We were allowed to extract that ore and send it to the mill and fill stopes, et cetera.

IV ASSISTANT GENERAL MANAGER, 1963-1971

Modernizing the Mining System at Homestake

Kravig: By the way, when I became assistant general manager, I changed the complete mining system at Homestake.

Swent: Tell about that, please.

Kravig: Homestake mining methods were mining shrinkage stopes, leaving pillars between the shrinkage stopes to be later mined out by square-set timbers. There were a lot of those stopes caved, and quite a bit of ore was lost. When I became mine superintendent, Mr. Bjorge asked if I had any changes in mind. I told him of the various changes I had in mind, and he said, "I wish you would write that up."

I still have a copy of my report. I said I proposed to change from shrinkage stoping to cut-and-fill stoping, to permit more selective mining and largely because of the safety hazard in the old system and the loss of ore, because it wasn't safe to clean down some of the stopes properly because the walls get bad and there is danger of loss of life. I suggested changing from column-mounted rock drills to what was called jack legs, which is a pneumatically-mounted rock drill. We had been experimenting with this for some time.

Cut-and-Fill Stoping [this section added later]

Kravig: When I became mine superintendent in 1951 I changed the mining system from shrinkage stoping and open square-set stoping in pillars into cut-and-fill stoping. The purpose of this change was

to reduce the safety hazards, mine more selectively, and to avoid loss of ore.

The mine levels below the 1100 level were 150 feet apart, so the shrinkage stopes were mined to a height of 125 feet. When the shrinkage stopes were drawn empty the miners were working under the hanging wall and the pillar walls up to 125 feet in height. On several occasions the hanging wall (often slate) and the pillar walls became unsafe because of loose rock and the danger of falling rocks; and the stope was abandoned with some broken ore still left unclaimed. Likewise open square-set stopes were mined up to a height of 75 feet and occasionally caved in and were abandoned with some ore left unclaimed and unfortunately in such cave-ins sometimes fatalities occurred. The cut-and-fill stoping permitted much more selective mining while the shrinkage stoping often had to include low grade rock.

There was no noticeable objection from the miners in this change of mining methods and I believe they recognized that it was a much safer method. The loss of ore in the shrinkage stopes and the square-set stopes is the reason for mining the open cut today.

Introducing Atlas-Copco Drills

Kravig: One of the leading companies was a Swedish company, Atlas-Copco. Two husky Swedes came and demonstrated these machines there, and I could see that they were very efficient. With the old method of setting up a column-mounted leyner--a column-mounted rock drill--it would take the miner about an hour to set up the posts and mount the machine. Then he would drill three or four holes, and that was a shift's work. But with the pneumatic-mounted machine you could carry the machine from one spot to another in five minutes and drill two rounds or more where you drilled only one round before.

It was quite obvious to me that it would increase efficiency over 100 percent. I was assistant mine superintendent at the time we were testing those, and I suggested to Ed Ross that we switch over to jack leg-mounted machines. Well, he said they might be all right if they furnished a couple of husky Swedes with every machine. [laughter] So they were not adopted right away, but further testing continued.

Swent: What year would this have been, Clarence?

Kravig: I became mine superintendent in '51, and that's when I made the complete switch. We had been testing them in '50.

Swent: You couldn't find Swedes to operate them?

Kravig: We picked out some of the most experienced miners. They had some training to operate a pneumatically-operated rock drill instead of a column-mounted one.

Swent: Where did the power come from?

Kravig: They hooked it up with compressed air. It was called an air leg--a pneumatic leg which would push the machine against the rock and supply the pressure necessary, and it would also furnish the power to operate the machine. But if you turned on too much air on the leg, the whole machine would go flying out of their hands. It was sort of a training session to learn how to operate the valve properly. After training, our men were just as competent as the two Swedes who demonstrated the machines.

Swent: Did the men like them?

Kravig: I knew it would increase efficiency by 100 percent or more, and so we would have to change the rate of compensation for the miners, which is a ticklish operation when you say you're going to cut the cost per ton mined. I picked out two of the best miners I had who had made real good money the previous month.

Swent: Who were they?

Kravig: I forget their names. I said, "You use the jack leg for one month and take this 30 percent cut in pay, and we'll guarantee you the same earnings that you earned last month if you give it an honest effort. Anything you make over and above that is yours." How could they refuse? The very first month they made more money than they had the previous month, which had been a record.

At the end of the month I asked, "Do you want the jack leg machines at a 30 percent cut, or do you want to go back to column-mounted drills?" Well, they took the 30 percent cut. So instead of forcing everybody by decree, I sold it to them. Within a year's time we had all the miners using them.

At that time Ab Shoemaker was general manager. I took him underground and showed him how much more efficient they were, and he got behind me and pushed. I was only going to change them quite gradually. We had a lot of column-mounted leyners that were not worn out yet--but Ab Shoemaker was correct. He said, "You

cannot afford to keep the leyners any longer, if what you are saying is correct. Scrap them. Move faster," which we did.

As mine superintendent, I didn't ask anybody what to do. I made the decisions. I kept the general manager informed about what I did; I didn't keep any secrets from him. But I didn't ask him whether I could do something. I did it and then told him what I did. That seemed to be okay with him.

I have to tell you a funny story about Ab Shoemaker. You remember him, don't you?

Swent: Oh, yes, very well.

Kravig: He was a pretty rough-and-ready sort of a fellow. Kind of rough.

Swent: Yes, he was.

Kravig: He and I went to San Francisco, I think for a budget meeting. Neither one had our wives along; we were alone. Mrs. Bjorge invited us out to lunch at her very fine club. I think it was the Oakland Women's Athletic Club. Here we were, having a nice luncheon, and Ab Shoemaker looked around and said to Mrs. Bjorge, "Women's Athletic Club--I don't see any women wrestlers around here." [laughter]

Mrs. Bjorge was pretty proper, and she didn't think that was funny, but she said, "Well, we're all getting older, and we don't go in for much athletic activity any more."

"Well," Ab Shoemaker says, "why don't you change the name of it, then?"

"That wouldn't be practical. All of our silverware, linens, and so on are marked WAC."

"Oh, that's simple," Ab said, "just change it to the Women's Arthritic Club." [laughter]

Swent: How did she like that?

Kravig: She had to smile a little, but it was hard. Mrs. Bjorge was a fine lady, but--

Swent: She was very proper.

Kravig: Very proper. That's the name for it, yes.

Silicosis and Dust Control [this section added later]

Kravig: The mineral quartz (Si_2) is quite common in the Homestake ore. Dust becomes airborne during drilling and blasting operations. This obviously had been recognized in part in the early part of the century when rock drills were equipped with water applied to the drill bit during drilling operations in order to allay the dust. But dust created by blasting had not been curtailed and blasting occurred throughout the shift.

Drifts and crosscuts were tunnels running parallel and crosswise of the geologic formations and raises were vertical or inclined tunnels from one level to another. Blasting in drifts, crosscuts, and raises were done in three stages. The first stage was the blasting of the "burn" which was a center hole with four to six relief holes around it; the second stage was the blasting of the "cut" which were holes drilled several inches up to nineteen inches or more around the burn; and the third stage was the blasting of the "round," all the remaining holes, a total of twenty-eight or more holes in all depending on the kind of rock encountered.

After the burn was blasted the miners had to walk through a cloud of powder smoke laden with dust in order to light the fuses of the cut holes; then the miners again had to walk through a dust-laden cloud of smoke to light the fuses of the round. In the raises the same three stages of blasting occurred but the miners had to climb ladders through the heavy dust-laden smoke each time.

To be sure, the use of respirators was encouraged, but could not allay all the dust concentration. Blasting was allowed any time during the day in chutes and at times in timber stopes where big rocks had to be blasted in order to keep production going. Consequently powder smoke laden with silica-bearing dust was prevalent throughout the day and silicosis was a health hazard and caused many premature deaths. This disease was known to the miners as "miner's con," an abbreviation of consumption (tuberculosis).

Along with the new mining methods I initiated a one-shot blast in the mine which meant that blasting in drifts, crosscuts, raises, and stopes had to be done with only one blast at the end of the shift and the miners no longer would walk or climb through dust-laden smoke after blasting stage number one and number two. I am certain that this practice materially reduced the incidence of silicosis.

I was in charge of operating the Homestake uranium mines in Northeast Wyoming from startup in 1959 to finish in 1967; this included building a community center including laundry, etc.; buying mobile homes for living quarters; sinking a shaft, etc.

Unionization

Swent: Were you superintendent when the mine became unionized?

Kravig: I was assistant general manager.

Swent: How did it affect you?

Kravig: I could tell you a story there, but I don't know whether I want to be quoted.

Swent: Tell us what you can. First, let's get the background. Homestake had not been unionized since 1912, I think.

Kravig: A brief description of the situation in 1909 is that Homestake had a union at that time, and it was company-supported and company approved. Then the Western Federation of Miners came in and tried to dictate policy. It wasn't a strike; Homestake locked them out. It was a lockout. To make a long story short, it broke the Western Federation of Miners, and that was the end of the union. There was no union from then on, and Homestake adopted a pension plan at the time: anybody who retired at age sixty-five would get \$50 a month, from the lowest to the highest. That doesn't sound like much nowadays, but back in those days it was a pretty good pension plan. In 1911 Homestake built a recreation center including an opera house, swimming pool, bowling alleys, a billiard parlor, a library, and meeting rooms. All facilities were free except the opera house.

They also initiated a Homestake Aid Association: \$1.50 was deducted out of every employee's paycheck, and some social welfare was done with the proceeds. At that time there was no public welfare of any sort and no Social Security, of course.

We had beat the union previously, and this election was coming up in 1966. Jim Harder was general manager, and Donald Delicate had taken my job as mine superintendent; but they changed the name to mine manager, because that was his title when he came from Grants, New Mexico. As near as I can interpret it, he was told he was given a free hand in running the mine.

I was assistant manager, so I was in between the general manager and the mine superintendent. I didn't have any direct responsibility. Mr. Harder and Mr. Delicate went on a trip to visit the mines in South Africa.

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Kravig: Joel Waterland was Donald Delicate's assistant, who was in charge while Mr. Delicate was in South Africa with Jim Harder. They had ordered some new machines called jumbos--jumbo mounted drills that would increase efficiency again and again, supposedly. The plan was to cut the contract wages some more with the use of jumbos.

While Mr. Harder and Mr. Delicate were in South Africa, the jumbos showed up. I knew the plan was to have cuts in contract wages when the jumbos were used, and I said to Mr. Waterland, "I guess with the union election coming up, you certainly aren't going to put those machines into effect until after the election, are you?"

"Oh, yes," he said, "I had orders from Mr. Delicate to put the machines in operation with the cuts."

I said that would be suicide, and that the union would certainly vote against a cut in wages unless they are thoroughly educated that it is feasible.

"No, I have my orders. Mr. Delicate was told he had a free hand to run the mine, and those are the orders I had."

I couldn't say anything more. And they voted for the union.

Swent: Sure, of course.

Kravig: It is my opinion that this introduction of stope jumbos accompanied with a cut in the contract pay was a contributing factor in the pro union vote, but in all fairness there were other contributing factors such as the fact that Homestake was barely masking a profit under the then existing gold price and costs, so it could not give a raise in wages to compete with other industry. Likewise there was some feeling among the miners that they would like a five-day work week and a union might provide that; however, the subject of a five-day work week did not come up for negotiation in the first contract negotiations but did come on strong in the next negotiations three years later.

Swent: It might have been a different story if they had introduced the jumbos in the same way you introduced the jack leg machines.

Kravig: Yes. My gosh, you're dealing with human beings. You have to recognize that, and you've got to educate them.

Swent: Of course you do. That was terrible. And the coming of the union certainly made a big change.

Kravig: Oh, yes. Homestake used to be more or less paternalistic toward its employees. They would give away turkeys at Thanksgiving time or Christmas bonuses. One of the first things the union said was, "You can't give away turkeys without consulting with our union," so Homestake quit giving away turkeys. Nothing paternalistic. We would talk it over with the union before we did anything. That was the end of paternalism.

Swent: They used to have baseball teams, and a Homestake band.

Kravig: Yes, that's right.

Swent: Do they have any of those things any more?

Kravig: Nope. You know very well that I'm telling the story correctly.

Swent: Sure, they ran everything and gave everything.

Kravig: But it's been a great company, and it has treated me fine. I can't complain. I also feel satisfied with my part in Homestake's history.

Swent: Did you ever hear anything about Muslims working underground? That some of the Slavonians that came into Lead were Muslims?

Kravig: I never heard that. There were a lot of Slavonians. [added later] I have asked Mike Sentovich, a Croatian from Dubrovnik, and Alex Rentto if there were any Muslims in Lead and both of them said they had not heard of any.

Swent: I've been told that some of them may have been Muslims.

Home Ownership in Lead

Kravig: Going back to the early, early days, Homestake was credited with being magnanimous in certain respects by giving permits to the land in Lead. You see, Homestake owned practically all the land in Lead, and a lot of people thought it was pretty nice that you got a free permit to build a house on a lot. But actually that was a necessity on the part of Homestake; they wouldn't have any

place to live in Lead if they weren't given a permit, since there was no commuting in those days.

Swent: You built your house here.

Kravig: Well, I bought a lot. I never had a permit. I bought it from a private owner. I didn't have bedrock title, but I had surface title. There were a few pieces of land that could be obtained that way.

Swent: Homestake also built a lot of houses.

Kravig: Oh, yes. When I built my house in 1933, there were a lot of company houses built. I had a private contractor build my house. It was in the depths of the Depression and was built with first-class materials. It was a five-room house, nothing big or grand but a good-quality house. It cost me \$3,540 in 1933. Solid oak floors without a knot in them. I have an oak mantelpiece, as you recall, and solid oak doors; you can't find a knot in any of them. You can't buy material like that any more.

Swent: It's a beautiful house. Your cabin in Spearfish Canyon was on patented land, too, wasn't it?

Kravig: It was on a placer claim, and it belonged to Homestake; so I was on a permit on my cabin. There were over a hundred cabins on Homestake land, to the best of my recollection. Homestake certainly used some thoughtful people back in about the 1880s. They acquired all the water rights in the northern Black Hills. They platted placer claims from one end of Spearfish Creek to the other, excepting for about four different spots that they didn't get.

Each of those four spots ended up as a commercial enterprise. Right at what's called Cheyenne Crossing, there was a place called Wickiup Cabin, and that was privately owned. It ended up as a commercial cabin camp called Wickiup. Another one was Spearfish Canyon Lodge, which was privately owned and sprang up as a tourist cabin site. Then there was Rimrock Lodge and Latchstring.

Swent: Latchstring was called an Inn, I think.

Kravig: Yes. Spearfish Canyon Lodge was run by Mr. Curran, a real estate man in Lead. Oh, they used to have trail-horse rides and things of that sort polluting the stream. Homestake bought that from Mr. Curran, and they acquired Wickiup and Rimrock. Since they were commercial enterprises, they leased them out on a commercial basis. If it hadn't been for Homestake's private ownership, it

would have been a tourist trap from one end of the canyon to the other.

Swent: It would have been a mess, wouldn't it?

Kravig: Of course, furnishing water for Lead and Deadwood actually makes Homestake a utility.

Swent: And power.

Kravig: Well, no, they don't sell power to the public. They use their own power. They have hydroelectric power, but they use it themselves, and have to buy additional power from Black Hills Power and Light Company. They're trying to sell the waterworks or give it away to the city of Lead, and Lead has voted on it to accept it.

Reclaiming Gold Run Creek

Kravig: I missed an important facet along the way. Gold Run Creek, as you know, was the most polluted stream in the United States, I think, and that's saying something. [laughter] There were hundreds of mines in the Black Hills before World War I, and several mines were dumping their tailings into Whitewood Creek, including Homestake tailings. But worse than that, the cities of Lead and Deadwood were dumping their raw sewage into the same creek. It would have been a stinking mess if Homestake hadn't added thousands of tons of tailings and water, which helped dilute it, anyway.

But here this stream was, running totally black. Homestake had bought up several farms along Whitewood Creek, all the way down to the Belle Fourche River, to protect themselves against pollution lawsuits, et cetera. But a bunch of farmers got together and brought a class-action law suit against Homestake. It was a jury case, but after the trial was all over the judge ruled that this was a case of law, not a case of fact. Therefore it was not in the hands of the jury; it was in the hands of the judge. And he dismissed the case because Whitewood Creek had been a legally pollutable stream for all these many years. The statute of limitations had run out, and Homestake was perfectly within its rights to pollute the creek, as were the cities of Lead and Deadwood.

Then somebody, somewhere, found a law that you can't pollute navigable rivers. The Missouri is a navigable river. Whitewood Creek flows into the Belle Fourche River and the Belle Fourche

River flows into the Cheyenne River, and the Cheyenne flows into the Missouri River. It can be established that some pollution comes from Whitewood Creek all the way to the Missouri River, so we were in fact polluting a navigable river, and federal law issued a cease and desist [order].

If Homestake had lost the lawsuit they could have put in an impoundment area for about a million dollars, but since they won the lawsuit they later had to provide an impoundment area of their own that cost them ten times as much in Grizzly Gulch. If they had lost the lawsuit, they would have put an impoundment area down on Centennial Prairie, which would have been legal. They won the case, but years later when they were ordered to cease and desist, they had to create an impoundment area in Grizzly Gulch, which cost ten times as much.

Swent: They couldn't use the Centennial area?

Kravig: No, that was out from then on.

Developing Bacteria to Remove Cyanide

Kravig: That brings up another interesting subject. First of all, we were ordered to quit using mercury for amalgamation, but we were still permitted to use cyanide in recovering the gold in the metallurgical process. After they were putting their tailings in Grizzly Gulch, there were a few parts per million escaping down Whitewood Creek, which the Environmental Protection Agency said was too much: "You've got to bring it down to zero." Nobody knew how to get rid of those few last ten parts per million. Homestake tried to endow colleges to try to find ways of getting rid of these particles.

Nobody came up with an answer, but we happened to hire two biologists, and one of them was astute enough to have read about the bacteria that eats cyanide. We did our own research on it and put in a trial plant, and it works.

Swent: Was this Terry Mudler?

Kravig: I think so.

Swent: He developed these bacteria?

Kravig: They introduced this bacteria in a test plant, and they actually consumed the cyanide down to zero levels. So they built a

multi-million dollar plant, and now there are actually trout swimming around in Whitewood Creek. So one highly polluted stream has been cleared up nicely.

Swent: What about the sewage? Do they have sewage treatment?

Kravig: Yes, Lead and Deadwood got together on a bond issue and built a sewage plant in conjunction with the cease and desist order. Yes, I think I pay \$13 a month sewage fee. I was happy to do it to see clean creeks.

The Ku Klux Klan and Anti-Catholicism

Swent: I have another question that comes up as a result of conversations I've had this weekend. This was mostly before you came to Lead, but do you recollect anything about the Ku Klux Klan in Lead?

Kravig: I've heard about it, yes, but it was active before my arrival in Lead. Sure. Alfred "Shorty" Rogers was one of the instrument men that I worked for, and he felt that the Ku Klux Klan was great. You could go out and see crosses burning, and they just had a lot of fun. But that's all it meant to him. They had a parade. Royal Pullen was one of them parading down Main Street. He had a mask on, but everybody could tell by his long legs who it was.

Swent: Was that after you were here?

Kravig: No, that was before I came. But they were burning crosses. I don't really know what their aim was, but I suspect it was anti-Catholic.

Swent: There weren't any blacks here.

Kravig: There were no blacks here to fight against, so it must have been--well, I know this much: there wasn't a single Catholic schoolteacher in the Lead system, and I don't think you found very many members of the Homestake staff who were Catholics. We had a lot of miners who were Catholics--Italians and Slavonians.

Swent: But there wasn't any big influx of Catholics in the twenties. What would cause it to flare up at that time?

Kravig: I really shouldn't be talking about it, because I don't know, but I know there was some schism between Homestake and the Catholic Church. I know that Lead was the head of the West River diocese before it was moved to Rapid City. Bishop Busch was in charge of

the diocese here in Lead. The story I get--and I can't swear to the truth of this--is that Bishop Busch clamored for Homestake to quit work on Sundays. Homestake didn't like that. They worked Sundays, just like any other day, excepting every other Sunday when you had "change" Sunday; you changed from day shift to night shift. That was the only Sunday they didn't work.

There was enough of a schism between Homestake and Bishop Busch of the Catholic Church so that in 1911 Bishop Busch moved to Rapid City, and later was sent to St. Cloud, Minnesota.

Swent: Of course, Rapid City was growing to be a bigger city at that time.

Kravig: It was beginning to grow, yes. Earlier there was the murder of Father Belknap that was never solved. So it smacks of some kind of schism over the years, and I don't know really the background.

Swent: Father Belknap was called out in the night and went down Poorman Gulch.

Kravig: He was supposed to go down Poorman Gulch to call on some sick person, and he was murdered. They never determined who did it. The story is that someone was suspected, but he skipped the country, and they never did find him.

Swent: Rumor was that he had been hired to do it.

Kravig: Yes.

[added later]

The history of St. Patrick's Church which I acquired says, "It was during Bishop Lawler's residence in Lead that the devastating murder of Father Belknap occurred...Funeral services for Father Belknap were conducted in St. Patrick's Church Saturday October 29, 1921."¹

Swent: You say there was only every other Sunday off. So a workman would work thirteen days straight, and then have one Sunday off?

Kravig: Yes.

Swent: And then change shift and work another thirteen days?

¹For further references to Bishop Busch, the Belknap murder, and the activities of the Ku Klux Klan in Lead, see appendix.

Kravig: Right.

Swent: Were there any vacations?

Kravig: There were no paid vacations for miners, I don't think. Staff members got two weeks vacation.

Swent: When you started to work, did you work on Saturdays?

Kravig: I worked on Saturdays and Sundays. Not as a geologist, but when I was assistant mine superintendent I worked Sundays, excepting for change day.

Swent: So you worked thirteen days and then one day off?

Kravig: Yes.

Swent: What were you paid then?

Kravig: I don't remember now. I started out as assistant mine superintendent at \$100 a month less than Ed Ross had started out on the same job eleven years earlier.

Swent: Was that because of the Depression?

Kravig: I think Bjorge was a little uncertain about my ability. I was pretty young. It's only because I sold him on that geology that I ever got the job in the first place, so they recognized some merit there. After one year on the job, I got a nice letter from Mr. Bjorge saying that I had done a good job, and he gave me a raise.

Swent: What about vacations? What kind of vacations did you have?

Kravig: Two weeks vacation paid.

Swent: What were the hours that you worked?

Kravig: It was an eight-hour day, 8:00 in the morning until 5:00 in the evening with an hour off for lunch.

Swent: Did you go home for lunch?

Kravig: Yes.

Swent: Nearly everybody on the staff did.

Kravig: When I worked in the geology department, the geology office was almost a mile from my house, and I walked home for lunch and back again every day.

Swent: It kept you healthy! Tell us about your skiing.

Kravig: I was one of the charter members in the Terry Peak skiing.

Swent: You taught me to ski.

Kravig: Is that right?

Swent: It was what we call cross-country skiing now.

Kravig: Yes.

Swent: I can remember you skiing on the golf course.

Kravig: Do you remember my wife as your teacher?

Swent: Yes, absolutely. You used to take me skiing out at the golf course, remember?

Kravig: Yes.

Swent: But you would jump from that number one--.

Kravig: Yes, we had that little manmade jump there.

Swent: And they weren't the kind of skis we have now. [laughter]

Kravig: They weren't very fancy skis in those times.

Swent: You were a wonderful skier.

Myrtle Larson Kravig

Kravig: Were you in fifth grade when my wife was your teacher?

Swent: No, I think it was third or fourth grade.

Kravig: It must have been fourth grade, because she never taught third grade.

Swent: It was fourth grade, I think. She was about twenty-one years old at the time, and she was an old, old lady. [laughter]

Kravig: She was a good teacher.

Swent: Oh, she was a wonderful teacher.

Kravig: She was born in 1908--two years younger than I. This was in 1932, because we were married in '33.

Swent: So she was about twenty-three.

Kravig: Lead had good schools. Ralph Hunkins was given all the credit.

Swent: He was the superintendent.

Kravig: Yes. I think he did a good job, but he was also fortunate to have the job in the greatest economic spot in the whole United States, if not in the whole world. Supplies were cheap, labor was cheap. We sold our gold to the mint, and Lead was the brightest economic spot during the Depression years.

Swent: Yes, we really didn't feel the Depression.

Kravig: The Lead school system had its choice of school teachers. They did not hire anyone who wasn't in the top 25 percent of their graduating class and had at least two years experience.

Swent: What was Myrtle paid as a teacher?

Kravig: It may have been \$90 or \$100 a month.

Swent: Not very much.

Kravig: No.

Swent: And there was a rule then that you couldn't teach after you were married?

Kravig: That's right. That was kind of a general rule around the country--that there was supposed to be one wage earner per family. So teachers couldn't get married.

Swent: This was a hard decision to make.

Kravig: Yes.

##

Swent: Some of them just didn't get married because of that.

Kravig: I had to laugh. They gave a special bonus to the teachers who had children. That seemed a little bit odd. Doug Bell was assistant coach and one of the teachers. He didn't have any children at all, so he objected strenuously. "Well, you don't have any children."

"I ought to have something for effort," he said. [laughter]
I never admired Doug Bell very much.

Swent: I don't think he did much harm. As I look back on it, I think the students felt sorry for him. He was kind of a good object lesson in how not to live your life.

Kravig: Maybe so.

Swent: I think we were quite clear-eyed about his faults and shortcomings. I don't believe anybody admired the way he lived.

A lot of those regulations you couldn't have today.

Kravig: No, that's for sure.

You can see I'm an old-timer, reminiscing like this.

Swent: I think this is awfully interesting. Is there anything else we should mention?

Kravig: I can't think of anything else.

Swent: Then I guess that's it. Thanks a lot, Clarence. This has been very good of you.

APPENDIX

[The following material was supplied by Clarence Kravig from local sources in Lead, South Dakota.]

According to the South Dakota Historical Society Quarterly, Winter 1977, Vol. 4, No. 1, the Ku Klux Klan made its first appearance in South Dakota by July 1921. "In Sturgis and Lead the fear of Catholic control was strong."

I asked my friend Alex Rentto, a retired South Dakota Supreme Court justice, now eighty-nine years old and a native of Lead, why there was such strong anti-Catholic feeling in Lead. He told me that it was because Bishop Busch of the Catholic Diocese in Lead had supported the union during the threatened union strike and subsequent lockout in 1909 and 1910. The hard feeling between Homestake and Bishop Busch is substantiated in the history of the St. Patrick Church.

It seems to me that the bishop's opposition to Sunday work hardly was sufficient reason for the hard feelings but coming on top of the bishop's support of the union movement surely could bring on the schism. It seems clear to me that the statewide anti-Catholic feeling in the 1920s fell on fertile ground in Lead because of the previous schism in 1909 and 1910. My boss, E. O. Ross, who was mine superintendent when I was his assistant, told me that Lead was a tinder box in 1909 and 1910 and ready to explode into violence at any time. He was one of many guards armed with revolvers or sawed-off shotguns and deputized to keep order in town. He gave me his Colt 389-calibre revolver when he retired.

My wife, Myrtle, who was raised in St. Cloud, Minnesota, told me of the fine large house on the banks of the Mississippi River where Bishop Busch lived. I was told that he was a member of the Anheuser-Busch family.

For the last forty-five to fifty years I have not felt that there has been any anti-Catholic feeling in Lead.

Excerpts from the document, "A History of the Catholic Church of Lead, South Dakota"

A priest by the name of Joseph Busch from the Archdiocese of St. Paul was appointed Bishop of Lead in 1910. Bishop Busch had a brilliant career as a missionary priest in Minnesota, going to different parishes to conduct parish missions. He had rather a stormy career during his stay in Lead because he tried to do away with Sunday labor and to restore to the people some sense of sacredness of Sunday, the Lord's Day. The Homestake people fought him "tooth and nail" as if they had never heard of the sacredness of the Sabbath. Indeed they made matters so hard for him that he moved his residence to Rapid City, with Lead still remaining the See City. Since he had come from a wealthy family in St. Paul, he built a costly home for himself in Rapid City. The house is still there, now in use as a supper club, the Esquire Club.

[1921] The Lead Daily Call stated, "One of the most startling, sensational and cowardly crimes that has ever shocked and brought sorrow to a community occurred this morning in Lead, when Rev. Father A. B. Belknap, one of the most popular of priests was foully [sic] murdered by some person or persons who had lured him from his rooms with a story of a sick and dying man needing the consolation of the priest's holy office. The murder which was committed sometime between 3:30 and 4 a.m., has aroused the people of Lead and surrounding cities and was evidently perpetrated by someone with a mind diseased....

Father Belknap was summoned from the rectory by an unidentified caller after 3 o'clock in the morning. He prepared for the sick call and then went to the garage to get his car. Discovering that it would not start, Father Belknap started walking. Mr. Arthur Miller, assistant mine foreman for the Homestake Company, was one of the last to see him alive. Father Belknap told Mr. Miller that he was to go to the third house in Benders Park. Mr. Miller told Father Belknap that no one was ill in that house because he had just been there. It is generally believed that the murderer directed him the direction of Benders Park after Mr. Miller left Father Belknap.

Dressed in his cassock, Father Belknap and the murderer walked on the Poorman Road. Arriving at the place of the murder, the slayer of the priest had evidently, it is thought, stepped behind him or allowed him to proceed and then he dealt him a blow on the back of his head with a heavy hammer or some instrument of metal and when the priest staggered around from the effects of the blow, had fired at him from close quarters, four shots, some say who had heard the reports....He was found dead, face down.

Tony Bartolino who lived across the street, found the dead priest's body. Patrolman Huddleson, Chief O'Meara and Deputy Sheriff Owen hastened to the scene of the murder and began their investigation. They found three 45-calibre cartridge shells for a Colt automatic revolver. Bloodhounds were brought from Rapid City, but unfortunately it snowed before their arrival in Lead.

The priest was known to have no enemies or grievances....Father Belknap was well-liked, a favorite of Catholics and Protestants alike. No one knew of anyone who would have wished him harm or conspired to take his life....

Bishop Lawler in speaking of the murder of Father Belknap said, "...It is difficult to ascribe a motive for so dastardly and cowardly a crime, because he was a favorite with all classes of people, whether in the Church or out of it. As the relations between Catholics and non-Catholics in this community are most pleasant and amicable, the foul deed cannot be attributed to religious prejudice. The act must have been perpetrated by a person mentally unbalanced."

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Homestake Mine Workers, Lead South Dakota, 1929-1993

Wayne Harford

LABORER, HOIST OPERATOR, 1949-1990

Interview Conducted by
Eleanor Swent
in 1993



Wayne Harford, 1971

I EARLY YEARS, 1930-1949

[Date of Interview: September 15, 1993] ##¹

Swent: Let's begin with where and when you were born.

Harford: I was born in Redfield, in the eastern part of South Dakota, on the fifth of December, 1930. I graduated from Redfield high school in 1949.

Working for the Spink County, South Dakota, Highway Department

Harford: When I got out of high school, I was working for Spink County in the highway department, and I had some friends who were working for Homestake. I said, "Let's go out and see what's what," and I came out the day after Labor Day.

Swent: What did your father do?

Harford: My dad? He was a contractor in Seattle. My folks were divorced when I was about six years old. My step-dad was assistant highway superintendent in Spink County, where Redfield was.

Swent: So he was working with heavy equipment?

Harford: Yes. On summer vacations, when I was out of school, I was working for the county. I started out working on the bridge crew.

¹## This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

Swent: How old were you when you first did that?

Harford: I was probably sixteen. The following summer I worked on the mowing crew, mowing ditches and whatnot. The last year I went on the gravel crew, driving a gravel truck.

Swent: So you were getting used to working with big equipment.

Harford: Yes. Not only that, I did roll a gravel truck; the steering knuckle dropped off. I had no control of the truck. That sort of deterred me from working there, and I was thinking of doing something else. And, as I say, I had friends who worked at Homestake.

Swent: Were you hurt?

Harford: No, just shaken up. My friends said Homestake was hiring, so two of us came out to Lead, another boy and I.

Swent: How did you get out to Lead?

Harford: Motorcycle. In September, right after Labor Day, 1949. It was quite an experience in September in this country. After you live here a while, you know; but we ran into rain and so forth.

Swent: Did you have a place to stay?

Harford: No. We got the job--

Hiring On at Homestake, 1949

Swent: How did you get the job?

Harford: We talked to John Moody at the employment office.

Swent: Where was the employment office at that time?

Harford: Let me think--it was next to the hospital.

Swent: A part of Main Street that isn't even there now; but it used to be just below the hospital.

Harford: Wait a minute. It was up where the dental office was. Or the eye doctor--between the pay office and the bank. It was on the left-hand side, going up the street.

Swent: What was the eye doctor's name?

Harford: Wildermuth. Yes, the employment office was over there at that time.

Swent: What sort of procedure did you go through to get a job? Did they give you any tests?

Harford: No. I just filled out an application. At that time I was too young to go in the mine, but they did put me on the surface. There was one buddy who came out with me, and then there were two others who came; there were four of us, and we all got jobs. The other three were in the mine; they were older than I was.

Swent: Did they give you a physical?

Harford: Yes, I had to pass the physical.

Swent: Any literacy test?

Harford: No, just whatever years of school you had. They didn't ask for any reading and writing. [laughs]

Working in the Drill Shop

Swent: Where did you start to work?

Harford: I started in the Homestake drill shop.

Swent: Sharpening drills?

Harford: Yes. The old Homestake steel was still there. I got \$1.16 an hour, seven hours a day for 42 hours--two hours at time and a half. I worked in there from September until I went home and got married. Then I came back. In November Leroy Seyhers came down; he was assistant mechanical engineer under Joe Gerrans. He asked if I had ever thought about transferring into the hoist room. I said I hadn't even seen it and didn't know what it was. I asked what it involved.

He said, "Greasing, wiping, and cleaning." I thought that sounded fine. He said it was three shifts, and I was working straight days. I went home and asked Bonnie, and she said, "If you want to try it, try it."

Swent: It paid more, I suppose.

Harford: Yes, I got \$1.26 an hour. [laughs] I got ten cents an hour more, plus differential for afternoon and graveyard.

Swent: Where were you living?

Harford: Before I was married, I was living in Mrs. Riley's boardinghouse behind the post office.

Swent: You ate and slept there, and she packed your bucket for you?

Harford: Yes.

Swent: What sort of bucket did she pack?

Harford: A good bucket. A couple of sandwiches, fruit, some kind of pastry, and milk or coffee.

Swent: Did you work Saturdays?

Harford: Yes. Forty-two hours--seven hours, six days a week.

Swent: So it was six full days. Did you get vacation?

Harford: Yes.

Swent: How much?

Harford: The first year I really didn't get any, because I left in September to go in the service. I started in September of '49 in the drill shop. After I went home to get married and came back, Leroy Seyhers came down and wanted to know if I had transferred. I told him I wasn't sure, because everybody else in that wanted to transfer.

Swent: You hadn't asked for this?

Harford: No.

Swent: He must have spotted you as a good worker?

Harford: I have no idea. The next day he came down to the drill shop, and he said, "Come with me." We went up, and he showed me through the shops.

Swent: Before we get to that, please tell me what you did in the drill shop.

Harford: I was loading and loading out the Homestake steel--you know, it used to be the old stamp. Instead of knock-off bits there were

eight machines in there and different lengths of steel that would come in from the mine in the cars. I would unload the Homestake drill steel.

Swent: With the bits on the end and all one piece?

Harford: No. They weren't screw-on bits; it was just straight steel. They put it into the machine, and then it made the bit on the end of it with steel. The machine stamped out the bit.

Swent: You weren't sharpening?

Harford: No.

Swent: You were actually making drill steel?

Harford: Yes, they were making it. I wasn't actually on the making end of it; I was loading and unloading. I could have, if there had been an opening, but it was on a seniority basis as to where you worked.

From there I went to the hoist room. After I got up there and saw it, I asked Leroy, "Do I have to learn to run it?" Well, yes. So I asked what would happen if I couldn't.

II TRAINING AS A HOIST OPERATOR

Breaking in by Greasing and Wiping: Critical Jobs

Swent: You didn't start right out running it, did you?

Harford: No, you broke in under an older operator. You did your greasing, and you did your wiping.

Swent: What did you wipe?

Harford: We greased the machinery of the hoist itself, and we mopped the floors, cleaned the generator room, and did anything that had to do with the building. Day shift did so much, afternoon shift did so much, and graveyard shift did so much. At that time there were two operators; there was an operator on each hoist.

Starting at the Ross Hoist

Swent: Which hoist was this?

Harford: I started in with the Ross ore hoist. I started with Phil Dyer.

Swent: Phil Dyer was still a hoist man then? He must have been pretty old.

Harford: He was about to retire. Phil was there on the ore hoist. At the Ross you started out on the Ross ore hoist, raising ore and rock. From the Ross ore hoist you would go over to Ross cage hoist and break in on men and material. When you got done with that hoist you would go over to the Yates hoist and do the same: you would break in on the Yates ore hoist and then on the Yates cage hoist.

When you got done breaking in with both those hoist rooms--at that time 4,100 was bottom.

Swent: Did they both go to 4,100?

Harford: Yes, both of them stopped at 4,100. Well, there was a skip pocket below that, and a sump; but 4,100 was in the last drift.

Swent: These two hoists, two shafts, were going down to the same area of the mine?

Harford: Yes. Your cage hoist would go to the bottom, to 4,100, to raise and lower men, and your ore hoist would go down to the pocket to raise rock.

From there you went to what they called the #3 winze hoist, the littler hoist on the 4,100. In other words, the winze did not come to the surface. It's a hoist shaft, and doesn't come to the surface.

Swent: So that was underground?

Harford: Yes, on the 4,100. From there they started up and made up the #4 winze on the 4,800.

Before that, they had started drifting down on the winze country--went down to the lower country. Then they lowered the Yates and Ross shafts both to the 4,800. During that period of time we would be raising that rock with the cage hoist up to the levels above, and then they would dump it into the raises and hoist it to the top or use it for backfill.

When they got to the 4,800, then they went back in and set up the #4 winze hoist.

Swent: They were actually extending the shafts down at the same time that they were continuing to use the hoists?

Harford: Yes, drift in from the #3 winze country. They drove that shaft down, and then they would run out on the 5,000. When they got started at the Yates and the Ross shafts, they did drift that right off from the shaft and went back into the other levels joining into the back of the working areas.

On the hoisting jobs, you would start breaking in on the Ross. If there were too many of us breaking in, then they'd start them on the Yates, too, and rotate.

Swent: Was this a provisional thing? If you didn't work out--

Harford: You could go back to your old job. I asked him at the time, and he said, "You won't get canned; you can go back to your old job."

Swent: Did some people do that? Did they try out and not like it?

Harford: Yes, there were some, even in later times, after I'd become an operator and started breaking people in. It was sort of comical. Sometimes they would run that cage hoist with one or two men on it--the cagers--and never think anything of it. But when you said, "Okay, it's time you start raising and lowering shift," they would get thirty-six men on the cage. Then they would start getting a little shaky.

My philosophy, and I would tell them when I was breaking them in, is that it doesn't make any difference if you have one man on or thirty-six; you run it the same. The only thing is that you have a little bit more weight on it, and you have to start slowing it down a little sooner. Well, some could do it, and some couldn't. Some of them would take to it just like a duck takes to water.

Swent: Did you like it?

Harford: Basically, yes. The job was more mental.

At one time the Yates hoist, as it is now, was a double cage; so you had to raise one, and it was counterbalanced. As one load of men was going down, the empty one was coming up to be loaded, so you had to watch both sides on it. The Ross now is just one side and counterbalanced on the other side.

Swent: What kind of equipment were they using when you first began? What year was that?

Harford: This was 1949. Then I went into the service in '50 and came back in '52.

Military Service, 1950-1952

Swent: You had started training as a hoist man before you went into the service?

Harford: Yes. I started in November of '49 in hoisting, and the following September I left to go into the service.

Swent: This was the Korean war?

Harford: Yes. I came back in July of '52.

Swent: Were you called up, or did you volunteer?

Harford: I was in the National Guard unit in South Dakota, down in the eastern part of the state, and I was activated.

Swent: So you had no choice?

Harford: At the time they did give me a choice. I could have transferred and gone with the Lead unit, or I could have gone with the Redfield unit, because I knew most of the men in that unit.

Swent: You went to Alaska, didn't you? What did you do there?

Harford: Get cold! [laughter] It was basically just training. Why they sent us there, I have no idea. It was still a territory at the time.

Swent: Where were you?

Harford: At Fort Richardson, just outside of Anchorage.

Swent: You were there the whole two years?

Harford: No. I started out in Colorado for about nine months, and then we went up to Alaska for about thirteen months, just a little over a year. I was in twenty-two months altogether.

Swent: Did you think about going back to Alaska to live?

Harford: I should have. You could still homestead up there. It's beautiful country. I still want to get back up there some day, and I will.

Operating the Number Three Winze Hoist, 1954-1957

Harford: But now I was back working at Homestake on the hoist. I came back to the same job. I got set up as an operator in 1954. When I got back out of the service, there had been enough retirements and whatnot, so as soon as I got broken back in on the hoist I was set up from an oiler to an operator. At that time I was sent down to #3 winze; there was an opening there. You had to work from your mine hoists up to the big hoist on the surface.

Using a Lever Mechanical Brake

Swent: These were smaller hoists?

Harford: Yes. It was an old Stearns Roger, I think, in the #3 winze country. It had the old lever mechanical brake on it. You would reverse power and then brake when you stopped. You'd have to go into reverse power and then brake it.

Swent: Was this hard physically at all?

Harford: It was physical and mental both. You had to be coordinated.

Swent: Did it take strength?

Harford: To set the brake the way it should be took a little bit more than the hydraulic brakes on the surface hoist.

Swent: Was it a hand lever?

Harford: Yes. I called it the gut-buster. But, as I say, you would reverse power, and that would start slowing the hoist down to where you could catch it with the brake. If you tried to catch it with the brake to start with, it would really chatter.

Signalling the Hoist Operator with a Bell System

Swent: You had to know exactly where to stop it.

Harford: On the #3 winze it was all on a bell system. Say three-two would be at the 4,800; they'd give you a three and then a two on the bell line. One bell would be a stop bell. They had what they called chairs on the cage, so they could push heavy stuff on and off and the cage wouldn't give or go up and down. Then they would bell you up with three bells slow, bell you down again with two bells slow, and then give you one bell to stop when they had enough slack so that it wouldn't jump off the chairs.

Swent: So the person on the cage was telling you--

Harford: The cager was telling me which way to go--up, down, or around.

Swent: Was this a person who was always on the cage?

Harford: Yes.

Swent: He was like an elevator operator?

Harford: Yes, basically he was. When they were driving these drifts down there, then there would be a cager down at the bottom of the shaft, wherever it was on that level, and there would be one up on the 4,100. They would push cars on and push cars off and tell you with the bell line to hoist or lower the cage.

Swent: How was this communicated? Was there a radio?

Harford: No radio on #3 winze, not yet. There never was. It was just a bell system.

Swent: How did the bell ring?

Harford: It was a little clanger in the hoist room.

Swent: How did the fellow down in the cage--

Harford: It was run by a bell line, all up and down the shaft.

Swent: Was it electric?

Harford: Yes. It was an electric bell line, and they would run a junction box about every three hundred feet or so, and then another cable all the way to the bottom shaft. They could reach out and pull the bell line wherever they wanted to move the cage when the cage was stopped at the time.

Swent: They could do it manually?

Harford: Yes, they had to do it manually. They could reach out from the cage, but it had to be by hand.

Swent: Actually hitting the clapper on the bell?

Harford: Yes. It had enough power to release the clapper, and it would ding. I didn't think it was too safe. There were some goof-ups. I'm not saying I was perfect, either. Some of them would try and ring them just as fast as they could, and you wouldn't catch it. I made one mistake one time; I took off when I thought we shouldn't have; I didn't really have the proper signal. When that happens, you just let it sit, and pretty soon they'll start ringing a little bit slower so that you can count.

Swent: I'm trying to imagine this. You were 4,100 feet underground in a little room adjacent to the shaft, the winze?

Harford: Yes, right behind the shaft.

- Swent: And the winze went on down another thousand feet?
- Harford: It went down to 5,000, roughly another thousand feet. Then they started drifting from there over to the Ross and the Yates. It bottomed out on the 5,000.
- Swent: These bells were--
- Harford: Hanging about every three hundred feet. There would be a line about three hundred feet, and then there would be a bell box; then another three hundred feet and another bell box.
- Swent: So they couldn't signal to you in between those boxes?
- Harford: Between levels on the go? No, there was no way; you had to wait until it was stopped. That's why I say it wasn't very [safe]. Once you got started, it had to be stopped before they could start belling again.
- Also, you sat back in there, and when they were driving these drifts they would try to get out over a hundred end dumps of cars. The cagers were contracting. They would get so much for a day's pay, and so many cars was a day's pay. Over that, they would get so much a car. So they were trying to get a hundred. At that time you had four-inch timbers just about eight inches over your head in this hoist room, and then you had electric grids for power to drive the electric motor. It would get to be 100 degrees, 110 degrees, 115 degrees in there. Then they would bring in a little vent bag from out in the drift and blew air in. But still it would get hot enough.
- Swent: And you stayed there all the shift? You didn't come out for lunch?
- Harford: Yes, we would come out at lunch. We'd come out around by the shaft, where there was a little air.
- Swent: But you didn't come up?
- Harford: No. We stayed underground all the time. At that time I had a good set of cagers.
- Swent: Do you remember their names?
- Harford: Yes. Mert [Merton] Corkins and Don Hurms. I would give them a break.
- Swent: You were the boss?

Harford: Well, I had control of the hoist. I had nothing to do with the mining end of it, but the hoist room was mine. Every day I was supposed to grease at a certain time. I had a half hour, and these guys [the cagers] would come in and help me so that they could get their hundred cars or over a day. But at lunch time I did a full half hour.

Swent: Did cagers get a bonus if they got more cars?

Harford: Yes, the cagers were contracting.

Swent: Oh, I see.

Harford: I think they figured forty cars or so was a day's pay, and I think they were getting a dime or something a car over a day's pay. If they got a hundred, they were about \$6 over a day's pay. So they'd help me grease, and I'd give them a break.

Swent: What exactly were you greasing, the cable?

Harford: No. You had clutch arms, couplings, and big bearings that you would grease. These clutch arms--you could throw the clutch in or out. If you throw the clutch out, the only thing that would turn would be the clutch itself; the drum and the cable wouldn't turn until I put the clutch back in. It was on a swinging arm.

Swent: So those had to be greased regularly?

Harford: Every day.

Swent: You sat in a big chair?

Harford: A wooden chair.

Swent: Not very comfortable!

Harford: Well, they had pads in them.

Swent: And you had this big brake lever.

Harford: Brake lever on the right, throttle over here on your left. It was just like a train engineer's throttle. It was in a box.

Swent: Dials?

Harford: Yes, you had about a four-foot dial up there with all the levels on it, from 4,100 down to 5,000.

Swent: It stopped every 100 feet?

Harford: About every 150 feet. I think the upper levels were 100, and they started 150 below.

Swent: If somebody belled you, and you didn't understand it, was there a way you could answer and ask them to repeat it?

Harford: Just sat. If you sat there long enough, they knew you didn't get it, and they would repeat it.

Swent: So you didn't do anything?

Harford: No. Just let the hoist set and not move. Within a minute or two, if you didn't move they knew that you didn't get it. We did have telephone communication from each level, but if I didn't move within a minute or so, they figured I didn't get it, and they would repeat the signal.

If they were to really put something heavy on or were going to lower something--well, I could see if they were going to lower something, and they'd come in and tell me, because I was just right back of the shaft. But if they were doing something on the bottom level and going to put something heavy on, they'd get me on the phone. The phone was set out by the shaft there, and I could hear it when it rang.

Swent: You had to get off your chair and go to the phone?

Harford: Yes. They would tell me if they were going to put a motor on or something heavy.

Swent: How big were these cars that they were putting on?

Harford: One ton.

Swent: How many of those would go on at a time?

Harford: Just one. So they made a hundred trips outside of raising and lowering the rest of the men. The first thing in the morning you would get off at the Yates on the 4,100, get on the man car, and go to the #3 winze hoist on the 4,100. Whatever miners were going down below would go, and then these guys would start right in. There would be some cars on the 5,000, and the motorman would start bringing empty cars back to be filled with rock. This is right around the clock, three shifts, that they were doing this. The mining was three shifts, too.

Swent: Did any people ever try to ride on the ore hoists?

Harford: There were no ore hoists at #3 winze. It was just straight men and materials, plus they would put the cars right on the cage.

Swent: The same cage?

Harford: Yes. It would hold about eight men if you squeezed into it.

Swent: And one car?

Harford: No, you couldn't get both men and a car on at once, it was not legal. Well, once in a while somebody would sit on top of a car.

Swent: They weren't supposed to?

Harford: No, but they'd do it. If there was anything on the cage, you weren't supposed to ride it.

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Harford: On the 4,800, when that drift was in, they put what they called the #4 winze in, and that was just one straight man cage. That went to the 6,800 to start with. Later on, they put in a new Nordberg ore hoist. I didn't get in on it; I could have taken the hoist at that time. I had broken in in the cage hoist end of it.

Automatic Hoist at the Number Four Winze

Swent: At the #4 winze?

Harford: Yes. This was set up so that it was automatic. At the time, the operator could go in and set it up, and then the skip puller down below would run it by buttons.

Swent: How would that work?

Harford: It would go up and dump, and then come right back down again.

Swent: With no operator?

Harford: No, no operator. The only thing the operator did was if something would go wrong and he had to run it manually. Then he would run it at the time they were checking the shaft, which they did at #3 winze, too. About once a week we'd have rope men come in and check the rope, or cable. The reason they call it a rope is because it has a rope center in it under the wire cable.

As I said, at #4 winze they set up this new ore hoist, and it was automatic. The operator would go in and set it up, and then the skip loader had control of it.

Swent: So there was no person on that cage at all?

Harford: No. The only time there would be is when they would set up on the platform and work in the shaft or when something would go wrong. If something would go wrong with the cage hoist, in an emergency they could use it for a man hoist.

From #4 winze I had worked my way to the surface, I'll put it that way. I had enough seniority, enough time in the hoist rooms, so that when there was an opening on the top I went up there. For three and a half years I was swing man.

Swent: When was this? How many years were you on the winze hoist?

Harford: I was on the #3 winze from '54 to '57, about four years. From there I didn't go on the big hoist, no. In '57 they began sinking the #5 air shaft in Grizzly Gulch, and I was operator out there.

Swent: You didn't actually work on the #4 winze, then?

Harford: Just a short time. I had my choice at the time, as long as I was underground, of #3 winze or #4 winze. I was just satisfied sitting right there at #3 winze instead of going to #4 winze. But when I came out of the mine, I went up to Grizzly Gulch on #5 air shaft.

Operating a Nordberg Double Drum Hoist on Number Five Air Shaft

Swent: It was the same kind of work?

Harford: Yes, it was hoist work. It was a big Nordberg double drum hoist. We were out there for two or two and a half years sinking that shaft.

Swent: That was a ventilation shaft, wasn't it?

Harford: Right. It went to the 4,800. Then they offset it to 4,800 and went down again with another portable outfit, but we didn't have anything to do with that.

After the steel was all in, we went back through and they ran electrical cables in for lower country--big voltage electrical cables, 12,000s or so. It was about 4-inch cable that we ran in through there.

Before I went to the Yates hoist room and after the number five shaft there was about nine months at the Oro Hondo air shaft where I ran a hoist bought from a coal mine in Pennsylvania where the miners stripped all the timbers and bar down the shaft to give more air flow into the mine. This hoist was a double drum. We only used one drum. Later, it was cut in two and made two smaller hoists in the mine.

Swing Man at the Yates Hoist

Harford: From there I went back to the Yates, and I was on the swing shift. I would put three days on one hoist and a day off, then three days on the other hoist. It rotated between the Yates cage hoist and ore hoist.

Swent: Before that you had been working all three shifts?

Harford: Yes, I had been on three shifts all the time. It was two weeks on day, two weeks on afternoon, and two weeks of graveyard. It was 7:00 to 3:00, 3:00 to 11:00, and 11:00 to 7:00.

Swent: Was there a pay differential?

Harford: On the afternoon, from 3:00 to 11:00, I think it was fifteen cents, and it was twenty cents on the graveyard. And over a period of time we did get pay raises.

Swent: On swing shift you just worked three days?

Harford: I worked three days on the cage hoist, and then I had my day off; I had straight Wednesdays off. Then I would go over and put three days in on the ore hoist. On the cage hoist I'd go from graveyard, to afternoon, to day, and then I'd have my day off. Then I would do the same back over on the ore hoist so those three operators could have their day off. At the time I did have a relief operator with me, and he would relieve relief operators who were on the hoist on the same shift.

Swent: I'm confused. You would work three days of day shift?

Harford: No. I would work the first night on graveyard, 11:00 to 7:00. I would go home at 7:00 in the morning and come back at 3:00 in the afternoon and work until 11:00. I would go home at 11:00 and come back the next day at 7:00 in the morning on the cage hoist. There were two short changes in there. Then I would go over to the ore hoist side, and there were longer changes there. I had two short changes and two long changes.

Swent: Wasn't that pretty hard on you?

Harford: I think it was harder on the family than it was on me.

Swent: What was the reasoning behind that schedule?

Harford: You had the day, the graveyard, and the afternoon shift.

Swent: And you were working on their days off?

Harford: Yes. I was filling in on their days off as a relief operator at that time. I would fill the days off on the cage hoist, and then I would fill the days off on the ore hoist. At that time I would have a relief oiler with me to relieve their oiler. There were three men on a shift.

A Double-Caged Hoist

Harford: Okay, down. The Yates cage hoist was a double-caged hoist. It had drums of 25 feet on the big end, 12 feet on the small end, with a cone-shaped drum with over 6,000 feet of inch-and-7/8 rope on it. There were 126 strands of wire around a 7/8-inch Manila rope in the center. That you would help grease and wipe. The day shift more or less took the greasing and wiping and the top floor cleaning. The afternoon shift had the generator room, which was offset from the hoist room, and that's where you cleaned. The graveyard would take care of the dry (the change room) and the basement.

On the cage hoist basically we were raising and lowering material and men. We'd lower the shift in the morning. At that time you would still have maybe fifty to sixty cars of Homestake steel to bring out of the mine off of each level--that is, fifty to sixty cars altogether; you might have five here and ten there. Then you would have material going down--a lot of timber for your timber stopes. Afternoon and graveyard would also have a lot of stuff. Graveyard was basically the cleanup for the mine. On day shift you would lower Homestake steel; on graveyard you would

bring it up for day shift to send down to the drill shop to be sharpened.

Swent: So you were really going every minute?

Harford: Yes. As I say, you had a relief operator or an oiler, as they called them at that time; they're relief operators now. Then we went to an eight-hour shift, six days a week. Out of the eight-hour shift, the oiler would give you maybe an hour and a half to two hours [relief] on the cage hoist, and over on the ore hoist it was the same.

Swent: For your lunch and so forth?

Harford: Lunch, bathroom, and break.

Swent: The oiler relieved you and also did the oiling?

Harford: Yes, and cleaning.

Swent: And cleaning the change room as well? This is the change room where all the miners changed--?

Harford: No, we had our own individual change room, our own dry in the basement. There were three showers set up down there and a lavatory.

Work Clothes

Swent: Did you change clothes when you came to work?

Harford: Yes, I changed in the hoist room. You wore your street clothes to work, and you wore your street clothes home.

Swent: But you changed to work clothes in the change room?

Harford: Yes.

Swent: What did you wear?

Harford: Just jeans. They didn't even require hard-toed shoes in the hoist room.

Swent: Safety glasses?

Harford: No.

Swent: Hard hat?

Harford: No. Eventually that all came in.

Swent: Why did they want you to change clothes?

Harford: You could have worn your street clothes to work in if you wanted to get them dirty and greasy.

Swent: It wasn't required by management that you wear special work clothes?

Harford: No. But later on, yes, you had to have the hard hat, safety glasses, and hard-toed boots. At that time, if you were on the platform you could take the hat off.

Swent: Did the company pay for these things?

Harford: They furnished the glasses, but you bought your own boots or shoes and hard hat.

I spent three and a half years on the swing [shift], and then there was an opening that came up on the cage hoist at the Yates. Well, I had put some time in over at the Ross, too--very little. I should say that when I first got set up off that relief operator--do you remember Joe Dunstan?

Swent: Yes.

Harford: Joe had retired over at the Ross cage hoist. I had to take the opening, because I was the oldest man with seniority. I was over there about two weeks on the cage hoist, and then Earl Warren passed away who operated the Yates cage hoist. So then I came back and went on the Yates cage hoist, and I worked with my neighbor here, Don Allen, for over fifteen years as my partner. He was on the ore hoist, and I ran the cage hoist.

III HOIST OPERATOR AT THE YATES SHAFT, 1962 TO 1984

Ore Hoists and Cage Hoists Compared

Swent: Was one considered any better than the other?

Harford: Well, yes. There were little differences. Basically all four hoists were the same, but there was a little quirk to each hoist. I hunted and fished with Don, and I guess as far as a partner, I couldn't ask for any more.

Swent: You've certainly been wonderful friends. But was there any preference between cage and ore hoists?

Harford: Oh, yes. The ore hoist was the preference.

Swent: It was? Why?

Harford: Well, you didn't have to listen to the cagers. You didn't have the stress of raising or lowering the men. All you had to do on the ore hoist was hoist it when the skipper had loaded it with rock and given you three bells to hoist the skip. Once it was dumped and the other skip down, he'd give you three bells. The loaded one would come up, and the empty one would go down. It was just down and up. You could just sit back. There was no radio to listen to unless you had shaftmen checking the shaft out. It was just a matter of going up and down.

The cage hoist at the Yates at that time had two 1,250-horse motors on it, and the ore hoist at the Yates had two 1,500-horse. Basically it took you, from the time you left the 4,800 until you got to the dump, about two and a half minutes. So it was moving around thirty miles an hour.

I'm getting ahead of myself. I was on that cage hoist for about fifteen years.

Swent: Were you moving men all the time as fast and as often as the ore hoist?

Harford: No, you would get a little bit of a break. If the cager caught up on his work, he might say, "I'm going to go get a cup of coffee." But you still did not leave the platform, because if somebody was hollering on the radio and needed something--. When the cager left to go get a cup of coffee, you would sit there. When he came back, he would give you a stop bell before he got on that cage so you would not move it. [You shouldn't move it] anytime without a proper signal from the cager, but somebody might forget, so he would give you a stop bell before he stepped back on it. Then he would holler on the radio wherever he wanted to go. If the radio would give out, he would go to the bell line, just like #3 winze.

Swent: The bell line was a backup to the radio?

Harford: Yes.

Swent: And the radio operated on the--

Harford: It came through the cable. There was a little band set up at the top of the head frame on the cable. I don't know what you'd call it, but it was a sort of a little collar.

Swent: I remember they were very proud of it when they developed that. It was quite a new thing.

Harford: The bell was just for backup. They had radios on the ore hoist, too, for shaftmen.

Swent: That must have been a big help.

Harford: For shaftmen it was a good help.

You did your cleaning and your oiling. The operator then also had to help grease and wipe on Saturdays. Saturday was grease and wipe day. Sunday, if they were skipping on the ore hoist, you greased and wiped and then ran the skipper, the relief, or the shaftman around on the cage hoist.

After about fifteen years Don retired, so I did go on the ore hoist. Don retired about fourteen years ago, because he and I drove from out here for about six months after we built the

house out here. I was on the ore hoist up until '84, when I went to the old high on the maintenance crew.

Maintenance Man at the Old High

Swent: What is old high?

Harford: That's the building.

Swent: I don't know that building.

Harford: You don't? It's down by the Ellison shaft. It's the old high hoist room. I went down there and got on maintenance.

Swent: So you weren't operating--

Harford: No, I got completely out of the hoist room. I will say this. They had started to change the shifts around, and I was getting tired of three shifts. I figured that after about thirty years of three shifts, I had enough.

Decline in Maintenance Standards

Swent: You told me once that you thought things weren't kept as clean and as ship-shape as you would like.

Harford: No, they weren't. We were getting people in--I had worked my way up to where I was assistant boss or lead man. If I was in the bossing job, and I would try to tell someone something, I had a boss over me who said, "Oh, we have to keep these people. Let things go a little bit."

Swent: Not to be too hard on them?

Harford: Yes, not to get down on them. It didn't set with me, because you could have eaten off those floors when we were in there. And that hoist was clean and shining.

Swent: Oh, I remember when it was so clean.

Harford: Even the generator room--the offsets in the Yates there. Oh, I tell you, it irked me. And you couldn't do anything to these people. When I was breaking people in, I was telling them

whether they were going to make it or not, and if I figured they could. There were a couple that I said, "No, I don't think they're going to make it."

But I was told we had to keep them. I guess they're still there. I have no idea. But I didn't want the responsibility if he was going on the ore hoist, let alone on the cage hoist with men and material. With material he could wreck the shaft or the cage, but with men, I just couldn't--

Swent: Did the union have anything to do with this?

Harford: No. I was not a strong union man. I paid my dues, because I figured I'd get the benefits. I will say that I think I got a little more on my retirement.

Swent: But what about the lack of discipline?

Harford: Yes, they [the union] would have a little bit of, "Well, he's got it in for this guy." One of them was colored, but that was beside the point. He's still there, so I guess--. The first two weeks he was there, I wanted to give him a chance to go on the cage hoist to see if he could run it. Because he was having trouble running the ore hoist.

So I went to the old high, and at that time it was plant maintenance. I would work on the hoists if they broke down. I would work on pumps in the mine, anywhere from the 8,000 up to the 1,100. B & M went up to the 1,200 at Ross. Then we would work down at the mill if we were needed. At that time I basically got from the bottom of the mine to the top--everywhere.

Swent: Working just on hoists?

Harford: Hoists and pumps. About the last seven months, I was driving trucks for the electrical department, hauling men and material and delivering. Then I retired. [laughs] The opportunity came when I got to be sixty, and they said, "Okay, there will be no cut in retirement." I figured it was time.

I won't say I was in love with the job, any of them, but I made a living and raised a family. After forty-one years with them--I didn't figure on staying that long. I got married, and I knew I had a wife to support. There were times when I would really have liked to throw in the towel, even in the hoist rooms. Because it was no different from me putting a new man on a hoist and breaking him in as to have the cager over on the other side not knowing what he was doing. For about the first three or four days you would sit on the platform with this man, breaking him

in. But you are trying to break him in, and you've got a new cager over here who really doesn't know what he's doing--I want to tell you, it got to where it was a little hectic and hairy. I would rather sit in a chair myself and run the hoist.

I knew what was basically going on from past experience. You sit in the chair, and you don't anticipate, but you can figure, "Okay, now they're going to be doing this, so I have to do that." But if you have a new man on the chair, and a new man on that cage, it gets a little bit hectic.

Swent: Were there ever any bad accidents?

Harford: There was one at #3 winze. I had changed shifts with Ray Schebel. I was day shift, and I had something I wanted to do; so I traded shifts with him. He was afternoon shift, and he went down in my place on day shift. They had a new employee cleaning track and cleaning water ditch. I think he was on the 4,500 at #3 winze. He decided to see where the water was going, and they were hoisting rock. The cage was on its way down with an empty car on it, and it decapitated him.

Swent: Was that in the fifties?

Harford: Yes.

Swent: He was a farm kid who had just been on the job a few days.

Harford: Yes, and he wanted to see where that water was going.

Swent: That was a terrible thing.

Harford: I know some where they went down the shaft or the ore ways at the Yates, but we had nothing to do with them. There were one or two that I know of.

Instruction in Safety

Swent: Let's go back and talk about some of the special things that happened. You were saying there was one fatal accident, which fortunately didn't happen on your shift. But still that must upset people. What in general was the safety training or philosophy? Were you given special safety instructions?

Harford: To start with, no. I guess you took it upon yourself to watch out for yourself and the other man. Later on, yes, they would have safety meetings, either in the department or in the safety room. They would be on different topics--electrical, blasting, rock bolting--which really didn't pertain too much to us, but it was a required safety meeting that you would attend.

Swent: Even though it wasn't your particular job?

Harford: There was other safety information with it, too.

Changes in Personnel and Attitudes

Harford: I should mention that at that first hoist room it was sort of like a close-knit association. Once you were in, you didn't want out. It was quite a time to get into it. Eventually, after the union came in, it got to where whoever had seniority and a good work record could fill out the job. Then, in the last few years, it got to where nobody really wanted to come into the hoist room. I'll bet you that over the last five years that I was in the hoist room, 95 percent of the new hoist people came off the street. They were looking for jobs. It was the shifts, and I think some of it was just that mentally they didn't want that responsibility of hoisting. Also this was because no one from the mine or other departments would bid on the job.

Swent: You retired in--

Harford: November of '90.

Swent: So you're talking about five years before that, in the middle eighties?

Harford: Yes, in the middle eighties it changed. And probably while you were there, the turnover of people who worked for Homestake was high. There used to be--I called it five nights and out. Some would come in and work three or four months to get enough money, and away we go. At the time I worked a little part time on the police force, and you could tell the turnover of the personnel from Homestake. At one time it was quite a few of these single men, and the bars--the whole town would get a little wild, like other mining towns.

Then all at once it seems like it did a whole big flip-flop and came in with the family personnel and men who really wanted jobs and stayed there.

Swent: When was this change?

Harford: It was probably in the early seventies.

Swent: The population became more stable, and there was less turnover in the workplace?

Harford: Yes, less turnover in personnel. Jobs got a little bit more scarce, and if you had a job, you stayed with it.

Swent: When did the union come in?

Harford: Let's see--Russ graduated in '71, and we were union then.

Swent: Russ is your son.

Harford: Yes. I think it was '69.

Swent: There hadn't been a union at Homestake since 1912.

Harford: No, there hadn't been one since then.

Swent: From 1912 to 1969, forty-seven years without a union. There had been attempts to bring in unions; there had been a lot of agitation.

Harford: Yes, there had been votes quite a few times.

Swent: What is the union?

Harford: The Steelworkers, Local 7044.

Improvement in Safety: the Union and the Bureau of Mines

Swent: When that came in, did it cause any drastic difference?

Harford: I think in a way, yes. Between that and when the Bureau of Mines really got tough, it helped on the safety end of it. I'm not saying that the union did it on its own; the Bureau of Mines I think required a lot more than the union, which pushed a little bit. I'm not saying Homestake wouldn't have.

Swent: But it did make a difference?

Harford: It made a difference. I think it made a little bit of difference in the personnel. At one time you were a person, and eventually

you got to be a number; and a number could be replaced. It gave you a little bit of thought to realize, "Now I've got the union behind me; I can at least have a say if I have something come up."

I should say, too, that in the hoist room they were pretty strong if you started drinking. You were over the hill and down the hill before the union; you didn't stay in the hoist room [if you drank]. I'm not saying you couldn't have a drink, but you didn't go to work drunk. And if they saw you on the street drunk, they might think about keeping you in the hoist room.

Swent: This was before the union?

Harford: Yes.

Swent: Was there a difference afterwards?

Harford: No, but I could go to the union and say, "I did have a couple of drinks. They gave me fifteen or twenty-nine days, and I don't think I deserve it. What are we going to do?" The union might get my days cut down to five days or so.

Swent: Whereas before you couldn't--

Harford: No, you took it if you wanted to work. They would give you days; they could give you days for sleeping on the job or coming to work drunk. It's like any other job; you couldn't--or shouldn't --drink or sleep on the job and get by with it.

Swent: Was there much problem of people drinking in the mine on the job?

Harford: I have known of cases, yes.

Swent: Did it ever contribute to any accidents?

Harford: Not that I know. Two men that I know of did it. One of them was a tool packer, and all he had to do was take a truck and go through the levels picking up tools. Nobody seemed to bother him, but there were times when I think he came out of there worse [for drink] than when he went in. He never got caught.

Swent: If a miner came to work and had had something to drink, would the shift boss talk to him?

Harford: If he thought he shouldn't go to work, he'd catch him before he got on the cage and say, "You go home." If the miner gave him a little bit of lip, then he'd say, "Okay, now we're going to give you five days." That was five days' lost wages. They were

supposed to catch them before they got on the cage and into the mine, but I have gotten on the cage sometimes knowing that it smelled pretty strong.

Minor Horseplay on the Hoists

Harford: I probably shouldn't say this, but probably 60 or 70 percent of the hoist operators in the hoist room the day after pay day--or pay day night if you were afternoon shift--would like to give them a little bit of a yo-yo bounce in that cage. The cager knew what we were going to do, and he'd hold the radio open. You could just hear the guys going, "Unhhhhhhhhhhhhhhhh." We deliberately did it, because we knew some of them had had a few drinks before they got on that cage. We'd give them a little extra bounce on there.

I remember the time we took the guides down.

Swent: The guides for the summer tours?

Harford: Yes. The cagers would have it all hooked up with us, you know; they'd know what we were going to do. They'd hold that radio open and then give them a little bit of a bouncing yo-yo to let them scream a little and make it exciting.

I can remember the first ride I took on one of those cages. That was over at the Ross when I was breaking in. It was on a Sunday, and we were greasing and wiping. The operator asked me if I had ever been down in the mine, and I said no. I didn't even know what skip pockets looked like, where they would load the rock to raise to the surface, because I had never been in the mine. He says, "Go on up there, and give me a stop bell on the bell line." He told me how to turn the radio on. I walked up the steps from the Ross to the head frame, gave him the bell, got on the cage, and radioed to lower the cage. And that's what he did to me; he gave me a yo-yo ride. That cage bounced about three times. When I got down there, he laughed. "How did you like it?" [laughter]

So you had your fun. It was nothing that would cause an accident. It was just something to entertain.

Swent: Did any of the hoist operators drink on the job?

Harford: Yes. One. He came in later; he wasn't there when I originally worked there. He had it in his car. One of the men had been

drinking when he was working with Don and me. We did cover for him a couple of times and wouldn't let him run [the hoist], but that was enough. We told him after that, because we didn't have to put in eight hours because of his drinking. Eventually he went with another crew, and he stopped drinking on the job, but the first thing he did when he got off shift was have one or two; on the way home he would have a little bit.

Swent: What about drugs? Was marijuana or anything else in evidence?

Harford: They were drug testing before I got out of the hoist room. I think the government set it up so that the company could test at random. They would come in the hoist room, and we had two young guys that I know of who got discharged because of drugs.

Swent: Was it your impression that it was a problem underground?

Harford: I couldn't say that, Eleanor. I didn't get underground that much at that time. When I did get underground, I was in the old high on the maintenance crew. We got to where we knew quite a few of the crews, because we were working on the compressors, too, and on the coolers; we had cooler systems for the miners. They were big coolers, and we did work on them. We'd get around to different crews and different areas, but I couldn't say there was a problem with drugs and alcohol in the mine.

Swent: You weren't worried about it?

Harford: I figured that as long as it didn't affect me, I would look after myself. In the hoist room, yes, I rode that cage, going up and down. But until you brought it up, I really never gave it much thought.

Working on the Mine Rescue Team

Harford: You talked to Ken [Kinghorn], and I was in mine rescue from 1953-1986, twenty-some-odd years. I have been on three fires.

Swent: I didn't realize there had been so many.

Harford: Oh, yes. Some of them maybe only part of the mine rescue crew got called out. The biggest one was on the 3,500.

Swent: When was that?

Harford: In the seventies. Ray Bunche was safety engineer, and I think Bud Braun was under him at the time. I didn't go underground that time. They needed somebody to take a truck and go to the airport in Rapid to pick up some cordoxide and some more breathing equipment that they were sending in from the Bureau of Mines in Salt Lake City. Bob Campbell and I took the truck down to Rapid and to the airport and picked that stuff up. So I really didn't get in on that, but I got in on it the next day.

Swent: Was mine rescue something that you volunteered for?

Harford: [laughs] I didn't. It was more or less put to me. Basically what it amounted to was that they wanted so many out of the hoist room, so many out of the mine, so many out of electrical. So if I had to go underground and run a hoist, I would know how to use the breathing equipment, and I could go down and run hoist. This is what it was set up for. I sort of got volunteered for it; it wasn't my idea. Leroy Seyhers came over and said they needed hoist operators, and he said I was younger than some of the older operators.

Swent: Did this give you any extra benefits?

Harford: Yes, we got paid for it. There was four dollars once a month for drill, and any overtime in the mine. We didn't get anything as far as fire pay--hazardous pay. You got paid your straight wages plus time-and-a-half. And it included shift bosses and some foremen, because they knew their area. I and two others out of the hoist room could go and run hoist underground with the equipment on.

Eventually they set up what they called a caskaid air system in the hoist rooms underground, where they had air tanks, probably about a dozen of them in the hoist room down there. Then they had a long enough hose and mask that would fit the operator sitting right on the platform. He would run it until the fire rescue crew would come around and say, "Okay, you're relieved," and then get him out of there. But he had the air and the mask and equipment that he could go to if he had to. If all the men that he knew of were out of the mine, then mine rescue hoist operator would take over and finish off running the hoist if the mine rescue crew had to get lower. It was quite an experience.

Swent: After all, the hoist man was the key person.

Harford: Yes, he is the key person, he and the motorman. The motormen were in mine rescue.

Swent: The motormen on the train?

Harford: Yes, who hauled men and material and rock. He had to know where his men were, where he had dropped them off and if they had moved. Well, the shift boss would have to know, too. Then he'd say, "I've got everybody back here off the level," and maybe the shift boss would check behind him and say, "Okay, I have sixteen men on the beat, and that's what we got out."

Swent: You worked in three fires?

Harford: Yes.

Swent: There was never a fatality in a fire, was there?

Harford: Not outside the one in the old Ellison, way back in 1930.

Swent: But not while you were working here?

Harford: No, no fatalities due to fire.

Swent: Were you involved in any other accidents? Did you have to work when there were mine accidents and bring people up?

Harford: No, I didn't get in on that. The safety department pretty well took care of that. The miner, his partners, or some of the other crews would take care of it. You did learn some first aid in mine rescue and some CPR. As far as going down on a working accident, no, because the safety department took over and said, "We'll need you, you, and you," and they got the crew that they wanted.

High Grading in the Mine

Swent: What about high grading? Was that--

Harford: Oh, yes. I did it, and I think I still have some from #3 winze country. I don't think I'm the only one. I think anyone who worked for Homestake has some sample somewhere. I don't say it's on a large scale, outside of the time they had those guys who were contracting and tearing out that pipe down in the mill when they were taking it.

Swent: When was that?

Harford: That was back in the eighties, not too long ago.

Swent: That was a real ring, wasn't it?

Harford: Yes.

Swent: What were they doing?

Harford: They were taking out amalgamated with gold in it from the mill down there. They were changing piping. The contractor's crew had come in to change pipe, because it was getting plugged up with amalgam. They were hauling it out and running it some way to extract the gold out. They were even hauling it out in the cyanide cans, I guess. Then security really went on stronger.

I can remember when I was working in the old high. We would get down to check the elevator at the refinery, and you emptied your pockets going in--everything. Your tool bag was emptied when you came out. They had sort of a plastic cup with little black and white balls in it. If you drew the black, you had to take your boots off. [laughter] It got to where it was scary. They had cameras set up to cover everything in the refinery and mills.

Swent: Just in the refinery and mills?

Harford: Yes. I'd go in there to check the elevator and grease and wipe it.

Swent: Did they do a check on miners as they came out off shift?

Harford: Years ago they used to do a little random check, and they would never say anything.

Swent: Did they check their lunch buckets?

Harford: Yes. It wasn't only high grade; it was other stuff--tools or something. You'd come up, and there was the shift boss or the foreman standing there saying, "Open your bucket." Were you going to say no?

Yes, I have a sample or two.

Swent: Of course, Homestake ore isn't really very high grade.

Harford: No. I got mine at that time when I was down at #3 winze. One of the miners who was doing the drifting mentioned something about it. He said, "Do you want some samples? They're not too good, but check the next fifty or sixty cars that come up." So we looked through them and found a little fleck here and a little speck there.

I did see one nice piece of quartz come out of there, though. It was probably about two and a half inches round, and there was nothing but wire gold in it, just as pretty--it was like a porcupine. The guy who had it knew someone who did rock work, and he had it split and made into a bolo tie. But he didn't wear it around here. [laughter] I know the guy, and he's down in the eastern part of the state now. He had half the piece made into a bolo tie and just left the other half the way it was. I don't know what it would be worth.

I have been on the hoist when they brought it up in the powder box--the foremen, the shift bosses, the engineers, and some of the higher-ups. They'd bring it up and put it right on the conveyer belt and made sure it went through the crushing system and into the mill.

Swent: Had they taken it from somebody?

Harford: The miners would hit a pocket of high grade, and they knew about it. You would move your miners out and any other personnel who were around there close. Then maybe three or four shift bosses and a foreman or so would pick it up and put it in the old wooden powder boxes. They'd get on the motor with it and bring it out. They'd put it on the cage, bring it up, and then put it over in the crusher room.

Swent: Special handling.

Harford: Yes, it was all hand-handled right out. Then they'd go down and check the mine again to see if there was any more of it on the next blast. It was very seldom, but there were a few times.

Swent: I guess I was kind of naive. Not too many years ago I heard a conversation about contractors making so much money, and I always thought the contractors got rich because they worked hard and were well paid. Then somebody said, "Usually they're high grading, and that's how they got so rich."

Harford: If a contractor wanted to work to make money, he was either paid by the tonnage or by the footage. There is either A, B, or C grade; it depends on the toughness and the hardness of the rock. Say they got \$30 a foot on some high-grade rock. If they get a ten- or twelve-foot round a day, that's \$300 that's split maybe between three of them, two miners and the motorman who hauls rock. That's \$100 over a day's pay, and maybe they were making \$60 or \$70 a day's pay at that time.

Later on, I think, is where the higher contract money comes on. When we were out at Grizzly Gulch, there was one month that

they really poured the coal to it and made over \$100 over a day's pay. Then--I shouldn't say this, but I will--they were told to cut back. Before that they were making \$60 or \$70 over a day's pay, but this one month they just thought they would see what they could do. It got back to the office up here, and they said, "This is causing a little friction with the rest of the miners who are contracting."

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Harford: They'd know how much they were going to spend to sink that shaft. My philosophy is that rather than do it in three years or two years, what's the difference if they got done in thirty days or a year ahead of time? It didn't bother those guys.

Swent: But it didn't seem quite fair.

Harford: It didn't seem quite fair to those guys down there, because they were probably only making \$50 or so--which at that time [was pretty good?] At the time, they wanted to get us on the contract out at Grizzly Gulch in the air shaft, but the company wouldn't go for it. At Christmas time the miners would give us something to help out.

There were times when your operator could really make it tough. You could say, "I'm not going to do this or do that. I'll slow things up a little bit."

Overall, I guess I had a good job.

Fringe Benefits

Swent: You said you started out with a week's vacation.

Harford: Yes, for the first five years. Then I went to two. After you had fifteen years, you got three weeks, and I think the union got it to where after fifteen years you got four weeks. For the guy who had twenty years or better, when they came around with the vacation and went back to fifteen years to get four weeks, we had no benefits out of it no retroactive vacation for those who had gotten only three weeks at fifteen years. So they gave us two and a half days' pay over and above your month's vacation.

Swent: That was kind of a retroactive clause, then.

Harford: Sort of a little bonus. Then there were safety awards. I got safety awards all over.

Swent: What for?

Harford: For non-accidents.

Swent: What sort of awards were they?

Harford: Oh, we got bolo ties, and sometimes you had your choice. I got a watch, a watch for Bonnie. I've got a belt buckle in here.

Swent: The Homestake belt buckle? Yes, I've seen some of them.
[Harford looks for his and finds it] Oh, my, I haven't seen one like that. It's gorgeous. It says, "No-injury award, Homestake Mining Company."

Harford: It has the Yates head frame and Yates hoist room on it.

Swent: In gold on a silver backing. That is a beauty. It has a couple of seals. One shows the mill, and one shows a miner. Do you ever wear it?

Harford: No.

Swent: It probably weighs a ton.

Harford: I don't know, I just look at it and think, "Why should I scar it up?"

Swent: How long did you have to go without an accident to get that?

Harford: That was several years. At that time you had a choice of four or five different items for that year.

Swent: They were all gifts? They didn't just give you money?

Harford: After the thirty-fifth year I did get a bonus of money. Well, it was put into a fund, and we did get Homestake stock for a while, too. I don't know how it was set up, but we got so many shares of Homestake stock.

Swent: Did that give you more of a feeling of participation in the company?

Harford: [dubiously] Yes, but at five cents a share, it was no big income. I sort of laughed about making out a check for two or three dollars.

- Swent: I wondered if it made you feel a little more as though you were part owner of the company.
- Harford: Oh, yes, it made you feel that you had gotten something. It was like anything else: when you get something, it's better than nothing.
- Swent: What about the medical benefits? How did you feel about those?
- Harford: Well, good. We had three children born when I was at Homestake.
- Swent: All of them were?
- Harford: No, Becky wasn't. Becky was born in Sioux Falls when I was in the service. But Russ, Steve, and Chris were all born in Deadwood. Up until the last year--it isn't [run by] Homestake now. I think the personnel in the hospital down there--I think if it was still under Homestake we'd have had better care.
- Swent: Yes, your wife had a really unfortunate experience at the hospital, after it wasn't the Homestake hospital any more.
- Harford: I had no trouble with the clinic up there. I had a regular checkup on the hoist every year. You had a physical, which was required. In Bonnie's case I had to pay for the hospital, but when all the kids were born and you went to the doctor, you wouldn't pay for it. I think the benefits were good, and I still think they are. I still have Homestake, and so does Bonnie.
- Swent: It continued into your retirement?
- Harford: Yes. The only thing I do regret is that I didn't keep the insurance that I had for the last eighteen months under Homestake. The government required that I could take it for eighteen months after retirement, and I do regret that I didn't keep it up, because now I can't get insurance on Bonnie.
- Swent: And you could have kept it?
- Harford: Yes. But I figured I could get something cheaper. We still have a Homestake doctor. I'm not too concerned for myself, because I do have V.A. doctoring. As far as medical, I think I got treated all right. I did get money back by going back to Homestake from Bonnie's stay at Rochester. At that time the contract was 90-10 percent; I paid the first fifty dollars and 10 percent of the unpaid balance. When we were [at the Mayo Clinic] in Rochester, [Minnesota], the last contract with the union went 80-20. Well, they charged me the 20 percent in Rochester, which I wasn't going to argue.

Then I got back here and got to thinking about it, and I thought I would go talk to Mrs. Celia Smith of Homestake insurance personnel. She asked if I had all my paperwork, and I said yes. She took copies of it, and I got money back from Rochester.

Swent: They gave you the 90 percent, then?

Harford: Yes, I was under the 90-10 yet instead of the 80-20.

Vacations? Well, that first five years of a week was tough. Boy, when you got to two weeks, you really thought [that was great]. After twenty years there really were no benefits, because it went back to fifteen years when you got four weeks. Basically I didn't gain anything until that two and a half days' pay was added on.

Swent: There's a big difference between a one-week vacation and a four-week vacation.

Harford: We've talked about the union. I do think we got more money than we would have gotten without it. It's just like any other company, if we can save money on wages, we're going to---. We did have the union to push for us. I'm not saying the union is right for everything, but I think we got some benefits from it.

Swent: For a while there was a lot of bad feeling, but that has pretty well calmed down now, hasn't it?

Harford: I think so, yes. Now Homestake is cutting back, and I've heard rumors now that they are going to have another early-out.

Swent: Early retirement?

Harford: Yes.

Swent: Doesn't everybody have to belong to the union?

Harford: No. It's not a closed shop. Once in a while it causes a little bit of friction. The union gets the benefits for you, and you take it and don't pay.

Swent: That causes bad feelings.

Harford: It does. I think it either should have been a mandatory closed shop, or just forget it and not have a union. [Without the union] I probably wouldn't have gotten the wages that I was getting at the last and maybe not some of the other benefits, either.

Overall, I had no problems working there.

Swent: I guess we've covered all that I wanted to ask about. Is there anything else you'd like to say?

Harford: Not unless you want more specifics on the hoist rooms.

The Hoist Room Then and Now

Swent: They used to have potted plants in the hoist room, and they don't have those any more.

Harford: No.

Swent: I remember the big ferns.

Harford: And they had big oleanders blooming in there.

Swent: It was a beautiful place. Did they do away with plants because of safety?

Harford: I think so, to a certain extent. To go back in there and work, after I went on the maintenance crew--if I had left things in a state like that when I was in there, I'd have known about it.

For instance, I was working day shift, and the mechanical engineer, Leroy Seyhers, came in there. He would come in two or three times a week and just check. He came up to me and said, "Wayne, go down and clean the gear case bit." There was some oil leaking down in there and whatnot.

I said, "Roy, that's afternoon's job."

He said, "Go clean it, Wayne." Well, Eleanor--. So I went and got the mop and the bucket and went in there and mopped it up. He was gone when I came back out of the basement.

But when the afternoon shift came on, he was over there, and somebody got it good. He said, "I'm not going to have Harford or anybody else do that on day shift. You will do it, and you will do it every day if you have to." I guess I spoke out of turn when I said it was afternoon's job, but it was.

Swent: But he wanted it clean right now.

Harford: Yes, so I went and cleaned it.

Swent: But it's not that way now?

Harford: No, I think you could go in there and wade in oil and grease up to your neck. I would hate to think about it. When I went in there and worked on the hoist, there was grease and oil [work required]. Now I think all they think they have to do in that hoist room is run the hoist. The thing that bothers me now to a certain extent is that they figure, "Now that we've got them [workers], we've got to keep them. We can't can them because we can't get anybody to replace them."

Swent: This could ultimately translate into a safety problem, couldn't it?

Harford: I think so. Somebody might slip in the grease. I will say that when we were in there with maintenance, and also the electrical crews, we'd clean up after ourselves. It wasn't left to them. I remember mopping floors when I was in maintenance. If we tracked up something, we cleaned it up behind us--maybe not to where it was spit and polished, but it was no safety hazard. But now you go in there, and--. I'm going to go up one of these days and go through, just to see what it's like. It's been a while. I could just snoop. [laughs] Not on a tour, but just go get hold of somebody and ask if I could over to the hoist room and look in the nooks and corners. Maybe I might be wrong; I hope I am.

They used to have a floor man at the Ross for a few years. That's all he did was take care of all the floors. He didn't do any of the greasing and wiping, but he'd take care of all the floor work. They had him over there basically because of that fly ash out at Kirk. When they would scrub down the Kirk power plant, the fly ash would come flying up the hill.

Swent: Would the grease accumulation affect the safety of the hoist operation--the machine?

Harford: No, I don't think so, Eleanor. I think it would be more or less personnel safety. You would go inside that drum to clean or wipe or grease it, and there's all that grease floating around inside. You might step in it, and there aren't too many handholds in those drums to get hold of. Just before I went out of the hoist room, you had to start wearing a safety belt in there and a rope. They did put a couple of handholds on the inside of the drum for when you were wiping on the collar in there, but when you crawled around in there you didn't have too many handholds.

Swent: Of course, the hoist is stopped when you are doing that.

Harford: Oh, yes. As a safety factor it was shut down, padlocked, and whoever was the lead man on the job took the padlock key. Either that or the hoist operator would take the key. If he had to move, it was up to him to get everybody out of the way and then go in and unlock it, which was a good idea. There were a couple of times that I had it turned on me a little bit. Even if I was in there greasing and wiping, if somebody new was on the hoist, he'd think, "Now I can go ahead and turn it," because they were done on their side; but I wasn't done on my side.

Swent: That would be scary.

Harford: It was scary. It made me a little gun-shy about going back in there. The only way I really had peace of mind was when I had the key to that padlock. Then I had the responsibility of making sure everything was clear before I'd turn it.

Swent: I think that pretty well covers it.

Harford: Forty-one years, two months, and twenty-six days. [laughter]

Swent: You were a youngster when you started, just out of high school.

Harford: I had no idea I would stay here so long. All the guys I started with worked about two years apiece, and then they all went scattered ways. One of them went into carpentry in Minneapolis, one went to work for a power company down in the eastern part of the state, and the other one started up an electrical repair outfit of his own.

Swent: I'll bet none of them has as nice a place to live as you have. I can't imagine a better place in the world than this.

Harford: I wouldn't say that we don't have a nice place. The location--I don't know how I lived in town. Lead was good, but it has really changed. They had part of the highway torn up when you were here, didn't they?

Swent: Yes.

Harford: But it's changed a lot since then, too. That open cut--. The old Lutheran church is now going over alongside where the bank was, and the bank is now the tour office. The Rod and Gun Club get the old tour office, and it's going down below towards the old truck barn, by the conveyor belt. I don't know what they're going to do with the old Rod and Gun Club.

Swent: There certainly have been a lot of changes. Thank you very much, Wayne, for sharing your recollections with me.

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Berkeley, California

Homestake Mine Workers, Lead South Dakota, 1929-1993

Kenneth Kinghorn

FROM MINER TO SUPERVISOR, 1966-1993

Interview Conducted by
Eleanor Swent
in 1993

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I CHILDHOOD AND EDUCATION, 1947-1975

[Date of Interview: September 19, 1993]###¹

Swent: To start, Ken, would you like to tell where and when you were born and a little bit about your education before you started working for Homestake.

Kinghorn: I was born in Deadwood, South Dakota, November 1, 1947. We lived in Deadwood the first five years of my life, and then our family moved to Lead. Since then I have spent the rest of my time in Lead.

I went to school here in the Lead system. I graduated from high school in May, 1965, and after high school I just spent a year out working. Then I came back and enrolled in Black Hills State College, as it was called at that time.

Swent: Where did you work that year?

Kinghorn: In Phoenix, Arizona, as a machinist. I spent the summer working in and around the Lead-Deadwood area. After the summer months were over, I went to Phoenix and worked in a machine shop.

Swent: You weren't working in the mine, then?

Kinghorn: No. I came back in May of the next year and spent the summer working here in the Lead area again. Then I enrolled in college in the fall of '66.

¹### This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

Working Part Time for Homestake as a Laborer. 1966

- Kinghorn: That's when I also started my employment with Homestake, in November of 1966, as a laborer. I was going to college full time and working part time, three days a week.
- Swent: Days?
- Kinghorn: Yes. With my college schedule I was able to. I was going to college Monday, Wednesday, and Friday, and I was able to work Tuesday, Thursday, and Saturday during the day. At that time Homestake was working six days a week. It wasn't until 1972 when, through union negotiations, we went to a five-day work week.
- Swent: Do you remember what you were paid?
- Kinghorn: If I remember right, \$1.89 per hour was my starting wage.
- Swent: For how many hours a week?
- Kinghorn: I worked thirty-two hours a week.
- Swent: Did you get benefits?
- Kinghorn: No, there were no benefits associated with that. They didn't have any for the part-time help.
- Swent: Not medical?
- Kinghorn: Well, you did have the clinic, but you didn't accumulate any vacation or anything like that.
- Swent: The clinic was here in Lead at that time?
- Kinghorn: Yes, at that time it was in Lead. I don't remember what year they moved to Deadwood.
- Swent: In '66 was there any commotion here about the Vietnam involvement?
- Kinghorn: No, there wasn't. There was a lot of it on TV.
- Swent: The campus wasn't disrupted?
- Kinghorn: Not as I remember. I guess we were isolated from that, although you would see it on the news, and friends of mine had gone to Vietnam. A real good friend of mine went, and when he came

back--I know you've heard this from a lot of people--you could see a change in his personality. I guess that was what happened with a lot of the guys.

Swent: But you weren't pressured by it here?

Kinghorn: The reason I wasn't, I guess, was because at the time I was going to college, and of course I was being deferred from going to Vietnam. At that time they had the lottery in the draft, and I had a pretty low number, so had I not been going to college I would have been drafted. I eventually was drafted. Sheila and I got married in August of 1971, and I believe it was in January of '72 when I received my draft notice. So they eventually got me, and I had to go to the army.

I left Lead in May of 1972 and spent three years in the army. At the time I went in the army, Vietnam was starting to wind down. There were still troops over there, and they were still sending a few guys over. But it was pretty much winding down, and they were trying to get everybody back home. I think by a year later, sometime in '73, they were starting to bring everybody back.

Swent: So '66 is when you started college and started working for Homestake?

Kinghorn: Yes. I worked off and on, part time, and going to college. Then I took some time off, and then I worked. I don't remember the years, but I spent a year working full time.

Swent: What were you studying in college?

Kinghorn: Business.

Father Alvin Kinghorn, Pipe Man for Homestake from 1939

Swent: Perhaps we should mention your father. He had worked for Homestake all of the time that you were growing up?

Kinghorn: Yes. In fact, he started in 1939.

Swent: Had his father worked here?

Kinghorn: No. His father was a rancher-farmer, and my dad grew up in the St. Onge area of South Dakota, farming and ranching.

Swent: What was your father's name?

Kinghorn: Alvin.

Swent: Your grandfather ranched around St. Onge, and your father came to work during the Depression?

Kinghorn: Well, he spent many years trying to get hired on at Homestake and finally got hired on in 1939. It was somewhat similar to my case. He spent a couple of years at Homestake, and then he was drafted and went overseas in World War II. He spent several years in Europe during World War II, and after that he came back here and went back to work for Homestake.

He spent the first couple of years mining--doing various mining jobs. From there he moved into the pipe department.

Swent: This is underground?

Kinghorn: They have a pipe shop at the Ross top, and at that time all the pipe men worked out of there. They would go down and maintain the high-pressure lines that was used for the air motors underground. They installed any and all of the water and air lines that were needed underground.

Swent: They must have hundreds of miles of lines.

Kinghorn: I couldn't tell you how many miles there must be. At least hundreds.

Swent: Compressed air and water.

Kinghorn: Yes. At that time the compressed air used for the air motors carried a thousand pounds psi, which was real high pressure. Our normal air lines carry a hundred pounds, used for drilling and operating some of the air equipment underground, like the muckers, the air drills--the jack legs that are used for drilling. The thousand-pound air lines were kept separate from the other air lines that carried a hundred pounds. The thousand-pound lines were just used strictly for the air motors.

Swent: So your father maintained these pipe lines?

Kinghorn: He maintained and installed any and all water and air lines that were needed throughout the mine.

Swent: I think you said he saw every inch of the mine in doing that.

Kinghorn: In that capacity he was able to see everything from the top to the bottom.

Swent: Was this a shift job?

Kinghorn: No, he was one of the fortunate ones who, when he was working on the piping job, was able to work pretty much straight days the whole time he worked at Homestake. At that time there were a lot more straight day jobs than there are now. Everything underground in the last couple of years has pretty much gotten away from straight days. It used to be that anybody who installed timber chutes or timber lines, did track work, the bar man--all those types of jobs were always straight day jobs. Over the last several years they've incorporated those into the shift work also.

Swent: That's an interesting change.

Kinghorn: I understand that the reason they did that was to try to balance out the shifts. We had too many people working day shift and not as many night shift. It just helped in balancing out the work force and trying to get shift underground, especially day shift. If you didn't have as many day shift, you could get shift down quicker, and that way everybody was able to work at their job a little bit longer. I think it was management's philosophy to balance the shifts and try and get everyone at their workplace--try and get them there sooner so they could spend more time on their job, which makes sense.

Swent: Did you feel that your dad was fairly content with his work?

Kinghorn: I think he enjoyed it. Probably what helped him enjoy the work he was doing was because he was able to see so much of the mine. In some cases, like if you are a miner, you may spend four, five, six, seven years on one level, just mining your stope. In my dad's case, doing what he was doing, he was able to see probably every level in the mine. In some cases he even got to see some of the upper levels that were no longer being used.

Underground Fires in the Mine

Swent: Were there still areas that were on fire, that were burning? Did he ever say anything about that?

Kinghorn: The one thing I remember him saying is that back when he first hired on in the forties, and maybe even in the early fifties,

they used to have problems with fires in the open cut or in the upper levels of the mine. They would go in and build walls. They didn't really know where the fires were at, but they knew that they could smell smoke. They were getting CO [carbon monoxide] readings, but they couldn't really pinpoint where the fires were at. So they would go in and build walls and then sand backfill in these drifts and seal these areas off. That would take care of it.

Maybe sometime later, just through spontaneous combustion, the old timbers that were used in the open cut in the old-type mining methods would start the whole process all over again. Not having a way to get into some of the areas and not knowing for sure where they were at, they would just build walls again, sand backfill, and seal it up.

Swent: That's where they're digging it all out now.

Kinghorn: Yes, and I don't think they have quite reached the area that my dad was referring to. Maybe in some cases they have, way down in the bottom of the pit.

Swent: I remember hearing about fires that just went for years.

Kinghorn: Even as recently as a few years ago John Marks, our ventilation engineer, had to reverse a number two intake fan that was from the surface to the 2150 level. We detected some smoke, small amounts of CO but not enough to amount to anything. The only thing that John could figure out was that it was this same spontaneous combustion of old timbers in the open cut. The way the ventilation system was set up, we were drawing air down through the old raises and stopes into the mine and the upper levels of the mine.

So he changed the number two intake. Instead of making it an intake, he reversed the fan and made it an exhaust and repressurized it, forcing the fresh air back up through the open cut instead of letting the open cut draw air down to it. He just kind of pushed everything out.

Swent: That did the trick?

Kinghorn: That has taken care of it ever since. It really helped, because you just have spontaneous combustion in the old timbers. John was able to reroute the air and take care of that problem.

Army Service, 1972-1975

Swent: Did you finish college?

Kinghorn: No, I didn't. I completed three years, and at that point I was drafted into the army. I spent three years in the army.

Swent: Where were you in the army?

Kinghorn: I was really fortunate. Sheila and I were married in August of '71, and I was drafted in May of '72. I spent basic training at Ft. Leonard Wood, Missouri, for two months. From there I moved to Ft. Carson in Colorado Springs, Colorado. I was fortunate enough to spend the rest of my three years at Ft. Carson. At one point I did have orders to go to Korea.

I said I was drafted into the army, but I enlisted, and I would only have had to spend two years had I been drafted, but I enlisted and had to spend three. But by enlisting, I guess I helped myself in where I would be stationed. They had at that time what they called a unit of choice, so I was guaranteed eighteen months at Ft. Carson, Colorado. I got orders to go to Korea, but at the time I received the orders I had only been at Ft. Carson fifteen months; so I had three more months to spend there. Uncle Sam couldn't send me to Korea quite yet.

They had to rescind those orders, and after a few months went by I was getting what they call in army terms "too short" to go overseas. They want you to spend at least twelve months overseas, and I didn't have that much time left. So it just worked out that I was able to spend all three years basically at Ft. Carson.

Swent: What did you do?

Kinghorn: I was a personnel specialist. I was basically the company clerk with an armored unit. In the army you have a primary and a secondary MOS. My primary one was personnel specialist.

Swent: What does MOS stand for?

Kinghorn: I was afraid you'd ask that. It's your primary occupation. Then you always have a secondary, and that was being in an armored unit. So I was a personnel specialist with an armored unit. I spent probably 90 percent of my time in the office doing paperwork for the company, but when they would go out in the field on maneuvers, I would go out with them, which I really

enjoyed. We'd get to go out in the tanks and fire all the guns on the tanks, went out on maneuvers, played war games.

Swent: Did any of this carry over into good experience later? Was it beneficial to you?

Kinghorn: Not until probably the last several years. I spent quite a few years mining, and from there I took an electrical apprenticeship for four years at Homestake. After that I went into the safety department. It's probably there that my army experience has helped me out quite a bit. It was some years later, but I can still see where that experience helped me out.

Swent: You came back to Lead when you got out of the army?

Kinghorn: I was back here in June of '75.

Swent: Was it a big decision to come back here? Sheila is also from here.

Kinghorn: Right. She had grown up here. She was born in Eureka, South Dakota, and her folks moved here when she was four or five years of age, so she grew up in Lead. We spent those three years in Colorado, and we really enjoyed Colorado Springs. It's a nice area, and we kind of thought about staying there. But at the time jobs weren't real plentiful, and we decided to come back here. At that time, of course, you could always get hired on at Homestake. In my case there was really no problem, because I left Homestake to go into the service. The agreement is that if you leave the employment of Homestake to go into the service, you have a job when you come back.

We came back, and I started working for Homestake.

II WORKING AS A MINER FOR HOMESTAKE

Hiring On

- Swent: Had you gone on full time before you went into the army?
- Kinghorn: Yes, I changed my status. The last year I was at Homestake I was working full time, straight nights, and going to school during the day.
- Swent: What was the procedure for hiring on at that time? You had to take a physical exam, I presume.
- Kinghorn: Yes, everybody is required to take a physical.
- Swent: Was it rigorous?
- Kinghorn: Just your run-of-the-mill physical. You do your lab work and see the doctor. He asks you questions about how you are feeling, if you have had any prior surgeries.
- Swent: Any special emphasis on your back or your physical strength or your lung capacity?
- Kinghorn: Yes, there was. I think they always ask how your back is. I think they check to see if you had any back surgery, just in case you are not quite telling the truth. At the time I came back from the service, I had what they called something like a hernia that had developed in the service. They checked me over pretty thoroughly. In fact, they said I was going to have to have that taken care of before they could re-employ me. I convinced them that it wasn't bothering me, and I had had it for a year or a year and a half. So they hired me. I only had it taken care in 1986 or '87. They said it was starting to

develop, but what was actually there, I'm not sure. It never really bothered me, but I did decide to have it taken care of.

Swent: What was your job at that time?

Kinghorn: When I came back from the army in June of '75, I was rehired as a laborer, but I quickly moved into a mining contract, and then I was a contract miner.

Training as a Miner

Swent: Tell about what the procedure was for changing from a laborer to a contract miner.

Kinghorn: You just hire on as a laborer, and a supervisor has you do odd jobs. It might be filling in motoring; you can fill in as an extra contractor when a miner is off and the supervisor needs someone to go into a stope. You might be in there if the individual is gone for a couple of weeks' vacation; you spend a couple of weeks in the stope as an extra contract.

Swent: How did they train you?

Kinghorn: There really was no set training program. It was just on-the-job training.

Swent: It must be sort of scary the first few weeks.

Kinghorn: When I first came back in '75, it was still new to me. When you first go underground, it's kind of overwhelming. It's dark, because you only have this light on your hat. I never felt claustrophobic, but some people did to the point where they wouldn't even finish out the shift and would go back to the top. I think it's just getting used to the darkness and getting used to having to do everything by this light that's on your hard hat. And ducking sometimes as you walk along, because pipes hang down low. I remember running into those many times. I think I was a little taller than some of the other guys.

Swent: How tall are you?

Kinghorn: Six foot. When a person was hanging pipe in a drift, one of the specifications was that it had to be a minimum of six feet over the top of the rail so that you wouldn't run into it. When I first hired on in 1966, we had a lot of timber stopes in the mine. In fact, on the level that I went to work on, the 3650

level, there were six timber stopes, which meant that there was a tremendous amount of timber that would come in the mine almost on a daily basis just to accommodate these timber stopes. As they would mine out just a small area--we called it a set--they would have to install a set of timber.

Working in a Timber Stope

Swent: Is this what they call square set?

Kinghorn: Yes. It took a lot of timber to accommodate all that, because every day that they mined rock, they had to install timber. They tried to do that every shift.

Swent: They weren't backfilling?

Kinghorn: Yes, they did. When they finished mining that lift, that level, then they would seal that timber area up and sand backfill.

Swent: But they didn't take the timber out?

Kinghorn: No. Well, for the most part, no. They laid what we call laggin as flooring down in the timber sets, and they would reuse those as much as they could. That was a real nasty job, because all the rock had been on them, and you would slush across them to get the rock out of the stope. They were dirty and wet, which made them extra heavy, and you would have to lift those laggin up, which were six-inch by eight-inch by six feet long. You'd have to lift them up on top of that set of timber, and you would either use those for flooring for the next lift, or you would use them as cribbing.

In a timber stope, cribbing is what actually supported the back or the rock, because you would have your timber sets, and then you would put this crib on top of the timber set and lay laggins crossways across each other, one on top of the other one. Then you would wedge that up to the rock, and that actually supported the rock. In a timber stope you had no rock on either the north end or the south end of the stope, because those had already been mined out by an open-cut-and-fill stope. The timber stope is actually, in mining terms, taking the pillar of the rock out. So you had already taken the north end and the south end out, and you had just left this pillar in, which was real good ore. Using that timber was our method of getting that rock out and supporting the ground as we took it out.

Swent: Just on the pillars?

Kinghorn: Yes. We had two methods of mining at that time: the open-cut-and-fill method and the timber-set or square-set method.

Working in an Open-Cut-and-Fill Stope

Kinghorn: You would mine the open-cut-and-fill stope on the stope line on the north end and then the stope line on the south end. Then you would have the pillar stope in between there. Once you mined the north end and the south end, which you did first, then there was no support. You had a pillar of rock--that's why they call it pillar--from one level to the next level, and there was just sand backfill on the north end and the south end of that. So there was no real support for that pillar of rock, and that's why the use of the timber.

Swent: Did you get around this pillar on the east and west sides? Was that open, too?

Kinghorn: No, it was all sand backfilled, all tight, but there was a raise still in the middle that gave you access to that area. As you carried your timber square sets up, you would build what we called a manway, which allowed you to go all the way from one level to the other. You would go through the manway to the stope and then from the stope up through the raise to the level above.

With the manway you also carried a binline, and that's how you extracted the rock out of the stope. You would have a slusher in the stope, and you would slush the rock to the binline, and the rock would just gravity-feed down through the binline to the next level where the chute was. When you were moving the rock out of the stope there would be a miner in the stope operating the slusher. He would draw the rock to the binline with the use of a slusher, and his partner would be down in the level below at the chute, pulling chute and loading the cars--the granbys.

Drilling and Blasting

Swent: You haven't mentioned blasting.

Kinghorn: Yes, I guess before removing rock we have to blast, don't we? Before you start moving the rock, you come in a timber set or square set and drill out a drift round, blast, and then move your rock out to the binline. You may or may not have to pull rock that particular day, depending on how much room you have in your binline. You may have enough room in the binline to accommodate that much rock, so you wouldn't have to move any rock that particular day.

Once you blasted your drift round or slab round to accommodate another square set of timber, then you would stand the timber and drill and blast another slab round or drift round, depending on--

Drilling a Drift Round

Swent: What's the difference between a drift round and a slab round?

Kinghorn: If you needed to go straight into the rock, you would drill a drift round. A drift round is just drilling straight into the wall of rock, and you are able to blast the rock and get it to come out. The way you are able to do that is to drill what is called a cut and burn, which is several bigger holes in the middle of your round. That depends on the miner, the type of rock that you are in, and how many big holes--or relief holes, you might call them--. Then you drill your smaller holes around that and start progressing outward to however wide and high you want your drift.

When you blast that, then you start in the middle of your drift round in the cut and burn, using delayed caps. Generally you would start with a cap numbered aught, and if you have one available you may go to one that is numbered a half, then to a one, two-and-a-half, three.

Swent: These are all decisions that you had to make as you went?

Kinghorn: This is something that each miner had to learn. That was part of the learning process. You hoped that you could work with somebody who has spent a number of years mining so that as a new miner you could pick up on what he knows. It's not just a matter of drilling some holes, putting caps in, blasting, and having the rock come out. It's quite a technique, really.

If you drill a ten-foot hole, you want ten feet of rock to come out. In some cases, if you drill a ten-foot hole you may

only get seven or eight feet, and that's not good for the miner or the company, because both have lost if that's the case. You get paid in some cases by the foot, or in the old timber-stope method you got paid by the car--how many cars or how many tons you pulled out of the stope.

Drilling a Slab Round

Swent: You were starting to tell what a slab round is.

Kinghorn: We had drift rounds and slab rounds. Once you have mined a drift round and still have ore on either side of the drift round that you've just taken out, then you could possibly use that as the break. In other words, you could drill to that instead of having a solid wall of rock. Once you have a drift round out of there, you have an opening to where you can move your rock, so you can move over and drill a slab round.

Swent: Off to the side?

Kinghorn: Yes. Blast and move the rock to where the drift round was. You can do that on either side. You get to a point off of that, though, where if you still have ore out in front of you, you have to take another drift round and keep advancing out. Then you can take your slab on either side.

Swent: Which one is easier?

Kinghorn: You can produce more rock with a slab round, so if the conditions are right, it is more beneficial for both the miner and the company to be able to drill a slab round. You could drill fewer holes and use fewer explosives to break more rock.

Swent: Is it a completely different kind of drilling pattern?

Kinghorn: Yes. In a slab round, depending on the miner and depending on how high you want to go, generally the guys would drill either three or four holes high, and you could mine out about nine feet of height from floor to back.

Swent: The back of a mine is really what we would call a roof, so from floor to back is up?

Kinghorn: Right.

Swent: You are still drilling perpendicularly into the rock?

Kinghorn: No. Say this is your line of advance with a drift round, and when you drill a slab round, you come off at an angle, because you can't drill a hole straight in or perpendicular to your drift round and get a good break on the rock. You have to have some relief, so we would drill at an angle. In a slab round you could also say you were drilling at 30 degrees or maybe 45 degrees from the drift round and just winging out, as we call it, from the drift round.

I've talked a lot about the timber stope, but in the open-cut-and-fills and in the shrinkage stopes, where I really did most of my mining, the only timber we used in an open-cut-and-fill was the manway and binline area, and that was installed after you mined out your lift of rock. In mining in open-cut-and-fill, it was considerably different than a square set or a timber stope. In an open-cut-and-fill, you worked off a sand floor; it was backfilled with sand after you took a lift out. Then you would come in and mine out what ore you may have in the walls. To do that you would drift out and do your slabbing first.

Forty-fiving

Kinghorn: Once you had all the ore out of the walls you would come in and do what we call forty-fiving that--drilling holes in the back the whole length of the stope. In one end of the stope you would have to drill a break. [demonstrates] This is the back, or the roof, and you would have to start drilling holes at an angle until you had holes at the angle in the back that you wanted to drill the rest of your back out with. We called it forty-fiving, which they said was a forty-five degree; but it varied considerably.

You would drill your whole stope or your whole back out before you did any blasting. Once the back was drilled out, we would go up and blast the break. Generally we blasted the break out first to make sure we had the break out so that when we blasted the rest of the back we knew the rock was going to be able to move.

Swent: So the whole back would come down with one blast?

Kinghorn: Mining varied a lot, depending on the size of the stope.

Swent: What size are we talking about?

Kinghorn: All stopes varied. They might be anywhere from a thousand ton up to--in 1975, when I came back from the army, I went into a stope that was 22,000 tons.

Swent: What would that be in area?

Kinghorn: If I remember right, our stope was about 300 feet long by about 40 to 50 feet wide.

Swent: That's several big houses, isn't it?

Kinghorn: It's pretty big. Well, 300 feet would be the length of a football field. I think in places our stope was actually wider; I think we were probably closer to 80 to 100 feet in our widest spot, and then on the south end of the stope it narrowed down to maybe 40 feet. In following the ore body, that's just the way the ore lay. It was probably the largest stope in the mine at that time.

A Narrow Escape in Dropping the Back

Kinghorn: Probably a year after I was in there, we were in the process of doing what I was just saying in dropping the back; we were blasting the back. We had blasted our break and slushed it out and gotten rid of it, and we had blasted the north third of the back. At that time the process we used, we came in and barred it down. We used six-foot bars and were scaling the back down of any loose rock and starting to rock bolt and support the ground. We didn't have any particular pattern that we used at that time to install rock bolts; we just installed them at the miner's discretion. We had five-foot and eight-foot patten bolts that we used. It was pretty much the miner's decision on which bolts they used in a particular area.

After you blasted your back, you would come in the stope, and you would of course have to ventilate it, come down and make sure the raise entrance to the stope was all secure. We'd bar down and kind of work our way out from the raise. The mining methods have changed over the years, but at that time we would just go in and bar the whole back down. Once it was all barred down we would set up our jack legs and start rock bolting.

In this particular stope, we had blasted the first north third of the back, which included the raise, our access to the level above. We were barring and bolting and had that section pretty well taken care of. I remember this very well, because

we were day shift. This was a six-man stope; most stopes were just four men. We had three men to a shift because it was so large. Myself and my two partners were taking our lunch break in the stope, sitting on our slabs, and there was this big bang. It was so loud that I thought it was a blast for a moment, and then I realized that it wasn't. It was our back actually working.

Swent: Coming loose.

Kinghorn: We kind of shrugged it off and continued to work the rest of the day. The night shift, our opposite shift, came in and did the same thing we had done--barred and bolted. When we came back the next day, that next morning a section of the back had fallen in and landed probably four feet from where I had been sitting eating lunch the previous day. It was 10 feet thick, about forty feet long, and about 30 feet wide. That's why it really sticks in my mind.

Swent: You had not bolted that?

Kinghorn: That section of the back hadn't been blasted down yet. It had all been drilled out but not blasted.

Swent: Now you didn't need to blast it!

Kinghorn: Well, we did, because it was such a large chunk. It came off so high; it peeled off right where the points of our holes were, so we actually loaded it from the topside instead of from the bottomside. I felt real fortunate. I was that close to not being here today. That was probably the biggest close call I've ever had working at Homestake. I don't think I'll ever forget that.

Swent: You did hear the sound the day before.

Kinghorn: When you're mining stopes, you hear that a lot. Sometimes you hear it and sometimes you don't. If the stope is working, I guess as miners we always felt more comfortable if we heard a pop every now and then than if things got real quiet. When they got quiet, probably eight or nine times out of ten some rock is going to fall. So as the stope is working, as a miner you felt more comfortable. It seems odd, and I had a hard time getting used to that when I was first mining. It's when your stope gets real quiet that you need to keep an eye on it.

Over the years, when we were using the open-cut-and-fill method and the timber stope method, it seemed that if you had a fall ground or a cave in, it happened more often on night shift

than on day shift. I don't know if there's any truth to it or not, but the guys always said they always felt like the gravitational pull of the moon on the earth had something to do with it. That was miners' talk and their way of justifying what happened.

The stopes working seems kind of eerie, and I had a hard time getting used to it. Still today, when you're down there and the rock pops, I think miners tend to be a little nervous because of it. If a rock pops, the guys tend to jump.

Swent: What is there that you could do?

Kinghorn: I was in a stope several years after that in an area of the mine called 19 ledge.

Swent: Let me interrupt for just a moment and ask what you called this huge stope you were working in. Did it have a name?

Kinghorn: This was 19-21 stope. It was in an 11 ledge between a 4100 and a 3950 level.

Swent: You just designated it by that location?

Kinghorn: By that number. Every stope has a numbered designation. The mine has ledges also, and each ledge is an ore body. This particular stope was in 11 ledge, between the 3950 and the 4100 level.

So several years later I was in another slope in a lower part of the mine, in an area called 19 ledge. I don't remember the stope number, but I was down there extra-contract. I was probably waiting for sand backfill. Once you've completed your lift and are waiting for sand backfill--[telephone interruption]

Current Work as Supervisor of the North Exploration Drift

Swent: Ken had a telephone call from a workman wanting to know--

Kinghorn: --what his job assignment was for the evening. In June they moved me out of the safety department, and I'm supervising the north exploration drift. I have four drift crews down there doing the mining. We operate seven days a week, two shifts a day, mining there. A couple of weeks ago we had a problem with our ventilation in division 5, which is our bottom division in the mine--from the 6,800 level down to the 8,000. The problem

we had was in the 31 exhaust raise. We had a blockage in that. Some sluff rock fell and plugged off this raise, thereby just totally interrupting the ventilation system in the lower part of the mine. It got extremely hot for about a month.

Swent: How hot does it get down there?

Kinghorn: In some parts it can get up to 120 degrees to 130 degrees.

Swent: And the humidity?

Kinghorn: In some cases 100 percent.

Swent: That's very dangerous.

Kinghorn: It can be extremely hazardous working if you're not careful how you work.

Because of this blockage in this 31 exhaust, they needed two crews. What they had decided to do to alleviate this blockage was to drive a drift into the 31 exhaust. To do that they took two of my crews away from me and assigned them to this 31 exhaust project, which was really the most important project at the mine at that time, because we had to get this ventilation going. So I was left with two crews. They assigned another supervisor to supervise the other two crews doing that particular job, so I didn't really keep track of what they were doing.

I continued to mine in the north drift with the two crews that I had.

Swent: How deep is the north drift?

Kinghorn: It's on the 6,800 level. It starts at #6 winze going north. Right now the face of our drift in the north drift is about 11,500 feet from the #6 winze, so we're a little over two miles out. It's straight, too; that drift is pretty much straight north.

Swent: This is just exploration; you're not going with the ore?

Kinghorn: No. They had plotted it out that they wanted a drift straight north. Originally it was supposed to go 17,600 feet. Geology has been drilling test holes from the surface, and that was their reason for driving this drift. They had what they thought was real good intercepts, and they thought it was probably another Homestake ledge--a major ledge. That was the

determining factor in driving this drift, to see if they couldn't better define what they had found from the surface.

Swent: Is this the one going up to Maitland?

Kinghorn: Yes. I understand that they drilled at least two holes that were probably about 10,000 feet deep from the surface. Then they decided to drive this drift on the 6,800 level to better define the ore body. As we drove the drift, we had diamond drillers who followed along with the drift advance. They are diamond drilling all the time that we are mining, but they are farther back from the face, so it doesn't interfere with the diamond drilling.

As we advance the face, we mine diamond-drill cutouts, and the diamond drill machine is set off to the west side of the drift and they do their drilling. At the present time there are two diamond drill machines set up to do the drilling. Even though I'm supervising there, I'm not real sure what we have or what they've found. I certainly hope there's a major ore body there. I'm just guessing, but I think there really is. That's pure guessing on my part. I'm sure geology or someone probably knows by now, but they haven't let the cat out of the bag yet.

Swent: You can't tell whether they're happy or not?

Kinghorn: No. This is a pretty major undertaking. The people doing the work, the drifting, have had to work under some pretty adverse conditions. Two weeks ago we hit water in the face with our drift. We are getting 50 to 60 gallons a minute of water coming out of the face. I have just recently gone into the north drift, but I think this is probably the third or fourth time that the drift has encountered water.

Swent: What about the rest of the mine? Do you generally have water?

Kinghorn: No, not in the terms that I'm talking about now, where we mine and actually have water coming out of the working face.

Swent: You mentioned that when you were picking up the timber it was wet.

Kinghorn: It was wet because we used water in the drilling process and for dust control. When you come into the stope, the first thing you do is get the water hose and wet the rock down.

Backfilling the Stopes with Sand

Swent: But it isn't an exceptionally wet mine?

Kinghorn: No, it's generally pretty dry. The levels can be wet at times from the sand backfill, because we use sand backfill to backfill the stopes once the ore is taken out. Of course, you have to drain that water off the stope.

Swent: The sand goes in in a slurry?

Kinghorn: A wet slurry, yes. It's brought from the surface, and it's gravity-fed underground through an extensive piping system. They run the sand through a rubber-lined pipe, not just a steel-lined pipe, because steel would wear out extremely fast. So they use a rubber-lined pipe to run the sand into the mine to the different working areas where you need some sand backfill. Once the sand is in the stope through the slurry system, then you have to drain that water off. That goes to the next level, and that can be pretty wet and sloppy at times until all that tends to drain away.

Swent: Eventually do they pump it back up?

Kinghorn: Eventually that water goes through the drainage system to the pump rooms. We have pump rooms on the 8,000 level. We have some pumping that pumps water out of the mine that starts at the 8,000 level and goes to the 6,800 level. This is at the #6 winze area. From the 6,800 level it is pumped up to the 5,000 Ross. From the 5,000 on the Ross the water is pumped up to the 3,650 level, and from there it's pumped up to the 2,450 level. From the 2,450 level it goes up to the 1,250, and from the 1,250 it's pumped out of the mine.

Swent: We should mention that the Ross is the name of one of the major shafts.

Kinghorn: The other area of the mine is the #4 winze area, and we also have pumping over there, which comes from the 7,400 up to the 6,800 to the 6,200 level.

Swent: Is the water transferred each time at these pumping stations?

Kinghorn: Right. It has to be, because you just couldn't pump water out of the mine from, say, the 8,000 level to the surface because it would take such a huge pump. So they do it in stages. They pump from the 8,000 level to the 6,800 level, and that goes into a big sump area, a big water reservoir. Depending on the size

of the sump area, it may hold anywhere from a million to two million gallons of water. The pump on that level pumps that water up to 5,000 level. It just does it in stages, on up to the surface.

Re-use of Water in the Mine

Kinghorn: We were talking about our re-use of water in the mines. We're trying to re-use as much as we can. We pump out of the mine probably a million and a half gallons of water during a twenty-four-hour period, so you can see there's a tremendous amount of water that comes into the mine, either through fresh water or through sand backfill or just natural drainage that comes into the upper levels of the mine.

Swent: What kind of pumps are these?

Kinghorn: On the lower levels, the 8,000 and the 6,800 levels, there are two 1,000-horsepower pumps on each level.

Swent: Do you know what brand they are?

Kinghorn: No, I don't. That's a lot of horsepower, so that in itself tells you how much water they actually move.

Once the water is taken out of the mine, it is pumped down to the mill where we mill our rock, and they use a lot of the re-use water. Once the rock has gone through the milling process and all the gold is extracted, and we have nothing but the sand and the waste, any sand that can't be used underground has to be pumped out to Grizzly Gulch. That's a holding dam several miles south of the Homestake workings. That sand has to be pumped out through a couple of miles of pipe out to the dam.

I just found out several years ago a very interesting thing. Once this sand is pumped out to the dam, we're actually still able to recover gold out of that water that is used. Once the sand is put into the dam, we pump that water back out of the dam up to what we call decant buildings, where the water flows into a carbon cone system. It filters that water, and the carbon actually is able to extract the suspended gold out of the water. I found that real interesting, because we had to have been sending this gold back underground for years and years and years.

Kinghorn: It has just been through technology that we have been able to find out we could do this. I understand that just in this process alone we are able to get an ounce of gold every eight hours out of the water that is pumped out to the dam.

Swent: Think of all that was sent back down.

Kinghorn: Right. A lot of money. Before we had to clean up Whitewood Creek, all of that went down the creek.

Swent: Why are they driving this exploration north drift up to Maitland instead of just sinking a shaft up there?

Kinghorn: As I say, it's all new to me, and I'm not real familiar with the whole process. They drilled some test holes from the surface, and apparently they determined there was an ore body there. To sink a shaft costs millions and millions and millions of dollars. Not knowing for sure what they had there, they determined it would be cheaper to drive this drift out to this suspected ore body. I'm not sure they know today what they will do if they do find the ore body--if they in fact then will sink a shaft or what they will do. We're driving this drift out to help geology better define what the ore body is. Then we can get the diamond drillers and get more test holes from the bottom side versus just straight down from the surface. They can drill out east and west.

Using Lasers for Surveying

Swent: How do you get it so straight? What sort of instrumentation are you using?

Kinghorn: We're using a pretty modern method now, compared to what we used in years past at Homestake. We have surveyors who work at Homestake, and they map. They keep track of every foot of drift and every pound of rock that is taken out of the mine. Surveyors have come down, and we use a laser system. It shoots this laser out to the face, and the miners use the laser; it's just a red dot on the face of the drift. That laser or red dot tells the miner everything he needs to know. You can see the beam because it's so dark, and you see the dot on the face. They actually measure from that beam down, and that gives them the grade of the drift, and it tells them where they need to lay their rails. It actually gives them the elevation of where their rails have to be.

Swent: When you say grade, you don't mean ore grade.

Kinghorn: This is the inclination of the drift. In fact, speaking of that, I mentioned earlier that our drift right now is about 11,500 feet in length. But from where we started at #6 winze, we're out 11,500 feet, and that is 55 feet higher than where we started. We're mining on what we call mine grade, which is a half a percent per hundred feet. So every hundred feet we come up six inches.

That has always been used in the mine and, I think, in most mines. It's used mostly for drainage. You have water in your mining, and you need to keep that water draining and moving back to an area where you can collect it and move it out of the mine. That's why we use what we call a grade.

We were talking about the laser. It's a pretty unique thing that we've started using at Homestake. The drifter or the miner will actually use the dot on the face, and he'll actually measure out from either side of that dot so he can get the width of the drift, and they'll measure out the height. That keeps the drift going just as straight as an arrow. It's a pretty unique process and is pretty easy. We're able to set the laser up. The last time we moved it we were out 1,500 feet in front of that; so you can set it up, and it's good anywhere from 1,500 to 2,000 feet. It's not something that has to be dealt with or moved every other day.

Swent: Does it operate on batteries?

Kinghorn: It operates off of 110 electricity.

Swent: That's what you have down there?

Kinghorn: In the north drift, because of the two electric drills that the diamond drillers are using, we have to carry electricity with us. To accommodate those two machines we have to carry a 12,000-volt power cable with the drift. We have electricians who also work in the drift. As the need arises, the electrician comes in, and we extend this 12,000-volt power cable and where needed put in transformers to accommodate. Because it is such a long distance we have to install transformers every so often. That is what allows us to have power in the north drift.

Where the diamond drillers are set up, the machines don't operate off of 12,000 volts; the transformer gets stepped down to 480 volts. Then we can step that down so that we have 110, so we have lighting in various places along the drift.

Because we had encountered so much water in the north drift, we used a system of sealing most of this water off. But because we have encountered water several times, we weren't really sure what we might encounter as a big, major water course. So we installed what we call a submarine door at atopeline 119. It's a door that we are able to shut should we encounter a major amount of water that might actually flood the lower part of the mine. We can come out, close these doors, and just seal the drift. That's really necessary, because if this water were to get to the lower parts of the mine--that's our major part of the mine right now--it would shut the mine down. So it was really important that we have this door. Hopefully we'll never need it.

Swent: This is an exciting job. You sound pretty excited about it.

Kinghorn: It's pretty interesting. It's pretty much one area versus some of the areas where supervisors have a bigger part of the several levels to deal with. I just have this one area, one part of the mine.

Clothing and Safety Gear at Work

Swent: We haven't mentioned equipment or clothing. How are the miners dressed?

Kinghorn: Generally the guys wear bib overalls. Of course you have to wear rubber boots, because it's generally wet enough to require them. Some areas you can get by with leather boots, but I'd say that 95 percent of the work force that works underground wears hard-toed rubber boots.

Swent: Slickers?

Kinghorn: The people who work in the two shafts that go into the mine--we mentioned the Ross shaft, and there's also the Yates shaft, which is a major shaft going into the mine from the surface to the 4,850 level. The Ross shaft access accesses down to the 5,000 level. Those people working in the shafts wear slickers, kind of a rain suit, because we use water in the shafts to keep on our guides. The guides are wooden, made out of Philippine mahogany, and water is kept on those guides as a lubricant so the cage going up and down the shafts can actually slide better on this timber.

There are actually a couple of reasons. The Ross shaft is pretty much a rock and steel shaft, and we use steel in the shaft as support. At the Yates they used a lot of timber, and at the Yates they use a lot of water to keep the timber wet; it actually kind of helps as a preservative and also, as I said, as a lubrication on the shaft guides. So at the Yates they probably use more water than at the Ross, and that's the reason why. If you work there, you have to wear a slicker to stay dry. As a rule, they are the only people who wear a slicker all day long in their job.

The guys who work underground--the miners, the day's pay people, people who motor--just wear bib overalls, rubber boots, and rubber gloves. Nowadays we wear arm guards, which has helped a lot in the last several years since we started using them. They are made out of Kevlar, and they cover the arm from the wrist up to, depending on the length, just below the shoulder area. They've helped a lot in injuries. We used to have a lot of cuts on the arms, abrasions.

Swent: Does the company provide these?

Kinghorn: Yes, they do.

Swent: Do the men welcome them?

Kinghorn: At first I think, like anything, the guys were reluctant to wear them. Everybody said, "I don't need those."

Swent: Are they uncomfortable?

Kinghorn: At first they were, because they were something you didn't wear. But now guys put them on just like they put their bibs on, which is good. We really have them in the habit of wearing them, and they've reduced the injuries. We don't have near the arm injuries that we used to have. In fact--and it's probably not unique to miners or here at Homestake--they fought them tooth and nail when they first were instituted, but now if they don't have a pair, they want to know where they can get a pair. [laughter] That's good, because they realize what they are doing for them.

Swent: And they wear hard hats, of course.

Kinghorn: They have hard hats and safety glasses. Ear plugs and safety glasses are furnished by the company. If you have to have prescription glasses, the company also pays for those. You just have to go down and see the local eye doctor, and he takes care of you.

Swent: It all gets pretty heavy, doesn't it? Your light, your battery, and everything.

Kinghorn: We thought about that one day. When I was in the safety department I would take people on tours. By the time they put on their hard hat, safety glasses, a belt to accommodate the battery for your mine light, hard-toed boots--. I would kid the women who took a tour, "I guarantee you that when you are done with this tour, you'll be seven pounds lighter." We thought all the equipment weighed seven or eight pounds. Once you wear it day in and day out, though, you think nothing of it.

Swent: How about masks?

Kinghorn: Depending on the job you have. Especially nowadays, where we have mobile equipment underground with diesel exhaust, we want all of our people working on and around the mobile equipment wearing respirators. It is the required thing to wear if you are operating a piece of mobile equipment. If you are in or around the area doing odd jobs, we highly recommend that you wear a respirator.

Swent: Do they resist these, too?

Kinghorn: At first it was kind of like the arm guards, but pretty much people have accepted that, too. I think they realize that breathing diesel exhaust day in and day out probably isn't good. The respirators can be uncomfortable, especially in lower parts of the mine where it's hot. Sometimes it's hard to breathe anyway, and then you have to put on this respirator. It can make for a long day, really.

Swent: I tried one once just to prevent hay fever, and I didn't stick with it. I preferred hay fever, it was so awful.

Kinghorn: I always had a hard time breathing through one. I don't know if it was just because I couldn't get used to it.

Swent: I think it's just a natural impulse not to want something over your nose and mouth. But you could get used to it, I suppose.

Kinghorn: I think if you are thinking at all about your health, you have to get used to it.

Mobile Equipment Underground

Kinghorn: We have a lot of mobile equipment underground now, and our mining methods--I said earlier that we had the square-set timber, timber stopes, and the open-cut-and-fills. In the late seventies we made a transition away from those, not all at once. We went to what we call mechanized cut-and-fill stopes and vertical-crater-retreat methods of mining. That's the method of mining that we use today.

Swent: This is possible because of new equipment?

Kinghorn: Right. We were able to bring what we call load-haul-dump equipment underground, which is nothing more than a front-end loader.

Swent: Yes, LHDs.

Kinghorn: We also brought diesel jumbos underground. I say diesel--they're diesel powered, but the drills on them are air operated with hydraulics. That's what enabled us to convert from the open-cut-and-fill method and timber stope method to this mechanized type of mining. It was a necessary thing, because this type of mining allows us to move more rock in an eight-hour day than the old method did, and it takes fewer people to move that same amount of rock.

When we still had the open-cut-and-fill method and square-set method, we had approximately a hundred stopes. You might say there were on average four people to each stope, so you had roughly four hundred miners involved with the mining. With our mechanized-type mining and vertical-crater-retreat-type mining, we were able to reduce that workforce, and we're still mining the same amount of rock, if not more rock, today than we were then with fewer people. So it's just a step towards modernization.

In the old type method--when I say old I'm still referring to the open-cut-and-fill--you had one crew to an ore body. Now, with this type of mining, we can assign one crew and have them mine as many as maybe three, four, or five ore bodies, because they are that mobile. To access these ore bodies, we now have a ramp system in the mine. It's nothing but a drift on an incline or a decline from one level to the other. That's what enables us to access these different ore bodies with our mobile equipment. We can drive a ramp up or down, whichever the case may be, from one level to the other.

Speaking of ramps, we can now access all the levels in the mine from the 8,000 level up to the 3,500 level through this ramp system. We could actually drive from the 3,500 level down through this ramp system to the 8,000 level.

Swent: No more ladders?

Kinghorn: For the most part, no. It has really changed what the supervisor does. We also had to make him mobile, too, so he can cover those areas. He has either what we call a boss buggy, or for the last couple of years the company has bought some of these Kubota tractors. They're a Japanese-built tractor, a tractor like you might see on a farm but on a small scale. The supervisors use that for transportation so they can get around to see all their people.

The miners now have to be more mobile, and they mine several different ore bodies. They do that on a continuing basis. They will mine this one, say, today on day shift. Once they drill and blast that and a person comes in and wets it down and bars it down, then they will come in with that load-haul-dump and move the rock. While the rock is being moved, they will be over here [demonstrates] drilling and blasting, because they are moveable and are able to mine several headings at any one given time.

Swent: So now it's more specialized?

Kinghorn: We try not to get them too specialized where one person does one thing all the time, because you do have crews, say two people to a crew. If I've just been running the loader, and my partner who has been running the jumbo, is off, I may have to move from the loader to the jumbo, and the person who comes in may have to take the loader and move the rock that I have to drill. In some cases it happens, but we try not to let that happen because of that; we want the people to be able to do everything. Sometimes on a particular crew one guy likes to drill and the other guy likes to run the loader, so they tend to want to do that all the time. But we try to keep them cross-trained as much as possible.

Women Mine Workers

Swent: You're assuming they are all guys?

Kinghorn: Yes, I am right now. We do have women working underground. When I came back from the army to work in 1975, we had several women working underground then. At this time, in 1993, I believe we have approximately thirty to forty women working underground.

Swent: In all the different jobs?

Kinghorn: No. I can't remember women ever actually having done contract work. They've done some of the other work--operating the motors. Now that we are mobilized and mechanized in our mining, some of the women do operate the loaders that move the rock. Generally now you will find the women pretty much in the maintenance areas, taking care of the equipment and operating the electric motors that we have on the different levels.

The motors that we have are battery-operated. They are just a large battery that is charged every day at the end of the ten-hour shift now; we've gotten away from the eight-hour shift and work ten-hour shifts now. They use them for all the equipment that comes into the mine and back to the work areas. They are used to haul the people back to the work areas, and then all the rock that has to be moved. The electric motor pulls what we call the granbys. They load those, haul them out to the dump, and dump the rock in the ore dumps.

That's quite a process. When I was in the safety department and took people on tours underground, I guess one of the things I would really try to emphasize was that when they were down there looking around, everything they saw had to come down in the cage that they rode on. If it was too long or too big to be in the cage, it was suspended under the cage. There are a lot of supplies that come into the mine that have to be moved every day, and the motor people have to take care of that. So there are people doing various jobs--the motormen, there's piping to be done, we have maintenance people, we have a few people who walk through the areas barring down and checking for loose rock.

Swent: You've done just about all of these jobs at one time or another, haven't you?

Kinghorn: If you worked there for any length of time, at some point you do them all, maybe not for any length of time.

III CONTRACT MINING

The Contract or Bonus System

- Swent: I want to talk a little more about your contracting. You were working just as a regular miner, and then you went to contracting. Is this something that you had to wait to get a chance to do, or were you recruited? How did this come about?
- Kinghorn: It can come about in various ways. If you want to go in a stope and contract, if you happen to be lucky enough and there's an opening and the crew wants you, they can take you in.
- Swent: This is something that is sought after, isn't it?
- Kinghorn: To a point by some people; not everybody wants to do it.
- Swent: Why would people not want to do it?
- Kinghorn: Because it's pretty hard work and can be real strenuous.
- Swent: Do you take a chance of losing money on a contract?
- Kinghorn: I guess I should explain a little bit about how that contract works. The contract miner works on a contract basis, a bonus system, I guess.
- Swent: You're still a Homestake employee?
- Kinghorn: Yes, but working on a contract basis. The people who are working on a contract basis are the ones actually moving the rock. They are paid by a couple of different ways. When you are drifting and advancing through the solid rock, you get paid so much a foot. When you are into the ore body, you can get paid by the foot as you are advancing your drift into the ore body, and you also get paid by the cube. I said earlier that we

have surveyors who keep track of every pound of rock that comes out of the mine or is moved. Once an ore body has been mined out--in other words, once all the ore is taken out of that particular area--a surveyor comes in right away and surveys that whole area. They measure it out into cubes, and the miner gets paid so much per cubic foot.

Swent: Is there any mining done by people who are not on contract?

Kinghorn: Generally not. If there is, it's just a very small area that would have to have some rock moved. Ninety-eight percent of the rock that's moved is all done on contract basis.

The way the miner makes that money, he gets paid by the cube and by the drift foot. The quicker he gets the rock out over a given period of time, the more money he makes. There's a set price, depending on where he is located in the mine, because the deeper you go the more you get paid for cube. The miner on the 7,700 level, because of the hot conditions and the longer time it takes him to get to the work area, gets paid more per cubic foot of rock than the miner on the 2,000 level. The 2,000 level in our mine at Homestake is considerably cooler. In fact, it can be about 50 degrees. In that temperature, your body is just capable of doing more work in an 8-hour day than where it is hotter, so what is paid per cubic foot is adjusted accordingly.

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Kinghorn: So they compensate you. If you have to work in the lower part of the mine, they pay you a little more. They know you can't work and get out as much rock in an eight-hour or ten-hour period as the miner on the higher level. It kind of evens out.

That's basically how a contract system is set up. It's on a bonus system. Right now it's set up on a six-week period. Every six weeks the contract is closed and then reopened, so the miner gets paid every six weeks on a contract basis. He's also paid an hourly wage. When he's working on a contract basis, he always gets his hourly wage; he can't lose that. If for some reason things don't go very well and they don't make any money on the contract for that six weeks, he always has his hourly wage. He gets paid every two weeks on the hourly wage and every six weeks on his contract.

Swent: How many people are in a contract? Does this vary?

Kinghorn: There has been a transition over the years. We used to have generally four men to a contract, but the last year and a half

the contracts have changed, and we have put seven men to a contract. The reason for that is because we have gone from a five-day work week to a seven-day work week. The seven-day work week started in October 1992. We asked the people to start working seven days a week. As you know, we were going through some pretty rough times, and management decided that we had to do something to make the mine profitable again. One of the things was that we had to operate the mine seven days a week. To accommodate that, we had to change the crew sizes, so we went to a seven-man crew.

Swent: How does the work divide up, then?

Kinghorn: We operate day and night shifts, and there are two men on each shift. Their schedule is on a rotating basis, and I can't even tell you how it works, because I haven't kept up on that. They may work three days and are then off two.

Swent: So the seven men aren't all working at the same time in the same place?

Kinghorn: No. The way it's set up there are only two people working together at any given time.

Swent: When you were contracting--

Kinghorn: When I was contracting, we had four men to a crew.

Swent: Two on day and two on night?

Kinghorn: Yes. If you had a little bigger contract, you may have had a six-man crew, three day shift and three night shift.

Swent: What are the day-shift hours?

Kinghorn: Day shift now starts at 5:30, because we're working ten-hour days now, and goes until 4:00. Night shift starts at 4:15 and goes until 2:45 a.m.

Swent: When you were contracting, what was it?

Kinghorn: We started at 6:30 and went until 3:00; we worked an eight-hour shift. Night shift started at 6:00 p.m. and went until 2:30 a.m.

Swent: Was the blasting done at the end of night shift?

Kinghorn: Blasting was done at the end of each shift, whether it be day shift or night shift. Each contract may or may not blast at the

end of each shift, depending on what you were doing. You may go several days or maybe go even a week before you blast, depending on what type of mining you were doing. You had designated blasting times, and those were at the end of day shift and the end of night shift. With the boss's permission you could sometimes blast sometime during the shift, depending on where you were located. You didn't want to blast and have your blast smoke interfere with another working area, so it depended on where you were located whether or not you were able to make a blast sometime during the day.

Working as a Team

Swent: Was one of the contract people the leader of the others?

Kinghorn: Yes, generally one guy was considered the lead man. But as a crew you worked together.

Swent: You just had to learn to get along whether you liked it or not?

Kinghorn: Yes. Sometimes it was real hard to find four guys or even two guys who could work together. You always had to have an opposite shift, so you had four people who worked together, and sometimes you get four people who work real well together, sometimes four people who work kind of together, and sometimes four people who didn't work together very well. Of course, how well you worked together could determine how much money you made.

Swent: Sure, because you had a lot of decisions to make.

Kinghorn: You had to basically coordinate things between what the other shift was doing and what I might be doing.

Swent: Your shift boss didn't tell you a lot? You had some leeway?

Kinghorn: Generally as the crews gained experience, the boss's responsibility basically was just to keep the crews in the ore body. How they went about mining it was pretty much left up to them. He had gone through the process; he'd been a miner and then moved into supervision. He knew through the process that the miners pretty much knew how to go about getting the rock out, unless it was a new crew or maybe there were some complications, and then the supervisor would come in and lend a hand and give some direction as to what they may need to do. But if things are operating smoothly, the supervisor would come

in and find out how things were going; he would make sure you were getting your test holes in the right area for the stope, and check on the people and make sure you were doing things safely. It was his responsibility to order supplies. He would ask the miners if they needed anything, and it was his responsibility to get those ordered.

As the miners gained experience, and if both shifts worked together real well, they almost didn't need to talk to the supervisor at the beginning of each shift. I would always leave a written note to my opposite shift as to what I got done during the day, and they would leave me a written note. Sometimes on day shifts, if I didn't leave a written note, I would call night shift before they went to work. From night shift to day shift we always left a written note.

Swent: Once you found a group that was compatible, did you stay with them for a long time?

Kinghorn: We always tried to stay together as much as we could.

Swent: Who were some of the people you worked with that you liked especially?

Kinghorn: When I got out of the army the crew I worked with was Bennie Lara, Junior Aldeen, and Lyle Bowman. Junior and Lyle were on the opposite shift, and Bennie and I worked together.

Swent: Did you ever work with your brother on a contract?

Kinghorn: No. Sometimes you found brothers that worked together, or maybe cousins. I can remember the Merchen brothers. I think there were three of them, and I can remember that they all worked together at one time. I can think of three brothers who work at the mine now, and two of them worked together for a short time, but generally they worked on different crews. Sometimes it can be good, and sometimes not.

I remember I was told when I first started, and as I gained experience I learned this, that sometimes an older miner was more inclined to take a guy of lesser experience into the stope with him. Then he could teach the younger man his ways, rather than take a guy that has been mining five to ten years, because by then you're starting to get set in the way you do things. That wasn't necessarily how it always was, but some of the guys were willing to take a newer guy in just for that reason.

Swent: Is that how you started, with an older miner who trained you?

Kinghorn: Yes. This individual probably had been mining for thirty years already.

Swent: Who was he?

Kinghorn: Marlin Isaac. I learned how he did things. Everybody has a certain way they do things, and I learned a lot from him. I don't think I ever didn't learn something new from whoever I worked with.

High-Grading

Swent: What about high-grading? Is that a problem here at Homestake?

Kinghorn: When we had the old stopes, the open-cut-and-fill stopes and timber stopes, guys used to high-grade. I don't know if you would ever really call it a problem. I never took the time to look for it. If I was mining and happened to see something that might look like it might have some free gold in it, I might take a little time. But when I was contracting, the more I got done during the day, the more money I knew I was going to make. If I was over there picking away at the wall looking for high grade, I knew I wasn't making any money.

I know of one guy in particular who would spend a lot of time doing it if he thought there was any around.

Swent: Could he get significant amounts?

Kinghorn: He used to carry it out and make jewelry out of it. You weren't supposed to be taking out of the mine, but he was making jewelry out of it, and I understand management people would buy from him. It was something that you weren't supposed to do, but they overlooked it.

Swent: He wasn't doing a major selling project with it, though?

Kinghorn: I don't think so.

Swent: I didn't hear a lot about it. You certainly didn't hear stories of people milling it in their basements the way you do in some places.

Kinghorn: I think the high grade the guys took out at the time was more like a souvenir: show your friends and relatives; this is what I'm down here mining. I took a little bit out. I don't think I

even have it any more, because friends and relatives come and look at it, "Gee, I'd like to have some of that." Pretty soon you give it all away.

Nowadays, with the type of mining we do, we've gotten away from the better ore bodies. You really don't find the high grade like you used to. Nowadays I don't even hear anybody talking about doing it.

Benefits of the Union

Swent: How much change did the union make in your life?

Kinghorn: Financially they made quite a bit of difference. They came in, and we were able to get higher wages and more benefits. I said I started out at about \$1.89 an hour. I can't remember offhand what I was making when I came back from the army in 1975, but I think it was upwards of \$6 to \$7 an hour, maybe \$8. So from 1966 to nine or ten years later it had gone up that much.

Swent: When did the union come in?

Kinghorn: In '67 or '68.

Swent: And which union is it?

Kinghorn: United Steelworkers of America.

Swent: How much would a good contractor make today?

Kinghorn: Today they could make upwards of \$50,000 to \$60,000 a year, if all things go right and everything falls into place. When I first started in 1966, when I was still a laborer, I would hear the contractors talking. I don't know why I remember this, but I guess at that time it sounded like a lot of money--and it was a lot of money then. This contract miner said, "I think I'll make \$10,000 this year." I think the buying power then was probably more than it is today.

So you can see that there has been quite a transition from what a contractor made then, \$10,000, and today, anywhere from \$40,000 to \$60,000. Of course, everything has to be taken into consideration--cost of living and inflation.

We've also gained in benefits. When I first hired on at Homestake we didn't have a dental plan. It was through the

union that we were able to get a dental plan. When I first hired on we had free hospitalization and free medical coverage, but through the union that was extended through a major medical program, where we could go out of the area or go away from the free hospitalization that we had here and go to see another doctor. Our major medical would cover a certain percentage of that.

Swent: That has been a big help, hasn't it? Before, if you went away, you had to pay it yourself.

Kinghorn: Or if they just didn't have the expertise here, it would cover it.

Swent: Would they pay for it if they sent you somewhere?

Kinghorn: Maybe; I'm not sure.

Swent: They might be reluctant to send you anywhere.

Kinghorn: I've been too healthy to know much about all that.

Swent: And they cut back to a five-day week, but now they've changed that.

Kinghorn: Yes. We went from a six-day work week, Monday through Saturday, to a five-day work week, Monday through Friday. But we went from working 48 hours a week in 1966 to 40 hours a week on a seven-day rotation. So the guys are still only working 40 hours a week, and actually they're only working four days a week now, versus five before; but we're working longer days--ten-hour days instead of 8-hour days. And we're having to work Saturday and Sunday now.

Swent: Do they mind this?

Kinghorn: Quite a bit. They're gradually getting used to it. But when you have Saturday and Sunday off for so many years and have to start working those days--those were your days off, your free time to play golf, go camping, go snow-skiing, whatever. Those were your traditional days off, and now you have to adjust and try to do those same things on, say, Tuesday and Wednesday. In some cases the hard part in the transition to that is that the friends that you went camping with on Saturday and Sunday don't have off the same days that you do. Some of the problem in getting used to that seven-day rotation is that you maybe aren't able to do things with your friends like you were able to do in the past.

Swent: I thought you worked eight days and then had six off. Don't some people do this?

Kinghorn: The crew that I have in the north drift have a different schedule than the rest of the mine. I have them work Sunday through Wednesday. We operate the north drift seven days a week also, but we have four people per crew, and there is a day and a night shift. I start them on Sunday, and they work through Wednesday. Wednesday is an overlap day; I have both crews on day shift and both crews on night shift, so I have eight people day shift and eight people night shift. Any other day of the week there are only four on each shift. The other crew works Wednesday through Saturday. That way we cover all seven days of the week.

My crews are set up differently than the rest of the mine. I have four men per crew, and the stope crews have to have seven to accommodate the work schedule. They may work two days and be off a day or work two days and be off two days. They might work three days and be off two days. I haven't studied that schedule because I'm not really involved in it.

The Mine Rescue Organization: National Championship Team

Swent: Can you tell a little about your mine rescue groups that you worked with? How did you get into that?

Kinghorn: When I was still contract mining I joined the mine rescue organization.

Swent: Was this voluntary?

Kinghorn: It's a volunteer group, but when they have openings you apply for it. The people who are already in the mine rescue organization vote on the members coming in. The mine rescue organization is run by the safety department, but the safety director or the trainer in safety does not decide who is going to be on the mine rescue team. It's a pretty democratic organization. We all have to work together under some pretty adverse conditions, so I guess that's why there is an application and the members decide on who is coming in. You do have to work under some pretty adverse conditions if you have a mine fire, so you want everybody to be pretty compatible. That's why everybody in the mine rescue organization gets to vote on all the applications that come in. It just depends.

We try to maintain anywhere from fifty to sixty members; we try to keep it in that range. The reason for that is because if you have a mine fire, you have to stay on top of it; so we have to operate on a shift basis. Over the years we have had several fires, and we have sometimes operated on a three-shift basis, where we had a day shift, an afternoon shift, and a graveyard shift working on that fire to extinguish it. Because we have to accommodate three shifts we try to maintain anywhere from fifty to sixty people.

If you are on a mine fire, you have to go underground and you have to wear the apparatus, which weighs approximately thirty-five pounds. You don't always have to wear it in a mine fire, depending on where you're located on a fire. You might be on a fresh-air side, but if you are on the exhaust side, you are going to have to wear that the whole time you are underground, and it can get pretty heavy. It's a three-hour apparatus, so you can only be under oxygen for three hours with it. If it's hot--and if you have to wear it in a mine fire, you're pretty well guaranteed that it's going to be hot because of the fire--it's pretty exhausting wearing an extra thirty-five pounds on your back, and you've got a face piece on which you have to breathe through. That's why we try to rotate three shifts.

On one of the fires that I remember, we operated on a two-shift basis. We had twelve-hour shifts, but we didn't have to be under oxygen. We didn't have to wear our apparatuses, but we kept them with us in case the fire would backfire, and if we had to go under oxygen they were available. So we could have twelve-hour shifts, and we could still work on the fire, sealing the fire with timbered walls and preparing it for sand backfill. In a mine fire we're always constantly monitoring the air for carbon monoxide or other explosive gases.

When we have to go underground on a fire we team up, and team size varies. Generally we try to have four people to a team. We do have a call-out system set up. All the mine rescue members are set up in teams, and on each team is a captain. In the event there is a fire, we just go to this list. We have certain people designated as a first-call team, because they are more readily available on the property. If in fact we do have a fire to the extent that we have to bring all the members in, then we just set the members up in different teams as they come in. There might be anywhere from three to five people to a team, and one person is always designated as the captain. You have to have somebody who is in charge when you go underground. You can't have five people on a team trying to decide what to do. That's one reason for the voting; you have to be pretty compatible. Once you've designated somebody to be the captain,

all four people have to fall in line. It's worked really well. In only one case can I remember somebody not following along.

Swent: You and your brother were each captains of teams, weren't you?

Kinghorn: I was never a captain of a team. I've filled in on the contest team. Besides the captain you have a mapman, two first-aid people, and a co-captain. I have worked all four of those positions on a contest team.

Swent: Your team won the national--

Kinghorn: In 1988 our team, the gold team for Homestake, won the national championship in Las Vegas. We competed against thirty-three other teams nationwide from various mines. Some of the teams were from salt mines, some from soda ash mines in Wyoming, and we had teams from New York, Louisiana, New Mexico.

Swent: You placed another time, didn't you?

Kinghorn: We placed in regional contests. Our silver team won four western regional contests four years in a row. When I first went on the contest team in 1982, we at that time were just kind of building our team. We had gone to contests and felt like we had done real good, but we just weren't good enough to quite place. About 1986 and 1987 our teams were starting to jell, and we were really starting to compete as teams. That's when we started winning contests. We placed first and second and took third.

I guess the culmination of it all for me was in 1988 when we won the national contest. I felt real proud of that. It was just trophy awards, no cash awards; except we did have a cash award in the form of a \$5,000 scholarship that we were able to award to a high school senior. The people that gave us the scholarship to give away here at Lead said we could either give it to one person as a \$5,000 scholarship, or we could divide it in half and give it to two people as two \$2,500 scholarships. We thought it would be nice to go that route, so we split it up and awarded two \$2,500 scholarships. Winning that contest, that was what made me feel really good--to be able to come back here and give that to somebody else.

IV FOUR YEARS AS APPRENTICE ELECTRICIAN, 1987-1991

Swent: After a number of years working in the mine you became a contractor, and then you switched over to the electrical department.

Kinghorn: That was in 1987.

Swent: Was this something that you aspired to do or were asked to do? How did that come about?

Kinghorn: I quit contracting--

Swent: Why did you quit contracting?

Kinghorn: I just felt that I had had enough. I felt I needed a different challenge.

Swent: You certainly worked hard at it. It takes a lot out of you.

Kinghorn: It does. I just reached a point where I wanted to do something different.

Swent: I think you told me once that you wanted to do something with your brain instead of your back.

Kinghorn: Yes. Mining was a challenge. Certainly guys have to think about what they're doing each day as a miner, but it was a lot of physical work. I have always kind of been interested in electricity. This electrical apprenticeship opening was posted on the board, and I decided to give it a try.

Swent: It must have been quite a cut in pay.

Kinghorn: It was about an eighty-cent-an-hour cut in pay.

Swent: Had you ever had an accident in the mine?

Kinghorn: No accident that caused me to have a lost-time injury. I've worked twenty-four years now for Homestake without a lost-time injury. I certainly had a few minor scrapes and cuts and some close calls.

Swent: Was there a feeling that you shouldn't push your luck much farther?

Kinghorn: The biggest close call was when our stope caved in, as I mentioned earlier. I wasn't actually there when it happened, but I could very well have been. I have done some other things in my career at Homestake when I put myself in jeopardy when I probably shouldn't have, just to get the job done. You feel compelled to get the job done, and a lot of times that's how our accidents at Homestake and I'm sure at other jobs happen. You want to get the job done, so you take a shortcut. That's usually when a guy will get hurt. Not to say that in twenty-four years, just because I haven't had a lost-time injury, I didn't ever take a shortcut. Sometimes I just got lucky.

I remember one job in particular that I did and never should have done, because something serious could have happened. As it turned out, nothing did.

Taking a Risk in a Hung-up Chute

Swent: What was that?

Kinghorn: When I was mining, our chute was hung up. The chute is what we pull the rock out of the stope with. The rock was hung up above the chute and just wouldn't come down. We had blasted on it several times--quite a few times, as a matter of fact--and it just wouldn't come down. My partner and I were at kind of a loss as to what to do to get this down. We looked up through the chute to try and see how big the rock was that was up there hanging things up. We decided--it was our decision and not our supervisor's or management's--we took a jackleg up inside the chute and drilled this rock so that we could actually put the explosives in the rock. Putting the explosive up next to the rock just wasn't doing any good.

Swent: Had you tried anything before that?

Kinghorn: We were pushing explosives through the chute up to where the rock was at and setting them off, but the rock was so big it wasn't doing any good. We couldn't get the explosives placed just right on that rock so that it would crack it. So we decided to take a jackleg up inside the chute and drill it from inside the chute, with this hanging over our heads.

As we got up inside the chute, we hadn't just gotten in there and a little rock fell. Boy, both of us just shot down out of that chute and back down onto the ground. I think we were probably reasonably safe, and I still think that today; but I would never do that again. I would find some other means to do it.

Swent: You didn't blast it, then?

Kinghorn: We drilled holes in the rock and actually loaded the holes and blasted it that way and got it down.

Swent: So what fell down on you?

Kinghorn: When we first went up in the chute and were preparing to drill the rock, just a small gravel-sized piece of rock fell down and scared us both. Out of there we shot.

Swent: But you went back in after that?

Kinghorn: We went back in and drilled it and got it out of there. Needless to say, I was real nervous the whole time we were doing that, because you don't really know what you have there. You can see what you think you have, but you're never real sure.

That's one of the shortcuts I mentioned. You want to get it down because you're contract and want to get to moving the rock so you can get paid more. As I said, I've never had a lost-time injury in twenty-four years at Homestake. I've had minor scrapes and cuts and a few stitches, maybe three or four at one time, but I've never been off work because of an accident.

Swent: So then you got the apprenticeship.

Kinghorn: In 1987, after having mined for quite a few years, I decided I wanted to do something different--work at a job where I really had to think about what I was doing. There was an electrical apprenticeship posted on the board, so I applied for that and got it. That was a four-year apprenticeship, and I spent the next four years working at it. It was a real interesting field.

I've always been interested in electricity, so I found it really interesting.

Ventilation in the Mine

Swent: What does it involve?

Kinghorn: My job involved installing the ventilation fans that we have--the 15-horse fans, 5-horse fans, and we use 40-horse fans to ventilate the working areas of the mine. You have to run the power cables to feed those fans, so you have to hang these 480-volt power cables. The amount of those cables that you have to hang could vary in length, depending on where your power source is at for that particular fan. You may have to hang 50 feet, or you may have to go as much as 1,000 or 1,500 feet.

The power coming into the mine comes in in 12,000-volt lines and then is stepped down to workable voltage, which is 480 volts. Generally we have our mine pumping, and those pumps operate off of 2,300 volts. The working voltage of the mine is split up between 480 volts and 110 volts. We have some electric LHDs underground, and they operate off of 480-volt lines. The mine generally is without any illumination, but it's not dark everywhere you go, because we do have electricity underground. We step it down to 110 volts. All our stations at all the shafts and winzes underground are lit up. Back in the working areas where the guys are moving rock and operating the LHDs, all of our dumps are required to be lit up, more for a safety factor than anything else. It is a big open hole, and we want those areas lit up so people can see them when they come by.

Other parts of the mine--our powder magazines, we have lighting in there, where we keep the explosives. Our explosives are separated, of course. We have a cap magazine and a powder magazine.

Swent: Does Homestake still have its own power plant?

Kinghorn: Out in Spearfish Canyon we have two hydroelectric plants. Today they generate approximately five percent of the electricity that Homestake uses. The rest of it is bought through Black Hills Power and Light. Homestake at one time did own Kirk power plant, but they sold it in the fifties to Black Hills Power and Light. The Kirk power plant operates off of coal.

Because I was in the electrical field for some time, I became somewhat familiar with the Kirk power plant. They had four generators down there, three smaller ones and one larger one. Because the plant is becoming pretty outdated--it's a pretty old plant, and it's becoming more costly to operate--Black Hills Power and Light has shut down the three smaller generators, and they're operating just on their one large generator. That, I understand, is really being kept in operation just as a backup for Homestake power. All the other power is fed in from their Wyodak plant in Wyoming by Gillette. Homestake really needs that backup power, because if something would happen to the major power line coming from Wyoming, it would shut down the Homestake mine. When you have people underground, you have to have a means to get them out of the mine, so you have to have a backup power system for the hoist.

So I did get a little bit involved with that plant. Our two hydro plants feed into the Kirk power plant, and the power that is generated there is distributed from there to the mine, whether it be on the surface or underground. The power feeds that go underground, as I said, are all 12,000 volts. They go down the Ross shaft, and we have a main 12,000-volt feeder that goes down the Number 5 shaft from the surface that feeds the Number Four winze area. The power is distributed throughout the mine through these 12,000-volt power cables.

Swent: They're all hung from the shaft?

Kinghorn: They come to the shaft, and then they are actually suspended in the shaft. They go down to various levels, and then they are stepped down to a workable voltage, either 2,300, 480, or 110 volts. Every level has miles of power cables on it, too, just as they have pipes and track. There are miles and miles of power cable for the pumping, the lighting, and the ventilation system.

We had to run one 12,000-volt cable down from the surface to the 6,950 level just to power the main cooling system that was installed on the 6,950 level. That system is a big refrigeration unit that actually cools the air for the lower parts of the mine from the 6,950 down to the 8,000 level.

Swent: How does it do that?

Kinghorn: It's nothing more than just a big refrigeration unit. I've been told that it's comparable to the air conditioning units that cool the Sears Towers in Chicago. So it's a pretty large unit and a pretty large system. It's a totally enclosed system; in other words, we only have to add about 55 gallons of water to

the unit about every 24 hours. It's not a large consumer of water, which is real good, because it's not water we have to pump back out of the mine. On the other hand, it's a real big consumer of electricity. It runs about three quarters of a million dollars a year just to operate that.

Swent: What temperature do they get it down to?

Kinghorn: Coming out of that refrigerated area, the temperature is about 65 degrees.

Swent: Isn't that about normal rock temperature?

Kinghorn: The rock temperature can be about 100 degrees.

Swent: But in most places in the earth, isn't 65 degrees a normal rock temperature?

Kinghorn: I'm not sure of that. As you go deeper, of course, the rock gets hotter, and that's what we're dealing with now. We cool the air temperature, and that is distributed out through the working areas through the ventilation project from the 6,950 down to the 8,000.

Swent: By fans?

Kinghorn: As it comes out of the plant there are three big fans that are blowing this cold air out. Because of the way the ventilation system is set up, it actually draws this cool air out away from the plant and then just circulates it down through the working areas. At Homestake we have what we call a negative pressure system. Our exhaust raises have a fan sitting on top, on the surface, that actually draws the air out of the mine, thereby drawing fresh air into the mine through the Ross and Yates shafts.

Swent: The shafts are the air intake?

Kinghorn: The Ross, Yates, and Number 5 shaft are the fresh air intakes.

Swent: The Oro Hondo--

Kinghorn: That's the major exhaust shaft.

We're getting away from the electrical aspect, but it still involves electricity. We still had to do maintenance on this ventilation project. I guess that's how I came to learn as much about it as I have. The same with the Oro Hondo.

Swent: So the electrician's job is to go around and inspect these miles and miles of cable?

Kinghorn: We do installations of anything electrical that's needed--lighting, ventilation fans. We have 30- and 60-ton cooling units, refrigeration units, that are used at the working areas in the lower parts of the mine where it's hot. They are actually what you might call a spot cooler that the miners take to their particular working area that helps cool the area. We do those installations. Of course, you have to hang all this cable for those. When I first started in the electrical department, the particular boss I was working for was responsible for the #6 winze hoist, so we had to maintain that.

Swent: What was his name?

Kinghorn: Bob Harlan. He had responsibility for the #6 winze hoist, the #4 winze hoist, and the #7 winze hoist.

Swent: These were all underground?

Kinghorn: Yes. The #6 winze was on the 4,550 level, #4 winze was on the 4,850 level, and the #7 winze was on the 6,800 level. We had to maintain those and keep them operating.

Swent: That's pretty crucial.

Kinghorn: I was just learning the trade, but certainly I enjoyed that part of it more than anything, because it was really a learning process to learn how those operated.

Swent: Did they teach you by just sending you down on the job?

Kinghorn: It was on-the-job training, and then Homestake required that I take an ICS [International Correspondence School] course in electricity.

Swent: Is that course from Chicago?

Kinghorn: Pennsylvania, I believe.

Swent: How long was that course?

Kinghorn: You had the four years to complete it. It was a set course, and there were so many books in the course. I don't remember offhand just how many there were. Besides your on-the-job training you could work with your books and try to correlate what you were doing at work and what you were doing through your bookwork.

A Constantly Changing Field

Swent: Did you think you really needed four years?

Kinghorn: In the four years that I spent in the electrical field, it seemed like it was forever changing. I learned a lot in four years, but certainly there was a whole lot more to learn.

Swent: So you didn't feel you were just marking time?

Kinghorn: Oh, no. I don't think--if you spent twenty or thirty years in the electrical field you would never learn all there is to learn, because it is changing. As I saw it in the four years that I was involved in it, there was a trend from the electrical field more towards electronics, which is more involved. The #6 winze hoist that I talked about got more involved in electronics than some of the other areas. It was a quite a bit more modern hoist than the other hoists that we had--than at #7 winze and #4 winze that I dealt with at this particular time.

There was just so much to comprehend in the electrical field, just learning how electricity works. If you get involved, as I did a little bit, with the #6 winze hoist, then you're getting into electronics, and it gets a little more complicated.

Swent: In what sense? More automated?

Kinghorn: You start dealing with microchips, microswitches--things that computers are made of. Instead of a lot of wires, which electricity basically deals with--running a wire from point A to point B--you can do everything in a computer chip. This hoist was probably a combination of electronics and electricity. It was quite a bit more sophisticated hoist than, say, the Ross or the Yates hoist is today.

I worked through the apprenticeship. I started out working with each electrical supervisor. I started first with Bob Harlan, and then I moved on to Ernie Mosher's crew. Both of those crews were underground. Once I completed the time they had set for me underground with each one of those supervisors, I moved up to the surface and spent some time with the surface electrical crews. Chuck Davis at that time took care of all the electrical needs on the surface.

Then they had me go to motor repair, which was still the electrical end of it. I spent some time learning about electric motors.

Power Distribution and Generation

Kinghorn: I already mentioned being down at the Kirk power plant while I was on the surface. From that point you learn the electrical distribution--how electricity is distributed to different points. I got to spend some time out in Spearfish Canyon, where our two hydro plants are at, and I learned how those operate. You're really getting down to the basics of electricity there; you learn how it's generated through water power.

Swent: Those are beautiful old buildings. When were they built?

Kinghorn: Hydro Two I think was built in 1935. It's pretty new, really.

Swent: I thought one of those buildings was even older.

Kinghorn: I understand that there is hydro one, which is down in Spearfish Park. That is actually the second location of the first hydro plant there. I'm not real certain where the first one was at. They built a hydro plant, and apparently it didn't work quite like they wanted it to, so they rebuilt hydro one where it is at the present day. I don't remember offhand the year that one was built.

I found it pretty interesting being out there, because you got to work on the generators. You find out how the water comes through the pipeline to the surge tanks and down the penstocks, hits the water wheel and turns it, which generates electricity. Then it's sent out through the distribution lines back to Kirk power plant. It's really basic, but it was interesting.

The system that Homestake had set up there for their power plants is pretty interesting in and of itself. They picked up the water out of the creek and put it in a pipeline, then ran it along a canyon wall so that it would have enough water pressure on it to come down and turn the water wheel. Then it went through the hydro two plant and on down the creek again, and they picked it up out of the creek. They mined a tunnel through the canyon wall that I understand is five miles long. They divert the water out of Spearfish Creek through this tunnel. It comes out right above Spearfish Park and is picked up in a water line. It goes down from there to the surge tank, and then it goes down the penstock to the water wheels--to the generators at hydro one.

I've often thought it took some real good engineering to think of that whole system the way it's set up.

When I was on the surface electrical crew we maintained all the overhead power lines on the company property. They ran anywhere from 2,300 volts to 110 volts. You got even smaller voltages, depending on what you were working on. Some of the smaller electrical equipment was used to monitor certain equipment down at the metallurgical department. Through my electrical experience I got to deal with voltage anywhere from 12 volts up to 12,000 volts. It was quite a variation and quite an experience.

I really enjoyed it, because when I decided not to mine any more, I went into the electrical field because I really wanted to do something where I really had to think about what I was doing. In the electrical field you always had to think, because one wrong move could be your last one. You always want to be careful where you put your hand.

Swent: How long did you actually work in the electrical field?

Kinghorn: I completed the four-year apprenticeship, and within a week I was accepted into the safety department. I worked in the safety department a year and a half, and then they moved me into supervision.

Swent: Each one has been a step up, hasn't it?

Kinghorn: Yes. And I've enjoyed each place I've been. I have always tried to make the best of wherever I've been.

Swent: As a supervisor, what is your title?

Kinghorn: I'm the north drift supervisor. I have come into this project at the later stages. I just started in June of this year, 1993. This project is a little over three years old.

##

Kinghorn: I've seen the drift from the start to where it is now, but as a supervisor I've only been in since June of '93.

Swent: How long a project is it scheduled for?

Kinghorn: It was scheduled to be a five-year project. Originally the drift length was supposed to be 16,700 feet. The reason for that was because geology thought it would take 16,700 feet, or a little over three miles, to get out to where they thought we would intercept what they hoped to be another major ore body. Since we have started drifting and they have done more test-holing from the surface, they have decided that our drift is

almost as far north as it needs to be. We're approximately 11,500 feet north of where we first started.

Originally, through their testing, they thought the ore body from the surface lay at a north-to-south inclination, but through more testing they have decided that the ore body is actually lying flatter. It's still going south, but it's at a lesser degree, and that's why our drift is intercepting it sooner. Hopefully that's the case, for a couple of reasons. We're at the ore body sooner, and naturally that's going to save us a lot of cost, because it's one less mile of drift we have to drive.

Polygrouting to Stop Water in the North Drift

Kinghorn: Right now geology is going to have our drift stop at 168 stope line. We're right now 400 feet shy of that, but we've encountered water. We have 50 to 60 gallons a minute of water coming out of our face. We've encountered water before in the drift, but that was prior to my coming to the drift. Homestake came up with a means of using a polygrout system to stop this water. To do that we have drilled holes around the perimeter of the drift--all the way around the sides, across the back, and across the bottom.

We put what we call packer pipes in there. We install these packer pipes, and then we have this grout machine that pumps this polygrout, which is like an epoxy glue: you have two tubes of glue, and as you mix the two together as they come out of the tube, it hardens. This polygrout that we use works in very much the same fashion. We have two barrels of that, and we pump it in this hole. We actually have what we call mixers, and this pipe that we pump it in is hollow. As the grout is pumped into this pipe, it goes by these little plastic mixers, mixing this grout up. Then it solidifies once it gets beyond these mixers. The pump that is used to pump the polygrout can actually overcome this water pressure, which in some cases has been as much as 2,000 pounds psi.

It has worked really well. It has worked well to stop the water, but it has been a real challenge to try and get the water stopped. We have 50 to 60 gallons a minute of water coming out of the face now, but we don't have a lot of pressure. The volume is there, but not a lot of pressure. We're fortunate in that case that we're still using the polygrout. We drill holes and pump this grout in, and it seals the water off.

Swent: It holds it back?

Kinghorn: It basically holds the water back in the rock. Once the water stops, it allows us to keep advancing with the drift. The water is a problem, of course, when you are mining, but if we don't stop the water it just adds that much more to the water in the mine that we have to pump out; so we try to stop as much of that as we can. We don't get it all stopped, but we get it down to maybe 5 gallons a minute. As much of that water as we can stop just adds to keeping that much more water out of the system, which adds to the cost of operating the mine.

Right now our drift is at a standstill because of the water. We'll be working on it again Monday when we go back to work. My crews will be pumping grout. The last shift in there got a lot of packer pipes installed and we were making pretty good headway on trying to stop the water. I'm real confident that when we go back to work Monday morning we can stop it altogether.

Swent: And then just 400 feet to go?

Kinghorn: Once the water is stopped, we'll start the mining process again and will advance out 400 feet.

Swent: How long would it take you to do 400 feet?

Kinghorn: We try to get 300 feet a month.

Swent: So that's only a little over a month?

Kinghorn: We're looking at five to six weeks. Once the drift advance is done, we'll take all the mining crews back out. As I said earlier, we have had two diamond drill machines that have been following the drift advance. The plan is to pull the mining crews out, and then the diamond drillers will have the drift to themselves for about six months. They have about 40,000 feet of diamond drilling that geology wants them to do to further define the ore body or define the rock to try to determine exactly what we do have.

Swent: We haven't said much about your brother. He has done some of the same things you have done, hasn't he?

Kinghorn: He's had a little variation on what I've done as far as the maintenance end of it. I haven't done a lot of that. My career at Homestake has basically been mining, the four years in the electrical department, then the safety department, and now in the supervision.

Swent: That's a lot of knowledge of the mine in three Kinghorns, isn't it?

Kinghorn: Yes, it is.

Swent: Your dad must have been pretty proud of you.

Kinghorn: You asked earlier if he had any influence on what I was doing. I think he would probably rather have seen me out doing something other than working at Homestake. As it has turned out, things have gone quite well. I would have to say that probably a lot of the fathers hope their kids will go out and find work elsewhere. It's been a good job. I've enjoyed it. For this state, for this region, it has paid real well. A lot of people are envious of people who work at Homestake because of the pay and benefits that we get.

Swent: You certainly earn it with hard work and risk.

Kinghorn: I have always thought so.

Swent: Thank you, Ken; this has been great.

Kinghorn: It's been fun.

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Eleanor Herz Swent

Born in Lead, South Dakota, where her father became chief metallurgist for the Homestake Mining Company. Her mother was a high school geology teacher before marriage.

Attended schools in Lead, South Dakota, Dana Hall School, and Wellesley College, Massachusetts. Phi Beta Kappa. M.A. in English, University of Denver. Assistant to the President, Elmira College, New York. Married to Langan Waterman Swent, mining engineer.

Since marriage has lived in Tayoltita, Durango, Mexico; Lead, South Dakota; Grants, New Mexico; Piedmont, California.

Teacher of English as a Second Language to adults in the Oakland, California public schools. Author of an independent oral history project, Newcomers to the East Bay, interviews with Asian refugees and immigrants. Oral historian for the Oakland Neighborhood History Project.

Interviewer, Regional Oral History Office since 1985, specializing in mining history.

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