Dawn Ingersoll

Interview

November 30, 1999

PREPARED QUESTIONS FOR THE INTERVIEW

1. When did you first get started or involved in mining? What company did you work for?
2. Did you have friends or relatives involved in the mining industry?
3. What were your different roles and responsibilities in mining?
4. From your perspective, how do you view the history of mining?
5. How has mining changed over time? Technology, equipment, etc
6. Has safety changed over the course of time?
7. How did the professional staff deal with the strikes and labor unions?
8. Over the years, how did management change or effect the daily operations?
9. What are your comments on the Berkley pit and the efforts to control the water?
10. What were your pros and cons of the mining industry; and it's effect on Butte?
11. What do you think is the future of mining in Butte, the mine life at MRI?
12. From your perspective, how have the lifestyles, values and attitudes changed toward mining?
13. Any stories?

OUTLINE OF THE INTERVIEW

When Floyd and I first started the interview, he wanted to know the questions and have a discussion prior to starting the recording. The following is some information that was discussed.

Floyd started working for the Anaconda Mining Company upon his graduation in 1950 from the School of Mines. He obtained his degree in Geology. He first started as a mining engineer, then a planning engineer, construction superintendent, then into the ventilation department. During the 1967 strike, he went back to school to further his education relating to the environment, obtaining his masters in Cincinnati. In 1968, he wanted to leave the Company, but his manager wanted him to stay, and gave Floyd special assignments. Soon, a teaching job at Montana Tech was offered to Floyd, and he accepted. While there, he taught mining methods and ventilation. By his third year, he had started environmental courses and phased out of mining. Floyd also played a major role in starting the Occupation Health & Safety Programs. By his 5th year, the Environmental Engineering degree was approved, and by his 7th year, the OSH degree was approved. Floyd stayed at Montana Tech for 10 years while also pursuing his consulting career.

His first consulting assignment was for his previous manager at the Anaconda Mining Company. The Butte mines were difficult, short of air and hot, sometimes reaching temperatures of 165 degrees. During the 1930's-50's, the best knowledge of mine ventilation was right here in Butte. It has since transferred to South Africa for the deep gold mines.

Floyd enjoyed what he did. He claims he was very fortunate for his opportunities. He has kept up with his consulting, however, has started phasing out of it in the past couple of years.

Then we proceeded on to the interview questions. (see attached)

After the interview, Floyd did make a couple of comments. He said that since Marcus Daly was Irish, he got the word to Ireland that the Irish should come to America and go west until they found the 5 stacks. There they would find jobs. The Chinese weren't allowed to go underground, instead their function was to placer mine and clean up after everyone else had taken their hauls. Ethnic groups seem to have stuck together and work at common mines. For instance, the Mexicans worked the Belmont, and also because of their small size and relative small size of the mine.

TRANSCRIPTION OF INTERVIEW

This is an interview of Floyd Bossard conducted by Dawn Ingersoll at the home of Floyd Bossard on Monday, November 29, at 8 PM. Our discussion will center around mining in the Butte area.

(Please see insert)

DI: You said that you worked with for the Anaconda Company in 1950 when you were going to school for Geology, did that help you while you were working in the mining industry?

FB: Indirectly. I never did practice geology as such because I considered it as a requirement particularly with the Anaconda Company you spent your life in geology and I didn't want to dedicate my life to geology. I wished I had worked one or 2 years as a geologist but I absorbed enough geology with my school work and with the work I did with the Anaconda company and my associations with geologists. I have a basic understanding of geology, underground geology. Besides that, I have been fortunate enough to visit, work at, consulting work with over a hundred underground mines. You can't go into mother earth a hundred times without learning something about the geology of the world. And the geologists at the mines are very good about explaining the general geology of the mines to you when you visit, if you ask the questions, and I always did.

DI: Did you have friends or relatives that might of helped you get involved in the mining industry, or did you do it on your own?

FB: It was not my intent to go into mining. My dad had come to Butte when he was a young man and hired on, went underground into one of the mines and came right back up on the cage. He didn't spend the day. I was looking more towards petroleum, that was my thoughts when I was taking geology at Montana Tech. It was obvious that you could either go toward mining or petroleum and I felt it was, the options were that geology left for me were beneficial. But I wound up going the mining way.

DI: That might of been a wise choice. There's a lot of petroleum engineers up there that have changed careers.

FB: Yep. I think the world is such that most people will change their career in their lifetime now. How about you? Have you changed yours?

DI: When I first started I was going to be a teacher then it switched over into business. That's what I'll be finishing up my degree, in business. But I think I still have that desire to go back to be a teacher. I'd like to teach.

FB: Did you teach?

DI: No, well I worked in a school district for seven years and I had a lot of opportunity. I coached the girls and I really liked it. I would like to go back and teach K-3. What were your different roles and responsibilities when you did work for the Anaconda Company?

FB: When I first started, I started where everyone does, as a Mining Engineer. At the time when I came to Butte, there were 15 operating mines. I worked as a mining engineer at 5 or 6 of them at various times in my life. I started at the Orphan Girl which is now the museum. So that was my start in mining at the Orphan Girl. Then I went into a Planning position as a planning engineer. I worked at that. I typically worked 3-4 years at each assignment. My philosophy was that I should move on at the most about 4 years in any one position. And I was able to do that at the Anaconda Company without changing companies. I was very fortunate to be able to do that. So as a planning engineer, then I went into the Mining Ventilation Department. I worked there under some very, very fine people who were leaders in underground ventilation in the world at that time. Fellows like Jack Warren, he was just a super, super intelligent man. Frank Laird was a big assist to me in my career. Bill Williamson was another old timer who I worked with at Anaconda

in ventilation engineers. I went from there to construction superintendent. That was a very good opportunity to get hands on with equipment and with projects and bring projects to fruition and to completion. I enjoyed that.

DI: Did you get to see the mines grow from nothing to something?

FB: No, the mines were actually on a plateau when I first came here. There were about 15 of them operating at the time. A dozen to 15 I would gather. They were on the plateau. I saw the decline in the number of mines in Butte. In the 50's, I started in 1950 full time with the Anaconda company. In '56, the Kelly Blockade mine came to pass in Butte. It shut down several mines because it mined under them in large scale mining operations. That was followed up in the early '60's with the Berkley Pit. It in turn took the place of the mines on the east side of the hill and eliminated them. So the combination of physically taking over the mines with large production, high production rates, lower grade ore meant that the volume that came out of Butte probably went from 15 thousand tons a day from underground mines to 50-75 thousand tons per day with the remaining underground mines plus the lower grade operations, the Kelly Blockade Mine and the Berkley Pit. So volume made up for grade. Economics forced it to go that way.

DI: Where they all mining copper at that time?

FB: Basically no they were dependent. Some lead zinc mining going on. Butte's a classic halo deposit where the low temperature minerals are on the outside of this halo ball you might think of it as. The low temperature of the metals, the precious metals, gold and silver, that's where you find them typically on the fringes and then the lead, followed by zinc and copper's the core. Butte's a very classic example of that type of ore deposit.

DI: Has mining changed over the course of time when you were involved in it?

FB: It changed very considerably. When I first started at the Orphan Girl Mine, it was rails, ¾ ton cars, small track, and electric engines. The other mines, the Kelly Mine was a track mine, electric rails, had a ram and trolley, trolley mines, trolley cars. They were about 3 ½, 4 tons per car. There was some introduction of diesel equipment in Butte. That was towards the latter stages of the underground mining and it never really took off. Of course, you know the story of the Berkley pit, the size of the equipment there just jumped every several years. It went from about 25-35 ton trucks to 250 ton trucks. Those kind of things.

DI: What do you think of the Berkley Pit? Do you think they'll succeed in finding an effective way to control the water inflow?

FB: They're not going to control the water inflow. The water will always come in. I guess my concern, I question whether it will act as an inverted cone as the hydrologist have said it will. There are a lot of structures around Butte and water comes in different locations. It comes under different, gets confined in these structures. It's not a porous mass that allows water to weep in from all direction with the same pressure drop in all directions. I think that there is a good possibility that we'll see some sections of this district where contaminated water will rise above the Berkley Pit and show up in our groundwater.

DI: You have a background in the ventilation. Is that also related to the safety of the miners? That's what they breathe.

FB: It is in this respect. It's not associated with the physical safety hazards of the miners are exposed to but it is associated with the unseen hazards the miners are exposed to, the dusts, and gasses, you can smell the gasses, particularly with the diesel equipment nowadays. The exhaust gases from diesel equipment, it has been my experience that anytime a mine goes from a rail type mine to a diesel mine, it may have adequate ventilation when its rail, as soon as it's dieselized, it has to, you have to increase the volume going to that mine, generally several times, to reduce the exposures to the men of toxic gases which is carbon monoxide, oxide nitrogen, hydro carbons and carbon dioxide to a level that is permissible. My greatest

concern from a ventilation standpoint is twofold. One is the breathing of contaminated air, and also includes the gases, dust from the rock, that is primarily quartz, silica. You have mines that have various ranges of quartz. Butte is about 18% of the ore was quartz. When I work in the gold mines now, in Nevada, 2/3's , 60-70% of the rock is quartz. That's what gives men the silicosis. That 's why we have Galen down the road servicing the men who had become debilitated. Last but not least is fire. So ventilation from a safety standpoint is mine ventilation plays a key role in protecting men in the event of a mine fire. They have the opportunity to get always get access to a fresh flow of air. The worst thing , design of a mine you could possibly have is where a mine has a single intake of air. A piece of diesel equipment operating in it gets on fire , it's going to fumigate everything below it. There have been instances of that. Very strong against designing mines where the intake air is potentially contaminated in the event of a fire.

DI: Where there safety's back in the 50's-60's for that ventilation ? Was it hard to implement those safety precautions?

FB: I think that it started in the 30-50's, the Butte mines were very strict on ventilation. They knew and learned the hard way the importance of ventilation and they set criteria ventilation systems and standards and criteria and they stuck to them. They sampled the air for dust, particularly looking for quartz all over the hill, there was a team, that was there job, sampling quartz. They were very supportive of mine ventilation in Butte.

DI: And probably now it's regulated by OSHA, in the best interests of everyone, maintain the standards.

FB: I think there's a fallacy, as far as I'm concerned, about OSHA and it's understanding of mine ventilation and it's effective implementation of mine ventilation. The setting of standards is of some benefit, but you can't dictate a safe environment by setting standards. You have to know what a safe, unsafe environment underground is. I don't experience many MSHAW inspectors that are knowledgeable enough to make me feel comfortable with them making inspections of mine from a real hazardous standpoint.

DI: What do you think are the pros and cons of the mining industry are and the effect on Butte?

FB: On Butte, I guess my feelings are mining particularly Butte was a catalyst that opened Montana. It would've taken a lot more years for Montana to become economic viable and become a state if it hadn't been for Butte. Butte suffered like any mining district from the results of ill practices. I think we're all aware of that from what Superfund is trying to mitigate now. But, by the same token, a lot of people were feed, a lot of people educated, a lot of benefits came to rule because the mines were successful and the wealth came.

DI: What do you think the future of mining is in Butte?

FB: Butte's future. I think it's about 25-30 years with the present Continental Pit (MRI). I don't hold much hope for them draining the water out of the mines and going back underground. I think the cost of that would be exorbitant. There's a lot of mines around the world more easily accessed and better grades, and mined more economically than Butte.

DI: In your perspective, how do you think the lifestyles, values and attitudes have changed toward mining?

FB: Towards mining.

DI: I read in our history book, the Anaconda Mining Company was the center of the community, everything was the company. I would say that's changed, first of all since they don't exist anymore.

FB: The company was a state if you want to go back far enough. Anaconda Company dominated the state because the state did not have resources. With the population, Butte was the largest between San Francisco

and Seattle. The attitudes, Butte was a and still is a socially, benefited from the mines because, the miners, it was difficult and hard job and typically, the miners worked as partners and looked after each other. 2 men looked after each other, other crews looked after each other. There was a camaraderie in the Butte mines. It was interesting for me to see that when I came here. It was such that there was no hierarchy, no social hierarchy in Butte either. People were considered equals. Working in this difficult environment, you pretty damn well succeeded or you were killed. The social structure in Butte was flat you might say. There were some wealthy people, more important people. It was not a stratographic social structure in Butte. There was not a stratographic structure in the underground mines. I think one of the things in the underground mines, has to do with safety. A lot of men were killed in the underground Butte mines or maimed and one of the major problems in the mines were the Irish miners. The Irish miners had the attitude that when their time came, God would come and get them. It might be on the surface, it might be underground. They did not work as safe as they should have or could have. Look back at the old stories, the religious beliefs that they had, when your time was up, your time was up. They wouldn't take that rock down, when it got him, it got him. It's hard to understand nowadays.

DI: That's all I have now unless you'd like to add any stories.

FB: I just consider myself very fortunate for having worked in Butte. I worked in Butte during a time when a lot was going on. I was given the opportunity to get a lot of experience, varied experience, all the way from mining engineer to planning engineer to construction superintendent to mine ventilation. My takeoff, my experience with Butte, it provided me with the basis of my consulting activities after my time with the Anaconda Company, I've been consulting for 30 years, I've been consulting since 1969. It provided me with an interesting, challenging career. Very rewarding to think I've been able to design mine ventilation systems, improve people's health and save lives.

DI: Well, thank you very much.

FB: You're welcome.