CHAPTER TEN

*****

A ROCKY MOUNTAIN HIGH (HELLO)

INTRODUCTION

The title of this chapter has a two-fold meaning in that; 1) I was definitely on a high note as I left the Texas gulf coast headed essentially for home or the country I loved and; 2) our arrival there was welcomed by our families as well as Schlumberger personnel and marked the beginning of my 17 year trek through the various geologic basins covering that vast area. That, of course, was followed by another 6-year stint in New Orleans before returning to Denver where I retired in 1986.

THE MOVE NORTH

Even though we had enjoyed our stay in Wharton, Texas, we left a day behind our household items in a somewhat excited state of emotion. We weren't sure what Glendive, Montana would bring but Esther was pleased we were locating somewhat closer to Idaho. Valerie was now 5 and Celeste 3. I think they sensed our excitement as we headed back along the roads we had traveled a little over a year before on our vacation. When we arrived in Pueblo this time, however, we continued on north to Denver because of my appointment with the Area Manager. I-25 was just coming under construction and generally paralleled the old highway. It provided no benefit and the going was slow, particularly as we approached Denver. I remember coming in on Santa Fe Drive, which, being only two lanes, was congested even in those times. It had been a long day and we grabbed a motel in the south part of Denver along that thoroughfare.

I left the office elated and found Esther with the girls in the lobby. She was tickled pink as well and exclaimed how nice it would be to live within 500 miles of home.

Bright and early the next morning we went into down town Denver where Esther walked around with the girls while I stopped by the Area office. As I remember, it was located in the Mile High Center, which was one of Denver's nicer buildings in 1957. I don't remember spending any significant time there, only enough to validate my assignment before heading on north. What a surprise I was in for. Somehow, they had heard I would have preferred going to Rock Springs, Wyoming because of its proximity to both Idaho and the mountains in general. The Area Manager, whom I remember to be Louis Magne though I could be wrong, told me Bill Baker had gone to Glendive and we were assigned to Rock Springs where Bob Kudrle was the district manager. I mentioned my household goods were shipped to Glendive but I was told not to worry because they would re-route them to Rock Springs. They contacted Mayflower, while I was in the office, and they complied but told us it would take a couple of weeks to make the cargo change. I left the office elated and found Esther in the lobby with the girls. She was tickled pink as well and exclaimed how nice it would be to live within 500 miles of home. Of course, she hadn't seen Rock Springs and didn't know just what she was in for but we'll get to that soon. Actually, when it came to towns, it was a toss-up as to which was the worst.

We headed north on highway 287 for Laramie, Wyoming, our destination for that night. Again, the new interstate, I-25, was under construction but not available to us. I don't remember any problems other than plain old slow going. Even so, the area was completely new to us and we enjoyed the beauty of the front-range as we proceeded from town to town along 287. Laramie was in its usual November form, cold and windy, when we arrived. Having just come from the gulf coast, it was a chilly welcome but we knew we would adapt.

The next morning, we headed out under threatening skies along highway 30 for Rock Springs. Interstate 80 wasn't even under construction though I'm sure it was in the planning stage. By the time we got to Bossler, it was snowing pretty hard and my 57 Ford with its Texas style tire tread was all over the road. To play it safe, I was only going about 35 miles an hour. I pulled into an old service station and was able to buy some tire chains, which I mounted before leaving. Though you can't break any speed records with chains, I made a little better time and primarily, we all felt safer. The snow had quit falling and I took the chains off before arriving in Sinclair. From there it was clear sailing on into Rock Springs except for the 18 wheelers we found ourselves frequently behind. Arriving at our destination around five, we pulled into the El Rancho motel on the east side of town and got a room for the night. It was cold and windy and we began to experience the delightful climate of that southwestern Wyoming coal-mining town. We learned later that the wind blew roughly 360 of the 365 days each year.

GETTING SETTLED IN ROCK SPRINGS

That evening Esther expressed a desire to go on to Glenns Ferry for a couple of weeks rather than live in a motel while waiting for our furniture. That seemed reasonable but we agreed she should wait until we were oriented and had at least looked around the town. We picked up a local paper and quickly went over the few rentals listed therein.

With the arrival of morning, I decided to check in at the Schlumberger office, which, at that time, was located on the second floor of the First Security Bank Building just south of the main line of the UPRR. We entered on the west side of the building, as I have depicted in the town plat of figure 10-1.

I have illustrated the town layout in rather crude and abbreviated form as an aid for my written remarks in this particular section. Though far from accurate, it should help you visualize the few land marks referred to as I relate various incidents that took place during our stay in the lovely metropolis of Rock Springs.

Bob Kudrle, my new manager, welcomed me warmly and introduced me to everyone in the office. There were two other engineers and a combination secretary clerk. Glenn Land was a new engineer who remained in Rock Springs until after I left. The other fellow, whose name escapes me, was transferred soon after I arrived. He then took me to the garage located behind the Northern Hotel where I met all the operators, who were on duty. I asked him about

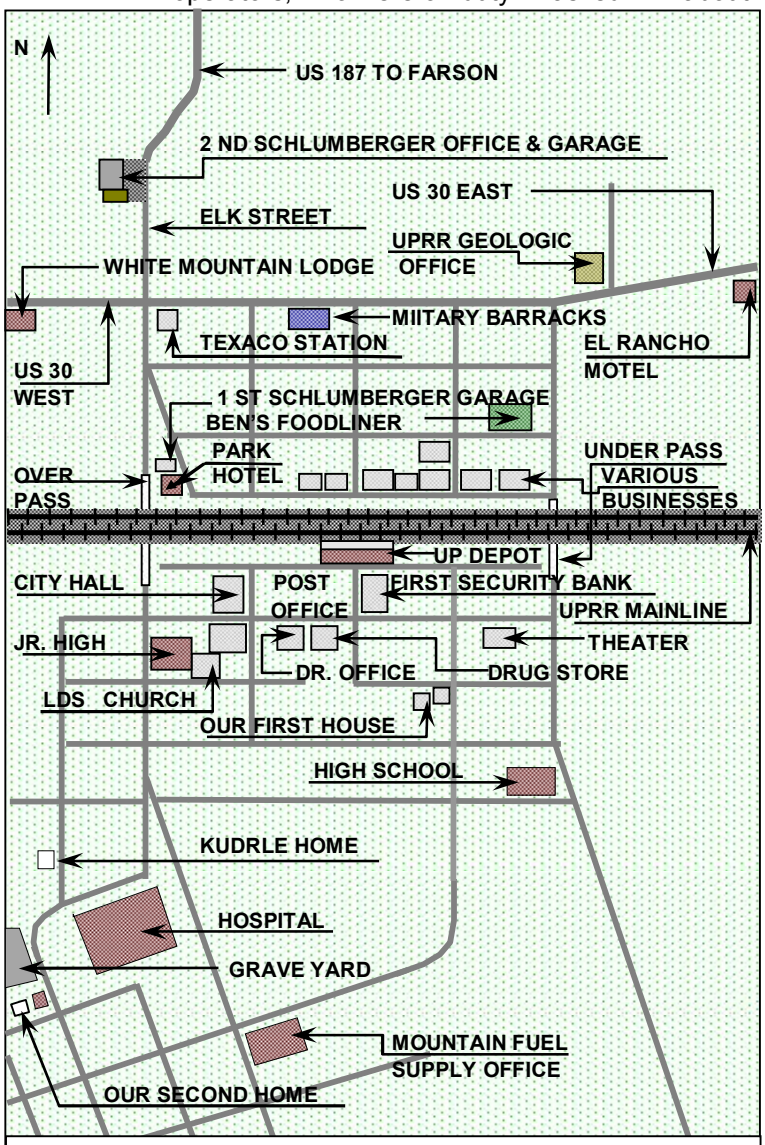


Figure 10-1 A rough illustration of the Rock Springs, Wyoming city center when we moved there in 1957.

the split facilities, i.e. differing locations for garage and office. He explained that the location was relatively new and that was all they

could find but they planned to build something better soon. Actually, the garage was hard to get a logging truck into or out of and the overall facilities were barely adequate for Schlumberger's purposes, but they made do.

With the introductions completed, we talked about the metropolis of Rock Springs and the possibility of my finding a rental house. He indicated housing was tight and it might take a while which kind of cinched the plan to send Esther and the girls on to Idaho.

I dropped by the Chamber of Commerce (they actually had one) and picked up a map before heading back to the motel. Esther and the girls were waiting for my return and a decision on our next step. Soon we began our tour of the city, which must have taken at least 30 minutes. Though bigger than Wharton, it was still small and, quite frankly, rather depressing as compared to where we had just come from. The name, Rock Springs, was well chosen in that the surrounding bluffs were Mesa Verde sandstone and literally sprang out of the ground. It was not a town of beauty and, at that time, little seemed to be done to change its image. In fact, during the winter months they spread crushed coal on the streets in place of sand, which quickly ruined the beauty of any new fallen snow. I must admit, however, the natives were very congenial and we were warmly welcomed. This experience helped me realize that people contribute more to ones satisfaction in a community than does the climate or surrounding scenery.

The few listings we had taken note of were either gone or completely unsatisfactory. I began to see what Bob had meant. We did take time for Esther and the kids to meet Mrs. Kudrle (Joyce) and stopped by the train station to obtain tickets for Glenns Ferry. That was one advantage, and maybe the only one, the town had, i.e. Rock Springs was located on the main line of the UPRR as was Glenns Ferry. We then spent the rest of the day becoming familiar with our future city. We ate at a truck stop just east of the motel whose name is a blur. The next morning I loaded the family on the train, waved goodbye and went over to the office ready to become involved in my new assignment. Even though I was happy with the assignment, I had a little sinking feeling with the temporary loss of my family. It would be lonely but I would stay busy.

MY FIRST WYOMING FIELD EXPERIENCE

There wasn't much to do other than wait and hope regarding a house to live in. In the mean time, I agreed to go to work. They needed the help and I needed the money. The Rock Springs district had two engineers prior to my arrival with two trucks to operate. That meant the manager had been providing days off relief for the engineers and he wanted me in that slot. However, the immediate problem was a perforating job, which had just been called in for Caulkins Oil Company, an independent operator with headquarters in Farmington, New Mexico. The well was located in South Baxter basin, an oil field just south of Aspen Mountain, maybe 30

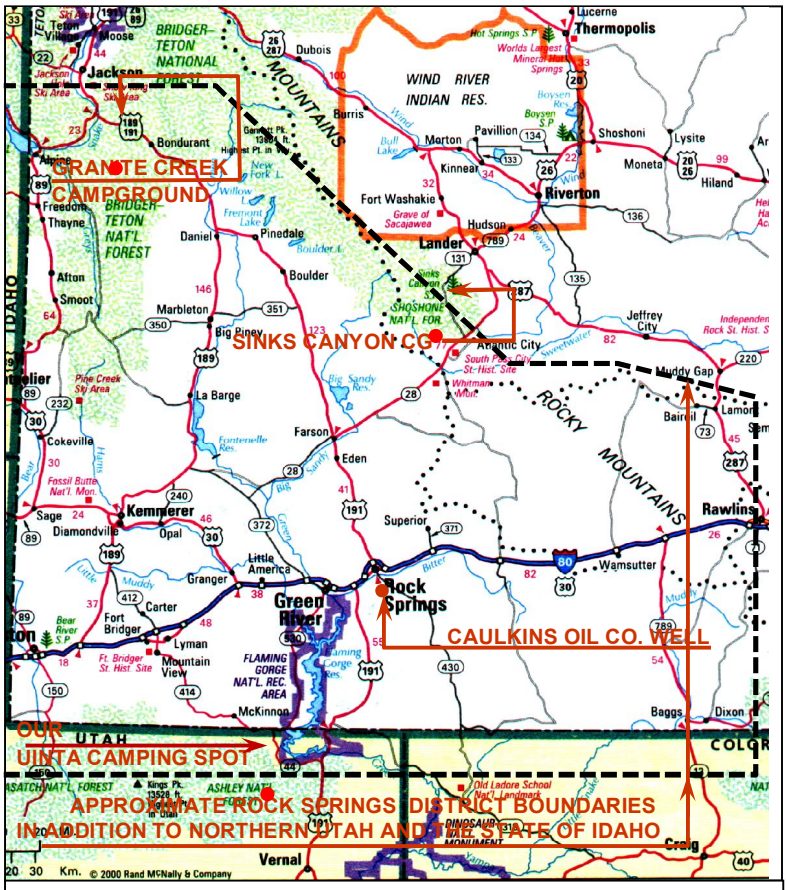


Figure 10-2 A map illustrating that portion of Wyoming serviced by the Rock Springs district in 1957.

miles from town. See figure 10-2, which I'll use to identify most of my experiences in that first Rock Springs tour, as well as the illustration of figure 10-3, an expanded view of the Rock Springs, Aspen Mountain and South Baxter basin area. I have indicated the well's location in each figure by a brown or red dot, which may help with my story.

Keep in mind that Interstate 80 didn't exist but you can replace it mentally with U.S. 30, a two-lane highway. Likewise, U.S. 191 south of Rock Springs didn't exist and that north of the town was called U.S. 187 if my memory serves me correctly. Of course, it may not but then that really won't change my story. The Flaming Gorge Dam and reservoir were, at best, only a future plan of the Department of the Interior or whoever is responsible for planning those types of projects. Wyoming State Highway 530 going south from Green River did exist and was actually paved at that time. Wyoming 414 from Mountain View to its intersection with 530 was only a dirt road. Wyoming 430 from Rock Springs to the Colorado line was paved to that point. Finally, U.S. 789 from Creston to Baggs and on to Craig, Colorado was also paved. While I'm at it, I should mention that Wyoming roads 372 (the Green River cutoff), 240 (the Opal cutoff) and 351 (the Big Piney cutoff) as well as 235, 412 and the extension of 28 from Farson to 372 were all dirt and I mean dirt, no gravel unless provided by Mother Nature in places. Though such information may seem unnecessary, it provides part of the background for my escapades in the oil field during that particular era of this old man's somewhat uneventful life.

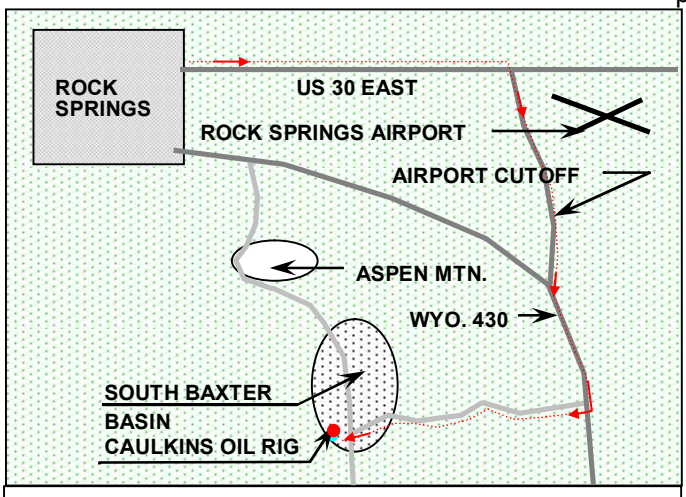


Figure 10-3 An illustration of the Caulkins Oil Company rig location for my first Wyoming job.

Well, let's get back to the perforating job for Caulkins Oil Company in South Baxter Basin. The weather was nasty, which is quite normal Wyoming weather. The wind was blowing at about 40 miles an hour and the storm Esther and I had struggled through near Bossler had dropped a foot or so of snow around Aspen Mountain. Bob Kudrle, as well as Glenn Land who had just completed training a couple months earlier, told me to get myself equipped for the Wyoming winters. Besides long johns, I bought myself a heavy jacket with a fur lined hood, some new boots, a pair of rubber galoshes which zipped up the front and a good pair of gloves with fur lining. I felt I was prepared. Glenn's truck was going to make the job and other than Bob, I was the only qualified engineer for completion work. Consequently, he asked me to take the job with Glenn looking over my shoulder.

Soon we had the truck running again (snow had been sucked into the air filter cutting off the air intake) and we headed back to the rig.

The call came in around noon. They wanted to run a gamma ray neutron collar log and then perforate about a 40-foot section of Dakota, the producing horizon in South Baxter. The completion engineer, a Mr. Gray, had given instructions for us to run the GRN and bring a print to town so he could correlate depths and finalize the perforation interval. Such requests weren't unusual when the rig is close by and theirs wasn't more than 30 miles from town. We were to meet him at the White Mountain Lodge where he was staying illustrated in figure 10-1.

We took three vehicles, the wire line unit, a flat bed truck loaded with riser and 4 inch shaped charge guns as well as Glenn's car. The operators each drove a truck and Glenn and I followed in the car. We stayed close, allowing the big truck to break trail for us through the drifts, which had accumulated. The road over Aspen Mountain was closed, as was normal for that time of year but that from highway 430 to South Baxter Basin had been kept open by Caulkins Oil Company. We made it to the well with no particular problem, rigged up and ran the GRN/CCL. The work was slow because of the wind, blowing snow and temperatures around 10 degrees below zero (Fahrenheit). We had a print ready

about 8:00 PM. Glenn told his crew to make themselves comfortable while he and I went to town for instructions. It would take a few hours at least, considering the weather and the roads we would have to negotiate, to get to the motel and then back to the rig. They might just as well take it easy while they could.

As we started out of location in the car, it became evident rather quickly that such a vehicle would never make it, so we backed up about 100 yards to the rig site. We decided the flat bed truck could make it because of the extra clearance, tossed our gear in it and took off. We made it 3 or 4 miles fighting our way through 2 and 3-foot drifts before getting hung up in one a little too big. It amazed me that drifts could be so high with only a foot of snow. Anyway, we tried to back out but were stuck tight as could be. Even with the weight of the guns in the back, the wheels just spun. The time was now approaching 10 PM. It was too far to the rig to walk and we had no communications with anyone, so we sat there with the truck engine running to keep warm. About 2:00 AM the truck engine died even though we had plenty of gas. Not knowing what to do next, we sat there as the cab temperature dropped to that of the outside (-15^{o} F or so). Fortunately, we had both bundled up well. Besides long johns, we were wearing heavy jackets, boots with wool socks and overshoes as well as a hood and gloves. Even so, as morning approached we were both getting mighty chilly but being unable to move around was worse. About 10:00 AM we heard a bulldozer, which was clearing the road for Mr. Gray who had decide to come to the well. The bulldozer operator seemed to know what our problem was right away. He lifted the hood, pulled the air filter and showed it to us. Snow had been sucked into the air filter cutting off the airflow, a common problem in windy Wyoming. We just left the filter out and soon had the truck running again. With a little help from the bulldozer the truck was soon free and we headed back to the rig. The perforations were picked and the job run without any more trouble other than slow going in such weather conditions.

I learned a couple of valuable lessons that night which included how to keep the air intake of the vehicle clear in such weather as well as to be prepared for the worst in a Wyoming winter. Getting stuck including loss of engine power and heat is a real risk in that climate as is one's ability to survive a couple of days on their own. From that time on I kept a couple of days' worth of grub in my car trunk, a sleeping bag and some extra clothes. I could tough out the worst of weather, at least for a few days. Yes sir, my first Wyoming experience had made me a believer in "Being Prepared". That was a virtue I never waffled on, relative to Wyoming winters, the whole time I lived in that wind-swept state, though I never had another similar experience.

GETTING MY FAMILY BACK

I continued to work for the next couple of weeks as I kept my eyes and ears open for available housing. Esther was in Glenns Ferry for Thanksgiving and I wanted her home for Christmas. I remember having Thanksgiving dinner at the Kudrle's home along with the other two engineers and their wives. I appreciated that but it sure didn't make up for a missing family. As time wore on my specifications for adequate housing were revised downward until I finally took a two-bedroom house with a single bath, living room and kitchen. All utilities including the stove were gas. At least, I didn't have the expense of buying a new stove. The basement was dirt and had to be entered from the outside. It was dry, however, and provided storage space. The yard was also dirt. In fact, the next spring the closest thing to anything green in the yard was a few weeds around the edges. I then realized that the name "Rock Springs" was truly chosen through inspiration. What a far cry from what we were used to in Wharton. I wondered how Esther would take it. The house was located on Goble Street or something like that and is designated as our first house in figure 10-1. About the only thing good I could say about it was that it was warm, close to town and a grocery store known as Ben's Foodliner. Right after I signed on the dotted line for the house, Mayflower notified me the furniture would arrive the next day. I was elated and called Esther to head this way.

The yard was also dirt. In fact, the next spring the closest thing to anything green in the yard was a few weeds around the edges. What a far cry from what we were used to in Wharton.

MOVING IN AND SETTLING DOWN

By the time Esther arrived, I had the furniture in the house and was batching it. I must admit, she wasn't impressed but said nothing of a derogatory nature about my house selection. I'm sure that she realized that I did the best that I could. She set to work making the house a

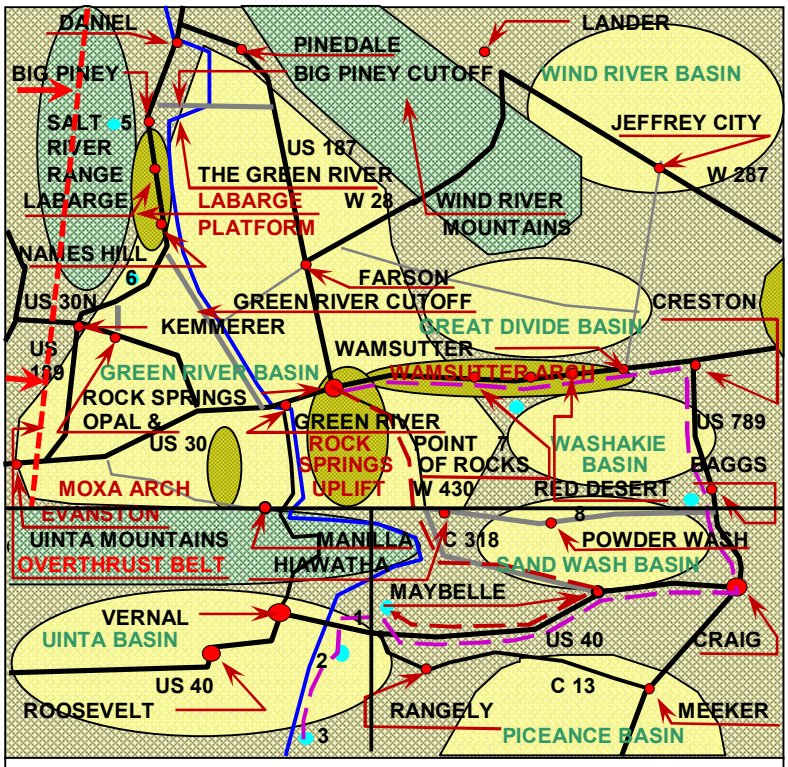
home and the girls with their chatter and laughter brightened the rather dark interior. Christmas was just around the corner and Esther immersed herself in preparation for that. Additionally, she soon was looking for a family doctor, which turned out to be a Dr. Harrison. He was located in the only clinic in town as illustrated in figure 10-1. The choice wasn't difficult because, of the four doctors in town, only he was accepting new patients. She soon got acquainted with Betty Land as well as Joyce Kudrle and seemed to be quite happy.

The girls adapted well going from a warm grassy backyard complete with sand box and swing to a surface with not even sufficient foliage to hide Easter eggs. They would bundle up and play outside, utilizing the basement as a kind of playhouse and protection from the wind. There was also a little shed, which they played in. I stayed busy in the field and was often gone or sleeping. Esther expected that but she set her sights on a better house almost from the day she arrived back in Rock Springs.

GETTING STARTED IN CHURCH

Esther still didn't drive and we only had the company car, which was gone most of the time. She would take the girls to town on a relatively warm day and soon knew her way around the immediate area. She even walked them to the doctor's office when necessary if I wasn't in town. In the process of her activity, she came across the LDS (Mormon) Church just a couple of blocks away and asked me one day if I minded if she took the girls there. I knew nothing of the Mormons at that time, even though I had grown up around several such families in Boise. Of course, I said, "no, go right ahead, at least you know something about that church and you can walk to and from it quite easily when I'm in the field on Sundays". She was pleased with my reception of that idea.

I worked a schedule of 12 days on and 3 days off. Being as busy as we were at the time, I was seldom in on Sundays. She hadn't much more than gotten started when she announced that she had been asked to teach in Primary. She had to explain to me just what that meant and I thought it was great. The girls obviously were enjoying their experiences and didn't seem to mind the walk. As you can see in the illustration of figure 10-1, the street we lived on came to a dead end at the corner. Esther had to take a little path down through a shallow gully and through an open field to get to the street that ran by the church. She and the girls took all that in stride and were pleased with their new friends and experiences. As we got into mid-winter, I managed to be in on a few Sundays and decided to attend with them. Soon I was going whenever I could which wasn't real often. I enjoyed the people and soon found out that there was nothing weird about them as I had once imagined. None of the men seemed to have in their company multiple wives as many of us non-Mormons appeared to believe and the families seemed to have very solid values. In fact, I soon found that they were a downright friendly group of people. At that time, Sacrament was in the evening with Priesthood and Sunday school in the morning. I attended



LEGEND: Dirt road — Major highway — River —
Geologic basin — Geologic structure — Town •
Mountain Range — Well-sites • Truck routes ⋯→
Minor paved road — Often traveled dirt roads —

Figure 10-4 An illustration of the various geologic basins serviced by Rock Springs trucks from 1957 to 1959.

all three because Esther had to be there in the morning and wanted to attend Sacrament. Esther and I would attend the investigator's class each Sunday.

Though the services were a little different than what I had experienced in the Church of Christ, I soon found out that their worship centered in Christ, He being the focal point of all their worship services. Even so, the idea of priesthood services was new to me and Sacrament was different. There was no minister and different people spoke each Sunday. I wasn't used to that. Most of the talks were good and taught the same Christian principles that I was used to. Some weren't quite so interesting, in my book, but I soon learned such participation was a means of helping members grow in their own understanding of the Savior and his gospel.

It wasn't too long until a couple of missionaries showed up at our house. They were members of the ward by the name of Croft. Bill Croft, I knew, was also a drilling Superintendent for Mountain Fuel Supply. He and I would talk oil field quite a bit and I learned he had been almost killed 10 years before by a rig, which fell on the trailer he was sleeping in. Even so, he didn't show any apparent ill effects. He was a tough guy, one could tell, but he took his religion very seriously. I listened to what they had to say and found no real fault with it other than accepting the Joseph Smith story. That seemed a little far out. In those days, everything had to have a logical explanation for me. The idea of seeing angels as well as God and Jesus Christ just didn't fit with my logic, as far as I was concerned. I guess he sensed that and gave me a book on Archeology and the Book of Mormon by Milton R. Hunter. I read that and found it quite interesting. I then began to read the Book of Mormon but never felt the urge to join the church. Besides, I was mighty busy in the oil field. Later, another lady in the ward gave me another book called "A Marvelous Work and a Wonder", by LeGrand Richards. I found it especially interesting as it tied the Book of Mormon to a prophecy in Isaiah 29 but I still wasn't satisfied that I wanted to take the step of joining. Besides, I wasn't sure I wanted to or even could give up coffee drinking. I virtually existed on it through long nights of running logs at the various well sites that I frequented.

He and I would talk oil field quite a bit and I learned he had been almost killed 10 years before by a rig, which fell on the trailer he was sleeping in. … He was a tough guy, one could tell, but he took his religion very seriously.

Esther and the girls continued to attend every Sunday. I went along when I was home just to be with the family in addition to the fact that I also found the meetings rather interesting. Even so, I still never felt the urge to join the LDS Church or go to any other church, for that matter, while we lived in Rock Springs. I was simply too busy to worry about such things at that point in my life.

EARLY OUT OF DISTRICT JOBS

During our first winter in Rock Springs, it seemed many of my field experiences were out of district. Our nearest district to the south was located in Grand Junction, Colorado. They had two trucks and served all of western Colorado with the exception of the Cortez area. They also handled a good part of Utah including the area around Vernal. With their work strung out over a wide geographical area, they often found themselves short of service trucks and called Rock Springs for help. Through the fickle finger of fate, my truck and I generally, were the beneficiaries of those calls. Actually, I found it interesting to go into new territory, but time consuming, and my income per hour was rather poor.

I have included figure 10-4 as a guide to help me relate a few of these experiences as well as later experiences during my first tour there. The locations of the early ones are designated in light blue and numbered as 1, 2 and 3 respectively. We had two routes, which we could take. If we went through Craig, Colorado (the Magenta route), i.e. U.S. highway 30 to Creston, then 789 to Craig and finally U.S. 40 to the Vernal Area, we were sure to have smooth sailing. Only major highways were involved and all would be open even in a snowstorm. However, this route was some 300 miles one way. If we chose the red route south from Rock Springs on Wyoming 430 to Hiawatha and then along Colorado 318 to Maybelle and U.S. 40 we could cut off about 100 miles. The going was somewhat slower but we could save time, maybe an hour and a half, if the roads were good. After a recent snowstorm, however, one could get hung up in drifts out in the middle of nowhere along the latter route. Consequently, we had to check the weather before deciding or maybe just take a chance on the short route. Such a chance might prove fool hardy if momma

nature didn't cooperate and we would reap the repercussions of our decision. As a result, we always planned our route and had check points along the way to be sure both truck and engineer weren't in trouble.

WEIRD LOG RESPONSES

My first trip to the Uinta Basin was in December of 1957. I was unfamiliar with the territory and stuck close to the truck as we headed down Wyoming 430 on the short route. The truck had to buck a few drifts but we made it through without any major trouble to Maybelle. I would have been lost for sure, had I taken that route on my own. You see, at that time, there were several roads branching off the main road and they all looked the same. All were dirt (no gravel) and only single lane. Furthermore there were no road signs. If one took the wrong road, he could end up miles from civilization and out of gas in short order. I learned then to stick with the truck in unfamiliar or snowdrift territory. To do otherwise was risky business, indeed.

Having a circuit of the cartridge in my manual, I decided to try to get the first one working by switching a probable bad tube…..Voile! Some 2 to 3 hours after beginning the MLL we now had one, which seemed to be producing a reasonable log.

As you can see from the map, the location of this first well was nearly on the state line between Colorado and Utah. There wasn't anything particularly unusual about this logging job other than it was one of the first, if not the first, which I made in my new district. It was common policy when going to foreign territory to try to take along a log of a nearby well to give one a good idea of what his log should look like. Well, that wasn't possible, of course, because any such logs were in Grand Junction, which was a couple of hundred miles to the south.

This particular well began a series of jobs, about all of which, I had serious doubts regarding the validity of some of the logs I ran. The well had been drilled to the Weber, which was a thick sandstone formation of high resistivity, i.e. over 100 ohms. This was contrasted to my gulf coast days where typical sands had anywhere from ½ ohm to 10 ohms of resistivity. Anyhow, I was convinced that the line was leaking and proceeded to trouble shoot the same. All was well and we went back in the hole. Everything repeated fine meaning the measurements were consistent. Not knowing what else to do, I completed the job with no other trouble and went back to Rock Springs. There, I went through a complicated procedure of testing the ES sonde for leakage, which again proved to be OK. When Bob Kudrle arrived, I discussed the log response with him and he assured me it was correct. He went on to explain just why the log looked peculiar even though the measurements were legitimate. My two operators, however, gave me a hard time over all our trouble shooting, probably a couple hours total, which was really unnecessary. Little did they know this was just the beginning of such experiences. They had a conscientious young engineer on their hands and I wanted my products correct. I not only had the responsibility for them but my name was clearly written on each and every log I ran. Carter Robinson, in Beaumont, had drilled it into me time and time again that I would become known by the quality of the logs I ran. I didn't intend to sully my name with sloppy work.

MY FIRST SALT MUD EXPERIENCE

We hadn't much more than caught up with the paper work and maintenance before Grand Junction called again. This time the job was for Carter Oil Company just east and south of Vernal as illustrated by the #2 dot. Even though unnecessary, they chose to drill with salt mud to obtain what they thought would be a superior log evaluation. The Grand Junction manager had made arrangements to have an LL-7 and a Microlaterolog tool transported to the well. We had no such equipment and I had never seen any before. (You can refer to chapter 7 if you have any curiosity about this device). Bob and I went over the operating instructions, which were in the field engineer's manual and he pointed out some pit falls I should be aware of. These could be summed up by saying, "double check the cable and bridle insulation, particularly #7 pin. Also, verify the down-hole scale of the Microlaterolog".

Well, back down the road we went but this time via Craig because of a recent snowstorm. We took along our own core guns, which, of course, I was very familiar with. Some seven hours later we arrived on location. Soon they were out of the hole and we were ready for them. I had poured over the manual of both tools while I had the time. The laterolog seven went like a charm. I had made all the recommended checks and everything functioned as it should or at least as I thought it should. Soon I had a log, which I was

confident was not only valid but very good. It was a pleasure to feel such confidence on my first try and having a smooth operation simply added to that pleasure.

We ran the Microlaterolog next. They had sent two cartridges and one sonde because the note said, "the cartridge isn't really very reliable". What surface checks I could make seemed OK and down the hole we went with the tool. Near TD I opened the sonde and set the down-hole scale. This was clumsy. One had to power down the cartridge, cross wire the cable to the main DC power supply and then send DC current down the AC conductors to step a solenoid throughout its scales. I could tell when it switched and counted the steps I needed to get to the desired 20-ohm scale. Then, I rewired the cable to the MLL panel and began to log.

Something just didn't look right. The resistivities were much higher than I expected. Thinking I had the wrong scale, I went through the process again with the same result. I tried other scales with no luck. Confident the log wasn't correct; we came out and tried the other cartridge. It didn't work either but the symptoms were different. Having a circuit of the cartridge in my manual, I decided to try to get the first one working by switching a probable bad tube. Out of the hole we came and made the necessary changes. Once again, back to bottom of this 10,000-foot hole we went. Voile! Some 3 to 4 hours after beginning the MLL we now had a tool working, which seemed to the best of my knowledge, to be producing a reasonable log. I completed the log with a sigh of relief and some three hours later we were running field prints.

I took off in a cloud of dust bouncing along that dirt road like great grandpa James William must have bounced across the prairie in his schooner of 1860.

Next we ran the sidewall cores, which presented no problem at all. Finally, I was running a device I knew something about. We made a couple of runs with core guns (thirty cores per gun) and finished the job about mid-afternoon. At that point the customer asked me to come down to the Carter Oil office in Vernal and go over the logs with them. I was bushed, having been up about 42 hours now but, of course, I agreed and I headed for Vernal while the truck headed back for Rock Springs. Fortunately, I only spent an hour or so in their office interpreting the logs and soon was on my way home as well. I needed to hurry if I was to catch the truck and the latter was almost a prerequisite in this unfamiliar territory. A guy like me could easily get lost in the wilds of NW Colorado.

By the time I left Vernal, it was getting dark. I arrived at Maybelle a couple hours later and

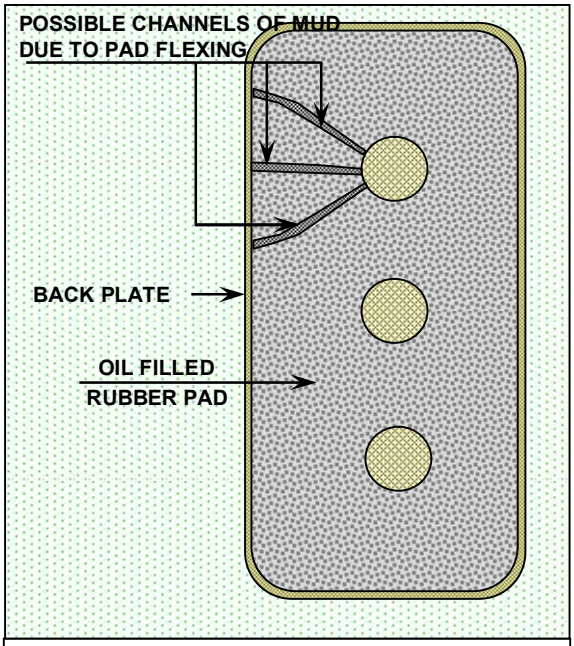


Figure 10-5 An illustration of the results of pad flexing in oil shale (high resistivity), which explains the negative readings.

decided to gas up before taking the short cut through Hiawatha. The truck had gone that way I knew and I hoped I could catch them before they got very far up the road. I really didn't want to be out in that lonely country by myself. I took off in a cloud of dust bouncing along that dirt road like great grandpa James William must have bounced across the prairie in his schooner of 1860. Well, those boys had at least a couple of hours head start on me and I saw neither hide nor hair of them until some distance north of Hiawatha. As you can appreciate, landmarks were hard to see at night but every once in a while I'd come to something that seemed familiar. Even so, my nerves were continually on edge as my imagination had me stuck in a snowdrift along some little traveled road. Now, if you believed my story about getting lost between Maybelle and Hiawatha during the day, just think what it would be like at night. I kept watching and hoping to see the lights of the truck up ahead with no luck. To make things worse, every little bit I would come to a fork in the road and have to stop, flip a coin

and make a decision which way to turn. Then I'd begin sweating that decision until I would see something else that looked familiar again. In general, all I could see was the road for 50 yards ahead of my car and I was in a quandary the whole 65 or 70 miles to Hiawatha. Man, was I glad to get there. I had been flying by the seat of my pants for the last two hours. I was on black top again at the Wyoming line and kicked my old ford up to 70 or so. About half way to Rock Springs I caught them on a hill and gave a friendly toot as I sailed by. Little did they know about my sigh of relief escaping my lips then nor the motivation behind my friendly honk.

OIL SHALE, WHAT'S THAT?

I'm sure all of you have heard of oil shale and the tremendous reserves of oil it adds, as an energy source for this country. The real name of the trapped fluid is kerogen and not oil but the latter can be derived from it through the refining process. From a logging standpoint, however, kerogen and oil have the same response, i.e. they are very resistive. In the case of so-called oil shale, the material whose resistivity is being measured is primarily shale and kerogen with very little water involved. The result is a rock formation whose resistivity lies in the one to two thousand ohm range. My next experience relates to my introduction to that unusual oil reserve and the microlog recording, which blew my mind.

These channels have no effect in normal resistivity formations (1 to 500 ohms) because they have such high resistance values. However, when the buttons face resistivities in excess of 1000 ohms, such mud channels tend to short the buttons to the back plate.

This particular job occurred about February of 1958, as I remember. Once again, it was a case of Grand Junction being out of trucks and Rock Springs filling the gap. The company had called for an ES and Microlog on a well about 7000 feet deep. It was about an eight-hour drive and we arrived in the late afternoon. We rigged up and soon I was coming off bottom with the ES. The geologist was sitting beside me as the tool entered the first oil shale section at about 5000 feet. I was surprised by the high resistivity and commented on it. Usually, even in the Rockies, the shales are in the neighborhood of 10 to 15 ohms. He explained that it was oil shale (I hadn't been warned) and then gave me quite an education on the stuff. It can only be released from the rock by heating the stuff in a retort and collecting the oil that drains off. Of course, that means mechanical mining, much like coal, and recovery cost per barrel is very high. At that time there was no interest in the rock and it was more of a curiosity item. I would guess there was a couple thousand feet of it in this particular well. We finished the log with no problem and had given him a field print by the time we were coming off bottom with the microlog. He had instructed us to log the ML all the way to casing for the caliper value, primarily. All went well until the ML sonde entered the oil shale. Sure enough, I got the very high resistivity I expected but every little bit the 2" normal curve would read less than zero rather than the proper high value it should. The readings were sporadic in nature. I had seen similar symptoms before and a broken wire in the hydraulic pad of the sonde had caused the problem. (See chapter seven for clarification). I had them suck the tool out of the hole and we changed pads. We were prepared and carried a spare pad all made up just for such occasions. After changing pads, back down we went and, wouldn't you know, we got the same response. I couldn't believe my eyes. I told one of the operators to start repairing the first pad because we had to come out again with what I felt sure was a second broken wire. About the time we got the tool on the bank, he had the first pad opened up and he told me, "Tom, there's no broken wire in this pad". I checked it out. He was right. The connections were solid as the Rock of Gibraltar. Imagine my consternation. Here I was 200 plus miles from home and had no way to communicate with anyone at either Grand Junction or Rock Springs. What do I do now, I thought? I said, "I don't know what's going on but let's go back down. Those resistivity curves are of little value in this shale anyway and I'll just scrape off the intermittent negative readings". I finished the log and as the tool cleared the oil shale I noticed the response seemed to be normal once again. I figured it had something to do with the oil shale but couldn't figure out how to explain it at that time. The customer was happy with the log, so we made field prints and headed for the barn 8 hours away. Needless to say, I got in touch with Bob as soon as I returned to find out just what was going on and he gave me the following explanation. I'll use figure 10-5 in my attempt to share it with you. I know you'll be thrilled at such interesting stuff.

The pad is made of rubber and filled with oil to make it flexible and thus provide a good seal

against the formation wall in spite of wall irregularities. The back of the pad is a brass plate to which it is firmly mounted. The plate, in turn is mounted to the caliper arm, which holds it against the borehole wall as the tool moves along the hole. The buttons, mounted in the front of the pad and applied to the borehole wall are made of brass also. A constant voltage is applied between the bottom electrode, or button A, and the brass back plate. Two measurements are then made, namely between M_1 and M_2 electrodes (micro-inverse) as well as between M_2 and a surface ground (micro-normal). The latter one is the measurement that registers negative values in extremely high resistivities because the button is effectively connected to the plate.

As the pad flexes, very thin mud channels can exist along the pad surface, which can intermittently connect the buttons to the back plate via a high resistance. I have illustrated 3 such possible mud channels in figure 10-5. These channels have no effect in normal resistivity formations (1 to 500 ohms) because they have such high resistance values. However, when the buttons face resistivities in excess of 1000 ohms, such mud channels tend to short the buttons to the back plate. Although it can affect any button, it is most pronounced on the micro-normal or M_2 button. In that case it gives the button a negative potential with respect to the surface ground or behind zero just like a broken wire in the pad. Basically, the tool is not designed to read accurately under such borehole conditions.

FAMILY EXPERIENCES

This seems like a good point to insert several family experiences, which were scattered through our two years in Rock Springs during that first tour. As I indicated earlier, Esther had expectations of a better house from the moment she returned to Rock Springs. The one I had picked was not only inadequate but it also left a lot to be desired in the esthetics of life. As a result, while I was running back and forth to Utah and/or making jobs within the district boundaries, she was on the lookout for better quarters. However, decent houses were never listed in the paper but were snapped up through word of mouth advertising. She was somewhat dismayed but began to set up her own housing procurement network. Soon she had several Schlumberger women as well as church members looking for her. She also became good friends with the people on the corner (next door) who were older but seemed to enjoy the

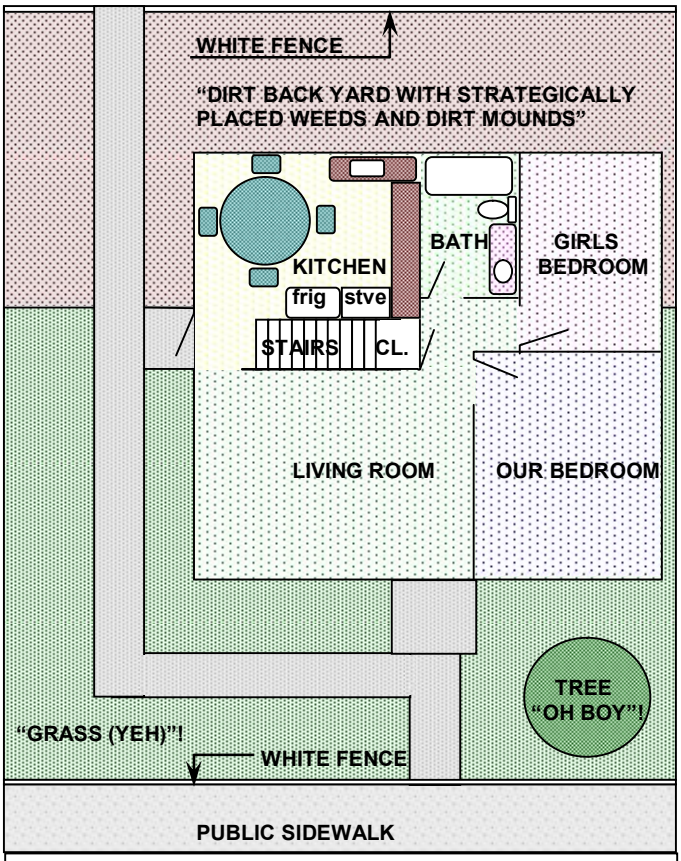


Figure 10-6 An illustration of Esther's pride and joy, our new domicile at 1008 Lincoln Street.

girls. They knew the town well and had many friends, being natives of Rock Springs. This really expanded her network. Along about April or May of 1958 this couple told her of a house for rent on Lincoln Street up near the hospital. She contacted the owners immediately and made a commitment while I was on a job. The house is identified as our second home in figure 10-1. When I arrived home, she announced she had found a nicer house and we were moving on my next days off.

A MOVE TO BETTER QUARTERS

We went up and looked at the new home that evening. Esther was pleased as a pet dog rummaging through the garbage. The house was nothing fancy and it was also small. However, it not only had a real basement with concrete floors but it also had a fenced yard with grass and a nice tree in front. It was also within walking distance of school and town as well as church. That was important because Esther still didn't drive. The address was 1008 Lincoln

Street. Within days we were moved in, a step that did much for Esther's morale. I have shown a floor plan, as I remember it, in figure 10-6 and also a photo of the girls in front of the house in figure 10-7. This was the house we lived in during the majority of our first Rock Springs tour. We moved into it the spring of 1958 and stayed until my transfer to Billings, Montana in the summer of 1959.

You can see how crowded the kitchen was with the table and four chairs. One evening after supper, we were sitting at the table talking. I was in the chair next to the door and refrigerator. Valerie was sitting across from me. I had turned sideways and was facing Esther. Valerie had enough of the old folks talk and came running around in back of Esther and past me. In so doing, she caught her foot on my big foot and tripped. Down she went striking her head on the corner of a chair, I believe. She was bleeding rather profusely from her forehead and we had to take her to the hospital for stitches. Fortunately, it wasn't too serious and I don't remember any lasting scar or other effects.

Figure 10-7 Valerie & Celeste taking advantage of a photo-op in the doorway of our home at 1008 Lincoln St. in Rock Springs, WY. about 1958.

It was also in this house where Valerie came down with polio. She was hospitalized for a period of time, a week at the most, and then sent home. To the best of my knowledge she had no permanent disabling effects from it but she did favor her left leg for a period of time after her sickness. Other than that I don't remember any particular consequences.

We had many good times while living here but the most memorable were the family camping trips. We simply camped out in a tent most of the time but on one occasion we rented a 16' camping trailer, which we pulled with the company car. That occurred when we took a vacation in Yellowstone Park for a week or so in 1958. On our second tour to Rock Springs we rented similar trailers a couple of times as well but those stories are for a later chapter. Let's consider just a few for now.

FAMILY OUTINGS FROM ROCK SPRINGS

I had been starving for a good camping trip ever since joining the air force. We never got to take such a trip while in the service and neither were we able to while in Texas. At the latter place we had rented a cabin on a couple of the lakes up around Austin, Texas but we had never camped as such. By the summer of 1958, we were ready for a good family camp out. I don't remember the timing of all the camping trips we took and may be guilty of a few chronological errors. However, I'll describe a few that come to mind which I feel certain were during our first stay in Rock Springs in the years 1957 to 1959.

THE MANILLA, UTAH AREA

On at least one occasion we camped in the Uinta Mountains just south of Manilla on what is now Utah highway 44. There was a beautiful little creek running along the foot of the hill as the highway climbed to the summit of the Uintas. Remember, U.S. 191 was non-existent then. We spent several nights there. I was able to fish and supply our little family with a sufficient number for supper. We all enjoyed trout cooked over an open campfire and sitting around the same telling stories before bedtime. We would drive up to the summit and enjoy the scenery. The road was steep with multiple switchbacks. Later, they closed that campground because of a flood resulting from a torrential down pour in the mountains to the south. A 30-foot wall of water came tumbling down the rocky canyon that summer day and drowned two or three families camping there. That spot along with the others I'll mention is identified as red dots in figure 10-2.

From some points it would seem one could see most of Wyoming. As I remember, the dam was under construction and we drove over to the site to simply get a view. The rock outcroppings to

the top of the summit had been named and identified by the Wyoming geological Society, which I found very interesting, though Esther couldn't care less. The complete geologic section from relatively recent times down through to the Precambrian is exposed along the road. To anyone interested in such things, it is a worthwhile trip to make.

A TRIP TO THE HOBACK

Another place we used to love to go was north of Rock Springs over the summit from Green River drainage to the Hoback River, which drained into the Snake River. I believe we only made one trip to that area during my first tour in Rock Springs because we spent only one and a half summers. However, we frequented that area more so during my second assignment, which lasted 4 years. We usually camped somewhere near the junction of the latter two rivers. I would fish various creeks draining into the Hoback or the Snake and we would take a family hike along some of them where the terrain was easier. All of us enjoyed camping though Celeste was a little fearful. Of course, Valerie did the best she could to add to any tendency Celeste had in that direction. When we weren't around she'd talk about bears, earthquakes, trees falling and anything else she could use to stir up little Celeste's imagination. She loved to tease anyone but particularly her sister.

As I remember, during our first year there, our campsite was in the Granite Creek Campground, which still exists according to the road atlas. That was one creek the whole family could walk along, at least near the mouth, and enjoy a beautiful little meadow complete with a mountain backdrop. I would usually go out early in the morning and catch a mess of fish for dinner before the girls were up. The rest of the day we would hike a little, play a few games or just relax while the girls did their thing. Valerie was usually off exploring while Celeste liked to stay closer to camp with its security in the persons of mom and dad.

THE WIND RIVER MOUNTAINS

We made a couple of trips into the Wind River Mountains and camped at Sinks Canyon (see figure 10-2) or maybe along the road into it. These were short outings during my days off lasting one or maybe two nights at the most. The girls liked to camp and they always had fun just playing around the campground or walking a short ways with Esther or me, or maybe both. Sometimes I fished but often I spent the time with the family just relaxing from work. I enjoyed cooking meals on the grate over the campfire. We hadn't, as yet, invested in one of those new fangled gas stoves but instead carried a heavy iron grate to cook on. After dinner Esther and I would do the dishes and then just sit around the fire and talk while the girls did their thing.

A YELLOWSTONE PARK VACATION

In the summer of 1958, as I remember, we decided to take a couple of weeks vacation and spend most of it in Yellowstone Park. At that time we were allowed to pull trailers with our company cars and so I had a hitch installed. The car must have been the 1957 Ford I brought up from Wharton. Anyhow, we located one in Green River, Wyoming just 10 miles to the west and on the appointed day, picked it up. I think

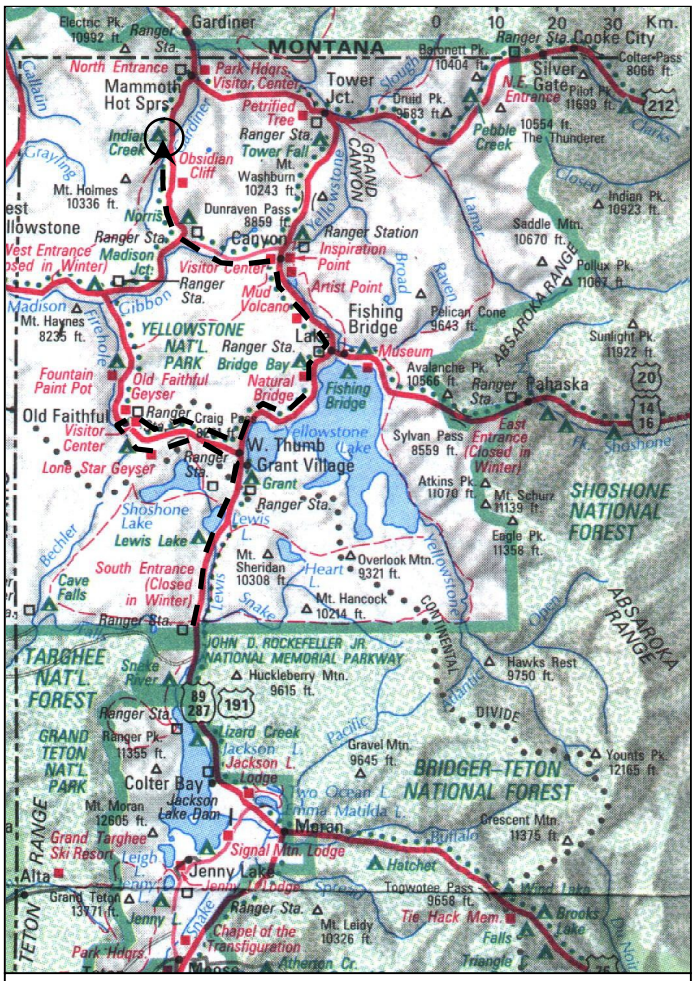


Figure 10-8 Yellowstone Park map with some of the surrounding area including Teton National Park.

we spent a good share of the day packing everything into it for the trip. Remember, our girls were now 4 and 6. Esther, being the conscientious mother that she was, must have packed enough clothes for three months. She had clothes of every kind for her and the girls. They were going to be comfortable whether they had any fun or not. I, on the other hand, was more interested in having adequate food. I knew our appetites would be somewhat greater whether we got a lot of exercise or not. Besides, I still had my youthful appetite from Bear Valley days, one which the oil field had yet to assuage.

Soon we were headed up US 187, now known as 191, north of Rock Springs. I don't remember the size of the car's engine but I do remember gearing down on many of the hills. We left after lunch and didn't make very good time, finally camping by the roadside near Pinedale.

FINDING A CAMP SITE

The next day we got an early start and made it to the park before lunch. We weren't sure where to camp and went by Old Faithful first. Of course, it was crowded so we reversed our field and went to Fishing Bridge as a second choice. It was even worse as far as crowded over-used campgrounds go. I remember telling Esther that it would be like New York City with its tenements. I believe one could reach out from one trailer and touch that of your neighbor without difficulty. That kind of camping wasn't for me or for Esther. Then I spotted a campground on the map at Indian Creek near the north gate of the park and talked Esther into going there for the night. Being at the north end of the park away from the points of interest, I convinced her, we would find fewer campers and more solitude. That appealed to her as well as to me. With both of us in agreement, we headed north in the old Ford. I've shown our route through the park in figure 10-8 as a red-brown dotted line ending up at Indian Creek (red-brown loop) with an arrowhead.

Figure 10-9 On the road to Indian Creek camp at Punch Bowl Spring along the Gardner River.

Figure 10-10 Valerie and Celeste enjoying the view overlooking the Yellowstone Canyon.

As we headed north from Fishing Bridge, we decided to cut across to Norris (see figure 10-8) and stop at some points of interest along the way. We visited several along the Gardner River flowing north into Montana. I was somewhat concerned about turning around in parking areas with the trailer but soon found out I could drive right through from entrance to exit. One of the first such stops was at Punch Bowl Spring where I took the photo in figure 10-9 of Esther and the girls. We took numerous photos that week of the Yellowstone sights and I can only guess at the exact location. Figure 10-10 is a photo probably taken at a viewpoint overlooking the Yellowstone River but I can't be certain. Wherever it was, Celeste was obviously enjoying herself. She was a happy little girl unless, of course, Valerie was teasing too much. As we approached Mammoth Hot Springs, I expected the same but as you will see, it didn't

turn out that simple. No, we were about to experience the fickle finger of fate.

DO IT AGAIN DADDY

I can't remember exactly why but for some reason we decided to go on past Indian Creek and see Mammoth Hot Springs before deciding on a camping spot. That proved to be a big mistake. As we arrived at Mammoth, we saw both the entrance and exit roads and though narrow, I felt I could pull through the parking area without any trouble as I had been doing all day. We spent a half hour or so climbing around the geyser remnants and then piled back in the old Ford for the trip back to Indian Creek. We never dreamed about the experience lying just ahead as we moved slowly out of the parking area towards the exit.

I had come down a pretty good hill to the parking lot and, sure enough, I had to climb back out at a spot equally as steep. Knowing I had a good load for the trusty old car, I got up as much speed as I felt safe with to start up the hill. Needless to say, the car wouldn't pull it. We bogged down about fifty yards from the top. Well, I was going to have to back down and get a better run at it. Since the road was narrow, Esther said she would guide me. I wasn't real good with a trailer and that seemed like a good idea. She didn't understand the back end of the car had to be turned opposite to the direction I wanted the trailer to go. Before long, she and I were both thoroughly confused about which way to turn and I had managed to get the back end of the trailer off one side of the road and the rear of the car off the other. Remember, it was a narrow road. About that time another guy came along and offered to help. By slipping the clutch and gunning the engine, I managed to straighten car and trailer out enough to back down the hill under the guiding hand of my new friend. Of course, Valerie was taking all of this in. I backed up as far as I could and floored the throttle heading back for the hill. As we neared the top I could tell the car wouldn't be able to pull it without help and I began slipping the clutch and gunning the engine in between to get what power I could out of her. As we finally inched over the crest of the hill I uttered a sigh of relief, wiped my brow and offered a short heartfelt thanks to the Lord. About that time Valerie pops out with, "Daddy-daddy, that sure was fun. Let's go back and do it again". She obviously hadn't sensed my concern over getting out of that hole and found the associated noise and excitement rather exciting. I said, "Yes, it sure was honey but I don't think we have time to do it again today" and kept my own feelings to myself. Maybe we'll try it on another day when we don't have to set up camp. I would worry about a suitable excuse later if she remembered to ask.

FISHING

We ended up camping at Indian Creek several times over the years because we enjoyed it and I always seemed to be able to catch a reasonable number of fish. I usually went down-

Figure 10-11 Dad has a nice catch for dinner in Indian Creek Campground during the summer of 1958.

stream from the camp nearer where it joined the Gardner River and where I would run into fewer fishermen and people. The limit at that time was 12 fish, which just made a good meal for Esther, the kids and I. It seemed there was nothing as good as fresh trout fried to a golden brown over a campfire with fried potatoes, corn bread, salad and maybe a little dessert of some kind. The fish of figure 10-11 verify the fact that I was often

quite successful. I don't believe I ever came back empty handed, though I may not have had a full twelve every outing as the law allowed even in the park in those days. Everyone really enjoyed fresh trout cooked over the camp fire.

We made friends with a couple at the campground and I went fishing with him on the Yellowstone River. I only caught one, a big brown about 18" long. I had cast out into the river about 30 feet with a spinner and lure. As the lure drifted by a big boulder, man, something hit it like an NFL full back trying to pick up a couple of yards for a first down. I don't think I have ever had that kind of strike before or since. He really fought for a few minutes and, after settling down, I played him carefully and was somewhat surprised at my own calmness. I surely didn't want to lose any fish, crocodile or whatever it was on my line of that size. Fortunately, he was securely hooked and I landed a big old brown shortly thereafter. It was my only fish for the day but because of the fight he gave me, I was one happy camper. You would think, as much as I like to brag, that Esther would have taken a photo of that big old brown and me but she didn't. No film, I guess. How else can one explain such negligence when opportunity knocks, especially in my case?

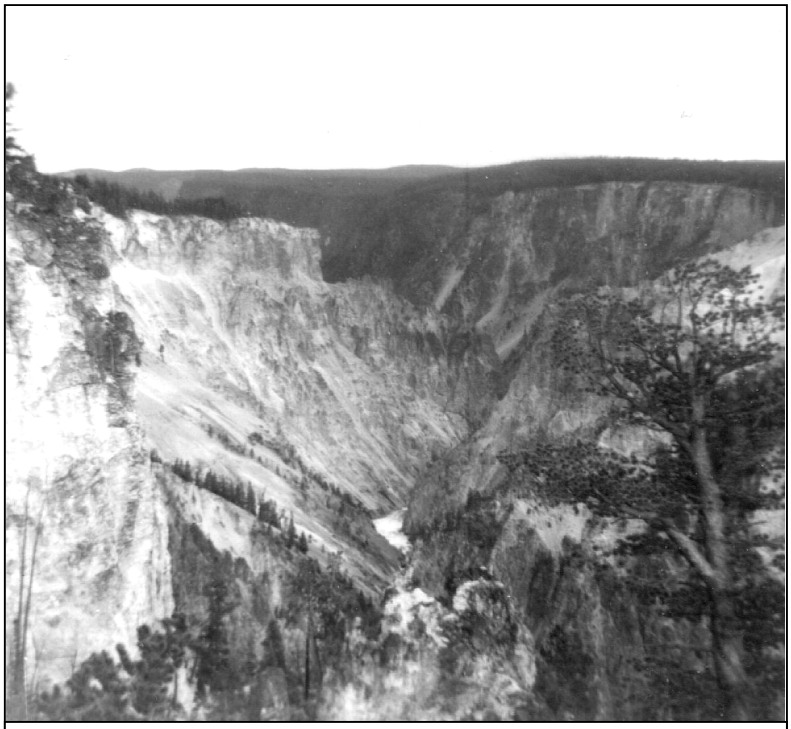


Figure 10-12 A 1958 photo of Yellowstone Canyon, which was taken from the falls looking north along the river.

A TYPICAL VACATION DAY

During our week plus stay at Indian Creek, we would take tours around the park with a picnic lunch and see the various sights of the park. We retraced some of our path coming into the park and revisited a couple of spots such as Old Faithful and the Yellowstone River canyon. My favorite scenery, I suppose, was the canyon and Yellowstone Lake. I remember having a picnic lunch on the banks of the latter. I have included a black and white photo of the Yellowstone Canyon (figure 10-12) more for the story's sake than beauty. Black and white hardly does justice to the real thing but it does show I was there at that time. The girls really liked Old Faithful when it erupted and Esther seemed to enjoy all of the sights as well. I believe we made at least three separate trips from our camp to various areas of the park, i.e. once to Old Faithful and the Firehole River, once to the canyon and Yellowstone Lake and once around the north end via Dunraven Pass and back to Norris Junction. We took our time and spent more like a half day each trip. Other than that the girls played around camp, took little swims in Indian Creek or we went on short hikes along the trail going up or down the creek. Of course, I was usually with them because of a mama bear and her cubs who took up residence in the same campground and with whom Esther never seemed to establish very good terms. When it came to fishing, I would usually cross the highway to the east of camp and go down Indian Creek a half mile or so where I always did quite well though the fish were usually quite small. The area was peaceful and I enjoyed relaxing and simply taking in the surrounding beauty while casting a worm.

THE BEAR FACTS ABOUT CAMPING

That second day of our travels, just south of Indian Creek Campground, we came across a black bear in the middle of the road as we drove north towards Mammoth Hot Springs. He or she wasn't too interested in letting us pass without an inspection (figure 10-13), so as to be sure we had the **bear** essentials for camping, I suppose, and, of course, a few morsels or tidbits to sweeten the palate of the welcoming committee which he/she headed.

Notice, I didn't verify the sex of this welcoming committee of one as I slipped out of the driver's side of the car to snap the photo. To me the apparent outward manifestations were the same and I didn't intend to get too close. Similarly, Esther entertained the questions during the interrogation by simply nodding her head since she wasn't about to roll the window down. As it turned out, this particular encounter with Smoky impersonating a park ranger was to be **bearly** the beginning of our one-week saga with bears. We saw them in trees in the process of climbing as well as asleep on a big branch. We also saw them along the road and, we even camped with a friendly family of three, as you shall see in the following short story, punctuated with its associated photos.

OBIELOCKS AND THE THREE BEARS

We pulled into Indian Creek Campground late in the evening of the second day of our camping trip hungry and tired. It had been a long and stressful day, at least for me. Valerie had enjoyed the events of the day and I suppose I had as well but negotiating the tight spots with the trailer and particularly our experience at Mammoth had just about drained me. Camp was relatively easy to set up since all the essentials were contained in our little 16-foot trailer. Esther and I set about getting dinner ready and soon we had satisfied our hunger pangs. The girls were tired as well and didn't fuss much as Esther put them to bed. She and I sat around the campfire and talked while enjoying a beautiful summer evening. Being somewhat tired from a rather stressful day, we too turned in rather early and before long the only noise emanating from our particular area was an occasional snort coming from daddy as he accentuated his dream about the hill and its excitement at Mammoth Hot Springs earlier. Yes-siree; that had been one stressful day and it zapped my energy more than I thought.

I was up early, as was my custom when camping, and had breakfast ready by the time the girls were awake. Because such days were active and our appetites heightened by the mountain air, we enjoyed pancakes, eggs and sausage with coffee for Esther and I. The girls got milk, of course, or hot chocolate and we all would usually enjoy a glass of orange juice. Man that was living. I cooked a mean breakfast if I do say so, having gained those skills during my Bear Valley years. I suppose the whole event may have taken a couple of hours including cleanup. I always heated the dishwater while we were eating and it only took a few minutes to wash the few dishes involved.

Upon finishing, Esther and I sat there talking about the day's schedule and enjoying the morning sun. All at once we heard Valerie yelling, "Daddy-daddy, a bear is coming". Needless to say, that got our attention and we jumped up to investigate. She was right, sure enough. In the camp a hundred feet or so from ours there came an old mama bear with her two cubs. She stopped at the garbage pit which had a heavy iron top activated by a lever. Without hesitating, she opened the pit with the lever as well as I could have. After going through the contents and retrieving anything she deemed **"bearly"** edible, she gave some to the cubs and headed for another camp situated next to ours. Esther took the girls and got in the car so they could watch from a safe position. After our neighbors camp, she came to ours and

Figure 10-13 A Park Ranger; is checking our credentials just prior to entering the Indian Creek Campground.

conducted the same methodical examination of the contents of our garbage. I could see she had only one thing on her mind, namely breakfast, and so I sat there watching from maybe 20 feet away on the other side of the table. Soon she went to the next camp and then the next. As far as I could tell, she didn't miss one but she didn't tidy up after herself.

In talking to some neighboring campers we found out such activity was a twice daily ritual for her. I've included a couple of photos in figure 10-14 and in figure 10-15 to add a little reality to my story. Needless to say the girls were wide eyed, watching all the bears' movements in wonder. I also added an illustration of the campground in figure 10-16 to help you picture the general, though hardly exact, layout of the area.

BEEN THERE AND DONE THAT

As you can see, there was a bear trap in a camp on the south side of the main camp loop. It consisted of a trailer with a heavy steel cage and a trap door, the latter being at the rear or east end of the trailer. Inside the trap the park ranger had hung a big piece of meat in the front near the trailer tongue. The bear could only touch the meat by going inside the cage. The idea was to draw the bear inside and as he/she grabbed the meat, the door would slam shut and the ranger could cart the animal off to some far corner of the park. Well this old mama bear had apparently been there and done that before and wasn't going to be fooled again, no sir. Several times a day she would wander over to the trap and try to figure out how to get the meat without springing the trap. She would go inside and smell the meat, looking at it from every side but would never touch it. Then she would come out, go to the front and try to get her paw through the bars to the meat. Of course, she couldn't quite do it from there but what amazed me was her discipline to never touch the meat while inside. When we left a week later, the trap was still there and mama was still on the loose. By that time, we were all familiar with the three bear family but we still kept our distance during their forays at the campsites. Esther wasn't taking chances and I knew enough to respect her, especially considering her cubs. She could be worse than that mad ma-ma I told you about in my Bear Valley experiences.

MAMA'S DISCIPLINE

The cubs were really cute and were constantly playing with anything they could find. The old mama bear always kept them in sight and would bark orders from time to time, which they

Figure 10-14 Mama bear making the rounds to secure ingredients for the family's evening meal.

seemed to obey quite well. Sometimes the bark meant "get up a tree to safety" because each

Figure 10-15 Mama bear and her cubs finishing a tasty snack taken from our neighbor's garbage.

would do just that upon hearing her. Other times it apparently meant "get over here before I pop you a good one" because they would come a scurrying to her side with little delay; except in an unusual case I'll now explain.

One time, however, they came across a beach ball about 12 inches in diameter that some kid had left. They loved that ball and had it rolling all over the camp as they played with it. Mama had moved on to a camp a couple locations away barking orders as she moved. Temptation was too great in this case and ignoring her, they continued to chase the ball. All at once she came after them, letting out a roar as she cuffed each a good one. I'm not exaggerating when I say they rolled like little fur balls across the camp from the whop she gave them. When they came to rest, they were ready to listen. Yes sir, mama had their attention. I'll guarantee you they followed her after that as she continued her food foraging among the garbage pits. In my opinion, society could use a little more of that type of "tough love". Now, I'm not advocating parents roll their kids across the floor with a blow to the head but a little pop in the rear at an appropriate time would get their attention and teach them a little respect for society's rules.

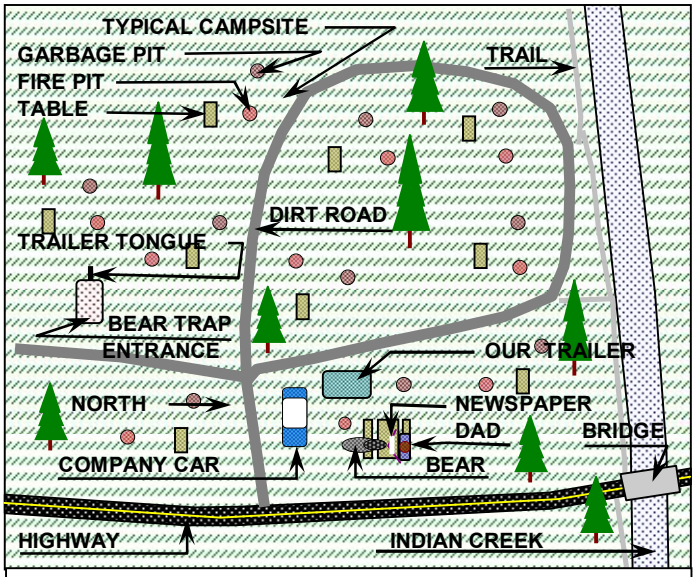


Figure 10-16 An illustration of our campsite at Indian Creek with garbage pits, bear trap, etc.

OH, HI ESTHER ARE THE KIDS A SLEEP?

One Sunday morning we bundled up the girls and went into Gardner, Montana just outside the park. We bought a few groceries and a newspaper, looked the town over and headed back for camp. There, Esther fed the girls lunch and decided to put them down for a nap. I sat down at the picnic table and began to read the paper. Esther was having a heck of a time getting the girls to settle down and Valerie in particularly. She was bouncing around like a rubber ball, opening the door and chattering something to me from time to time while Esther was trying to get her to settle down. After a while, I noticed mama bear headed our way. By this time, I was pretty used to her and felt I knew just what she would do. In any case, as she ambled into camp I noticed Valerie at the trailer door again. As mama bear passed the trailer door Valerie's eyes became big as saucers because she was coming right over to the table. I didn't move or say a thing but just kept on reading. Pretty soon she got to the table, put her paws up on the top and began sniffing the paper between her and me. I lowered the paper and said quite simply, "Oh, hi Esther. Are the kids asleep?" Well, Valerie just about split with laughter. She ran back to Esther and said, "Mama, mama, daddy thinks the bear is you" and then she was back at the door watching the ongoing scene. Of course, the old she-bear satisfied her curiosity, that is, neither the paper nor I was good enough to eat, got down and ambled back out of camp. I've tried to depict the little incident in figure 10-16 and if your imagination is real good, you might pick it out. Valerie was so excited she chattered about that little incident all the rest of the day, I believe. Also, when she started the first grade in Rock Springs that fall, it was still firmly embedded in her mind. She told the story to the class one day in "show and tell". Esther found that particular incident out in her conversation with the teacher during a regular parent - teacher conference.

Pretty soon she got to the table, put her paws up on the top and began sniffing the paper between her and I. I lowered the paper and said quite simply, "Oh, hi Esther. Are the kids a sleep?"

The remaining days of our Yellowstone trip were uneventful and we arrived back in Rock Springs ready to start Valerie in school and put me back to work. It was a great trip and a fun time.

ROCK SPRINGS AREA GEOLOGY

I probably should have planned this part a little better, that is, this discussion is going to utilize figure 10-4 which is way back on page 466 instead of right nearby. How-some-ever, I will reproduce it here as figure 10-17 so as not to require too much trouble on your part. I feel confident those among you who may be less technically inclined, will hardly make the effort to turn back and forth. What I want to do is talk a little bit about the

geologic basins, or inter-mountain basins as they are sometimes called, as well as major structures within them and also some of the areas of drilling activity that resulted due to these geologic phenomena.

THE OVER-THRUST BELT

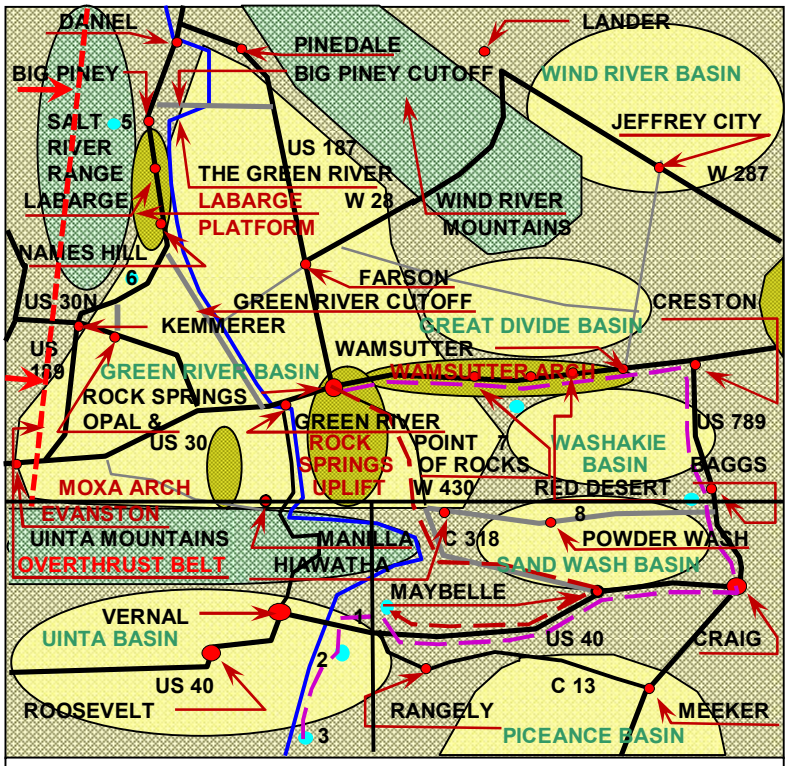
The over-thrust belt is a zone of major faulting in which the rocks from the west have been pushed or thrust to the east resulting in deeper sediments being pushed over the top of shallower or younger sediments. The result of these horizontal forces is to produce a series of thrust faults and associated anticlines or wrinkles in the earth's crust. This is depicted in simplified form in figure 10-18. In reality, there are many major and minor thrust faults involved as well as many anticlines or folds, any of which provide potential traps for oil and gas. The thrust belt extends from northern Utah up along the Idaho-Wyoming border, through western Montana and into Canada. It is some 50 to 100 miles wide and many hundreds of miles long. Though containing many potential traps, it is extremely complex and seismic records are difficult to interpret. Thus, even today (1975), it remains relatively unexplored.

DEPOSITIONAL BASINS

Within the Rock Springs district boundaries, there are several so-called inter-mountain basins or depositional basins. They obviously derive their name from being between mountain ranges. The major basin involved is the Green River basin whose watershed is drained by the Green River. To the east we find the Great Divide basin, which has no drainage, being locked between two segments of the continental divide. If there were any amount of precipitation in that area, a massive lake would result. To the south of the Great Divide basin lays the Washakie basin separated from the great Divide basin by the Wamsutter Arch. The latter is a geologic high but not a visible topographic high. Though the illustration shows no ridge between the Washakie and Sand Wash basins, there is a geologic high just north of the Wyoming - Colorado line called Cherokee Ridge, which I believe, is the geologic high that divides these two basins. Just east of Wyo. 789, lays the continental divide forming their eastern wall. Each of these basins may have structures within them, which though much smaller than the major features noted, form trapping mechanisms. Consequently, we find the occurrence of several gas fields within a basin such as that of the Great Divide, as already noted.

MAJOR STRUCTURAL FEATURES

The major features I became aware of during my two tours in Rock Springs have been noted in figures 10-4 and 1-17. There may well be others, particularly in the over-thrust belt, with which I have had little or no experience and consequently have only a very general knowledge. The over-thrust belt was virtually unexplored in those early days.



LEGEND: Dirt road — Major highway — River
Geologic basin — Geologic structure — Town
Mountain Range — Well-sites — Truck routes
Minor paved road — Often traveled dirt roads

Figure 10-17 An illustration of the various geologic basins serviced by Rock Springs trucks from 1957 to 1959.

THE LABARGE PLATFORM

The LaBarge platform lies in the northwest corner of the Green River basin. It is a major fold or high associated with the over-thrust belt lying just to the east of it. It is rather massive in

extent and contains individual highs and/or other trapping structures within it. Many operators drilled wells in that area but I suppose Mobil Oil Company and an independent named Belco Petroleum Co. were the most active. Production occurred in shallow horizons of tertiary age as well as in the Mesa Verde, the Frontier and Dakota of earlier eras. I believe all of the oil production was shallow while the three deeper horizons were gas productive. A major feature of the platform was the Darby thrust fault, which was an eastern member of the over-thrust belt or series of such thrust faults. Various folds or anticlines occur parallel to a thrust fault's axis and act as trapping mechanisms. Two that come to mind are the Hogsback and Tip Top fields, both being located in the Big Piney area. During my two tours in Rock Springs, this area provided the bulk of our business.

THE MOXA ARCH

I'm not too familiar with the geology of the Moxa Arch, which lies in the south center of the Green River basin. No drilling occurred there during my first tour and only one 20,000 foot plus test in my second tour. That becomes one of my choice experiences in chapter 13. Obviously, it's a major structure and undoubtedly, has many minor structures within it. The drilling took place long before my arrival resulting in the development of a major gas field. It was operated by Mountain Fuel Supply and produced from the Dakota formation, which is basal Cretaceous in age. The average well depth is around 13,000, feet as I remember.

THE ROCK SPRINGS UPLIFT

This particular feature is a topographic high as well as a geologic high. It must be some 50 miles long (north to south) and 30 or 40 miles wide. The formations outcropping around the town are Mesa Verde with the immediate member being the Rock Springs, naturally. This structure brought the coals common in the Mesa Verde to the surface and it became a main fueling center for the UPRR when the transcontinental railroad was completed. Most of the people brought in to mine the coal were of Slovakian descent and that ethnic group still dominated the area's population. Later, Chinese were brought in who worked for virtually nothing. There was an insurrection of the Slovakians who apparently killed many of the Chinese and ran others out of town. As the story goes, some, fearing for their lives, lived in the mines for some time after that. The military was brought in to maintain the peace and was billeted in some barracks near the center of town. See the illustration in figure 10-1. The remains of the barracks were still there during the 1957-58 era. Even without the Chinese, this community was definitely a company town. As I understand it, the UPRR not only owned the mines but also the stores and even the houses the people lived in. The people bought the necessities of life from the company, paid their rent to the company and, I suppose, lived by every word proceeding forth from the company, namely the UPRR. The picture such a history paints reminds me of Tennessee Ernie's song, "Ya Load Fifteen Tons and What Do You Get". I guess that's the first

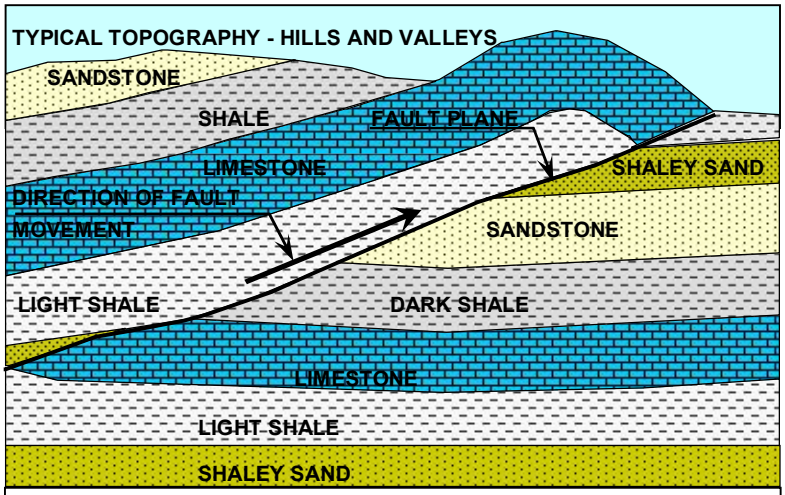


Figure 10-18 Illustration of a principle of many faults & associated folds in the thrust belt of western Wyoming.

line and not the title but you understand what I'm talking about. In any case you probably remember he would repeatedly groan, "I owe my soul to the company store".

Well, I kind of got away from the oil field. The geologic high point of the uplift was to the east of Rock Springs and to the south. The little town of Baxter lay maybe five miles east in the middle of the Baxter shale outcrop, which was surrounded by the sandstone cliffs of the Mesa Verde and termed Baxter Basin. There was a little field just north of there, known as North Baxter Basin and one I mentioned in the early part of the chapter to the south called South Baxter Basin. I'm not aware of any other fields on the uplift proper, although there were several

discoveries on its fringes, which were undoubtedly impacted by that structure. Mountain Fuel Supply controlled most of the production from the Baxter Basin fields, which consisted primarily of natural gas. Over the years, a good deal of drilling took place around the uplift. In fact, I made several jobs around its flanks, which all turned out to be dry holes. One well I remember logging on the southwest flank of the uplift contained shale and about 7,000 feet of brackish (low salt) water sands, which apparently replaced the original connate water.

THE WAMSUTTER ARCH

Pictured in figure 10-4 is the Wamsutter Arch extending east from the Rock Springs Uplift for 60 or 70 miles past the little town of Wamsutter. It was a geologic high, that is, it was expressed in the subsurface structure but was not visible to the eye in the topography. The gas and oil fields to the east of Rock Springs were on the flanks of this particular structure. That whole area continued to support our Rock Springs location with its drilling activity during both of my tours there. I have spent many hours, both north and south of the highway, wandering through this wasteland. It is strictly desert country receiving only about 5 inches of total precipitation annually. Most of this is in the form of snow, which then blows around forming drifts of various sizes. It's somewhat of a paradox to find yourself mired down in a snowdrift when there's little more than dry ground all around you. In the summer, of course, it is hot and dusty with no drinking water around. There are, at times, pools of stagnant water, which soon evaporate leaving white minerals of various types in their basins. Truly the area lives up to the name desert and Red Desert, a way station on the highway, is thus aptly named.

CHEROKEE RIDGE

I've already made reference to Cherokee Ridge as a geologic high separating the Sand Wash Basin from the Washakie to the north. It runs in an east west direction on roughly the Wyoming Colorado line and, I suspect though I'm not sure, that it had some influence on the trapping mechanisms, which created the gas deposits at both Hiawatha and Powder Wash fields. I'm not really familiar with the geology of either field but if my memory is correct, production is from the younger tertiary sediments. I believe both structure and stratigraphy are involved in the trapping mechanisms. However, there may well be structures independent from the Cherokee Arch influencing the traps rather than that major arch. Admittedly, I have placed myself out on a limb with this supposition regarding the Cherokee ridge but it seems to fit with the two basins involved. It also gave me something to write about and maybe something to right if it's not right. Savvy? Of course, I'll never know and neither will you. Well, I think it's time to get on with something I know more about. Such conjecture has often gotten me in trouble during my life. One would think I would know better by the time I got to this late stage.

WYOMING OIL FIELD ENVIRONMENT

I talked a little about weather conditions of the area in the Wharton Texas chapter. In the latter fifties, weather not only impacted field operations but also the available roads. In Texas, Farm to Market roads, as they were known, were all black topped and crisscrossed the whole gulf coast in that area. In Wyoming, roads were often marginal under the best of conditions and in bad weather might be difficult to negotiate or even impassable. A six-inch snowfall might well produce 6-foot drifts across any road not protected by snow fences. Consequently, we had good weather routes we followed which were the shortest route, time wise, to a given area as well as bad weather routes which we followed when drifting was a problem or mud became a factor.

I'll sight a few illustrations using figures 10-2 & 10-17 as guides. In the first figure the roads are numbered and in the second they appear as rather wide gray lines. The latter, of course, also illustrates the geologic features of the area. If a job was near Big Piney and the weather was good, we would head north on US 187 through Farson to Wyoming 351. Note, highway 187 is now known as 191. There, we would cut across to US 189 and south to Big Piney. If the weather was bad we had to go on up through Pinedale to the junction of 187 and 189 and then south to Big Piney. That added twenty miles plus to the trip. Snow along the cutoff might drift, of course, but if a little rain fell, the road was even worse because it became like grease and the truck could hardly be controlled. It was safer to go further north via Daniel.

If we were headed for La Barge, the shortest way was west out of Rock Springs to Green River, then northwest on Wyo. 372 to US 189 and finally north to our destination. That was okay in the summer but state road 372 was virtually impassable from November through

April. During those months we would go on west to Opal and cut north on 240 to US 189. That still saved about 15 miles. After a bad snowstorm, however, we had to go all the way into Kemmerer to assure safe passage. Wyo. 240 was only 12 miles long but it too could be impassable at times. I remember one incident in particular in which we had left the truck on location south of La Barge. They were going to drill a little deeper and call us back in 36 hours so we decided to go home, get a bath and some shut eye. We all hopped in my car and discussed the Opal cutoff as we headed south. We had come across it going to the well and though we fought some drifts, decided it would be safe to return the same way. We began to hit drifts soon after leaving 189 and had to work our way through them. It might take two or three runs to bust our way through them before making another 100 yards to the next one. Other times we would get stuck and have to dig and push the car out. After making 3 or 4 miles the situation seemed to be getting even worse and we decided to turn around. The struggle back to the highway was almost as bad because the drifts were reforming behind us. That little venture of trying to take the short cut cost us about two hours and then we still had to go around by Kemmerer which added another half hour to the trip. I learned that night to be careful when negotiating the Wyoming winter landscape, and particularly so, when being without the aid of a big truck to break trail or winch you out of a deep snow drift.

In figure 10-2 just west of Green River you will see Little America designated. It was there in the fifties, as well, and was a popular place to gas up and eat. Many of you may have stopped there. In that day, the complex was much smaller consisting of a small service station of maybe 12 pumps, a truck repair facility, a restaurant and bar with a small motel. On the back of their place mats they had "The Legend of Little America" printed, which we got a big kick out of. Basically, the legend described the experience of a sheepherder trapped by a fall blizzard in the area. Because of his deprivation and suffering, he vowed to build a place of refuge for the unfortunate winter traveler in that area. "Little America", aptly named after the settlement in Antarctica, I do believe, and became the manifestation of his intense suffering. As late as 1999, it was still printed on the back of those paper mats. Probably the story bears some resemblance to the truth but I doubt that the cause behind building the facility had the noble purpose that they would have you believe. Prices and overall business practices would seem to indicate the normal purpose of making a buck but the experience may have prompted it. Regardless, the story was a grim reminder of the kind of trouble one could get into in western Wyoming if caught in a winter storm. There, people need to plan and travel wisely.

We seldom got real heavy snows in the basin proper but, as I have implied a few inches could produce large drifts and close a road. Winter temperatures were typically minus 20^{o} F at night and about plus 20 or so in the daytime. In cold spells, the Big Piney area would reach minus 50 to 60^{o} F. Thus, I always carried extra clothes, a heavy coat with a hood, a sleeping bag and some canned food. These supplies were all in case I got stuck and had to wait a day or so to be dug out. You'll remember I experienced such a situation near South Baxter Field, which is situated twenty or so miles southeast of Rock Springs, the first week I arrived there.

There was a constant wind blowing from west to east throughout the year. It did get quiet once a year and, as I remember, that was on August 3rd from 2 to 3 PM. Typically, the velocity was 30 to 40 miles per hour but winds of 60 to 70 weren't all that unusual. While living in Casper in the early 70's, I remember the wind being clocked at over 100 miles per hour by the weather bureau. Why am I telling you this, because, I had to drive in it much of my career. When I would head north on 187 (now 191), there was a constant wind pressure on the left side of the car. In the flats, I would compensate for it by holding a bind on the steering wheel and sail along just fine. However, as the car entered a road cut, it was shielded from the wind. Naturally I had to release the bind or pressure to the left to keep the car straight. About the time I had compensated for the change, the car would emerge from the cut and, wham, the wind would grab it again. Of course, the pressure on the steering wheel had to be reapplied instantaneously to stay on the road and the whole operation became a little tricky. What made it even more exciting was the snow being blown across the road just after the road cut. The wind would form a layer of snow, about ½ inch in thickness on the road surface, making it rather slick. Consequently, as I would re-compensate for the wind, the car had a tendency to not only swerve but also slide a little until all forces were properly adjusted making

the driver wonder if it would stay on the road. At first it scared the living daylights out of me but later I accepted such thrills as part of the Wyoming oil field regimen. One thing I can say, however, is such excitement definitely kept you awake while driving with never a boring moment.

The last area, which sometimes plagued us in the winter, was northern Colorado on the roads shown as thick gray in the lower part of figure 10-17. In figure 10-2 the one leading to

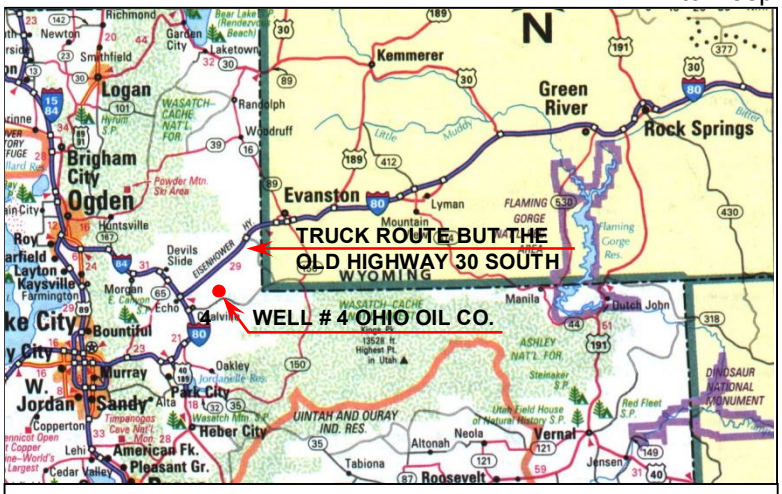


Figure 10-19 A map, which pinpoints the location of this unusual job for the Ohio Oil Company in 1958.

Maybelle is listed as 318. These were seldom-traveled roads, in those days, which could also be full of drifts after a storm. I made reference to an experience on 318 earlier in the chapter. As indicated there, I was careful to stay with the truck under those conditions because it could usually break through everything but the largest drifts. Usually, that made it possible for me to get around the oil patch without chains. Even though I carried chains I detested the idea of using them as long as there was another choice.

BACK TO OIL FIELD EXPERIENCES

I have a few more oil field experiences to share with my readers before concluding my first tour in the Rock Springs area. I think I'll reference them, in general, to the previous figure 10-17 and consequently save myself the effort of repeating that illustration. However, I may add other illustrations to help clarify my somewhat rambling stories. If ever one needed a picture to replace a thousand words, I surely fit the mold. So keep your little pinkie next to figure 10-17 as you follow the path of my rambling though not romantic reminiscing of my oil field adventures in the wilds of Wyoming. Though it may not help much, at least you can identify and locate the sites involved.

THE COALVILLE ANTICLINE

This particular job occurred in the summer of 1958 and is labeled as well # 4 in figure 10-19. The actual well site is some thirty miles west of the left edge of figure 10-17 where the Uinta Mountains of that figure are joining the Wasatch Front east of Salt Lake. I numbered it as shown to keep my experiences in order but took the easy way by using a map from the atlas. In that era or day we took highway 30 west to Echo Junction and turned south to Coalville, Utah. Upon entering that little Mormon community, we turned back east, along a dirt road, 4 or 5 miles as you can see from the map. The job was for Ohio Oil Company who then maintained an office in Salt Lake.

I remember arriving on location with the services ordered, about noon. There was no representative at the well and they had left orders for me to run the logs and bring them into Salt Lake to their office. That seemed okay. They had ordered a regular ES and microlog only. They were still on bottom when we arrived but were ready to trip the hole. I took a mud sample and was shocked to find out it was salt saturated. The resistivity was less than a tenth of an ohm. I talked to the driller and sure enough they had cut a salt section. The well was bottomed in rather old formations, carbonates, which it seems to me, were of Pennsylvanian age. I knew the logs would be worthless and told the driller, "I've got to talk to someone about this mud before running the logs. You just as well stay on bottom until I get this thing cleared up" and off I went for Coalville and a telephone

I drove into Coalville, called their office in Salt Lake and tried to explain the problem by phone. Obviously, I didn't do a real good job because they asked me to come on in to the office. Forty five minutes later I was in down town Salt Lake explaining the problem in more detail as well as recommending we get a set of Laterolog and Microlaterolog equipment in place of what they had ordered. They agreed after they understood the problem more clearly and we called Grand Junction for the necessary tools. At that point I was glad I had had similar experiences with Carter Oil when I first hit Rock Springs.

Back to the well I went and we waited some 16 hours for the tools to arrive. Of course, we managed some sleep and a couple of meals in Coalville during that time. The tools arrived some twelve hours later and we ran the logs without any particular problem. Soon I found myself back in Salt Lake interpreting the logs as best I could. You see, the formations penetrated were completely new to me and there was no SP available for R_w calculations. With the geologist's help, I managed reasonable values in the zone of interest and cranked out the answers. There was no indication of gas or oil anywhere in the well, which seemed to support conclusions they had arrived at from drill cuttings and the mud log. I was thankful for that earlier experience near Vernal. Being caught by surprise with this unusual log suite was disconcerting enough but had I never experienced them at all, I'm sure both the logging and the interpretation would have been much more stressful. The dry hole, of course, was disappointing to both them and to me. A discovery would have been good for the area, for Ohio Oil, for our location in Rock Springs and for me personally, but that was not to be. I headed back to Rock Springs some 48 hours after leaving, mighty tired but happy to have discovered the need for alternate logs early and to have successfully made the necessary adjustments. Such is the satisfaction of a job well done.

MOUNTAIN FUEL SUPPLY

Mountain Fuel Supply Company whose home office was in Salt Lake City also had a satellite office in Rock Springs (see figure 10-1), which was the center of their primary gas exploration efforts. In the winter of 1957-58 they drilled a well just west of Big Piney, Wyoming (see figure 10-17), which I have labeled as well # 5. It was ready for logging in the spring, about May I would guess. As you can see, the well was in the mountains (Salt River Range) at an elevation of over 10,000 feet and had a total depth of about 11,000 feet. Figure 10-20 is a rough illustration of the terrain, rig location and associated roads. Wyoming 350, at that time, was gravel all the way from Big Piney. I had two experiences on that well which seem worth repeating although their value really depends on who is buying and who is selling. Obviously, I'm selling, as the story teller, and you're buying, as the reader, but the price is right and the most you can lose in proceeding onward is a little time and you might even detect a little humor therein.

OPEN HOLE LOGGING

First, let me provide a little preliminary information. Roads into and out of rig locations were usually fair to bad. They were rough, sometimes steep and either rocky or muddy or maybe a nice combination of the above. Cars provided the engineers were standard issue. That is, they were the same as anyone else in the area might drive. It wasn't unusual to high-center in them, allowing rocks to puncture a car's gas tank, maybe drag a muffler off or something else of that nature. Mud holes were tough on clutches as well as transmissions. One might have to shift rapidly from low to reverse to extricate the car from such a hazard. As a result, repairing either or both was fairly commonplace. When receiving a new car, we typically welded tow brackets to the frame to make it easier to be extracted from a mud hole.

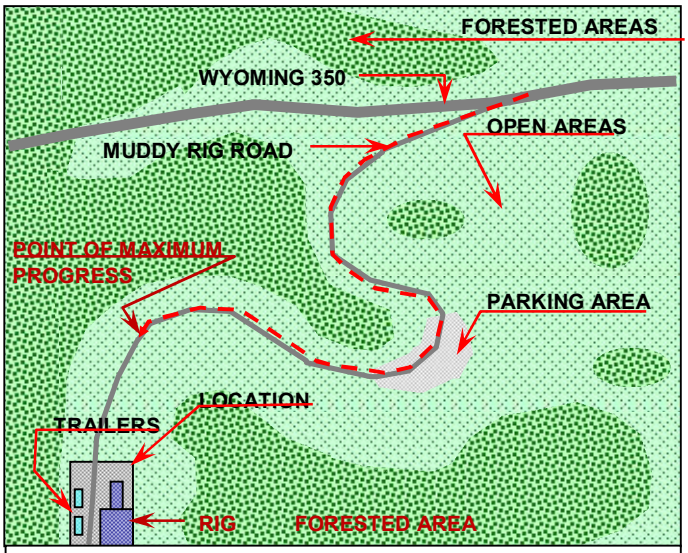


Figure 10-20 An illustration n of the road and location of the Mountain Fuel Supply Co. well.

We also placed asbestos under the gas tank by loosening the bands holding it, inserting the asbestos pad between them and the tank and then re-tightening the same. In some areas we also bolted skid plates to the frame under the engine to protect the oil pan. From these comments, one can visualize the kind of roads we traveled and maybe even understand our Baja California like driving that we engaged in.

On this particular job I left Rock Springs sometime after the truck, knowing I could make the distance to the well in 3 versus their 5 hours. My car's transmission needed some work, I knew but we had been busy and I had no time to

take it in. I figured, with any degree of luck, it would run until my next set of days off. I made Big Piney in about an hour and a half, gassed up and headed west on Wyoming 350. The road was up hill all the way but I never had to go below second gear. The road from 350 to the rig, however, was really steep and as I passed the parking area on the curve about ¾ of a mile from the rig I had to shift to low. Much to my surprise, there was no low gear. The engine roared but the car came to a stop. Well, I thought. I'll get a better run at it in second gear, try slipping my clutch and maybe, just maybe, I can nurse this thing up to the rig. I had a lot of stuff in the car I would like to have near me and knew going down would be a snap. I backed to the parking area, turned around and went back to 350. From there I got a good run in second, came roaring around the curve at the parking area and made it to within a couple hundred yards of the rig. Wouldn't you know it, at that point a water truck appeared, coming down hill and I had to stop. Back down I backed to the parking area, turned around and headed for 350 again. Letting the truck go by, I gave it another whirl. I had no more than rounded the curve the second time and here came another vehicle. The vehicle headed down hill has the right of way and, of course, I had to shut it down. The road was strictly one way except at the parking area, so as I went back a third time, I decided to change tactics.

I thought, maybe I can back my car to the rig. After all, reverse is a lower gear than second and I can start from the parking area. That will allow me to see when the road is clear before starting up the hill. I waited once more until all was clear, pointed the rear of the car uphill and away I went. Now, keep in mind, this is a narrow muddy road with ruts and bumps and slick spots due to standing snow patches. I still had to keep my speed up to overcome both mud and hill but reverse allowed me to move at a slower speed. Of course, it was harder to see and harder to control the car and that made the ride rather exciting, to say the least. I bounced around the curve shown about half way up and, you guessed it, here came another vehicle. Down I went again to the turnout and then repeated the process with the same results.

About that time a crew truck appeared at the parking spot and I said, "What the heck", and hopped a ride with my brief case, a few goodies, my mud boots and my coat. I figured 4 tries were enough. Besides, they had been pulling pipe and I knew they would be ready for us soon. Consequently, I quickly ran through all the necessary preliminaries and all was ready to go when the last collar was tied back. We finished the job some 24 hours later without incident, interpreted the logs and headed for home. Of course, I rode the logging truck down to the parking area, picked up my car and away I went downhill for Rock Springs. Second and third was all I needed for the return trip. Needless to say, I put the car in the shop the next day to get the necessary repairs.

THIS ONE SHOULD TIE YOU IN KNOTS

Though we only had two trucks equipped for open-hole work in Rock Springs at that time, we went after as much cased-hole work as we could get to help keep both units busy. As I explained back in chapter 6, an open-hole unit could be converted to a cased-hole unit by removing the bridle and adding a mono-cable head for perforating. Only one wire, usually #1 conductor was used in the cable. Once configured in that manner, the unit could be used for casing jobs or new well perforating. A mono-cable gamma ray or gamma ray neutron might be run for depth control and then the casing guns fired from the single wire. A plug or packer could also be set if necessary. The only disadvantage was cable size, which made it impractical, in most cases, to work against pressure. On this particular job, a frac job was to follow and there was no concern about formation damage, per se. The objective formation was the Frontier sandstone, which was just below 10,000 feet if my recollection is correct. There were several zones to be perforated and the total job required some 600 plus shots. With 24 shots per six-foot gun, that represents something like 25 guns. Of course, we used some longer guns. Though I can't remember the exact formation geometry involved, even with my superb, outstanding and rather humble memory, I have illustrated a reasonable facsimile of the zones involved in figure 10-21. Such is necessary to explain the unusual events that followed and my extremely good fortune. An apparent disaster turned into a positive experience whose results seemed to satisfy Mountain Fuel Supply Company and even enhanced my relationship with them.

We arrived on location prior to the appointed time with our logging unit converted to that of a perforating unit. It had recently been equipped with a brand-new 18,000 foot logging cable. The GRN we were to run had been checked and

re-checked as had the BOP and necessary riser we planned on using. One of the operators drove a flat bed truck loaded with guns sufficient to perforate roughly 150' of casing at four shots per foot. My diagram illustrates 140' of sand if you care to add it up. In short, we were ready and eager to get after the job, which was larger than the average we were used to. The truck was spotted for optimum operation, tools unloaded, riser coupled together and all equipment rechecked once again. I wanted to be sure we had a smooth operation.

Mountain Fuel Supply Company had the policy of perforating new wells with the drilling rig still on location and mud in the hole so as to provide good well control. Once the perforating operation was complete, they would displace the mud with frac water and then carry out the actual fracturing operation. Because such an operation produced the necessary permeability for production, they felt any formation damage the mud created would be overcome. This particular well had the casing loaded with drilling mud. Even so, full riser or sufficient riser to cover the complete tool string was requested.

Soon, the well was ready for us. We rigged up and ran the GRN first, which log is depicted in figure 10-20. The only thing unusual about that recording is the curve labeled "CCL AFTER" and the "UN-INTENDED PERFORATIONS", both labeled in red. Disregard those for now because they were only added for expediency. They weren't part of the GRN collar log but will be used to help explain the little mishap, which occurred later. The GRN was run without any problem and I carefully went over it with the customer's representative on location. The log was on depth with the open-hole resistivity log, an IES or Induction Resistivity Log of the 5FF40 variety. See chapter 7 for details if interested. Consequently, the perforations were picked as illustrated by the light magenta zones to the right of the depth track. They should add up to 140' as I mentioned earlier. Mountain Fuel Supply Co. had excellent radio communications with the Rock Springs office and the well site representative called in to receive permission to proceed with the perforations as shown. Little did he or I realize what was about to happen.

TOO HIGH A SPEED IS MIGHTY RISKY

In those days, we didn't have select fire systems in which guns could be selectively positioned and fired one at a time. We could run 6', 10', 15' or 20' guns with the whole string being fired simultaneously or, we could partially load such a gun to perforate something less than the gun length. As I remember, we began with a 20-foot gun fully loaded. The tool string consisted of a monocable head, a collar locator and the gun for a total length of about 26'. Consequently, we left about thirty feet between the blind rams of the rig and the stuffing box of our riser which placed the latter about 20' above the rig floor with the remaining ten feet coming from the rig pressure control equipment, that is, their Hydril and blind rams. Now I'm not speaking of a bighorn sheep in this case; remember your introduction to rig equipment in chapter 5.

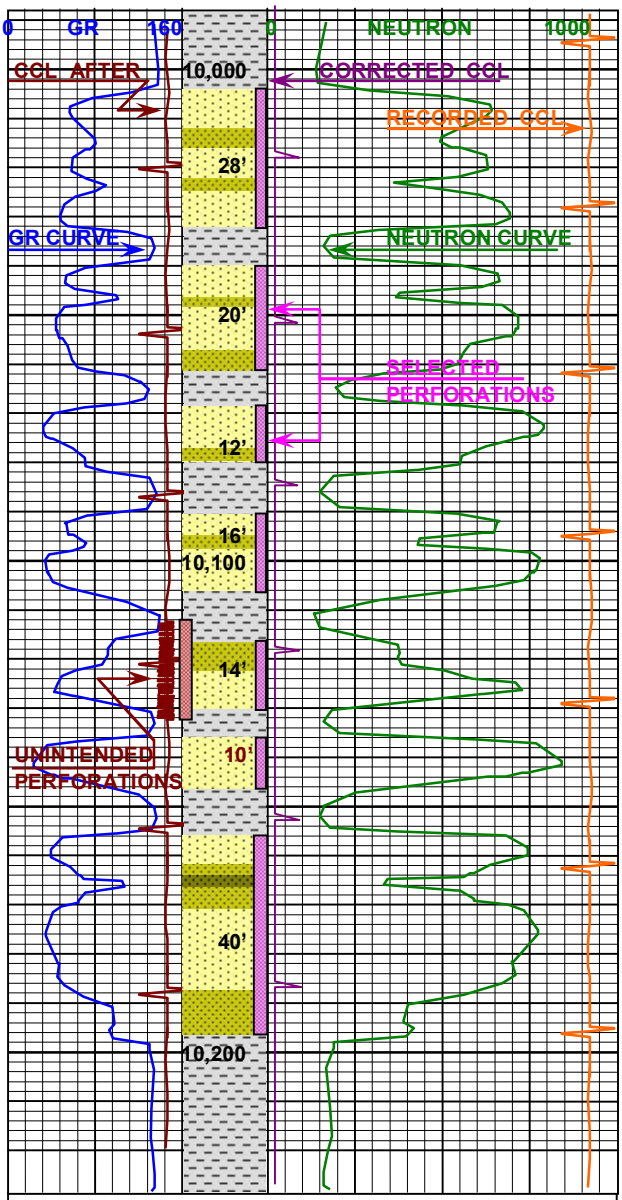


Figure 10-21 A reasonable facsimile of the Frontier section we were perforating that day.

We had planned to complete the job with 10 gun runs, i.e. 2x20' in the bottom zone, one 10' gun on the next zone, 14' of a 15' gun on the third zone from the bottom, one 10' gun and one 6' gun for the fourth zone, 12' of a fifteen foot gun on the fifth zone, one 20' gun for the sixth zone and finally one 15' gun fully loaded and one with 13' loaded for the seventh and final zone. Each run would take about 1½ hours including surface time, which adds up to 15 hours total to complete the perforating. The wire line trip time per gun would be about 1 hour. Obviously, we wanted to minimize the total time which could be done by dropping the tool into the well at 20,000 feet per hour or so and sucking it out after shooting at about the same speed. In cased holes, where there is no danger of bridges or ledges to stop the tool, such speed **should be** permissible. I emphasize the term "should be" because that assumption proved to be our downfall that fateful afternoon. Mud viscosity reared its ugly head instead.

The operator on the winch was named Jim but I can't recall his last name, not that such is important. He was experienced on the winch and I didn't worry about his expertise in that area. After the tool was zeroed, he obtained a bell or truck mark and headed for bottom at a speed somewhat in excess of 20,000 feet per hour. There was mud in the hole, remember, and the tool floated to a degree. He slowed down occasionally to let the tool catch up with the cable he was un-spooling and in 20 minutes or so announced he was nearing TD as he again slowed the tool to a stop. He pulled up a ways and I set the bell mark. The company man was in the truck and we checked a few collars. Everything seemed in order and I logged collars over the complete zone to be perforated. The film was developed and laid on top of the GRN to compare collar depths. All seemed well and I was given the go-ahead to pull the trigger. After positioning the gun at the bottom of the deepest zone, I put the juice to it and the gun fired normally. Everything seemed in order and I told Jim to suck her out of the hole. He slipped the winch into high gear, opened the throttle up and away he came.

About a half hour later, as he neared the surface, I took over the winch and sent him to the rig floor to help change guns for the next run. I hadn't much more than taken over when I felt a little jerk on the line and cut the throttle back. Then I felt another jerk, a little bigger this time, followed by another. Keeping one eye on the rig floor and the other on the weight indicator (that's hard to do, you know) I was ready to kick out the clutch on a moment's notice. Something was wrong but I wasn't sure just what. The jerking became more frequent but the cable didn't hang

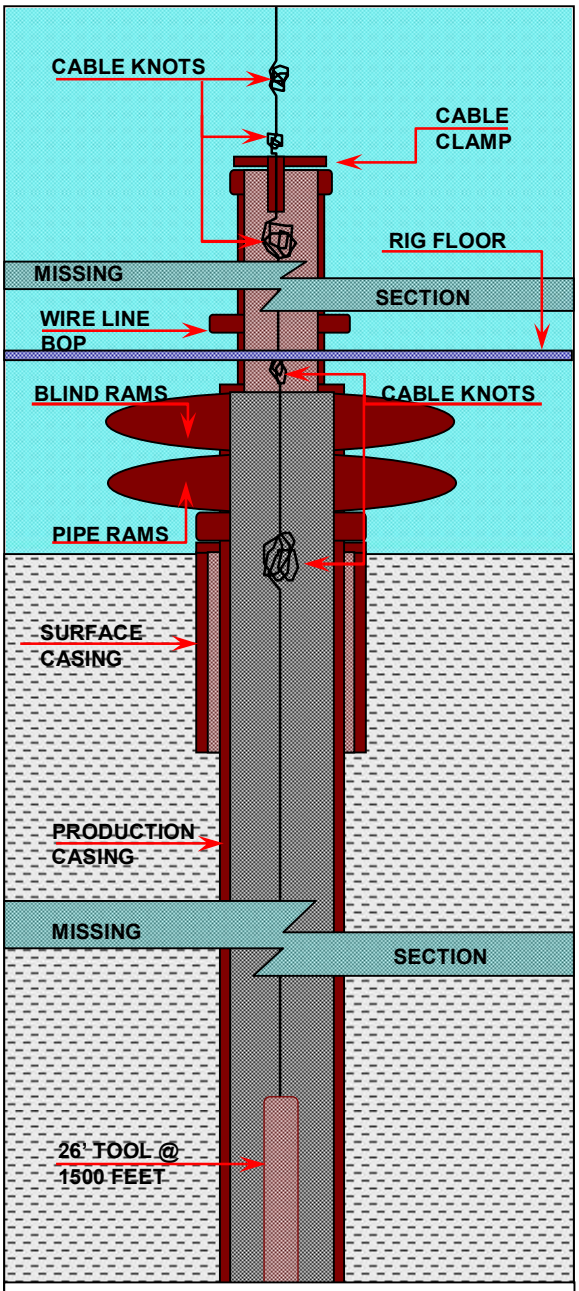


Figure 10-22 An illustration of the knotty (naughty) cable problem we had that day while perforating for Mt. Fuel.

up. About that time I noticed what appeared to be a small ball of cable coming out the top of the lubricator and then a couple of more including a rather big one (the bushings had been pulled earlier, fortunately). I shut down the winch and

went to the floor where my operators were looking at the mess. Sure enough, the cable was balled up in several places and I knew I was in trouble. That had to occur with the gun going in the well, which meant it hadn't been positioned and shot at the depth I supposed it had. Besides, the knotted cable couldn't pass over the sheaves and the gun was about 1500 feet from the surface. The situation is depicted in figure 10-22. Me, oh my, what do we do now, a very serious question?

The company hand from Mountain Fuel Supply came up on the floor about that time and asked me what was going on. I explained the situation and told him the first problem was to get the gun out of the well and verify it had fired. How I hoped that wasn't the case but deep in my heart, I knew it had because the firing action was normal including a little jolt on the cable as the 20' of gun was fired.

We carried a T-bar with the proper inserts for our cable with us at all times in case the cable jumped a sheave. That allowed us to get the weight off the cable and work it back into the sheave liner. I outlined a plan with my operators, the rig crew and the company hand and they agreed to the procedure to get the gun out of the hole. We would pull the cable out until the upper most ball of cable reached the upper sheave, place the cable clamp as shown and cut the cable a few feet above the clamp. We would then spool more cable off the truck until the upper knot was on the rig floor and cut the cable again on the truck side of it removing the exposed knots. We would then tie the truck end of the cable to the tool end with a square knot as in a fishing job and slowly pull the cable out of the riser, remove the cable clamp and expose any other knots present in the cable. We would also bring the square knot through the sheaves

As I came in, he welcomed me and said, "Obenchain, you may have goofed but you handled the situation beautifully.

and on to the truck in the process. As the next knot approached the upper sheave, we would repeat the process just described and cut out the next section of knots. That process would be continued until the gun was out of the hole at which point we could remove all the defective cable, cut a new rope socket and go back to work. With the client's permission, I knew we could probably locate any casing that was perforated with a collar locator.

As the rig crew and my operators went to work I told the Mountain Fuel Supply representative that if the gun fired, it was probably detonated at the wrong depth. If such were the case, I could go back in with a collar locator and make a pass over the whole lower section. Hopefully, the perforations would show up and a decision could be made as to what the next step should be. He agreed and called in to the Rock Springs office where he spoke with Jim Fisher, the production department manager. Jim was somewhat upset and rightfully so. He said to keep him informed and he would make a decision after we had more information.

A few hours later, we had the gun on the bank and, as I expected, it had fired. The operators had already dragged the knotted cable out of the way so the gun was laid on the catwalk, the bad cable spooled off the truck and a new rope

As you can see, the gods smiled on me, because I not only located them successfully but all but six feet were in a higher zone we intended to perforate anyway.

socket was cut. While the latter was going on, I examined the cable knots and estimated they consumed about 60 or 70 feet of cable. I mentioned the same to the company representative and explained I would expect the perforations to be about that much too high. He then talked to Mr. Fisher again and got the okay for me to see if I could locate the perforations with our collar locator. I had the operators hook on the GRN for weight but this time we zeroed on the locator so as to record the collars on depth. We logged the complete section twice to verify repeatability and the result is shown as "CCL AFTER" in figure 10-21. As you can see, the gods smiled on me, because I not only located them successfully but all but six feet were in a higher zone we intended to perforate anyway. The repeat gave Mountain Fuel the confidence that the anomaly shown was, indeed, the perforations. The results were called in and Mr. Fisher gave us permission to finish the job. They decided the misplaced perforations, including those out of the desired zone would cause no problem. I breathed a sigh of relief because he might just have well told us to beat it and he would get another company to finish the work. That's not an unusual act when one thoroughly messes up such a job on a well.

Well, we finished the job with no other problems in about 15 hours or so, rigged down and

headed for the barn. I still hadn't talked to my boss, Bob Kudrle, and was concerned about what he would have to say. I arrived in Rock Springs ahead of the truck, tired but happy with the way things had worked out. At least we had a satisfied customer or so it seemed. Bob couldn't be too hard on me. As I came in, he welcomed me and said, "Obenchain, you may have goofed but you handled the situation beautifully. Jim Fisher wants to meet with both you and me tomorrow and look at the recordings of the perforations himself".

The next morning, he and I took the film of the perforations and went to see Jim. Mr. Fisher was happy. The frac had gone smoothly and the well was cleaning up. It appeared all was well. As he reviewed the perforations on film, he complemented me on the handling of the job. It seemed, I had turned a mistake into almost a virtue by tackling the problem head on. My recommending solutions to the problems involved, keeping them informed and, fortunately, bringing the whole thing to a successful conclusion had turned the situation in Schlumberger's favor. They had accepted my recommendations and no one else, including my boss, had to get into the act. From that point on I seemed to be their preferred engineer for perforating. They even gave us all their work while I was in Rock Springs. Thus, a potential disaster became a rather positive experience.

I referred to the situation as a mistake and so it was. I hadn't known and neither did my operator know that new cable has a greater tendency to ball up in a well when slack than does older cable. The mistake was running the cable into the well to fast and particularly so with mud in the hole. Heavier mud increases the tendency of the tool and hence the cable to float. Thus, the cable doesn't sink as fast as it is run in the hole and piles up. Though he thought he gave the tool time to catch up or the cable to regain tension every little bit, apparently the stops weren't frequent or long enough and the slack cable coiled up. As it tried to straighten out near our firing depth, the result was many kinks and knots. That was a lesson indelibly burned into my mind from that point on and probably provided me with more experience than the other two and a half years I had worked. An operational mistake placed me in a bad situation but my engineering know how had saved me the probable consequences.

A BACK BREAKING EXPERIENCE

This particular experience took place on a drilling location along US highway 189 between Kemmerer and La Barge. You can spot it as point #6 on figure 10-4. I don't remember the operator of this well for sure. It was a major oil company, which I believe was Pan American, now known as Amoco Oil Company. In any case, we arrived on location in the early summer of 1958 ready to run a triple composed of an IES, an ML and a GRN. Sidewall cores were not very popular in the Rockies. Recovery was marginal and analysis results questionable at best. The Sonic tool, Schlumberger's version of the Mobil Oil Company experimental sound tool, was in its infancy and was only run occasionally.

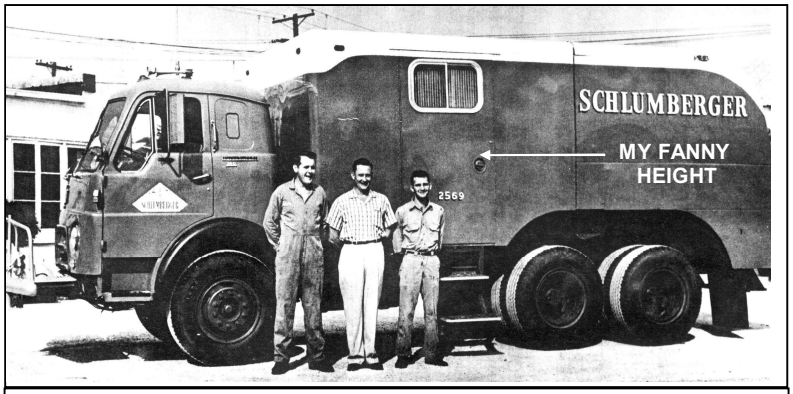


Figure 10-23 A photo of a truck whose appearance is much like that of the one in my back breaking experience story.

ESTABLISHING THE SCENE

I remember the area around the catwalk was very crowded and it was difficult to unload the tools. The crew backed the truck up next to the side of the catwalk, unloaded and then moved it out where they could properly spot it. It was a 1700 series truck, which looked very much like that of figure 10-22 except the internal cab arrangement was different. In the 1700 truck, the engineer sat behind his recorder with his back to the door as you see pictured there. In fact, on a sunny day, the door had to be locked from the inside to prevent someone from inadvertently opening it during a logging operation. If that happened, light could enter into the recorder through the engineer's periscope (see chapter 6) and expose the film. The result, at best, produced a product with poor eye appeal and, at worst, an obliterated recording in the area of over exposure. I have

included this photo to help describe the incident. You'll understand the remark shown in white soon enough because I intend to give you a blow-by-blow description. It was truly a back breaking experience as the title to my story describes.

The job went smoothly. We finished with the last log about 7:00 PM and I began running prints while the operators rigged down. About half way through the prints, Ray Helms, my senior operator stuck his head in the door and said, "hold on, we're going to move the truck and load the tools". I said, "okay" and prepared myself for the jostling which was sure to follow. As they backed the truck up, I continued running prints but had to steady myself with my hand while trying not to ruin the print. By the time I was done with that one the bouncing stopped and I continued while the tools were being loaded. Once again the truck began to move and the process was repeated.

Soon, Ray came in and asked if I wanted him to finish the prints. I agreed and moved over into the engineer's seat to finish my service order. I sat there with my back to the door and my brief case to my left for handy access. Ray completed the last couple of prints and laid them on top of the recorder. I finished up and shoved the film in my brief case. I then unlatched the door without looking back, grabbed the brief case with one hand and the field prints with the other and began backing out. The steps, which you can see in the picture, were stable and provided good footing. In addition, on the 1700 model truck, a metal bar was secured to the cabinet just inside of the truck to for a person to hold on to as he negotiated the stairs. My usual practice was to hold on to the bar with my right hand, carry the brief case in the left and back down the steps.

As I took the first step back, I realized nothing was there, dropped everything I had and clawed for the rail but to no avail. Down I went, landing on my fanny, and coming to a stop somewhat like running head first into a brick wall.

In this case, I had too many prints for the brief case and had both hands full. Well, Murphy's Law applies here. The operators had pulled up the steps while moving the truck and had failed to place them back down. I was standing in the doorway with my fanny about the place indicated or 6 feet off the ground. As I took the first step back, I realized nothing was there, dropped everything I had and clawed for the rail but to no avail. Down I went, landing on my fanny, and coming to a stop somewhat like running head first into a brick wall. You see, the ground was as hard as cement, having been well packed by truck and equipment. I let out a yell and the two operators came to my side and said, "Are you okay"? I answered, "Yes, I believe so but I knocked the wind out of myself". I felt like a metal band had been pulled tightly across my chest. I got up slowly, recovered prints and brief case and headed for the geologist's trailer at something less than full speed. Arriving there, I gave him the prints and had him sign the service order. He noticed something was wrong and asked me if I was all right. I answered in the affirmative, explaining I had just had the wind knocked out of me and would soon be okay. There was a second guy with him and he then commented they had decided to run a dipmeter. They were going into town to eat and would call Rock Springs to have it sent out. He then said to me, "Can we get you anything to eat"? Of course, we were starved, having eaten little all day, and I had him get us each a couple of burgers with fries. I told him I would catch a few winks and be ready to run the dipmeter when it arrived. At that point it was probably 8:00 PM.

The tightness in my chest was still there and I began to realize I had done more than knock the wind out of myself but I decided I could finish the job.

I walked back to the truck, told them what was going on and to be ready to rig up when the tool arrived. In the mean time, the rig crew was going back in to condition the hole. I also told them I was going to get some shuteye and they should too because we had a little wait in store. I tossed my brief case in the back seat, propped my sleeping bag against the front passenger door so as to make a ramp of sorts, started the engine to warm the car up and laid down in the front seat. The tightness in my chest was still there and I began to realize I had done more than knock the wind out of myself but I decided I could finish the job. I was also hurting to some degree all through my body but I figured most of it was from my single point landing. I wasn't too worried because I was able to move around okay but not without some pain. Needless to say, I couldn't sleep and I laid there waiting for the hamburgers and the dipmeter to arrive. The geologist came back around 11:00, gave us the burgers and

said the dipmeter should arrive soon. The tool did arrive about 1:00 AM which wasn't bad considering it took a good hour for the geologist to get to town, another hour and a half to get a hot shot loaded out and a couple hours trip to the well. I expected to wait at least that long even though the weather was good.

I walked slowly back to the truck when the tool arrived and placed the panel in the rack. I remember having difficulty handling it, although it wasn't particularly heavy. I loaded the dipmeter paper in for the 25" scale and had things ready to go by the time the head was hooked to the tool. We made the necessary calibrations and headed in the hole. I had Ray run the winch the whole time because I was uncomfortable enough just sitting in the engineer's chair. It wasn't exactly a lazy boy recliner. Anyhow, I suppose it took five hours to run the service counting calibration, descent to TD and some 6000 feet of log. By the time we were ready to leave location it was between 6 and 7 AM or almost twelve hours after the accident. I knew I had a good three-hour drive back to Rock Springs, which I definitely didn't look forward to.

I guess it was rather apparent that I was hurting because Bob Kudrle soon came over to me and asked what was wrong. I told him what had happened and he said, "Obenchain, you need to get up to the hospital and get an X-ray".

I left the truck and went around through Kemmerer, stopping just long enough to grab some breakfast and get my service order signed. The geologist had left location during the dipmeter to get some rest in his motel and asked me to stop by. I then lit out for Rock Springs some 85 mile away. The drive was none to comfortable as I bounced along US 30. Besides plenty of curves and hills, the highways of that day didn't have the smooth surface of today's freeways. Needless to say, I became very observant of the road surface so as to minimize the bounce of the car. When I would strike a good rough spot, it made me wince with pain keeping me ever mindful of my physical situation. By the time I made the 85 miles, I was ready to find another position to ease the soreness. I pulled up to the office about 10:00 AM and moved slowly in to finish up my work. I guess it was rather apparent that I was hurting because Bob Kudrle soon came over to me and asked what was wrong. I told him what had happened and he said, "Obenchain, you need to get up to the hospital and get an X-ray". I said I would as soon as I finished up and got a shower. I wasn't going in there smelling like a Texas warthog on a summer day. Anyhow, I had already hung out the dipmeter film to dry and just turned in the rest of my paper work. Bob then said, "I'll finish up the dipmeter film and mail it to Denver and you get moving towards the hospital". Well, I wasn't about to turn that offer down and told him I would appreciate it.

I went by the house and got a shower. Esther was concerned, needless to say, and she wanted to go with me. The hospital was only a block away and I was there in about a half hour smelling somewhat better than the Texas warthog I had resembled. The doctor told me the x-ray showed I had jammed two vertebrae together in the lower back, partially crushing them, and would need to be placed in a body cast for a couple months. He gave me a shot to ease the pain and said I would be able to move around normally once I felt better. He also said I couldn't lift anything until after the cast was removed, which wasn't too detrimental.

Next, I was ushered into a casting room and told to drop my pants so they could place the cast around my torso. There was a good-looking nurse there with the doctor and I wasn't sure I wanted to expose myself. I slowly lowered my trousers below my fanny and spread my legs so they wouldn't fall, leaving my shorts as they were. The nurse said, "We've got to get those shorts out of the way too" and she pulled them down about half way on my fanny. I could feel my face burning and it must have turned a scarlet red because she then said, "Don't worry Mr. Obenchain, I see all kinds of buttocks every day and yours aren't half bad". That didn't really help any except it completely transferred my mind from the pain I had been feeling to the embarrassment I was now undergoing.

With the cast on the doctor gave me a few instructions, which included not taking a bath or shower. I could wash with a cloth everywhere but I wasn't to get the cast wet. "If the odor from under the cast gets too strong", he said, "Sprinkle some baby powder down into it from the top". He then sent me on my way. Esther and I went on home and I spent a relatively comfortable evening and night, having been desensitized with the shot. He also gave me some pain pills, which I didn't need to use after the first night but I should have asked for some

24-hour cast deodorant with several refills, instead. That soon became apparent.

As luck would have it, the day I came home from the job was my first scheduled day of 3 days off. By the time I was scheduled to go back on duty, I was feeling fine and could do any of my engineering work as long as I didn't try to lift panels or tools. Consequently, I was back at work as scheduled three days later. I spent most of the day, I believe, filling out the accident report. Because of the timing of my days off, I hadn't lost any time and so stated on the report. The injury was listed as "a broken back" and the specifics described. Bob signed it and sent it in. A couple weeks later we got a letter from Houston inquiring about the accident. They wanted to know how anyone could break their back and not lose any time on the job. Well, it was true, I had broken my back though maybe not as severely as some and I didn't lose any time because of the days off schedule and the work required of me. Bob called and explained the situation and finally they accepted it.

I kept the cast on for eight or nine weeks and was convinced it was doing me no good in terms of support and in terms of social acceptance, it was a disaster. That wart-hog smell I mentioned as intolerable would now have been pleasant. I couldn't buy anything strong enough to counteract the odor rising from beneath my chin as the summer wore on and, if I was aware of it, surely all those around me were as well. Besides, my back and chest would itch. Talk about driving someone crazy. I would take any long skinny instrument available and try to reach down inside the cast and scratch. For my back, I had to rely on Esther but, unfortunately, she couldn't go to the field with me. I had to do the best I could with anything available but mostly, I just endured the constant itching. I suppose that was somewhat better than those around me who had to endure the odor. The 9 weeks went mighty slow for both of the effected parties.

When the doc finally agreed to take it off, I was one happy puppy. He warned me that my back would be weak because of having worn the cast for nine weeks and said to be careful how I moved around and so forth. He was right. Though I was now socially acceptable, I could hardly lift a pencil and for a week or so it was a strain to drive to and from jobs. Just sitting up straight for extended periods was tiring. It must have taken 3 months or so before I felt like I was back to normal. Now, 50 years have passed since that accident and I still have had no repercussions. I'm not bragging but am simply grateful for my good fortune and I realize, from observing other people with back injuries over the years that I am among the fortunate few. To this day I don't have to give my back any special consideration over and above that required by 75-year old bones - now 80.

THE PATRICK DRAW FIELD

East of Rock Springs along the Wamsutter arch, there was quite a geologic play in the Mesa Verde for gas in the late fifties. Most of the work was north of the Table Rock - Red Desert area, which you can pick out in figure 10-17, if interested. There were several small gas fields in that particular area, all being completed in the Almond member of the Mesa Verde. There had also been some drilling south of highway 30, now Interstate 80, all along the arch but all had been unsuccessful at that time. For those with a geologic bent, the Mesa Verde covers the whole Rocky Mountain region and is productive in places from Montana to New Mexico. It is subdivided into four members, at least in the Rock Springs area, they being known from the top down as the Almond, Ericson, Rock Springs and Blair. A thick shale bed, known by different names throughout the Rockies, lays below the Mesa Verde. In general it is known as the Hilliard, while around Rock Springs it was called the Baxter and in Southern Colorado and New Mexico the Mancos. Below that in the geologic column was the Dakota or basal Cretaceous.

Thus, the Mesa Verde formation was named after the outcropping of that rock in northern New Mexico and southern Colorado in the Mesa Verde National Park, which, in Spanish, means green mesa.

You might ask why there are different names for the same formation and I will answer with, "I'm glad you asked". That gives me a chance to show off what little geologic understanding I have. You see, various people did the original geologic work in different parts of the Rockies. As surface geologic surveys were made and various formations identified, the geologist gave them names such as that of a prominent geologist or names taken from towns and other prominent landmarks near the point of formation outcrop, i.e. points where they appeared at the surface. Thus, the Mesa Verde formation was

named after the outcropping of that rock in northern New Mexico and southern Colorado in the Mesa Verde National Park, which, in Spanish, means green mesa. The Mancos formation was named after Mancos, Colorado while its geologic equivalent in southwestern Wyoming was named after the little town of Baxter, Wyoming. Over most of the Rockies, the same rock is termed Hilliard, which was the name of a prominent geologist working in the Rockies.

A MESA VERDE OIL WELL

In the spring of 1959 I made a job for El Paso Products just south and east of Point of Rocks, which is designated in figure 10-4 as experience # 7. They called for an induction electric log and a microlog, the latter still being the basic porosity device at that time. After making the normal pre-departure checks, we loaded on a couple of core guns just in case and were off to the races. That last term is pretty close to being accurate, at least in the case of the engineer. Of course, the truck couldn't move very fast but the engineers always measured distance in time. It was about an hour and a half to Big Piney, which happened to be 106 miles from Rock Springs. Obviously that meant an average speed of 70 mph was required. We did this to make maximum use of our time and particularly so during high activity. We might catch a little extra sleep, work up a couple of overdue logs or whatever else we typically had on the back burner of our agenda.

The porosity ranged from 15 to 17 %, the R_w was calculated to be 0.23 (typical for the Almond) and S_w came in at about 45% on the average. This had to be an oil well.

Getting on with my story, once again, I arrived on location about ten in the evening with the truck close behind me. They had just begun to pull pipe, which meant we had about 1½ hours to get ready. I ventured over to the geologist's trailer to verify the log requirements and to just chit chat a bit. Much of the practical geology I learned in the Rockies was derived in that manner. Geologists, like any human being, like to discuss their fields of expertise and an interested Schlumberger engineer could learn a lot in such an exchange. In this case, we mainly discussed the drilling experiences, including any gas kicks observed and any shows seen in the samples. Such information allowed us to concentrate on the sections of interest during logging and maybe draw some preliminary conclusions about them as well as making the usual effort of being sure our records were of optimum quality.

The geologist had been hoping for a gas well in the Almond as was common farther to the north. He was disappointed because no such kick had occurred and it appeared that they had a dry hole. He had noted a little stain in the cuttings but didn't seem too excited over that. He asked me to record five-inch scale over the Mesa Verde and, of course, two-inch scale all the way to the surface casing. I headed back to the truck to make the required preliminary checks and check the mud sample. From the mud sample I would obtain values of the mud filtrate and mud cake resistivity for the ML calculations as well as the resistivity of the mud itself. All things were normal and soon we were rigging up.

The well was a little less than 6,000 feet deep and we were coming off bottom with the IES about a half hour later. The deeper Mesa Verde, i.e. the Rock Springs and Ericson were obviously wet with resistivities in the order of 2 or 3 ohms. I did a few mental calculations as we pulled through the Ericson. The SP seemed to indicate a typical value for R_w of about 0.1 ohms and that coupled with a typical porosity of 20 % meant a resistivity of 2 ohms would calculate 100% water. It would take a resistivity value of 8 or 10 ohms to be of any real interest. As we pulled into the Almond, the sands were somewhat shalier and it was difficult to draw any conclusions. From experience, I knew the Almond formation water was more resistive than the Ericson and was usually about 0.25 ohms in the wells to the north. As the IES moved up through the Almond the sands became a little cleaner but the resistivities still registered in the 100% water range of 8 to 10 ohms. However, as we moved through the top bench, which was about 20 feet thick, the induction resistivity moved out to 35 or 40 ohms. I told the geologist, now sitting by my side, that this top bench of the Almond definitely looked interesting. Soon we had the five-inch film in hand and I made a simple water saturation or S_w calculation assuming typical porosity and formation water resistivities for the area. If my assumptions were correct or even close to it, that zone needed to be tested.

Before long we had the microlog on bottom and recorded it to the top of the Mesa Verde or

Almond. By now, I was somewhat excited (it's always fun to find an oil well) and I roughed out a porosity value as the microlog came through the zone of interest. As I anticipated, the zone appeared to have a porosity of 15% or better. After the film was developed, I got some firm resistivity values from the ML and began to write down my calculations. After all, I had to have something to give to the customer. The porosity ranged from 15 to 17 %, the R_w was calculated to be 0.23 at formation temperature (typical for the Almond) and S_w came in at about 45% on the average. This had to be an oil well. I told the operators to talk to the rig crew and wait until I talked to the geologist before they began rigging down.

I then ran to the geologist's trailer, went over the figures with him and suggested taking some sidewall cores to confirm my analysis. He agreed and headed back for the truck. A few minutes later we were on our way in with a core gun and a list of 15 samples to take. As I remember, we shot about five cores further down hole and ten in the zone of interest. Within a couple of hours, I had the samples bottled and in the geologist's hands. I watched as he looked for stain and fluorescence in the samples. They definitely showed signs of oil. He then told me he would recommend a drill stem test as further evidence before running pipe. If they couldn't get a packer seat, they would test the zone through casing. He then said, "Obenchain, if this turns out to be a well, you get the credit. I felt sure we had a duster until you found it on the logs".

I headed back to Rock Springs with a sense of accomplishment that next morning (we had been working all night, a rather typical job). I told Frank Sanders (he had replaced Bob Kudrle) about it and he had the production people in Farmington, New Mexico contacted to try to get the completion work. Unfortunately, they decided to use Lane Wells, a competitor of ours in Rock Springs. Had the geologist had the say, he would have given it to us hands down. Not only had they made a well but his geologic work was proven correct. My calculations didn't change the nature of the thing but they did brighten up his day. He called me the next day and told me the DST proved my calculations right and they were running casing. Even without the perforating, it was a nice experience and gives you an idea about how we worked and pursued business. A few kudos from time to time; especially from a customer, are kind of nice too.

He then said, "Obenchain, if this turns out to be a well, you get the credit. I felt sure we had a duster until you picked it up on the logs".

OLD BLUE THROWS A ROD

The last experience during this first tour which seems worthy of recounting involved the engine of our logging truck throwing a rod while we had a tool about 8000 feet in the hole.

We had been dispatched to the Baggs, Wyoming area, which well site is illustrated as number 8 in figure 10-4. We had finished the Induction log as well as the Microlog and were on the way out of the hole with the latter device when the engine started knocking. The depth was around 6000 feet. My lead operator yelled, "Hey Obenchain, that's a rod knocking". I had no reason to dispute his analysis and I stepped outside to hear it more clearly. As I walked back into the truck, Larry remarked, "If we shut her down, we'll probably never move another foot". I answered, "Keep coming and we'll see how far we can make it". At about 3000 feet the engine froze and everything came to a screeching halt. I then remarked, after a short expletive, "I guess it's time to call a tow truck".

I went over to the tool pusher's trailer and explained the situation. We were done with the job but couldn't get out of the hole. He had no vehicle big enough to pull old blue so I said I'd call Rock Springs for a tow truck. It would take a few hours for it to arrive and I asked him to have the rig crew move the tool from time to time to keep the tool from sticking. He agreed and had the driller lower and then raise the block every little bit until the truck arrived. I talked to Frank Sanders and returned from Baggs, just a short ways away, forty-five minutes later. He told me White Mountain Towing would be on the way shortly. That meant about a three to four hour wait. In the mean time we needed a plan on just how to get the tool out of the hole so we could rig down. The process wouldn't be easy with no winch power. There seemed to be two choices and naturally, we opted for the easiest. If I hadn't learned anything else in my 4 years with the company, I learned the simplest is usually the best.

The simplest way of removing the tool out of the hole, it seemed, was to drag the truck some 3000 feet away from the rig, which would raise the tool to the surface. The question was, could

this be done in a straight line? I walked out along the road with Larry for a ways to reconnoiter the area. The road provided a straight shot for a quarter of a mile and then, at the first turn, the terrain ahead continued flat and smooth enough to pull the truck off into the prairie for a couple thousand feet. That was the thing to do, we decided.

About 1:00 AM the White Mountain Towing arrived and we explained our plan to the driver. He wanted to walk the route himself so he knew just what he was getting into. Having satisfied himself, he hooked up to old blue. We asked the driller to stop the blocks at the logging depth and signaled the tow truck to move out. He proceeded slowly while I walked along side him and the two operators stationed themselves so as to be able to signal me when the tool reached the surface. It wasn't long until the microlog sonde emerged through the rotary table and the second operator waved to Larry. He, in turn signaled me and I signaled the tow truck driver.

The simplest way of removing the tool out of the hole, it seemed, was to drag the truck some 3000 feet away from the rig, which would raise the tool to the surface. The question was, could this be done in a straight line?

The driller dropped the blocks sufficiently to lay the tool down on the catwalk. We broke it off and reeled the cable off the drilling floor by hand as we rigged down. Soon we were out of the rig crew's way but we still had 3000 foot of cable dangling off the back of the truck. There was only one thing to do and that was "cut it off". We removed the bridle, coiled it up and placed it in the recorder cab of the truck. We then used the rig's cable cutter to cut the cable at the truck and, with considerable effort, dragged the loose cable out of the way on to the prairie. That sounds rather easy but, let me tell you, it's heavy and it hung up on brush until the three of us got a good work out. By then, White Mountain had already secured the truck for towing and was on his way. Of course, we had completed other job details during our wait and we weren't far behind.

We finally pulled into Rock Springs about 6:00 AM, got some breakfast and headed to the shop. We arrived about the same time as old blue behind the tow truck. I finished up the office details and headed for the house, tired but satisfied with the way things had worked out. Frank called our Division Mechanic who was stationed in Billings. Luckily, he was available and could come down as soon as the new engine arrived. He, of course, made arrangements with International to ship the engine as quickly as possible. An inoperable truck could cost the district and even Schlumberger a considerable sum if left in that state any length of time. The truck was down a week having the engine replaced. In those days, the engine could be replaced for about a thousand dollars not counting the Division Mechanic expense. Times have sure changed.

TECHNICAL GROWTH IN ROCK SPRINGS

As I mentioned earlier, I arrived in Rock Springs in November of 1957. There were two engineers assigned to the district but one of them, whose name I can't remember, was transferred soon after my arrival, leaving just Glenn Land and myself. Glenn had just broken out a few months previously and was still a JFE or Junior field Engineer. I had been promoted to Field Engineer (FE) just a year earlier in Wharton and was trying to get the necessary studying in for promotion to GFE or General Field Engineer by the end of 1958. It was difficult to study during periods of high activity, which, in Rock Springs, meant all year but mid winter or January through March. Even the slow period was complicated to an extent by our having only two engineers during that time. Bob Kudrle would ride our trucks for days off which came every 12 days but if a job came in he would give us a call to see if we wanted to make the money. Usually, I would say yes because of the extra money and consequently worked that first winter with essentially no days off. As a result, I squeezed study time in between jobs and even during waiting time on jobs because I was determined to be ready for the GFE test when I became eligible. As I progressed, Frank would have me speak on a given topic and then critique the results. It simulated the actual test I would be taking and was a big help in preparation. Further progress with Schlumberger required becoming a GFE and such had been made crystal clear to me.

A LOCAL GEOLOGY PROJECT

About January of 1958, with business slow, Bob gave Glenn and I each a project. Mine was to write a paper on the geology of the La Barge Platform and Glenn's was to write a similar paper on the Rock Springs Uplift. Such an effort

would, of course, familiarize us with the general geology of two of the more active drilling areas and make us more conversant with the various geologists we ran into. Besides the available books from Wyoming Geologic Symposiums, we were to contact and talk to geologists of the Mobil Oil Corporation and the Mountain Fuel Supply Company, both of which had offices in Rock Springs.

I think the idea was to get us more involved with customers and their work with, hopefully, improved relationships. Such visits usually included lunch and some casual conversation as well. I spent quite a little time with Mobil geologists primarily because Mobil had more activity in the La Barge Big Piney area than did Mountain Fuel Supply Company. They were most helpful giving me an insight into the thrust belt in general and the Darby thrust fault in particular. The Darby fault impacted much of the La Barge area through associated trapping mechanisms. Additionally, they provided basic geologic maps and instruction relative to the Hogsback field, which was located on the La Barge platform, something I couldn't have gotten anywhere else. It probably took a month or so to put the papers together after which Glenn and I presented them to Bob. I enjoyed the project and it was a good way to utilize our time that winter. Of course, it didn't help us with Schlumberger technology but it was helpful in the improvement of customer relations, something we both needed badly.

They were most helpful giving me insight on the thrust belt in general and the Darby thrust fault in particular. Additionally, they provided basic geologic maps and instruction relative to the Hogsback field.

GENERAL FIELD ENGINEER PREPARATION

PERFORATING

You may remember, I had begun perforating in Wharton immediately after passing my Field Engineer test and had time to accumulate the better part of a year's experience before transferring to Rock Springs. I had continued to study cased-hole services in an ongoing manner from that day on. Though we didn't do a lot of perforating in Rock Springs (Our trucks were primarily open-hole units), I had pretty well assumed the role of perforating engineer because of Glenn Land's relative inexperience. Glenn continued to work in that area from a training standpoint but I did the lion's share of any perforating work that came along. Thus, this particular part of the test preparation presented no problem for me from either a practical or theoretical standpoint. All I needed to do was get my information together.

HARDWARE REQUIREMENTS

To pass the GFE test, one also had to obtain a working knowledge of "all" the standard logging services offered by Schlumberger as well as some specialized services such as the dipmeter. By now the more complex Teliclinometer Dipmeter, I spoke of in Wharton, had been replaced by a simpler and more reliable version called the Poticlinometer Dipmeter. I ran the latter from time to time in Rock Springs, one job of which was included in my "Back Breaking Experience". However, the salt mud devices, namely the Laterolog Three and the Microlaterolog were a different matter. Though I had a little experience by chance in one of my early jobs near Vernal, Utah and yet a second for Ohio Oil Company near Coalville, Utah, I hadn't been exposed to salt mud conditions to any degree.

INTERPRETATION REQUIREMENTS

Yet a third area to be reviewed in the GFE test was the interpretation of all the services, which Schlumberger offered to their customers. By 1958, the sonic device had been added to the cadre of tools available even though it was still a rather crude two-receiver device. It, along with the new 6FF40 Induction Electric Log were added to previous requirements of the ES, ML, GR and Neutron logs. Maybe the most difficult portion of all was the "in depth understanding" of the various ES curve responses. This included a discussion of the so-called departure curves that had been derived for that particular tool. These curves constituted a complete book of graphs, which described the response of both normal and lateral curves under various mud salinities, borehole sizes and through a wide range of formation resistivities. They were difficult to understand and use and quickly gave way or faded out of use with the advent of the deep induction or 6FF40. Along with these departure curve requirements, they expected the

Maybe the most difficult portion of all was the required "in depth understanding" of the various ES curve responses. This included a discussion of the so-called departure curves that had been derived for that particular tool.

GFE to have a complete understanding of radioactive curve response, both gamma ray and neutron. We had to be able to explain how to pick the proper time constant for a given logging speed, how that affected recording lag or bed boundary displacement and the statistical variations to be expected with those time constants at various detector count rates. Later, these requirements faded out with the advent of the scintillation detector and the automatic time constant. I mention these several details to better describe the nature of the test and the considerable preparation it took. As technology advanced, the amount of detailed knowledge required decreased because of the increase in number of log types. I guess they realized a man's brain can only adsorb so much.

A TRIP TO GLENDIVE, MONTANA

By the summer of 1958, it became apparent I would be on schedule for my GFE test or ready to take the test in November or so. Bob had kept track of both Glenn's and my progress and, in fact, reported the same to division on a monthly basis. Chuck Evans was the division manager at that time and he decided I needed to experience more practical salt mud work in which I could not only run the logs but also interpret them. Consequently, I was sent to Glendive, Montana, which was situated on the western edge of the Williston Basin. The primary production in that basin was from Mississippian, Silurian and Ordovician rocks, all of which were primarily carbonates. Mingled within these sediments were salt beds of varying thickness as well as some salt distributed in the various reservoir rocks themselves.

SALT MUD LOGS

The primary log was a three-electrode laterolog, also termed the conductivity laterolog, which was superior to the laterolog seven, used in my early experiences, at least in this environment. The Microlaterolog was utilized in place of the Microlog in salt mud conditions. See chapter 7 for details of any of these devices. Resistivities ranged from very low, in the vicinity of 1 ohm or maybe less in salt-water zones of porosity to essentially infinite resistivity in adjacent dense carbonates. Pay zones or those, which were oil productive exhibited resistivities of maybe 2 to 10 ohms. The primary job of the laterolog 3 was to discriminate effectively between water producing zones of ½ to 1 ohm and pay zones of 2 to 4 ohms. In this range of resistivities it was superior to the LL-7. The Microlaterolog measured the resistivity of the flushed zone which, along with a value of the mud filtrate resistivity, could then be used to determine the porosity in either oil or water productive zones. From that one could calculate the water saturation or amount of porosity filled with water from the relation;

$$S_w = (FR_w / R_t)^{1/2} = (R_w / R_t\, PHI^2)^{1/2}$$

Of course, the oil saturation was the difference between that and 1 or;

$$S_o = (1 - S_w)$$

That , obviously, is what the geologist and his boss are interested in.

THE EXPERIENCE

Anyway, I flew into Glendive on Frontier Airlines in a two-engine passenger plane (DC-3) and was met by my old friend, Bill Baker. You may remember, he also worked in Wharton and had been transferred to the Rockies just ahead of me. In fact, we had changed transfer assignments because I had expressed a desire to be in the mountains and nearer to Idaho. I spent the week with Bill making jobs and interpreting the results. The jobs all occurred along the anticline south of Glendive, which was operated by Shell Oil Company. The jobs were routine in nature but I learned a few tricks about maintaining good cable and bridle insulation in salt mud conditions. Building and repair techniques of both bridles and heads had to be somewhat stricter than in fresh mud because saturated salt fluids manage to find the smallest weaknesses. I also learned some peculiarities about practical interpretation in carbonates including the need for R_w tables. The SP, our usual source of R_w in fresh muds is ineffective under salt mud conditions and is never recorded. All in all the experience was very useful to me in terms of GFE preparation and I returned to Rock Springs somewhat more knowledgeable than when I left.

LOCAL PREPARATION FOR THE TEST

In the year preceding the test, Bob kept the pressure on us to study the required technical information and practice our delivery of the subjects involved. It wasn't unusual to find one of us in front of a chalkboard explaining a given subject and Bob there critiquing our facts and delivery. He wanted us ready and able to pass the test once we were scheduled in Billings, Montana, the location of our division office. In my case, I also had to go to Houston, Texas and

appear before a board at company headquarters after satisfying the division gurus. The latter was only required for the GFE exam. They were bound to work me over in Billings because Chuck Evans, the Division Manager, wanted his engineers to shine in Houston.

THE DIVISION EXAMINATION

For the division exam, both the district manager and the engineer involved had to come to Billings on the appointed day. The manager, now Frank Sanders, was there to see the fruits of his efforts in terms of proper preparation at the local level. Failure at division was frowned on by the division manager and didn't help the image of the manager. A well-prepared engineer, on the other hand, brought kudos for himself and the manager. Thus the manager became our primary advocate and cheering section that day. In my case Bob Kudrle, now the Division Engineer; was also interested in my success. The test, itself, was a daylong ordeal with a generous lunch break.

PRELIMINARIES AND AN EXAM OVERVIEW

I flew into Billings the night before my big day. Even that experience is clear in my memory. Once again it occurred on Frontier Airlines in a DC-3 and we stopped in Cody prior to stopping Billings. There, would you believe, they loaded on several crates of chickens. I was sitting next to the open door and thought I would freeze as they carried the crates in one by one and loaded them in the baggage compartment. I wasn't flying first class but neither did I expect such a poultry (paltry) experience as this. Did they think we were dumb clucks or something?

I had, fortunately, been through a similar situation for my FE test in the Texas Gulf Coast Division office two years earlier and knew what to expect. I felt confident, having been well reviewed by Bob and Frank as they played the devil's advocate in my local reviews. Even so, I would be less than honest if I didn't admit to being a little nervous and upset. The next morning I appeared in the division office at 8:00 AM and after a warm welcome was ushered into an office with only a chalkboard. In those days, as we talked, we did all our visuals on the chalkboard. We drew electrical circuits, illustrations to help make our point and wrote equations that applied to the situation at hand. We could have notes to refer to but a well-prepared engineer would only glance at them from time to time and then, only for details. The rest had to become an integral part of the brain.

In those days, as we talked, we did all our visuals on the chalkboard. We drew electrical circuits, illustrations to help make our point and wrote equations that applied to the situation at hand.

E DAY MORNING

E day is similar to D-day being short for Exam day. In the morning, Chuck Evans came in and of course, Bob Kudrle the Division Engineer. He was considered the expert on hardware in the division. We started off with hardware theory and its various practical applications. My background in the air force as well as my interest in technical things made that area relatively simple. Circuits were my cup of tea, and even if I do say so, I was a darn good field engineer. I had listened and learned and was conscientious about following the engineering guidelines. After all, they made the job easier. Anyhow, I sailed through that part with little difficulty and fielded the barrage of questions with relative ease. Even the salt mud tools went well, although I learned a few more practical points regarding field operation. All of these guys had had some experience with them.

LUNCH AND AFTERNOON EXPERIENCE

I was treated royally at lunch. Chuck Evans took me and all who were a part of the exam to lunch at the Northern Hotel. For a small town guy this was a special experience topped only by my visit to the Petroleum Club in Houston. We could order what we wanted and since my technical knowledge was, in those days, rather easily surpassed by my appetite, I found myself in hog heaven. Because that appetite was groomed in the oil field, only the example of those around me prevented me from making an ass of myself. My vision of stuffing myself gradually dissipated as the others ordered and, with a stiffened will, I simply followed their example.

Circuits were my cup of tea and, even if I do say so, I was a darn good field engineer. I had listened and learned and was conscientious about following the engineering guidelines.

The interpretation segment followed after lunch and again things went well. Along with Bob, the Division Sales Manager, George Ellis, sat in on this portion of the exam. Chuck Evans came and went as circumstances permitted. If I had a weak area, it was in carbonates and some of the

practical internal geometry peculiarities such as vugs, the proper value of exponents in the Archie equations, etc. Though I had reviewed some of these things in Glendive, I was far from an expert. On the other hand, shaley sands as well as clean sands were part of my daily diet, posing no problem at all. I only had to give a general overview of dipmeter interpretation because a specialist in the division office computed the actual dip values. This included a description of the features of a good dipmeter recording in terms of correlation curves and inclinometer data and then an overview of how that data was utilized in calculating dip values and direction. Of course, I was questioned about field operational precautions necessary to obtain good dipmeter data.

After the interpretation portion of the exam came the review of perforating and pressure control as well as a little on a typical fishing operation. Bob and Frank were my primary reviewers here, although Paul ????, our Division Supervisor, sat in on the fishing review. At that time, we primarily worried about pressure control after perforating if the well began to kick. This occurred primarily in through tubing work. We occasionally went in against relatively low pressure when setting a production packer or making a second run with a gun through tubing. Under balanced perforating hadn't really begun at that time, at least in the Rockies. Even so, I was familiar with the flow tube, which was our only device for such work and I had experienced several such jobs.

We occasionally went in against relatively low pressure when setting a production packer or making a second run with a gun through tubing. Under balanced perforating hadn't really begun at that time, at least in the Rockies.

Again, this portion of the exam proved to be of little difficulty and soon everyone was shaking my hand and giving me kudos on being well prepared. I was particularly pleased with Chuck Evans's remarks, he being the Division Manager. Among other things, he told me he was recommending my promotion to GFE to headquarters in Houston and they would notify me of the date for my review there. I had a plane to catch at 6:00 PM and soon headed for the airport. Tired but happy I was glad to have that step behind me and struggled aboard Frontier for another flight with the chickens. Much to my surprise, there were none on the return trip and I arrived home about ten PM where I was welcomed by Esther and the kids. Betty Land had brought them to the airport since Esther couldn't drive. After the usual hugs and kisses, we headed for home in my old Ford where we celebrated my having overcome that particular hurdle. Now, I had only to look forward to Houston. Though I wasn't particularly worried, I knew I would be relieved once that event was accomplished. They probably would have trick questions designed to trip me up.

THE HOUSTON EXPERIENCE

With the holidays coming up I was soon notified that my Houston date would be in late January which was good in a way because it gave me additional time to brush up on things like salt mud tools and their associated interpretation. We remained pretty busy through the early part of January and the time went by quickly. I kept fine-tuning my presentations and looking for anything else they might decide to bring up. I continued to practice my presentations in the car as I drove back and forth to wells. We had an outline of their expectations, which were, of course, the same as those I had to meet for the division review. I continued to make jobs because of the money (always important to me, you know) and the fact that we, once again, were down to two engineers for the winter months. If a job came in for my unit, I usually rolled with it.

I had scheduled a flight on Frontier to Denver with a change to TWA for Wednesday morning. I expected to get into Houston (Hobby Airport) that evening, get a good night's rest and be all primed for the review at 9:00 AM on Thursday.

By the time I got back to Rock Springs, I had missed my flight and had to book an evening flight, which was still supposed to get me to Houston at 11:00 PM.

That day would be just forty-nine years ago from this coming January. Allowing for twelve leap years, the last Thursday of January 1959 should have fallen on the 29th. All I remember for sure was it was late in the month. Anyway, I caught a job for the Sunday night before near La Barge and expected to be back in by Tuesday morning or earlier. As luck would have it, we had some borehole problems and they had to trip the hole during the operations, which added about eight hours to the job. We finally managed to complete all the services in the wee hours of the morning on Wednesday. By the time I got back

to Rock Springs, I had missed my flight and had to book an evening flight, which was still supposed to get me to Houston at 11:00 PM. I would still have time to grab a little sleep, a shower and a shave before going to Headquarters.

Though I can't remember the details, we got into Denver late and I missed connections. The best I could do was grab an early morning flight, change planes in Dallas and arrive in Houston at 8:00 AM. If the good Lord was with me, I could still make it to the office by the scheduled time of 9:00 AM. Well, needless to say I spent a sleepless night at the Denver airport and was tired enough that I sacked out during the flight to Dallas. I remember getting into Dallas about 6:00 AM and, realizing I needed a shave, I took advantage of the two hour layover by going into a barber shop at the old Dallas airport. There I got a haircut and a shave as well as having my shoes shined. I figured it would wake me up, give me a psychological lift and make me presentable for the review. I do believe, that was the first and last barbershop shave I ever had but then it was also the first and last time I found myself in such a situation. After that, I grabbed a little breakfast and found it was time to board. I snoozed a little more on the way to Houston, about a half hour or maybe forty-five minutes. That was probably a mistake because any lift the shave had given me was now gone. At Hobby I grabbed a cab and headed for Houston Headquarters, arriving there about nine, somewhat foggy but on schedule. In fact, I had to wait a few minutes for the examiners.

As I was scratching my head I heard Frank whisper to the other guy, "do you know anything about the Formation Tester, I certainly don't"? The other guy shook his head in the negative….. I immediately piped up and said, "I believe I'll speak on the Formation Tester".

The technical staff engineers and members of the sales staff conducted the reviews. The latter covered the interpretation while the former handled the tools. They put me at ease with a little small talk. I knew one of the staff engineers, Frank Eastman, who was transferred out of Wharton just as I arrived. I had also met the sales staff member, Bob Alger, though I didn't know him well at that time. About then, they dropped a bomb on me by handing me a new review format. It had just gone out to the field. In general the same material was covered but in different order and emphasis. That didn't worry me too much because I could adapt to that. However, they had added some optional categories, all of which I can't remember, and I wasn't sure which one to select. I had to pick one and as I looked them over I could see pros and cons for each one. I knew something about them all but had not prepared for any. I explained my problem and they said, "Well, we have to follow this outline and we'll allow for the differences if necessary." I started with standard tools and breezed through them with very few questions and no problems. By lunchtime I was well into interpretation. Bob had asked a few questions which I apparently fielded okay. We had an enjoyable lunch in the cafeteria and simply discussed field experiences. Soon, we were back at it. With the interpretation finished, Bob Alger left and another staff engineer entered whose name I can't recall. At that point we covered perforating, again with no problem. I was on firm ground with that equipment and operation. My Wharton experience was a plus for me at this point.

As we got to the optional category, I was trying to decide between the Formation Tester which I had run in Wharton but hadn't seen since and a couple of other devices. As I was scratching my head I heard Frank whisper to the other guy, "Do you know anything about the Formation Tester, I certainly don't"? The other guy shook his head in the negative and that made my decision for me. With an audience who wasn't familiar with the FT, how could I lose? I immediately piped up and said, "I believe I'll speak on the Formation Tester". They looked at each other and Frank said, "Should we get some help"? Between them, they decided not to and I had lucked out. That was probably the only good break I had had the whole trip. Having no prepared material, I began to discuss the application of the device from memory and mentally decoding what to explain and draw of a technical sense. As time wore on and it was obvious they knew little about it, I grew braver and began to act like an expert. Soon I was drawing diagrams of pressure buildup curves, electrical control circuits and the mechanical configuration. Whether they were all correct or not, I'll never know but my examiners seemed impressed. We finished up around 4:00 PM and I was told I had passed after being congratulated.

I headed for the motel just a couple blocks away and checked in. I was pooped from the preceding events but was still one happy

camper. In fact, you might say I was elated. The anticipated raise was $100 per month, which was significant in those days. I treated myself to a steak with all the trimmings and then hit the sack being both physically and mentally drained.

My flight was scheduled for around 8:00 AM and I was up and left for Hobby in plenty of time, about 7:00 AM. The airport was no more than a half hour away and it wasn't the big bustling place airports are these days. Soon we were in the air heading north and, would you believe it, when time wasn't critical, I made all of my connections on schedule arriving home as planned. This ended my stressful but happy and satisfying experience. I now had proven technical credentials and need only worry about the new devices that were sure to come along.

MY FIRST CUSTOMER LOGGING SEMINAR

Schlumberger conducted annual logging symposiums or seminars of roughly a week in duration to acquaint those interested parties in the petroleum industry with the use of our geophysical products. They consisted of lectures on tool theory as well as interpretation of the resulting logs. The latter subject included hands on sessions of actual log interpretation. In fact, customers were even invited to bring problem logs to the school for interpretation. However, these were handled individually while the hands on sessions were composed of actual logs released to the industry, which demonstrated the desired principles. The sessions typically had in the vicinity of 100 people attending at any given time. We used microphones and overhead projectors primarily, but also, a few slides. This experience would be far different than any I had had, as yet, with Schlumberger.

All I could see was a sea of faces out there in the dimly lit room and my delivery must have been the epitome of a person in a trance.

MY ASSIGNMENT

Schlumberger was quick in providing their personnel with assignments to help them developed their abilities to describe our various products and their applications as well as interact with customers. Having been promoted to General Field Engineer, I now received the surprise assignment of speaking in the 1959 customer seminar in Casper, Wyoming. My assigned subject was the Microlog/caliper tool including both hardware theory and the interpretation of the resulting log. That should have been easy since I had just passed a review by my superiors on the subject. In terms of knowledge, I was well prepared and only needed to adapt my prepared materials to the customer seminar. Psychologically, it was a different story. I had never spoken in front of such a group and the thought of describing this device to such an audience created a good deal of stress and nervousness for my rather introverted psyche. This was not my cup of tea, to say the least. Even so, I wasn't about to turn the opportunity down, knowing it was one of those things I had to conquer. Consequently, I grabbed the bull by the horns and began my preparation. I not only outlined the talk but practiced my delivery incessantly. Unfortunately, that didn't quell my fears.

Soon the week of the seminar arrived. I was to spend that week in Casper helping out as needed and listening to others make their presentations as well as circulating among the customers and getting to know them. Though not always needed, I later realized it was another training experience. My assignment came in two parts, namely Microlog theory and later Microlog interpretation. I had both well prepared and must have gone over them a hundred times in my mind, trying to anticipate questions and frame an appropriate response. I suppose such conduct is normal in preparing for a first experience before such an audience but my nerves were on edge right up to the time my name was announced as the next speaker. I thought, "Would I bungle this opportunity or not"?

The hall in which the seminar was conducted was kept rather dark to provide greater visibility of the screen and speaker. Thus, one walked out on a stage much like an entertainer and the thought of doing so terrified me. Thank goodness I was well acquainted with my subject and my slides were all in order. I'm sure I was on automatic and must have spewed out facts, figures and other information in almost staccato like form. All I could see was a sea of faces out there in the dimly lit room and my delivery must have been the epitome of a person in a trance. Somehow I answered all questions which came my way and covered the assigned material in the allotted time. When finished, I was relieved of the microphone by George Ellis, the Division Sales Manager, and walked over to the side of the room feeling as though a monstrous weight had been lifted from my shoulders. I actually got

a few compliments from Schlumberger personnel, which I appreciated but felt sure they were primarily meant to repair my distraught psyche. My second experience on stage the next day was somewhat less terrifying but, none-the-less, one, which I was most grateful to have completed. At that point, all the stress was gone and I could actually enjoy the remaining topics.

MISCELLANEOUS EXPERIENCES

My promotion to General Field Engineer became effective February 1, 1959. I fully expected to make use of the new status and understanding I had gained, as a working field engineer. I loved the work even though the hours were long and oft times arduous. The geology involved as well as the rather complex hardware and interpretation of results never allowed one to get bored. Esther seemed to have adjusted to the rigorous schedule and seemed happy with everything except Rock Springs. She never liked the town, primarily I believe, because of the lack of good doctors. There were four in town and only Doctor Harrison would take new patients and thus became our family physician. His philosophy seemed to be, "shoot first and ask questions later". By that I mean, after the nurse had taken the usual pulse and temperature, he stopped by long enough to say hello and tell you he had ordered a shot of penicillin for you before disappearing. The nurse then came in and administered the shot. There was little, if any, real doctor patient relations. In his defense, he was obviously very busy and it seemed our illnesses were routine to him. Likewise, we always knew a shot was in store and bending over with rear exposed became our usual routine.

It was black as Hades out there, no moon or light of any kind. I quickly lost sight of her, she being nothing but a little black fur ball. After a few minutes, I heard her whimpering and walked towards her pitiful cries.

A DOG NAMED FLUFFY

In the summer of 1958 or maybe the early summer of 1959, I don't remember which, Esther and the girls decided they wanted a dog. It didn't take me long to realize there would be no rest until their goal was satisfied. Consequently, one Saturday we went to Salt Lake and managed to find a cute little Pomeranian, which the girls promptly named Fluffy. The name was appropriate considering her long soft hair, which, by the way, she left samples of around the house from that day on. That one attribute was the thing that later convinced me that a dog, such as a French Poodle, which doesn't shed is the way to go.

Figure 10-24 Fluffy, our little Pomeranian, as she appeared during a Canadian vacation trip in 1960.

Even so, Fluffy was cute as evidenced by the photo of figure 10-24 and the girls loved her. There was no way I could even think of getting rid of her at this point. Even just the thought, had they known, would have earned me the name of Grinch, I believe.

Fluffy was just 6 weeks old when we picked her up and returned to Rock Springs. We kept her in a little box with a light bulb turned on at night to keep her warm. That, along with a ticking clock seemed to keep her from whimpering through the night. Within a couple weeks we decided to take a camping trip up in the Wind River Range during my days off. The girls and Esther prepared a nice little bed for her to take along. We rented a 16-foot trailer, similar to the one we used in Yellowstone and away we went. As I remember, we camped near Fremont Lake, just out of Pinedale, which you may remember, was a hundred miles north of Rock Springs.

All was well until bedtime. Fluffy didn't like being alone even though she still had her ticking clock. I guess she was cold. In any case the

girls took her to bed with them. Along about midnight, I became aware of the girls talking. Soon they were saying, "Fluffy has to potty". I had no choice but to get up and take her out. I grabbed her in one hand and stepped out of the trailer to let her down. It was black as Hades out there, no moon or light of any kind. I quickly lost sight of her, she being nothing but a little black fur ball. After a few minutes, I heard her whimpering and walked towards her pitiful cries. Fortunately, I did remember the state was in the process of making improvements in the campground and was now setting posts around the trailer parking areas, including ours. Otherwise, I might have broken a leg in an unfilled hole. Anyway, I got down on my hands and knees to feel for her. She began whimpering and so, I followed the sound. Soon my hand felt the edge of one of the postholes and I then realized that was where the sound was coming from. I reached down in, maybe 18 inches and found her at the bottom. Picking her up, I took her back to the trailer, hoping she had satisfied her biological need. I guess she had because, soon things were quiet, and we didn't hear any more from her until the crack of dawn. At that point, she started in again and I gave up. I decided to get up and prepare breakfast. Well, the rest of the trip was uneventful, at least as far as Fluffy was concerned but we returned somewhat wiser regarding new puppies. They seemed to have needs similar to a new child.

VALERIE CONTACTS POLI0

One might call this story an addendum to my reference to Valerie's polio on page 472. I'll just add a few particulars. As I remember, a little after I passed my test, maybe in March or April of 1958, Valerie came down with polio. Esther had taken her to Doctor Harrison for what she assumed was the flu or something similar. To his credit, he picked up on the polio symptoms quickly and she was in the hospital that evening. Knowing little, we were worried sick but soon were told it was a relatively mild case and it appeared to have only affected her left leg. She was home soon and underwent therapy for a time but appeared recovered from any obvious effects by the time we left Rock Springs. However, even that success with Valerie didn't really help as far as Esther was concerned. She desperately wanted a better doctor who would spend some time talking with her and not just order a shot of penicillin for everything. She did seem reasonably happy with our dentist which we saw infrequently but that didn't help the physician problem. Consequently, when my transfer to Billings came along, she was one happy lady. Yes siree, she was confident she could now find a good doctor.

PROMOTION TO SALES ENGINEER

Along about June of 1959, I was offered a promotion to Sales Engineer. I was surprised, to say the least, not having any real desire or talent for that kind of work. Chuck Evans, however, felt it was an important step in my progression and talked me into it. The location threw a little going away party for us. I received a card with a picture of a somewhat less than intelligent looking male on the front complete with buckteeth. The caption read something like, "Yesterday I couldn't even spell salesman and today, by golly, I are one". That caption was more truth than poetry. My skills didn't lay in that area. They were strictly technical in nature. I wasn't really a people person and though I didn't dislike people, I would rather deal with mathematical or electrical problems. Had I not been assured that my job would be primarily explaining our technical products to the customer, I might well not have accepted the challenge. About a week later, Esther and I took the two girls and headed for Billings to find living quarters. We hoped to find a rental there, which would be more satisfactory than the one we now lived in, even though it was livable.

The caption read something like, "yesterday I couldn't even spell salesman and today, by golly, I are one". That caption was more truth than poetry.