

Seismograph Monkey Business

Author: Wes Bender

During the 20 years that I sold, rented and used seismographs, I had the pleasure of meeting and working with numerous people and companies. Almost all of these relationships were excellent and I considered many of them friends rather than clients. There were a few, however, who either figured I had just fallen off the turnip truck or who otherwise tried to take advantage of me. Here are a few examples of those who tried to take advantage of a good thing or otherwise bent the rules.

A customer purchased a small fleet of seismographs from me for a contract in Texas. He needed to record the vibration from a petroleum geophysical company's small blasts. He couldn't afford to buy the units outright, so he decided to participate in my lease/purchase program. At the time, I would rent seismographs on long term contracts and would apply 70% of the rental paid toward the purchase price of the unit if the customer wished to eventually purchase it. After this individual had rented the fleet for a couple of months, he contacted me and proposed that I apply 70% of the rent on all of the seismographs, to the purchase price of one specific unit. I guess he figured that he could thus obtain ownership of a few of the units fairly quickly and then return the rest and call it a done deal. Of course, the proper language was in the lease/purchase agreement to preclude shenanigans such as this and he wasn't successful. He was still paying monthly rent on the units when I sold the business in 2002 so I don't know if he eventually purchased the fleet or not. (This same client has a couple of incidents also detailed in an earlier article titled *Digital Daze*.)

When I was with Alpha Explosives, we had an explosives customer in the Bay Area whose quarry was located in a populated area. He couldn't store explosives there, so we always provided shot-side deliveries and then brought back the unused portion of the explosives after his shot was loaded. He only blasted a couple of times per year.

A few years after I left Alpha and had added blast vibration monitoring and seismograph sales and leasing to my business, I got a call from one of the owners of this Bay Area quarry. He said he was contemplating purchasing a blasting seismograph and wanted to know if I could come demonstrate a unit on an upcoming blast that he was going to shoot. Of course, I was more than willing to do so. That's part of the business. It may not result in a sale or a lease, but you need to do it. On the day specified, I showed up at the quarry office with a demo unit and price lists. I was going to set it up just outside the office, but he had a better idea. Why not set it up at a neighboring residence to get a more realistic demonstration. OK, I can do that. We went out to the proposed spot and I programmed the unit for him and we recorded the blast. Afterward, we went back to the office and I explained what everything on the tape meant. After leaving him the tape, price lists and rental rates, I returned to Nevada City. A few weeks later, I called him to follow up about a possible sale, but he said he had not made up his mind yet.

Fast forward six months or so, and this potential customer calls me again. He still hasn't made up his mind, but he'd like another seismograph demonstration to help him arrive at a decision. This time, more than a few alarm bells went off in my head. Knowing his approximate blasting schedule, I figured this was the next blast after the one I had previously recorded. His wanting another "demonstration" was just too suspicious. I agreed to drive down to the Bay Area again with a couple of seismographs, but I figured I'd better do a little preparation first.

Instantel had just come out with their DS-200 Data Collector. At the time this was a fairly sophisticated unit. It processed and stored all of the data within memory but, not having a printer, it required that you run Instantel-provided software and download everything into a computer and print it from there. (That's fairly standard now, but back then it was something new.) I figured that I would not only demonstrate a conventional seismograph, but also the DS-200. Before I left the office, I ran the battery down to almost flat on the conventional seismograph and put it in the trunk of my car with the fully-charged DS-200.

When I got to the quarry office, I was met with the same requirement that we demo the unit at a specific location in a nearby neighborhood. We went out to set up the instrument and, right on schedule, the seismograph crapped out due to a low battery. Not to worry. I have a backup. I grabbed my laptop and the DS-200 and programmed it to record the blast. After the blast had been detonated and the results duly recorded by the DS-200, we returned to the office. I showed how the resulting vibration levels could be read in the small window that was the display on the DS-200. I also showed how I could view all of the data and waveforms on my laptop computer. Unfortunately, my potential customer was not impressed with this modern technology. He was also getting uncomfortable with the lack of a seismic tape. I apologized for the lack of a tape from the unit with the dead battery, but my apology wasn't making him any happier. It was becoming obvious that he needed a printed record.

Eventually, he admitted that he had a requirement to record vibration from his blasts. I tried not to show that I had seen through his little scheme, but told him that I could very easily print out a copy of the vibration record and send it to him, along with an invoice for monitoring services rendered. I did so and he paid my invoice, but I never heard from him again.

Digital seismographs receive an analog signal from their sensors and convert it to a digital signal for further processing. The sampling rate (the number of times per second that it reads and stores the output level of a channel) is what determines the unit's frequency response. It's important to use a high enough sampling rate so that some high frequency peak does not pass through undetected. For blasting seismographs, it's conventional to use a number that is one fourth of the sampling rate as the unit's frequency response.

Most regulatory agencies specify a frequency response of at least 250 hertz; hence the unit must sample at a rate of at least 1000 samples per second (per channel) to meet this requirement.

In the early days of digital seismographs, having enough memory to store four channels of data for a fairly long event was a bit of a problem. Most manufacturers managed to install sufficient memory, but one manufacturer took a different approach. Instead of adding sufficient memory, they found it cheaper to slow down the clock rate. A five second event sampled at 1024 samples per second, and that was just fine. However, if the event was expected to exceed five seconds, they slowed the clock to half speed, which lowered the sampling rate to 512 samples per second per channel. If an even longer event was anticipated, the clock rate was reduced by two thirds, which further lowered the sampling rate to 341 samples per second. This meant that the unit's frequency response under those conditions was approximately 125 hertz or 85 hertz. This didn't meet most frequency response specifications at the time, but their technical literature failed to disclose that shortcoming.

Quite a few years ago, when it was becoming apparent that digital seismographs were about to take over the marketplace, a manufacturer in Texas that manufactured analog seismographs tried to stir the pot by having their attorney send a letter to all of Instantel's dealers and distributors, claiming that Instantel's seismographs violated several of their patents. The letter indicated that, if we continued to promote the sale of Instantel's units, we would be subject to legal action. This letter arrived just before the annual SEE Conference and was intended to discourage Instantel and their dealers from being able to promote Instantel's products there.

I immediately notified Instantel upon my receipt of the letter. They had not received their copy yet, so I faxed them mine. They immediately got in touch with their own patent attorney and had me fax my copy of the letter to him too.

It was readily apparent that Instantel's digital units did not even come close to violating any of the patents held by the competitor. Instantel's patent attorney wrote them a letter telling them to cease and desist or they would be subject to a lawsuit themselves. We never heard anything further from either the competitor or their attorney.

Because the company making the complaint wasn't willing to expend the effort and money to develop their own digital seismograph, they pretty much faded from the seismograph scene shortly thereafter. They are no longer in business...

Another bit of monkey business was initiated by one seismograph manufacturer when they made the claim with the U. S. Federal Trade Commission that Instantel was using money from the Canadian government to help design and build their equipment and were charging unfairly low prices in the US.

InstanTel was developing some equipment for the Canadian government at the time, but this was isolated from their seismograph business. I didn't know if the complainant had a legitimate claim or if they were just trying to stir the pot. All of InstanTel's US dealers were required to go back through their records and provide the Trade Commission with their costs and selling prices on all sales transactions. This took a considerable amount of time for which we would never be reimbursed. (I overheard one principal of the complainant company joking about it later at an SEE conference, so I'm pretty sure that it was all a sham.) The investigation by the U.S. Trade Commission found no credible evidence that InstanTel was violating the rules and the case was dropped.

It irritated me considerably that I had to jump through all the hoops to gather the info for the Commission, but I got even in the long run. The company filing the complaint later bought out one of their competitors. A representative from that competitor had signed a hold-harmless agreement with a geophysical firm that it would protect said firm from claims of damage if they would use the competitor's monitoring and analysis on an extensive seismic project near McAllen Texas. The geophysical firm was using Vibra-Seis equipment rather than explosives. These are truck-mounted vibrators that put a sweep of vibration waves into the ground. The reflected waves are then recorded with sensitive devices. While the vibration generated is not likely to result in damage to structures, it can be felt quite readily by humans. Part way through the contract, an attorney stirred up a hornet's nest around McAllen. As more and more homeowners signed on with numerous claims of damage, the situation was rapidly getting out of hand. The company filing the Trade Commission complaint was stuck with the hold-harmless agreement that had been signed by the company they bought. Eventually, their legal team had to hire experts to assist in their defense. Two of the noted individuals they hired normally rented instruments from me. The defense purchased a house near McAllen, instrumented it with several of my leased seismographs and did extensive monitoring of vibratory equipment operating nearby. This went on for quite some time and the rent money kept rolling in. Of course, the complainant and their insurance company were paying the legal bills, so I was quite happy to get some remuneration from the company that had cost me quite a few man-hours of research earlier. The seismic buzzards had come home to roost.....

In another instance, an employee of a n engineering group in Hawaii took advantage of his position with his employer to try to gain a little extra income. He didn't so much take advantage of me as he did his employer. He called me and said the company wanted to rent a seismograph for a month. I shipped it to his attention. He asked that my invoice also be sent to his attention. He did the recording and then returned the unit. When my invoice went unpaid for three months, I sent a tracer, but to their accounting department rather than to this individual's attention. The company president called me and asked why they were being billed for something that didn't show up on their books. After hearing my explanation, he called the employee in to hear his side of the story. The end result was that my invoice got paid by the company and the employee was fired. He called me later and threatened me with bodily harm, but nothing has come of it so far.....