

Highlights from career path for David W. Allan

In 1960, when I graduated from BYU, I had an offer to do a Master's Degree in Physics – working with Prof. Dean Barnett and Tracy Hall with their synthetic diamond tetrahedral press. It was an excellent opportunity, but we felt to move our family to Boulder, CO and pursue a Ph.D in Physics at CU. I accepted a job to work with the atomic clock section at the National Bureau of Standards. They would pay my tuition if I worked full time and a student part time. This looked very attractive; besides we love the mountains.

Five years later in 1965, I was finishing up a Master's Degree, was teaching a class at CU, and was a Stake missionary and having a great time. We had four beautiful children at the time. I got a call from the Stake Presidency to be a counselor in the Boulder Ward bishopric. This was cross grain to our plans. I knew I could not pursue my education program with that extra load. I asked if I could pray about it. They were most kind and said to take what ever time I needed. I fasted and prayed for four days – the most intense I have ever done in my life. I was out in the field north of our home on 36th street in Boulder and the answer came, “this preparation for you to be a bishop,” which I had no desire to be nor did I feel that I would ever be one. I accepted the call knowing that it was from the Lord.

At the time, I was heavily involved with a fundamental problem in my master's thesis. There was a lot of confusion internationally on how to characterize and understand the observed instabilities in very accurate and stable atomic clocks and the quartz oscillators that were used with them. The Lord gave me the solution and my colleagues named it after me, the Allan variance. I am confident that had I not accepted the call that came to me to serve in the bishopric, I would not have been given the solution. Because I was obedient to the Spirit, the Lord blessed me far beyond my just deserts, as He always does. If you Google Allan variance, you will get about 150,000 hits. No one could have conceived at that time how far reaching the metrics written up in that master's thesis would be. It has been adopted as an international standard and was used in the development of the atomic clocks for GPS, for example. Because I knew where the inspiration came from, it has given me numerous opportunities to share my testimony with colleagues around the world. The principle timekeeper in Russia, Dr. Nicolay Koshelyaevsky, is an endowed member of the Church with deep gratitude in his heart to yours truly for helping him to find the Lord.

Once I found out that the Lord gives inspiration in our work as well as in conjunction with family and church work, I became known as the praying physicist, and over the years received guidance from the Spirit for twelve significant inventions that have changed or will change how the world uses atomic clocks and precise timing. Like Ammon, I am not boasting, but give the Lord the honor and glory and express gratitude for the privilege it is to be His servant, to help bring forth light and truth, and to serve His children.

It is particularly interesting how the Lord often uses our trials as lead ins to some of greatest blessings – thus stretching our faith. In 1979, while serving as Stake President in Boulder, things were going poorly for me at the Bureau; so bad that I was considering leaving the Bureau. A year before, due to inadequate government financing, four people had their jobs eliminated from

the Time and Frequency Division where I worked – all in a particular group – being considered the least relevant to the work of the Division. I had the responsibility to generate time for the United States from the atomic clocks at the lab. The Division Chief asked if I would also take over what was left of the group that had been decimated the year before through this RIF. It was like a slap in the face; things were going poorly and they wanted to add an iron yoke. In spite of how bad it looked, I felt to take it before the Lord, and I told Him that if He wanted me to add that job to my already unreasonable load, I needed ideas. I still remember how a flood of ideas came – a very interesting spiritual experience. One of the ideas was to use GPS in a special way for comparing clocks internationally. The previous method using Loran-C was burdened with problems. My management was not in favor of my idea since GPS was run by the military, and to get their cooperation seemed formidably. I had been working with some of the people in the GPS program – helping with the right atomic clocks for this program. I knew where the my idea came from, so I went forward in faith. We built some GPS receivers to test the idea and it worked exceedingly well. We could compare clocks internationally at the billionth (nanosecond) level, which was vastly better than anything before. It became the international best method for the generation of International Atomic Time (UTC), and is still used to this day. Trusting in the Lord and not man made all the difference. My job situation turned around dramatically going forth from that time. I became the international chairman of civil applications of GPS timing. I was able to help astronomers with the timing of millisecond pulsars at the Arecibo radio telescope, and was asked to lead a group for the International Astronomical Union in the study of millisecond pulsar timing.

When I retired from the lab in 1992, the Lord gave me another idea for how to use GPS for synchronizing cell-phone towers. At that time GPS was transmitting two timing signals – an accurate one for the military and one that was degraded by about a factor of 100 for civilian usage. The idea given to me was how to make a GPS civilian receiver have the full timing accuracy of a military receiver. Hewlett Packard hired me as a consultant and they sold millions of dollars of these receivers throughout the world for synchronizing cell towers.

A couple of amusing asides. In the audience of the first people we presented our results to was the guy who had developed the degradation methodology in the GPS satellites. He had a big smile on his face as I shared the results we were getting. But one of the funest presentations that I ever made on this technique was at an international GPS conference with a whole lot of GPS blue-suit military in the audience, who fully understood why the degradation was there. When they saw our civilian receiver getting results like their military receivers for precise timing, their jaws were hanging. The Lord has a sense of humor.

In 1997 through 1999, my wife and I served a mission in Cote d'Ivoire West Africa. We had a great experience and fell in love with the people – like a whole new family. While there, I was asked by John Wiley and Sons to write a book on GPS and Precision Timing as a college text type material. I asked them to wait until I got home to consider it. Upon returning, I evaluated the need for such a book and felt to go ahead with it and signed a contract to do so.

While working on it, a dear friend and neighbor at that time, Sister Ranae Lee was visiting with us one day. She asked if Einstein was helping me with my work on the book. I told her that I didn't know of that, but could be. She, having the gift of discerning of spirits, said she sensed

that he would like to help and that some significant ideas regarding the unified field theory that he was working on during the last years of his life needed to come forth and that I could help if I wished, but it was my choice. My wife and I took it to the Lord and got an affirmative in the face of what we knew would be many challenges.

We learned that there are many misunderstandings in modern physics, and we were given a whole new structure of how to look at the Lord's physics. I asked the Lord to give me some experiments that I could conduct to share with my colleagues so that I could convince them of the new versus the old. Again, I had a great spiritual outpouring of ideas. I thank the Lord. We have conducted seven of those to date – all with affirmative results.

The number seven is sacred in the Lord's arithmetic. It signifies perfection or completeness. There are seven... (See Freedom Week 2010 links)

In 1990, they had a comparative religion debate at the University of Colorado. I was then serving in the Denver Mission Presidency, and the Institute Director at CU asked if I would represent our church. Each religion was given seven minutes to share their beliefs. Knowing the students would not remember what was shared, I prepared a hand out for all interested so they could walk away with something to read and ponder later. There was a Catholic Priest, a Rabi, a representative from the Bahá'í Faith, a couple of protestant ministers, an atheist, and myself. I weaved the articles of faith through my presentation around the story that Elder LeGrand Richards has in his book, *Marvelous Work and a Wonder*, where Count Leo Tolstoy is conversing with Dr. White about the American religion. My handout became a tract for the CU institute, where hundreds of copies were distributed. We have used it extensively in Fountain Green for missionary work, and I often hand people a copy when traveling on an airplane or where ever opportunity seems appropriate.

Our bishop recently asked me to update. I found some alarming downturns, which reveal the ending of the fullness of the Gentiles and time for the Lord in preparing true Israelites to build up Zion. (See .ppt charts)