

The word came down from Bob Ingstad, owner of the Robert E. Ingstad Broadcast Group, in December 2005, that the "50 gallon blowtorch" in Fargo, ND is a go...and we had one year to 'git-r-done'. While accruing over 40 years of radio engineering experiences, building a 50,000 watt 6 tower DA-2 hadn't been one of them. So, I needed to get crackin'.

We ran the entire project through Harris, with several stipulations. My personal history of dealing with tower construction crews made that choice easy...Rocky Mountain Erection Company in Oklahoma. Billy Johnson and his crew are second to none in my book, and I'd never approach any tower construction project without his expertise and involvement. His foreman, Tyrone Humphries was incomparable, and the rest of the crew helpful beyond the call of duty.

Of course Harris would supply the 2 transmitters needed for the operation. The DAX-1 for the 1 KW night time array, and the 3DX-50 for the daytime 50 KW as well as the 8 KW critical hours power. Plus I had the good fortune to work with the lovely and gracious Teddy Moyer, the Harris rep that kept me on the straight and narrow. She was a joy to work with, and resolved a myriad of problems that arose.

Harris advised, and we quickly concurred, that the two phasors should be built by Kintronics. Actually when this project was first proposed a few years ago, Harris was intending to construct the phasor themselves, but over the course of time, decided to opt out of the phasor construction, and advised us to go with Kintronics. That made perfect sense to me, having had a good working relationship with the King family over the years. I considered Louie and Tom to have always built top quality phasors, and provide reliable service whenever we called on them. This project was no different.

The Kintronic 'Engineer-in-Charge' of the KKAG/Fargo system was James Banks. Let me say at the outset, this man is a class act. Not only exceedingly helpful, but easy to talk to and put up with my often ignorant questions, with understandable answers.

I'd be remiss if I didn't mention that beloved Eva. She put up with my frequently panicked phone calls in her inimitable southern warmth that made me want to reach through the phone and just give her a hug. I told Tom, with folks like that working for him, it's easy to see why he enjoys his job.

By early January, 2006, the consultant, William Sitzman of Independent Broadcast Consultants had sent to Kintronics his requirements for the 2 phasors. Visiting with James, it was determined the cabinets would be 7' tall, 5' deep, and 36' long. But, but, but...I'd already ordered a building from Thermobond of Elk Point, SD that would be 30 wide by 40' long. Either we stretch the building, or shrink the phasor, or only extremely skinny folks would be able to work in that system, which would certainly exclude me.

James immediately put me at ease by saying he could split the nighttime pair of cabinets away from the daytime, which would be 8' less length, 'shrinking' that main row down to a neat 28'. The two nighttime cabinets would fit nicely along the side of the building with the transmitters, equipment racks and phasor relay controller panel cabinet. Voila! Makes for a pleasant and roomy facility.

I told James the precise distances between the two facing rows of cabinets, and he put his staff to work on constructing the system with interfacing rigid 1-5/8" transmission line. This allowed the nighttime phasor to have no switching contactors, or transmission lines to the towers. The six transmission lines, varying from 7/8" to 2-1/2" were all fed from the daytime phasor, which also housed all RF contactors, and the Delta common point bridge.

When the semi full of phasor cabinets arrived, they were all unloaded and crates arranged so we could place the nighttime cabinets into the building first, and then the other cabinets in descending order. Once inside, we uncrated the cabinets, leaving them on their pallets, and began to juggle them into position. It was sort of a Rubics cube exercise. Billy and Tyrone and the Rocky Mountain crew were indispensable with this part of the project. Lots of 'grunt' power was required to position these two rows of cabinets precisely as they were constructed at the Kintronics factory. But as you see, the job got done, and all the interfacing hooked up.

As I recall, with ALL the cables we hooked up between the phasor, the relay panels, and the ATU's, we only had ONE color-coded indicator wire reversed. Absolutely amazing. Credit for that goes to the Ingstad Broadcast Group Chief Engineer, Don Brintnall. He was relentless in his perfection inspections.

The Kintronic's provided ATUs have only been mentioned in passing, but they are a story unto themselves. All six arrived ahead of the phasor cabinets, so we could position them on the concrete pads poured by the tower crew. All the transmission lines were unrolled in the trenches between the towers, along with the control cables, AC cables, and the sample lines. We then placed the ATUs under their associated towers, as soon as the steel was erected.

When the ATU's first arrived, we nonchalantly opened up a couple of the crates to show the tower crew how they needed to be fastened to the concrete pads. We put legs on one we opened (a smaller one for tower 6), and let it stand there uncrated until we had the pads ready. You can't imagine our shock when we started to open the other ATU crates later when we were ready to position them by the towers, and found the incredible damage to the tower 1 unit. There was nothing noticeable on the exterior of the crate to alert us to the fact that it had been damaged. Our only logical reasoning was the entire box had to have been dropped on its' pallet, and it jolted every thing inside, turning it into a complete shambles.

Since this was the ATU for tower 1, and the one with the switching for non-DA measurements, we were in a panic. I had measuring crews scheduled for arrival in two weeks to begin the antenna proof. James and Eva got after the trucking company post haste, and got them to return the unit to their factory.

The Kintronic fabricator told James the damage was so severe, even the cabinet could not be salvaged. So they proceeded to build a totally new unit, spending hours over the weekend so it could be returned ASAP. They tried to get it shipped with the truck load of phasor cabinets, but couldn't get it done in time, so it came out a couple days later on private truck. BTW, after talking with James and Tom, they agreed that shipping their premier products deserved better than some cross country freight hauler, so when the phasor arrived, it was on an air-ride semi, as was the ATU.

When everything was in place and connected together, the juice was applied and after taking Edsel Murphy's best punches, I think we were all mildly surprised nothing smoked. We tuned the #1 tower for the 1 KW transmitter, detuned the others, and began the nondirectional measurements. I had gotten permission from the surrounding land owners to trespass on their property with four-wheelers, so the in close 2 mile measurements were made quickly. We had a crew of 8 with FIM 41's, so the entire set of 19 radials took us only a few days to compile and send to the consultant. While he mulled over that info, we fired up the 3DX 50 into the daytime array, and the DAX-1 into the nighttime system. After some minor adjustments on the big transmitter, and some tweaking on the 1kw unit, we felt the common point was ready for us to begin directional measurements.

James had done all the pre-tuning of both phasors, as well as all 6 of the ATUs. I think we only changed a couple of ATU coil taps in the course of "twisting the alligator's tail". Our tune-up-crank-master was Tom Toenges of Topeka, KS. He turned the cranks and did the math, while the rest of us were positioned on various radials with 2-ways so we could communicate with the transmitter site at all times. I'd be remiss if I didn't mention that Dave Harry's magnificent machine...the Potomac 1901-6 digital antenna monitor was a phasor-cranker's dream come true. What a piece of equipment. Instant remote control readings as well.

Within a couple of weeks we had both patterns tuned in to Mr. Sitzmans specks, and Don Brintnall had the figures charted and emailed for putting the proof together prior to the December 14th deadline, which Mr. Sitzman met. The ball, so to speak, is now in the FCC's court.

We have done some 'playing' with the 50 gallon signal, just to see if it's blowing out any farmers windows, or peeling the paint off of neighboring radio towers. So far, the reach is as expected or beyond. But without Big Brother's Approval on the wall, we can't let 'er rip just yet. But it will happen soon, mebbe even when this is being read. ;-)