The Life and Times of a Master Contester — An Interview with Tim Duffy, K3LR

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K3LR at the International DX Convention, Visalia, California.

K3LR is one of the best-known Radiosport contest call signs with a team and a station to match. What has Amateur Radio and contesting taught K3LR? The same things it can bring to you!

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Every year after the Dayton Hamvention, an e-mail or two will be seen asking, "I saw this incredible station near the Interstate, just over the Ohio-Pennsylvania border! Is that *Voice of America* or something?" In a manner of speaking — it is the station of Tim Duffy, K3LR (**www.k3lr.com**) and the 100+ operators that make up the "K3LR Contest Team." Over the past 20+ years, Tim has spent countless hours building this station and a talented team to maintain and operate it. In the past few years, these efforts have paid off with a string of wins in major DX contests, such as the ARRL DX Phone (five consecutive wins), the results of which were in *QST* last month.

This article is not about how to duplicate what Tim has built — that would take up a whole year's worth of *QST*! Rather, we'll tell Tim's story as a way of talking about how ham radio — and radiosport specifically — enabled him to grow and led to a satisfying career inside and out of Amateur Radio. The lessons he's learned are useful whether you have one radio or a dozen.

Call the Kid!

From his current position as an executive with the largest telecommunications company in the world, it's quite a look back to growing up in western Pennsylvania, oldest of four children. His mother died from cancer five months before he got his Novice license (WN3SZX) in 1972 at age 12. The same year he enjoyed 26 crystal-controlled QSOs from the Novice station in his first Field Day with W8GFG/3, joined traffic nets and, thanks to WA3BGE (now K8MR), experienced CW Sweepstakes. Later in high school, even during basketball practice, he couldn't wait to get home and build something or get on the air.

One of Tim's first "real" jobs came soon after he got his First Class Commercial Radiotelephone license. Recommended by K3ULJ, the owner of a broadcast station hired Tim to be Chief Engineer (CE) of the AM/FM side of the business. Only one week into his new job the FM exciter failed and a call for quick help went out to the young CE — they had to get him out of his sophomore math class to fix the transmitter!

Tim drew on his ham radio troubleshooting experiences and determined that the exciter couldn't be fixed there at the station. In consultation with the manufacturer in Philadelphia, he decided to take the exciter back to the factory. Imagine taking commercial broadcast equipment back to the factory at age 16! And getting it fixed!

This first job turned out pretty well as Tim stayed with it for 4 years. After college and a 2 year stint of teaching, he was then hired by W8EKO, the owner of another broadcast station who was taking a chance on a new technology called "cellular mobile telephones." You may have heard of them. In this small company — not unlike ham radio — everybody did a little of everything. Tim installed "car phones," maintained the three tower cell sites, and the system grew to about 1000 subscribers by the end of 1986. The regional wireless company was eventually bought by Dobson/Cellular One in 1998. By that time, Tim was sufficiently knowledgeable that Dobson retained him as Chief Technology Officer. Dobson was recently purchased by AT&T — you may have heard of them, too — and Tim moved into his current position. Not bad from starting out fixing FM exciters and keeping an AM/FM station on the air during high school!

Management 101

Tim gives a *lot* of credit for his success to ham radio and ham radio contesting, specifically. It's not just the technical expertise the makes the difference; it's the ability to manage technical complexity and a team. For example, he characterizes his early Field Day organizing as "Management 101." All the aspects of running a business are there — hardware, scheduling, logistics, a team. Those early Field Day efforts resulted in category high scores in 1A, 2A and 3A.

"Ham radio opens doors and builds up your personal feeling of worth as an individual. It gives you the opportunity to become technologically literate, just like Scouting does for other fields. Radio contesting adds discipline in that equipment and antennas have to be used and made to work as-is with a firm deadline. You have to be ready at 0000Z when the contest starts — no excuses! You work with different team personalities under stress. Most importantly, you learn

Table 1
K3LR Station Equipment

Transceivers
IC-781, IC-7700 or IC-7800

Amplifiers
Single-band, single-tube 8877 homebrew

Transmit Antennas
160 m: 37-meter insulated base tower with 4 parasitic elements
75/80 m: Two 4-square vertical arrays, rotating dipole at 74 meters
40 m: 4-element stack at 59 and 36 meters, 2-element stack at 57 and 37 meters
20 m: 6-element stack at 71/52/34/15 meters, 6-element stack at 46 and 31 meters
15 m: 7-element stack at 60/37/25/12 meters, 6-element stack at 25 and 12 meters
10 m: 8-element stack at 30/20/10 meters, 7-element stack at 65/25/15 meters

Receive Antennas
160/80/40 share 4 Beverage antennas
160 m: DX Engineering 4-square receive array
160/80 m: low dipoles
20 m: 4-square vertical array
10 m: 4-square vertical array

Filtering
W3NQN transmit/receive filters, W2PV receive filters, harmonic suppression stubs

Computers
Contest software is the latest *Win-Test* version on custom-built Pentium *Windows XP* computers

about decision-making and learning from these decisions. From this, you develop the self-confidence to lead a team and make decisions." Right or wrong, make the best decision possible and move forward.

Building, Running and Keeping a Competitive Multi-Multi Contest Team

Ben Franklin, when asked what kind of government the Constitutional Convention had created, replied, "A republic, if you can keep it!" It's a little like that for a big Multi-Multi contest station. As the complexity grows, it's harder and harder to get all of it working at the same time through the 48 hours of intense operation in hyper-competitive "Monster Station" class.

Tim's first station was a Heath SB-102 kit, earned by mowing lawns and paper routes. It rapidly grew, adding all of the SB-600 series of station accessories. An SB-200 amplifier was added after he upgraded to Extra at age 14, using a slide rule on the FCC exam in Buffalo, New York. He traded WA3SZX for K3LR at age 16. Soon he added his first rotatable antenna, a TA-33jr. The station has since grown a bit as you can see from Table 1, Figure 3 and the photos on Tim's Web site!

Those of us that have been fortunate enough to operate from K3LR always come away impressed by the attention to detail and the level of preparation. Nothing escapes Tim's attention: from the antenna system, to the team of operators, to having a full refrigerator and topped off coffee-making supplies. Every PL-259 at K3LR is hand-soldered by Tim, for example. Every one! There are hundreds of them in service at K3LR. And they never fail, nor do poor connections cause interstation interference.

Tim designs and builds the station with leading-edge, but not breaking-edge, equipment. ICOM is his chosen radio manufacturer, with a collection of IC-7800, IC-7700 and IC-781 transceivers in use at K3LR that are known for their exceptional receivers. The amplifiers for each of the stations are based on the same single-tube 8877 design. The computer network was custom-built by Tim's close friend and Multi-Multi station owner, Dave, W9ZRX. The K3LR station is built so that should something fail, replacement with a nearly identical piece of equipment is straightforward. By using common elements over and over, repairs and maintenance are greatly simplified and reliability improved.

Antenna systems are designed for the station to maximize contacts with the locations necessary to win contests. (The K3LR Web site includes the topography around the station.) Because the K3LR operators need to hear as well as transmit, special receive antennas are available on each band, as well.

With a station of this size, the fall and winter weather take their toll. Before each major contest, a team opens the station and gives it a thorough checkout, including amplifiers and antenna systems. Problems are fixed *before* the operating team begins to show up on Friday afternoon. Tim wants to make sure that the team operators can concentrate on operating, so everything is there ahead of time. Paraphrasing the Great Gretsky, "You lose 100% of the contests in which you can't operate!"

The result of all this painstaking design,

TIM DUFFY, K3LR

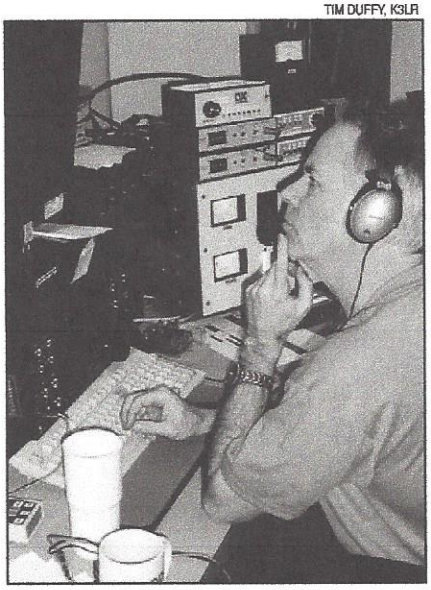

Figure 1 — Station owner K3LR right where he wants to be — 160 meter CW as the gray line sweeps across the planet. "No Place on Earth I'd Rather Be — Right here, Right now" (Jesus Jones 2005)

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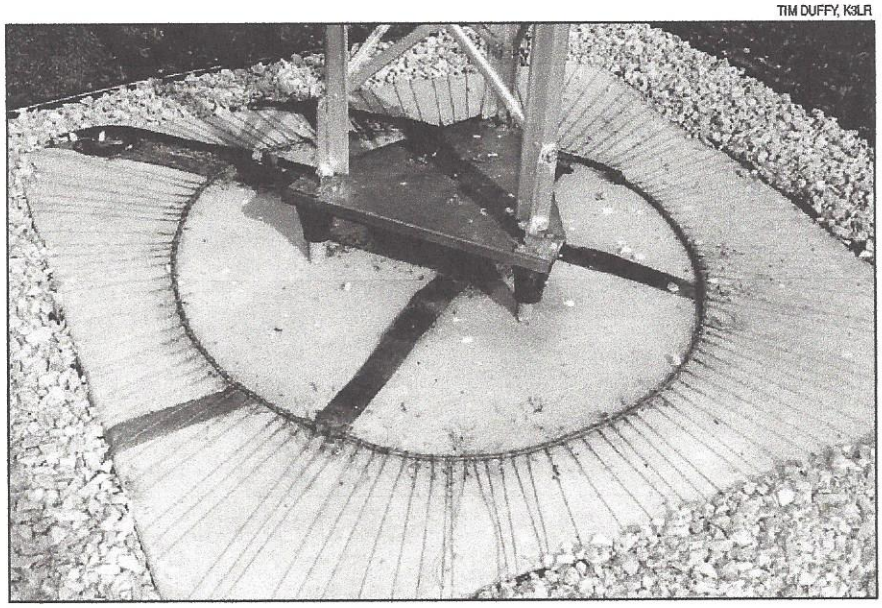

Figure 2 — The station's precise engineering is evident around the base of one of the eight elements that make up the dual K3LR 80 meter phased 4-square vertical arrays.

construction and testing is more than 350,000 QSOs over the past 17 years in Multi-Multi contesting, walls full of certificates, and a lot of #1 USA finishes! Lest you think K3LR is located on prime saltwater beachfront, his location is possibly the most western third district station, only a mile from Ohio in the eighth district! Many told Tim that the team would never be able to win from a "Western PA QTH."

Tim's father always told him that anything is possible. Dream big! It took lots of years and hard work, but in 1998 they won for the first time. Since then 13 K3LR USA #1 scores are "in the books." In 2006, the same year Tim was inducted into the CQ Contest Hall of Fame, the K3LR team had the highest (Phone + CW) total score in the world in the CQ World Wide!

Lessons for Smaller Stations

You might say, "I can't buy all those radios and stuff!" but that's not the point. Tim assembled the K3LR station step by step and team member by team member. To owners of smaller stations, Tim's wise suggestions apply to anyone trying to build the most effective station, whether for contesting or some other facet of ham radio. (Note that on Tim's Web site, the design page includes "HF Emergency Communications Response" right alongside contesting. The K3LR station is on the RACES net every Sunday morning and has helped during several tornados and hurricanes.)

"First, build up as much experience as you can with a smaller station. It will make you a better operator as your station grows or when you operate at a big one. Devour as many contest write-ups and articles as possible in *QST* and on the ARRL Contest Web page (**www.arrl.org/contest**), *National Contest Journal* (**www.ncjweb.com**), *CQ* (**www.cq-amateur-radio.com**), the free *ARRL Contest Update* newsletter (**www.arrl.org/contests/update**), and the 3830 and CQ Contest reflectors at **www.contesting.com**. Use the line scores and searchable databases as motivation and to set goals for your next contest.

"Make 'lists' of what changes you want to make to your station and what needs to be done to get ready for the next contest." Tim's current "list" contains over 40 projects to prepare for CQWW this fall.

"Contact the better operators and take advantage of opportunities to operate at multi-op stations with them. Learn how to call CQ effectively. Get in touch with the 'Big Guns' — they are quite approachable!" Long ago, on a road trip with a friend, Tim visited the famous station of Jim Lawson, W2PV, and got an invitation to operate. He remembers viewing the young operator team

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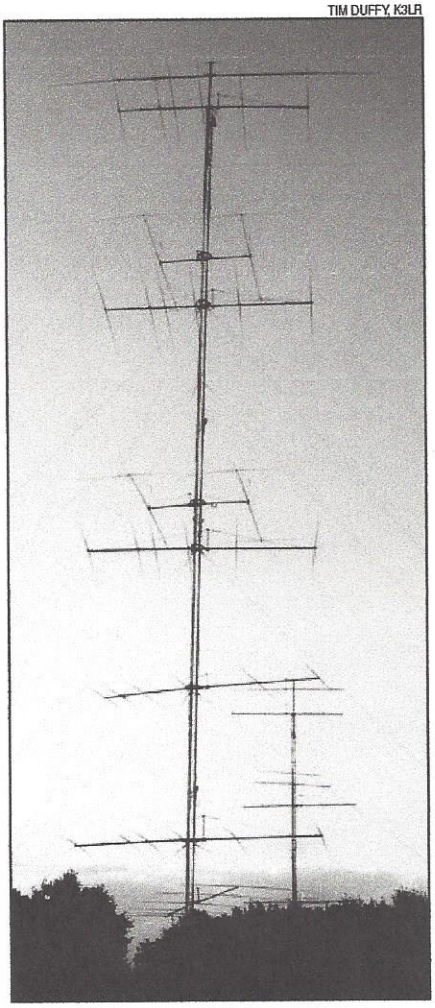

Figure 3 — One of the largest amateur antenna towers in the world, this "stick" holds the 24-element 20 meter WA3FET OWA stack, a pair of 40 meter W6NL Moxon beams, a 14-element 15 meter stack and a rotatable 75/80 meter dipole at the top!

of K1AR and N2NT operating at W2PV just as they do today at K3LR! Talk about dreams coming true.

It is vital to have a "vision" of where you want your life and your hobby to take you. Tim has three "vision boards," one each for Family, Career and Amateur Radio. He keeps them in constant view. It works!

"Establish relationships with other contesters, such as by joining a contest club." Tim is a member of three contest clubs and a past President and Charter member of North Coast Contesters. (A list of contest clubs is available at **www.ac6v.com/clubs.htm**.) "Ask questions without fear and ask to look at logs, breakdowns and rate sheets. Find out when they are working all those Europeans on 40 meters! Do they stay up all 48 hours? Look for unexpected scores and efforts, such as W2GD winning Sweepstakes from New Jersey. Most important — be enthusiastic!" Even after 36 years of ham radio, Tim is still one of the most enthusiastic hams you'll ever meet.

"Learn to delegate. It's important to understand what you can and can't control. Keep the important stuff in focus. Have a good time — it helps build a solid team! You never know whether propagation or circumstances such as weather are favorable until after the contest, so keep going even in the face of poor conditions."

Guidelines to Wireless Success

"Do what you love and the rest will follow." Don't forget to "give back;" it's not all Dayton (Tim has moderated the Antenna forum for more than 25 years) and big contests. Participate in local clubs (Tim is a founding member and eight term past President of the Mercer County Amateur Radio Club) and enjoy the other members. Learn to get along with other hams, no matter how they got into the hobby.

"Give-back rewards the hams that helped you and acknowledges those resources. Remember that the license carries responsibility as well as granting access to the public resource of the radio spectrum. Participating in local and community organizations fulfills that responsibility. Join the ARRL to help protect and further Amateur Radio."

"It's *so* important to have ethics for trust and reputation. It's key to maintaining relationships and the long-term friendships. It's cool to have trust in your competition that they are complying with the rules so that it's a contest between the teams and the propagation. Respected long-term contesters figure it out in contesting — the same attributes work in life."

Even as he continues to enhance his station, despite the heavy professional demands of his new position, Tim will keep on giving back, whether it's teaching a small antenna class at the local Field Day operation, running this year's Dayton Hamvention Contest University for more than 200 contesters, or organizing Hamvention Contest Dinner for the 16th straight year.

Ham radio has been very good to Tim and he wants to help others have the same great experiences. "I want my legacy to be one who gave back and enhanced others' enjoyment of the best hobby in the world — like many others who provided me with a lot of opportunities. I want to experience more of ham radio, support more things and show appreciation for the entire hobby — not just contesting."

The results, seen in contest write-ups every year, attest to the value of these guidelines. They are useful for just about any part of Amateur Radio you care to sample!

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