



Chirp and Splatter

Newsletter of The University of Michigan
Amateur Radio Club – *Summer 2006*



“The Prez Says”

Thanks to everyone who has made it another great year for amateur radio at W8UM. We have added to the ranks at UM-ARC, built up the station capabilities, and will soon add an HF Tower to the Electrical Engineering and Computer Science (EECS) building. It could not have been done without all our members and supporters, so keep up the good work!

The primary addition to the station this year was a brand new, advanced satellite station now operational on VHF and UHF. Plans are now underway to round out the satellite capabilities with S- and L-band. Echolink is now operational on the W8UM repeater (node #264358) and will soon be running on the shack PC through a 440 MHz link to the repeater site at Dennison. The club was also active for many contests including ARRL Sweepstakes (SSB) and Michigan QSO Party. I can report that W8UM finally overtook W8SH in the QSO party with 200 contacts to 140! W8UM again participated with ARROW and lent its callsign for Field Day, but this year we brought our own station. Built on a 20-ton utility truck with a 40ft crane, we mounted the club's old (very old) Mosley CL-33 tribander on a Taitwister rotor and a 40m inverted-V. We racked up over 250 contacts, contributing to the most successful W8UM/ARROW Field Day in recent history. Perhaps the air-conditioning was overdoing it, but we got many of our new members on the air and had a lot of fun.

The Hazel Park Swap was a huge success and justified the use of a rented truck to

(continued on the next page)

A Fundraising Challenge!

To help promote the fundraising for the W8UM Tower project, **Bill Becher AA8RW** and his **XYL Helen KG8TQ** pledge up to a total of \$1,000 to be used to match, on a one for one basis, cash contributions for the W8UM Tower project received from club members, friends and University alumni between now and September 30, 2006. A check honoring this pledge will be submitted to the University of Michigan and designated for the U-M Amateur Radio Club upon completion of the campaign period.

Would you like to help UM-ARC raise their new tower through a donation? Contact us at w8um.info@umich.edu or go to www.umich.edu/~umarc for more information. **Thank you for your support!**



Richard KD8APA works the 2006 Field Day 20m SSB station as Noah KC8TKP chuckles in the background. (See the Field Day report later in this issue!)

haul our booty to sale. We netted over \$700 from some of the club's old equipment and test equipment plundered (donated) from the Willow Run Labs. Dayton was also a blast and a great time to meet former UM-ARC members, pick up some cheap goodies for the club, including a bench vice for the completed electronics workbench that now features a new Hakko 936 soldering iron.

Thanks again to everyone who has continued to support UM-ARC as we near the finish line in reestablishing the station. With the tower rising above the EECS building, we will once again become a permanent fixture at U of M for future members. Go Blue!

73, Richard KD8APA

UM-ARC in Space!

DE Richard KD8APA

During the winter semester a new satellite station for UM-ARC was made operational. It all started with an ARRL Education and Technology Program Grant being awarded to the club in mid-January. The grant covered a brand new IC-910H, all mode VHF/UHF/1.2 GHz satellite transceiver, M² 2MCP14 and 436CP30 beam antennas and enough LMR-400 low loss coax to make two runs from the shack to the roof. The EECS Department pitched in for the DSP units, high frequency stability crystal oscillator, as well as a nice base station microphone. The sale of three rare Hickok model 580A and 539C vacuum tube testers by the club completed the funding of the station.

Winter semester I had enrolled myself in EECS430: Radio Propagation and Link Design, saw the perfect opportunity to complete the station and knew it had to be done right. The completed station has all the bells and whistles: polarization switching on both beams, a high stability crystal unit, dual DSP units for the main and sub bands, pre-amplifiers for both VHF and UHF, an AlfaRadio AlphaSpid Az/El rotator with 0.5° pointing accuracy, full

computer control of the radio and rotator, and a Heil Proset Plus headset for superior audio quality. The tower is a Rohn 25G top section with another 8 feet of galvanized steel pipe to extend the antennas and rotator to 17 feet above the roof. No roof modifications could be made so a custom mounting plate was designed and resulted in a simple method for raising and lowering the tower to service the antennas.



Part of the EECS 430 team and the newly constructed 2m/70cm circularly polarized, tracking antenna system for amateur space communication.

Finally, on April 10, 2006 at 2151 UTC the first contact was made over AO-51 with W8SH at the MSU Amateur Radio Club. Signal reports were great and everything worked as planned. Future plans are now underway to complete the station by adding an L- and S-band capability. A 60cm S-band mesh reflector is ready to be installed as soon as the club acquires a down-converter and plans are being made for the 1.2 GHz module and a helical antenna. The good news is that the tower and rotator were designed to have more than enough capacity to accommodate more antennas. It was a mad dash to finish the station and make a contact before the end of the semester, but in

the end UM-ARC got a new satellite station and an aerospace engineer passed EEC430!

Contesting and Club Events

Contest activity at W8UM was on the rise this year, with the club participating in the CQWW RTTY DX Contest, the ARRL November Sweepstakes (SSB), the Michigan QSO Party, and ARRL Field Day. Radio contests help new hams quickly gain operating experience and technical skill, and they are a whole lot of fun. The club also made trips to several other radio-related events including the Dayton Hamvention and the Hazel Park Hamfest.

CQWW RTTY DX Contest

Jon KG6URI caught the RTTY bug one Friday afternoon. Roughly twenty four hours and 54 QSOs later, W8UM had amassed 108 Points, including 20 Zones, 25 Countries, and 16 US/VE multipliers for a final score of 6,588. Jon missed the bus to Central Campus early that Saturday morning, but gained a new appreciation of frequency shift keying!

ARRL November Sweepstakes

For the second year in a row W8UM participated in the ARRL November Sweepstakes (SSB). This year, Jon KG6URI, Mark WD8DPA, and Chris KA8WFC operated the contest for the full 24 hours, with plenty of moral support from Jack W8AHB. Jon had the shack in fine operating condition by contest starting time, with the HF antennas tuned, the Ten-Tec Omni-VI under foot-switch PTT control, and the PC set up for logging. Also, a shack refrigerator and microwave oven (a welcome technology transfer from Paul KD8DPV's former dorm room) provided W8UM ops with cool beverages and perishable snack storage.

Despite mediocre solar activity, high local noise levels on 40m and 75m and a few minor technical problems, the total W8UM score increased to 35,712 points (up 201% from last year's 11,880 point tally). We

worked mostly 15m and 20m during Saturday afternoon, switching to 40m and 75m after about 9 PM local time, then back to the higher bands early on Sunday morning. In total, W8UM made 248 contacts in 72 ARRL sections, placing us 6th among the seventeen participating college clubs (a concurrent contest for college stations, the Collegiate Championship, runs during Sweepstakes). Memorable QSOs included our friends at W1MX (M.I.T.), W6UE (Caltech), and W6YX (Stanford), as well as the League's memorial station W1AW. To our great pleasure, many stations returned our signal reports with "Go Blue!" and other inspiring and congenial comments.

Club members, please put the upcoming ARRL November Sweepstakes on your calendar (November 18-20, 2006). With a new HF antenna system and HF power amplifier W8UM is poised for an even bigger showing!



Jon KG6URI works 75m phone at W8UM during the 2006 ARRL November Sweepstakes contest. (The Heathkit SB-220 in the background awaits a rebuild for next year's contest season.)

Michigan QSO Party – DE Bruce KD8APB

The weather was gorgeous and sunny for the Michigan QSO Party on Saturday April 15th. Rather than operate from the shack, which can get crowded, I decided to operate as a rover, use my own callsign, and assign the points to W8UM. A rover is a

combination mobile and portable operation, but motion is not required during operation. I was planning to operate from three Michigan counties similar to my effort in the Ohio QSO Party last August. I arrived in front of the G.G. Brown Building about at 10 AM with my IC-706, my deep cycle marine battery, my fiberglass mast, and a collection of inverted-V antennas to go along with the one for 40m that I built last summer. Showing up to participate were Richard KD8APA and Steve K8QKY. Members of the ARROW Club were Dan KB6NU, Mark W8FSA, Mark KD8AOM, and Jeff W8SGZ. They were invited to operate from the shack and the G.G. Brown parking lot due to a last minute change of plans on the part of their site host. We had radios, we had operators, we had antennas, and we had enthusiasm. What we lacked was propagation. Band conditions on HF that weekend were abysmal.

I started off with the 20m inverted-V, anxious to try out my new creation which I had finished the night before. My first contact was with the guys in the shack, W8UM. A point is a point after all. After almost half an hour of scanning and calling CQ, I switched to the 40m inverted-V. I quickly found club member Ralph KB8ZOY at his QTH and the guys in the shack again. Three contacts in 45 minutes were discouraging. I turned the rig over to Dan KB6NU who proceeded to run off 17 CW contacts in a little over half an hour. I stayed on 40m phone for the next eight hours until about 10 PM, racking up 55 contacts. Although I planned to operate as a rover it was evident that changing locations was unlikely to improve my prospects. The band had gone long and Michigan counties were mostly unavailable. However, there was a bright spot. I needed Rhode Island for WAS, and I worked not one but two stations, W1WIU and KD1EJ. Finally, after two years of being the underdog, and with over 200 contacts made in the shack, W8UM won its first recent triumph over W8SH!

ARRL Field Day – DE Richard KD8APA

Preparations for Field Day this year began early, and ambitiously. Many UM-ARC members had been drooling over the research vehicles and mobile towers stored behind the Space Research Building, many of them designed by UM-ARC's own Dave Boprie WS8P, a senior technician in the Space Physics Research Lab. After working up the guts, I asked Professor Tony England WØORE, also a member of the club, if we could borrow his 20-ton research truck with a 40ft crane and a 7.5kW generator—in other words the perfect Field Day mobile operation. To my surprise he was more than happy to lend it for the weekend and we began our work.



The U-M Microwave Geophysics Lab's research vehicle made for grand accommodations for Field Day ops, and a perfect support for the club's Mosley CL-33 tribander.

After cleaning it out we modified the docking sleeve on the crane to fit a Tailtwister rotator that we had in the shack, and reconditioned the club's old (almost 40 years old I am told) Mosley CL-33. We also borrowed Bruce KD8APB's 40m inverted-V, Steve K8QKY's Ten-Tec Orion, and the club's IC-2100H for local repeater access. With 7.5 kW to play with, and even with the AC running full blast, we still needed to load down the generator. We stocked up with computers, refrigerators and every other convenience we could think of and were off

to Domino Farms to join ARROW and lend the W8UM call sign.

With all the planning put in the months before, setup was a snap. We arrived Saturday morning at about 10 AM and were ready to operate well before 2 PM. Our truck was assigned 10m-40m phone operation which was perfect for many of our new members still learning the code. The next 24 hours saw a small army of operators from ARROW and UM-ARC racking up the QSOs at all of the 4A operating positions. ARROW was stocked with food, including pulled pork and beef brisket, and kept us all well fed.



A group of happy UM-ARC/ARROW Field Day participants (left to right): Tim KT8K, Steve K8QKY, Richard KD8APA, Bruce KD8APB, Vishal KD8DTF, and Dave WS8P.

We also had many of our new members getting on the air, both at the GOTA station and on our phone operation. The station was never empty and we added over 250 contacts to the total of 1,245 and an estimated 6,598 points. With the rotatable beam we hit almost every state on phone operation. In all it was a memorable Field Day that will set the bar for future operations. With the influx of UM-ARC members W8UM/ARROW Field Day 2006 was the best attended in recent memory, and we now have an impressive mobile base for next year. The truck was a complete success and a real attraction that represented U-M in the best way we could. **Go Blue!**



The inside of the W8UM Field Day phone station was equally well-equipped with a Ten-Tec Orion and expert ops (left to right) Tim KT8K, Paul KD8DPV, and Steve K8QKY.

Dayton 2006 – DE Jon KG6URI

I told several people that I quit my job to come to Dayton...which wasn't far from the truth. I left my previous company and started one with a few friends the day before I flew back to Ann Arbor!

I flew to Detroit on Wednesday so that I would get a chance to drop by the W8UM shack. Mark WD8DPA graciously picked me up from the airport and put me up for the night, and I woke up early Thursday morning. Before I headed out to the shack, though, I caught two morning passes of AO-51 from Mark's house. Using a vertical and a UHF Yagi that was clearly intended for terrestrial operation, I made my first successful satellite QSO! The trick seemed to be waiting until the satellite was only a few degrees above the horizon, contrary to normal operation. When I finally got to the shack, I was amazed. In the five months that I had been away, a huge amount of work had been done. The most impressive, of course, was the satellite station. Richard had clearly been able to assemble a great setup in a very short amount of time!

We headed down to Dayton on Thursday night, after we met at Bruce KD8APB's house. Joining Mark and I was Bruce, Richard, Steve K8QKY, Fred N6FS, and

Bob. This was Richard's first trip, and the first time Bruce stayed for the entire duration. On the way down, Fred randomly tuned to 80m on Mark's 10m whip and managed to copy a few stations! I fell asleep shortly after that, and we ended up at Tom N8ZM's house at about midnight.

We woke up bright and early Friday morning. However, we quickly found a problem. Tom's family didn't drink much coffee, but he dug out a coffee maker and a bag of beans. Unfortunately, the closest thing to a coffee grinder was a Cuisinart, and apparently coffee bean chips don't produce much more than brown water. Later, it seemed Tom's XYL found the real coffee grinder!

After that little adventure, we headed out to Hara Arena, home of the Hamvention. Walking into the arena, it was clear that there were more indoor vendors this year. Browsing the booths, I briefly saw the Elecraft linear amplifier that caused a bit of buzz, as well as the new Yaesu FT-2000. I picked up a new Astron power supply, a Motorola Saber battery and a speaker mic.

That night, we went to the Dayton VHF Banquet. It was my first time there. It was interesting to find out that the banquet isn't associated with any specific group, but that it is organized by itself. We were treated to a presentation by Brian WA1ZMS, who holds the only ARRL Worked All Bands award, about his SHF DX experiences. Afterwards, there was a prize draw. I managed to win a \$100 gift certificate to Down East Microwave, and so did a member of our group, Skipp WV6F. Richard picked up a repeater guide, and Mark won a tube of rusty nuts, cleverly marked "DEM". (A similar prize, a moldy old power meter, came with a hidden Down East Microwave gift certificate). Afterwards, we just went home and collapsed into bed.

On the second day, I had Hamvention volunteer duty. This year, Tom arranged us to work at security. My job was to patrol the

flea market on a golf cart, which was quite a challenge. The carts were gasoline powered, and didn't like to go slow. The horn was a button you pressed with your left foot, which seemed like a wrong pedal accident waiting to happen. However, it was the perfect way to see the flea market! As I expected, there weren't any emergencies during the event, but between helping people move and find things, I got a very good tour of the grounds. Afterwards, I was able to go directly to the stalls which I found interesting.

Saturday night was spent at Tom's barbecue. We met former UM-ARC president John N8UR, as well as a bunch of interesting hams. We stayed up as late as we could, but we were too tired to do much more. Sunday started out a cold and windy day. The flea market had mostly packed up by then, but we stayed around until the closing ceremonies. Fred suddenly went out and purchased an Icom solid-state HF amp, as well as a tuner and dummy load to go along with it. After the show closed, we debated attending the closing unclaimed prize draw. Bruce, Richard and I wanted to attend, while Fred didn't. We ended up staying, and Fred ended up winning a Palstar antenna tuner, quite similar to the one he had just purchased! We managed to convince Fred to donate it for the W8UM shack, where it will be put to good use.

We drove back Sunday afternoon, tired, looking forward to just relaxing, and next year's Hamvention. I spent the night at Bruce's house, and caught a flight back to the Bay Area on Monday. I certainly met a bunch of familiar faces, as well as a few new ones, and got to see a lot of ham radio. A proposal was floated next year for a joint UM-ARC—MSU flea market booth, which is sure to be exciting. Finally, all of us would like to thank Bruce, Mark, and especially Tom, for the transportation and the generous hospitality! It definitely made the trip memorable and enjoyable!

Hazel Park ARC Swap and Shop Trip

DE Bruce KD8APB

W8UM and its predecessors have been around since 1913. In that time a great deal of equipment has accumulated. There is stuff in the attic that most contemporary amateurs would look at and say “What is that thing?” Fortunately there is another group of amateurs out there that positively covet the stuff we no longer have any use for. Richard KD8APA, Paul KD8DPV, Nate, and myself rented a twelve foot truck and drove to the Hazel Park Swap on Sunday January 15th. We took the back issues of QST that did not sell the previous year, a Heathkit mobile rig, some impedance bridges, and other assorted test equipment. We found willing buyers for quite a bit of stuff but not the large computer cabinet with the removable doors; we had to lug that back to Ann Arbor for a future swap.

Everybody had a great time wandering the aisles at what is perhaps the largest swap in Southeast Michigan. Of course it goes without saying that I purchased the obligatory handful of connectors. Allowing for expenses, the club netted just over \$700. I can see the great tower rising slowly out of the gravel field on top of the EECS building. Can you see it too?

Station News

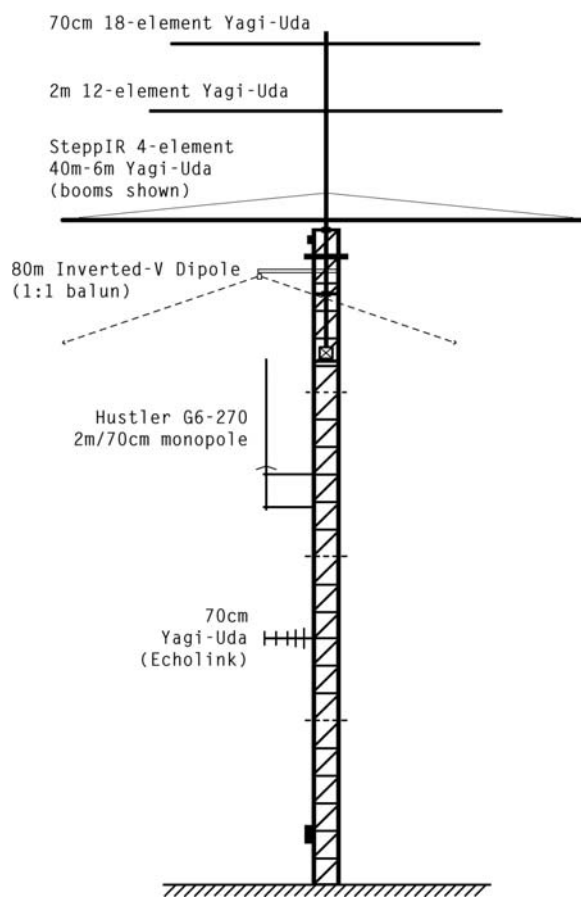
The New W8UM Tower

DE Chris KA8WFC

Thanks to the incredible support from our alumni, friends (and club members), and the University, W8UM will soon have a new tower and antenna system. The planned installation includes a 40 ft guyed Rohn 55G tower on top of the EECS Building. A SteppIR “MonstIR” 4-element Yagi-Uda will sit at 90 ft above ground level, promising W8UM a big signal on every amateur band from 7 through 54 MHz. An inverted-V mounted near the tower’s top will serve on 75m/80m. Long-boom Yagis for 2m and 70cm will open up these bands for weak-

signal experimentation and contesting. The tower will also support a Hustler G6-270R monopole for local communications and a small 70cm Yagi for an RF link to the W8UM/R repeater site in the Dennison Building on Central Campus. The entire system is engineered for decades of use with plenty of room for expansion.

With this new tower and antenna system, the club will have a strong foundation for many years to come. The W8UM station will offer students, faculty and staff, and our alumni a signal worthy of its call, affiliation, and history.



A draft of the new W8UM tower and antenna system—the new tower will support an impressive suite of HF, VHF, and UHF antennas and promises a big signal for the next generations of UM-ARCs.

The total cost of this project is \$30,000, and both the EECS Department and College of Engineering have pledged \$10,000. We now have just to finish fundraising our \$10,000 to pay for the installation. The roof

modifications have already been ordered, hardware is on the way and we are looking forward to an installation date near the beginning of the school year.

Echolink and the W8UM Repeater

DE Pat WA4DSR

Since January amateur radio operators have been able to connect to the W8UM repeater over the Internet via Echolink (see www.echolink.org). Echolink is a VOIP (Voice Over Internet Protocol) exclusively for amateur radio operators. It allows hams anywhere with an Internet connection to connect to the repeater and be heard on RF.

The current system consists of a Kenwood TH-K2AT HT running 0.5 Watts tuned to the W8UM/R frequencies. This is controlled by an Ultimate Linking Interface (see www.ilinkboards.com/indexuli.html) which is in turn connected to the sound card and serial ports of a Windows PC running the Echolink software. Audio from the Internet is transmitted to the repeater, while audio from the repeater goes out over the Internet.

Control of the system is either by a web based interface, or from the RF side through DTMF tones transmitted to the repeater from your HT. This system resides on a bookshelf in my office in the Astronomy Dept. on the 8th floor of Dennison, only 3 floors below the repeater itself.

The Sunday night net has a really broad reach now. One Sunday night there were logins from three continents: North America, South America, and Europe. On Field Day, alumni Larry WDØBCF provided driving directions to the W8UM/ARROW site from his shack in Houston, Texas. Frequently folks from the MSU repeater are heard in Ann Arbor via Echolink.

If you are not within RF range of the repeater on Sunday night, join the net via Echolink node WA4DSR-R (node #264358), or just drop by any time and see who is around on the RF side.

One of the club's current projects is to replace this temporary system with a more permanent installation. This will have a dedicated 440 MHz link from the repeater on Central Campus to a computer in the W8UM shack on North Campus. All of the hardware is purchased and the installation will be done soon. Special thanks to Mark WD8DPA and Dan N8DJP for working out the radios and power supplies.

The UM-ARC 2m Net

The weekly Sunday night (8 PM Eastern) net on the W8UM/R repeater has been very active this year, due in no small part to the repeater's Echolink connection. The net is getting an average of eight check-ins per week with stations including club members, alumni, and other radio amateurs. Even if you are not within the repeater's coverage area, jump on Echolink and join us Sunday evening for an hour of interesting stories and conversation!

More News from Around the Club

New Hams!

Congratulations to club members **Colin Duckett KD8CCQ**, **Paul Piong KD8DPV** and **Vishal Jariwala KD8DTF**, who all received their first FCC Amateur Radio Licenses this year! Colin is an assistant Professor in the University's Medical School, and has been interested in ham radio since he was a kid growing up in England. Paul is an engineering undergrad at U-M, has been a member of the club for over two years and served in the signal corps of the Singapore army. Vishal is a graduate student in the Aerospace Engineering department and joined the club shortly after getting his ticket.

Quest for 3Y0X at KD8APB

After several attempts to contact 3Y0X with his G5RV antenna, Bruce KD8APB erected his Buddipole and ladder support on the deck of his QTH, pointed it (broadside) toward West Antarctica and made the contact on 17m SSB. Persistence, and a little bit of directivity paid off! Nice work Bruce!



The Buddipole antenna on the deck of the KD8APB QTH. Good for at least 9,000 miles!

Congratulations to Our Club Members...

- **Lora Schulwitz KC8UDG** has enjoyed an incredibly successful year so far. Lora won the second-place prize at the 2006 IEEE Antennas and Propagation Society International Symposium for her paper, "Millimeter-wave Dual Polarized L-Shaped Horn Antenna Array." Lora also took second-prize in the student paper competition at the 2006 IEEE International Microwave Symposium for her paper, "A New Low Loss Rotman Lens Design for Multibeam Phased Arrays." Lora is a Ph.D. candidate in the Radiation Laboratory and her advisor is Prof. Amir Mortazawi. Great job Lora!

- **Prof. Tony England WØORE** was inducted into the CQ Amateur Radio Hall of Fame this year. This institution recognizes those individuals, whether licensed radio amateurs or not, who significantly affected the course of amateur radio; and radio amateurs who, in the course of their

professional lives, had a significant impact on their professions or on world affairs. Prof. England is an Associate Dean of the College of Engineering, a former NASA astronaut, and was the second ham to operate from space. Congratulations Prof. England!

- Faculty UM-ARC club members are leading the University! **Prof. Dave Munson** was recently named the Dean of the College of Engineering. After several years of leading the Electrical Engineering and Computer Science Department, Prof. Munson is now heading the University's engineering school, one of the finest in the country. We are very proud of Prof. Munson and are grateful for his critical support of our club.

- **Prof. Brian Gilchrist KF6ON** has been named the Interim Chair of the EECS department. In addition to a wide range of research activity in both the EECS and AOSS departments, Prof. Gilchrist is a devoted student project team advisor and a great supporter of the U-M Amateur Radio Club. Congratulations Prof. Gilchrist!

- **Jack Wagner W8AHB** installed a bust of Nikola Tesla at Carnegie Mellon University, honoring the inventor of radio. This is the 19th bust that Jack and his elementary school students have installed, all at the nation's top engineering and physics departments (perhaps you have seen Mr. Tesla in the EECS atrium). Way to go, Jack! (Please visit Jack's website: www.ntesla.org)

Thanks to our 2005-06 Club Officers!

President – Richard French KD8APA
Treasurer – Bruce Graham KD8APB
Secretary – Lora Schulwitz KC8UDG
Station Manager – Steve Culp K8QKY

Fundraising Continues for the W8UM Tower

By early fall 2006 we need to raise \$10,000 to complete the new W8UM tower. Please help if you can. Every dollar counts! By donating to UM-ARC you will be investing in the great tradition of Amateur Radio at The University of Michigan. To support the club, please see our website, contact us via U.S. mail, or contact Richard French KD8APA at rtfrench@umich.edu.

We have already received tremendous support from U-M alumni, friends, and the University. In particular, the following individuals have contributed to our station's tower fundraiser through a cash gift or have supported the W8UM station through an in-kind equipment donation:

Prof. Bill Becher AA8RW
Jack Burchfield K4JU
Gary C. Chatters WA9ZZZ
Steve Culp K8QKY
Gregory B. De Maggio AA8LS
Vic "Tory" Dorer III W8VKD
Joe Firlit WA8RTL
Chris Galbraith KA8WFC
Prof. Brian Gilchrist KF6ON
Gordon S. Good KC8ES
Bruce Graham KD8APB
Jack Kesterson W8PP
William M. Klykylo WA8FOZ
Robert W. Knighton KC4A
Gerald W. Kohn WS8GMH
Frode Maaseidvaag KE8CS
Steve McCarthy
Prof. Gabriel M. Rebeiz
Lawrence A. Rogers WDØBCF
Patrick O. Seitzer WA4DSR
Alexander Slingeland N8SPG
Fred Steiner N6FS
Mark D. Travaglini WD8DPA
Jack L. Walker AB8RK
Dennis Ward KT8X

Thank you for your support!

Chirp and Splatter is published by the University of Michigan Amateur Radio Club. The club holds monthly meetings, hosts many special events and radio courses, and operates a club station—W8UM—located in the EECS building on North Campus. If you would like more information about the club or amateur radio, please contact us!

Email: w8um.info@umich.edu
On the web: www.umich.edu/~umarc

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73 and GO BLUE!