RCARC
Membership Meeting

Thursday, 22 September 2011
1700 Social   1730 Meeting
Program 1800

Methodist Richardson Medical Center
At Bush/Renner/Shiloh Intersection
Second Floor Conference Room 200

Subject:
The Year in Review and Elections Too

Local Club News

Meeting Notice Please plan to attend the RCARC Annual Business Meeting this month, as we conduct the officer elections. This month's presentation is designed to enlighten and entertain. The RCARC will be presenting a video documenting the last Fiscal Year for the club. Many photos have been compiled into a video that will bring back memories for those who participated in the various club events. So, be sure to come for the fun and the elections.

Rockwell Collins Amateur Radio Club Information Net The W5ROK NET started on Thursday, August 4th. The following are the particulars:

WHAT	Information Net - **RCARCIN**
WHEN	Each Thursday night at 19:00 CST
WHERE	W5ROK Repeater 441.875+ PL 131.8Hz
WHO	Everyone and anyone.
FORMAT	(a) announcements
	(b) Swap
	(c) Check-in plus updates.

The format provides club and local announcements of interest to Amateur Radio, a swap net time as well as personal updates from net participants regarding their experiences in the hobby. All suggestions for content and format are welcomed. *(Submitted by Michael Ketchum K5MDK)*

Heathkit Returns to the Kit Business A notice on the Heathkit **website** announces that the venerable kit manufacturer, well-known to all Amateur Radio operators of a certain age, will be reentering the kit business in late August. The notice states, in part: "Heathkit will debut their new line of Do-it-Yourself kits for common around-the-house items. The first kit will be a Garage Parking Assistant (GPA). The Garage Parking Assistant kit lets you build your own system that uses ultrasonic sound waves to locate your car as it enters the garage. The system signals to the driver using LED lights mounted on the wall when the car is detected and in the perfect spot for parking.

 "The GPA-100 kit consists of two primary assemblies -- the LED Display in kit form and the pre-assembled ultrasonic range module. The kit will include everything you need to complete the project except a soldering iron and hand tools.

"Next on the market will be a Wireless Swimming Pool Monitor kit followed by many more. Heathkit wants to continue to bring to its customers interesting, unique Heathkit products. Heathkit is interested in learning what types of products kit builders would like to build. Kit builders can submit their suggestions through this website using the Contact Us email."

Unopened Heathkit HW-9 QRP CW transceiver in a display case at ARRL HQ.

Although there's no indication that Heathkit Educational Systems is planning to reenter *(Cont. on page 5)*

RCARC OFFICERS

VE SESSIONS

Dallas tests are held 4th Sat of each month at 10:00. 13350 Floyd Rd. (Old Credit Union) Contact Bob West, WA8YCD 972.917.6362

Irving tests are held 3rd Sat. of each month at 09:00. 5th and Main St. Contact Bill Revis, KF5BL 252-8015

McKinney VE test sessions are held at the Heard Museum the first Sunday of the month. The address is 1 Nature Place, McKinney TX. The time of the testing is 14:30, ending no later than 16:45. *Note: no tests given on holiday weekends.*

Garland testing is held on the fourth Thursday of each month, excluding November, and begins at 1930 sharp. Location is Freeman Heights Baptist. Church, 1120 N Garland Ave, Garland (between W Walnut and Buckingham Rd). Enter via the north driveway. A HUGE parking lot is located behind the church. Both the parking lot and the Fellowship Hall are located on the east side of the church building, with big signs by the entrance door. Contact Janet Crenshaw, WB9ZPH, 972.302.9992.

Plano testing is on the third Saturday of each month, 1300 hrs at Williams High School, 1717 17th St. East Plano. Check Repeater 147.180+ for announcements.

Greenville testing is on the Saturday after 3rd Thursday, 1000 hrs at site TBA, contact N5KA, 903.364.5306. Sponsor is Sabine Valley ARA. Repeater 146.780(-) with 118.8 tone.

President's Message

Are You Back Yet? – September has arrived with a break from the heat and we're glad to see the cooler weather return. Join us on the repeater for the "Club Info Net" weekly at around 7:00 PM. We meet on the club repeater at 441.875(+) PL 131.8. Hey, I'm even willing to help you get your radio setup so you can join us—just let us hear from you. It's also a great way to get used to operating in a net control style (in an informal fun way). You can hone your skills, learn about more activities, pick up some new equipment, or even take a turn as the Net Control Operator. You never know when you skills might be needed in a real emergency, so make a point of getting back each week. The repeater would LOVE to see you return.

We've continued our LEAN event effort in September and are beginning to show signs of improvements in the area. While helping, you can learn additional history, see some old club pictures, or find treasures that the club has to offer. The W5ROK station storage area continues going through changes as we slowly clear out loaned equipment or organize what is there before we make our next step.

As the current administrative year draws to a close, our officer meetings have been mainly focused on getting things in order for the annual meeting to be held in September. The September meeting is when new officers will be elected for the FY2012 term. Ballots and information concerning the voting for those standing for election is being distributed via email but you still have time to get involved, take action and vote. We've also lined up an October meeting for the newly elected officers.

Nominations will be taken even on the evening of the election, however, getting your nomination in sooner is better than later since you could get yourself in a position to win a Quad Band HF/VHF radio. So make a point of getting your confirmed nominations in by Wednesday September 21, 2011 to improve your chances to win our nominations prize. If you cannot attend the September meetings make sure your vote is registered by getting your absent vote into the club Vice President Dwight Ramsey KE5SAS at suhermano@tx.rr.com so he can vote your proxy (one vote per member).

Well it's time to say 73s to the FY 2011 club year. I hope you enjoyed it and please get involved whenever and wherever you can. We all improve though the relationships and involvement of all our great members. I know many of you did not get to make as many contacts as you wanted last year but hey just make a few QSO each week and you can improve your contacts in the FY2012 fiscal year.

Hope to hear you on the air!
73 for now Ross - K5SRT
k5srt@arrl.net

Secretary's Report
August 25, 2011

A regular monthly membership meeting was held on August 25th at the Richardson Methodist Medical Center Bush Renner campus in the 2nd floor conference room. Those in attendance were as follows:

1. Charlie Beis – K5UWD
2. Dennis Cobb – WA8ZBT
3. William J. Fell – KK5PB
4. John Galvin – N5TIM
5. Michael Ketchum – K5MDK – Club Secretary
6. John McFadden – K5TIP
7. Bob Kirby – K3NT
8. Dwight Ramsey – KE5SAS – Vice President
9. Chuck Samuel – K7NWM
10. Mike Schmit – WA9WCC
11. Jim Skinner – WB0UNI – Newsletter Editor
12. Ross Terry – K5SRT – Club President
13. Hernando Garcia – KC5FDW
14. Paul Veenstra – KC0TEG
15. Joe Wolf - N5UIC – Membership

This represents 4 Life members, 9 regular members, 1 associate member, and 1 visitor.

OPENING:
1. Club President, Ross Terry – K5SRT opened the meeting at 5:31pm with a pledge.
2. Introductions were made by all in attendance.

OFFICERS REPORTS:
> **PRESIDENT** – Nothing to report.
> **VICE PRESIDENT** – Nothing to report.
> **SECRETARY** – The club Secretary, Michael Ketchum – K5MDK read the minutes from the last regular business meeting. Bob Kirby – K3NT moved to accept the minutes as read. Dwight Ramsey – KE5SAS seconded this motion. <u>The motion to accept the minutes as read was approved by a show of hands.</u>

OLD BUSINESS:
1. **MFJ "IT" Antenna** – Michael Ketchum – K5MDK reported on the MFJ-1798, affectionately called "IT". IT was taken down this year and stored at his home QTH. A work party will be planned to dismantle, repair and package the antenna for sale when the weather cools down. It is hoped that Michael's YL will grill some lunch for the occasion of the work day, so please be looking for further announcements.

2. **Repeater Power Upgrade and Repair Project** – Michael went on to report on the progress of the approved motion from last month's meeting to purchase parts for the repeater power. Those parts, save the batteries, have been purchased. The plan is to buy the batteries next month against FY2012 budget. Michael made a plea to the membership to volunteer to help with this repair effort. If interested, please contact President Ross Terry – K5SRT.

3. **Retiree Advocacy** – Michael went on to express a recommendation from the officers to create a retiree advocate position in the club, given the percentage of retired members. Such an advocate would (a) come up with ideas to involve retiree members. (b) plan retiree events, such as Retiree Day at the W5ROK station. (c) continue to represent the needs of retirees to the club officers and membership. If you are a retiree and interested in helping, please contact our club President, Ross Terry – K5SRT.

4. **RCARC Information Net** – Michael went on to report on the Information Net, which began on August 4th. There were three nets before this meeting with the following check-in counts: 8/4 had 7, 8/11 is unknown, and 8/18 had 7 check-ins, with another net planned for tonight. The net meets weekly on Thursday nights at 7:00pm. Please join us on the W5ROK repeater.

5. **Constitutional Changes** – Michael went on to report that club constitutional changes were recommended by the officers at the last meeting. As per the constitution, an announcement with the changes was made to the entire membership and a planned vote was announced at that time. The changes were reviewed. A motion to accept the changes was made by Bob Kirby – K3NT. A second was made by John McFadden – K5TIP. Discussion included the following changes:
   a. Article XIII Section 1 paragraph 7 addition should be moved to Section 3 of that same article. (N5UIC).
   b. Article XIII Section 1 paragraph 7 addition should be reworded to past tense with "approved" and remove otherwise. (WB0UNI and WA8ZBT)
   c. <u>A hand vote to amend the motion with the changes from this section was made and passed unanimously.</u>
   d. Article XI Section 3 paragraph 2 addition was reworded to say: "If a nominee cannot be found for an office on or before the meeting prior to the annual meeting, the current officers can request suspension of this term limit to last one additional year. The membership shall vote to suspend the rule by a Quorum vote." (WB0UNI)

e. A hand vote to amend the motion with the changes from this section was made and passed unanimously.

It should be noted that there were two other areas that were discussed to be changed. However, these were outside of the announced changes. These other areas are as follows:

a. Article XIII Section 2 Paragraph 2 to remove "Noon hour operation is permissible. (WA8ZBT)
b. Article II Section 1 Paragraph 6 to be reworded to allow for members who are limited due to HOA restriction in their home QTH. (WA8ZBT)
c.

With no further discussion or changes to the motion, a hand vote was made. There were 14 for and 1 against.

6. **Silent Auction of Kenwood SM230 Scope** – Michael went on to cover the silent auction, which was approved by the officers and presented to the membership in an announcement at the last business meeting as well as email. The sale of the Kenwood SM230 scope would be done through a silent sealed bid auction. All bids to be sent to the Club secretary by August 24th at 12:00pm. Michael opened the sealed bids, which there was only one, and announced the winner as Bob Kirby – K3NT with a bid of $101.00.

7. **Annual Officer Elections** – Michael went on to remind the membership that next month will be the officer elections for the club. In order to encourage members to nominate and be nominated, a contest was created for the nominator with the most valid nominations. The rules were summarized with further email announcements to come.

8. **Sale of Dual DSP by JSP INR12** – President Ross Terry – K5SRT asked the membership about the sale of the JSP INR12 dual DSP device. There was discussion about the minimum price. One reported a used hamfest price of $100 was seen. The current retail price is over $300. However, more research into the minimum price must be determined by the officers before announcing this auction.

9. **Unknown Antenna Mounted On RCARC Tower** - President Ross Terry – K5SRT reported an unknown antenna on the TH7 beam tower. After research, it is believed to be part of a SIGINT project. After inquiry, Ross found out that the test will conclude and the antenna brought down by the end of August.

There was discussion about the safety of having people on the tower and putting RF devices in an area rich in RF energy. Bob Kirby – K3NT suggested a letter be written to facilities to express our concerns. Ross suggested regular inspections as well as a sign placed on all towers and antennas to warn of RF and also identify ownership. Bob Kirby – K3NT made a motion to write a letter of concern to Michael Kertis, the safety manager of the facilities team. This letter should contain the safety concerns as well as the need to inspect for possible damage to the tower. Michael Ketchum – K5MDK seconded this motion. Dwight suggested an amendment to develop an approach for handling/preventing situations like these in the future. The amendment and the motion were voted together, due to general acceptance, and the motion carried by hand vote unanimously.

NEW BUSINESS
1. **Calendar of Events** – Ross presented a listing of upcoming events.
2. **Presentation offering** – Hernando Garcia-Vasquez – KC5FDW offered to make a presentation on all of the technical factors that go into running a power plant. The club President, Ross Terry, acknowledged this offer and agreed to follow up at a later time to plan this presentation.

PRESENTATION
Tonight's program was presented by John Galvin – N5TIM. His expertise in Emergency Communications and public service events is renown in this area. He will be presenting various facts about APRS (Automatic Packet Reporting System). The presentation started at 6:24pm.

Heathkit Returns to the Kit Business *(Cont. from page 1)* the Amateur Radio market, the St Joseph, Michigan-based company is actively looking for kit suggestions.

After several decades of successful kit manufacturing, Heathkit left the kit business in 1992. Heath sold Amateur Radio equipment, at first only kits and later its own line of non-kit products, from 1954 to 1992. The company has been sold a number of times since its founding back in 1912 as an aircraft company. (Article courtesy of http://www.arrl.org/news *Contributed by Bob Kirby K3NT*)

Computers and Ham Radio in the 1970's Some of you will remember the 70's, but the majority are likely too young or started in ham radio later. Since I was first licensed in 1961, I'd had quite a bit of experience by the mid-70's. In those days, the majority of young hams built their transmitters and receivers (yes, separate units were the norm, although transceivers had started to become more popular) from kits. The 60's and 70's were the hey-

days of Heathkit, Eico, Knight-Kit, etc. You could do the wiring and assembly yourself and save hundreds of dollars off ready-made gear. Single Sideband had also become the norm, largely replacing AM phone, which went through death-throes in the late 60's and early 70's. Of course, the AM gang were always denigrating the "donald duck side-banders" (the "quacking" that SSB somewhat sounds like without a BFO). Some semblance of that prejudice remains even today, with a resurgence of interest in AM.

How about computers? Today we take for granted the multi-gigahertz clocked personal computers that can do just about anything we need them to do regarding ham radio. There are very good programs to run RTTY, CW, PSK-31, and other digital modes solely with a computer (with sound card) and just about any (SSB) transceiver. Not so in the 70's. Those were the days before Apple, before the IBM PC, and before any type of ready-made computer was available that cost less than hundreds of thousands of dollars, took up dozens of square yards of floor space and required a dedicated air conditioned cooling system.

Intel had come out with the 4004 and 8008 processor chips by the early 70's, but those were very limited in capability and used primarily as embedded controllers for other equipment such as traffic lights. It was not until the Intel 8080 appeared that true "personal computing" became practical. Motorola soon followed with the 6800 (yes, only 2 zeros - the 68000 did not come out until the 80's), and there was also a 6502 chip, eventually produced by Rockwell International (for whom I worked - having started with Collins Radio Company in the late 60's, which was bought by Rockwell in the early 70's). These were all good CPU chips, but that's all they were - processing units. You had to add all sorts of control circuitry, clocking, and memory as well as input/output devices to make a computer.

The first commercial personal computer that came out, in my recollection, was the Altair 8800. I bought one of them, or I should say I bought the parts to make one of them, in the mid-70's. Yes, it was still kit-building then. But any ham who had put together Heathkits or any other kit could likely build the computer. I still have that old Altair machine, albeit upgraded several times at great expense with new processors, memory, floppy disks, etc. I haven't turned it on (and the power supply capacitors are probably useless now) in 20 years but it rests in my garage attic, waiting for the day when I can create my own "museum".

It was ***expensive***, to say the least. I don't recall the basic unit cost, consisting of case, very underpowered power supply (built within the case), front panel, CPU card, and 1 kilobyte static memory card (yes, that is 1024 bytes). I think it was probably close to $600, and I later spent over $1000.00 for more memory and another thousand for a dual 5 1/4 inch floppy disk unit. It was initially programmed by means of toggle switches on the front panel, from which

you had to manually enter the digital codes (in octal, although I preferred hexadecimal) for all the instructions you wanted to execute. It had LEDs and switches for all 16 bits of the address and 8 bits of data. The 8080 used a 2 MHz clock, and each instruction took at least 4 memory cycles. So it effectively took 500 milliseconds to execute the simplest instruction and even longer for more complex ones. Not fast, but in those days, it was fast enough and about the best you could get for a microprocessor.

I was lucky that my employer started to use 8080's (and 8085's) in embedded equipment, so a commercial assembler was available to me (from Intel, as I recall). I was even assigned to projects that used them ! Thus, I became very good at cranking out 8080 assembly language - hundreds of instructions per day in fact. I used those skills to write my own ROM operating system (similar to a PC BIOS) as well as other programs. I created a mathematical package that included transcendental functions (all in assembly language) and entered it in a contest run by the company making the Altair (MITS). I won a prize, which was a 1 kilobyte PROM card, to add to my system. I was able to burn UV Erasable PROMs at work in off hours from the assembly code I had written. It was a monitor program, simple debugging program, and code to do Input and Output (I/O). All I had to do was enter a "jump" address on the toggle switches into the ROM starting address space to get the computer going. Later, after upgrading to a Zilog Z-80 processor and adding floppy disks, I wrote my own assembler.

Speaking of I/O, the only device I had was a KSR-28 teletype that I'd bought surplus when Rockwell International took over Collins Radio Company. It used the 5-level Baudot code, so part of my ROM program was converting to and from ASCII and Baudot to do all my input and printing. I also created a "boot loader" that used paper tape (5 level, of which I used 4 bit nibbles to make the 8 bit bytes) so I could make use of my model 14 teletype typing reperforator and model 14 transmitter distributor (TD) paper tape reader, both of which I bought used.

I had been quite active on RTTY on the air before that time. In those days, there were no computer programs to do the modulation and demodulation of the 2 tones used. You needed an external device called an RTTY Terminal Unit. It used analog circuitry and filtering. The best of the reasonably priced units was made by Hal Communications Corporation and was the ST-6. I built one of them in the early 70's from their "kit". As with many kits, as previously mentioned, what you actually got was a chassis and a set of parts. If you were lucky, you got pictorial layouts of the chassis parts and good schematics. The Heathkit-style step by step procedures were often not included. The ST-6, after construction and calibration, worked very well for the 170 Hz shift (2125 / 2295) used on HF and the 850 Hz (2125 / 2975) shift used on VHF. I was living in southern California at the time, and we had an excellent RTTY-only

repeater using the 146.10/70 pair. I also operated on HF, working some DX (Australia comes to mind) and domestic stations.

Interfacing the RTTY gear to the computer was no easy task since the mechanical equipment used a high-current loop while the computer needed low voltage digital signals. Fortunately, the MITS engineers had thought ahead and the Altair 8800 was designed using a backplane that accommodated additional circuit cards. It was called the S-100 bus, having 100 lines with large connectors into which the CPU card, memory card(s), and any additional cards could be plugged. The stock machine came with a 4 slot bus, but that could be expanded with additional 4 or 8 slot modules (imagine wiring together those things!). My 4 slots were taken up with the CPU, the 1K static memory, and the 1K PROM card along with an I/O card I purchased from a company called Processor Technology that sprang up to service the growing S-100 market. The PT card I purchased (and assembled) was called a 3P+S. As the name implies, it had 3 parallel ports (I believe they were 8 bits each) and a programmable serial port using a UART device.

I designed an interface using high-current switching transistors and opto-isolator couplers to drive the RTTY current loop of the ST-6 with the computer (and decode the bits on the bus as well). The UART provided for 1.5 stop bits (slightly more than the standard 1.42 used by the Baudot teletypes), but that worked just fine. I eventually got 100 speed gears for the KSR-28 (instead of the standard 45.45 baud, 60 WPM speed used for ham RTTY) so I could do "higher speed" printing from the computer. The model 14 units were fixed at 60 speed and were not changeable. So I recall buying a cassette tape unit to do my program input and output, interfacing it with the 3P+S unit. I also eventually bought a printer and wrote a driver for it using two of the 3P+S parallel ports. My PROM card capacity was nearly exhausted after all those software (or firmware) device drivers.

It soon became apparent that more memory was needed to do useful work with the computer. MITS came out with a very poorly-designed "dynamic" memory card. It had 4 kilobytes and cost around $400.00. I learned a lot from building a couple of those cards and trying to make them work. They were, at best, flaky, and would lose the memory content (dynamic memories need constant refresh to preserve their content, unlike static memory, but it was a lot less expensive and had higher capacities per chip than static). I recall doing some re-engineering of the timing of the refresh on that card and finally got them to work more-or-less reliably. So I had a whopping 9 KB of memory to work with. Does not sound like much, but with efficient assembly language programming (that was my favorite anyway), it went a long way. The BASIC language became available for the MITS system, but I never used it much at that time.

Moving forward a few years, and upgrading the system to a Zilog Z-80 based processor card that ran at a blazing 5 MHz instead of 2, I decided I needed to use the computer to help with my traffic handling. I had been active on CW (Morse code) networks since the mid-60's as part of the National Traffic System (NTS). Those days, a lot of messages were handled on behalf of 3rd parties due to telephone toll charges being very high (no cell phones and no Internet, of course). Nothing commercial, just things like birthday greetings, state fair ham radio booth messages, and, of course, true emergencies like earthquakes, fires, tornados, hurricanes, and floods, to get word to relatives outside (or inside) the affected areas.

I had purchased a small house from another ham who was in the Marines but got transferred to the east coast. He was also a very active traffic handler, and wanted to move CA traffic across the country quickly, once he got established (and I had set up my own station again). So I turned to the computer once more. It was already interfaced with the radio via the ST-6, so it was a matter of developing a program that would send and receive formal radiogram messages, either printing them or storing them for later relay.

My buddy on the east coast liked to get up very early to do his hamming, around 6 AM eastern time. Naturally, since I was 3 hours earlier, that was 3 AM California time and I preferred to be sound asleep. So I wrote a program that would start calling him on a pre-defined frequency (I believe it was on 40 meters) at 3 AM, synchronize with his reply, and accept traffic from him, storing it in the computer's memory for me to process later. At that time of day, there was little chance of creating any interference to other stations. Optionally, it could print a full log of everything as it occurred.

I had it rigged up so that if there were any problem, such as drop-outs or other anomalies resulting in no contact after a certain time, it would send "bells" to the teletype, waking me up so I could go see what was wrong (the ham gear was in a different room, so I did not hear the normal RTTY clacking). It only had to do that a few times in the months that we had the sked (schedule) going. The program could also send him eastern area traffic, and the call-up to him indicated how many messages I had. It also acknowledged each received message. If the message number were not correct, he would send the whole message again. We worked out a specific set of codes that would allow the program to work as intended. Essentially, he remotely controlled my ham station via 45 baud RTTY.

I'm not sure if that was completely legal at the time (per FCC rules), but it was pretty much the same thing as the automated Winlink stations today, which are legal. We never publicized our operations, which continued until he was once again transferred, this time overseas.

It was a really great time to be involved with the emerging personal computer era, and it provided a wonderful way to join my 2 favorite hobbies, both of which I still greatly enjoy. It was, of course, time-consuming to do all that development, but I was single then, so I had the opportunity.

I have lots more to say about computers and ham radio during that era, but the purpose of this article is to give a glimpse into the early days before personal computers, the Internet, and digital signal processing were developed and refined. Yes, that was more than 35 years ago, pre-dating even packet radio. (*by Steve Phillips K6JT* Formerly KN7OOR and WA6TVA)

Rockwell Collins avionics systems certified on 787 Dreamliner Employees across our company are one step closer to seeing the results of more than a decade of extensive analysis, development and testing on Boeing's highly-anticipated 787 Dreamliner airplane.

Boeing announced late last week in a ceremony in Everett, Wash., that it has obtained Federal Aviation Administration and European Aviation Safety Agency (EASA) certification for its 787-8 aircraft platform.

Rockwell Collins has more content on the 787 than we've ever had on any commercial aircraft. Our company provides and serves as the systems integrator for the 787's flight deck displays and crew alerting system, pilot controls, communication and surveillance systems, and core network cabinet. Our company also provides the common data network for the 787's Common Core System.

According to Jeff Standerski, vice president and general manager of Air Transport Systems, this recent achievement represents a significant milestone and is the gateway to the first aircraft delivery to All Nippon Airways (ANA) late next month.

"It's been an extensive journey, and so many people at Boeing and Rockwell Collins have been involved," said Standerski. "This accomplishment is monumental. The talent, sacrifice and commitment of our employees have allowed us to bring industry-first innovations to this revolutionary aircraft, and we're extremely proud."

For Barbara Camire, engineering project specialist in Bothell, Wash., who has worked on the 787 program since its start in 2004, the airplane's entry into service is "thrilling."

"The 787's design changes the face of flying for the public and airlines," explained Camire. "This program required a great amount of adaptability and fortitude from our employees, but all along we maintained a 'can-do' attitude."

Source: Rockwell Collins Online August 30, 2011 *(Contributed by Bob Kirby, K3NT)*

Rockwell Collins' digital network technology helps U.S. Navy validate systems required to operate X-47B unmanned system from a carrier WASHINGTON (Aug. 19, 2011) - Rockwell Collins Tactical Targeting Network Technology (TTNT) played a key role in the U.S. Navy's recent demonstration of an autonomous carrier landing capability developed as part of the Unmanned Combat Air System Carrier Demonstration (UCAS-D) program.

During this historic operation, an F/A-18D aircraft served as a manned surrogate for the Northrop Grumman Corporation (NYSE: NOC)-built X-47B unmanned aircraft, completing a series of carrier integration objectives that included launches, touch-and-go landings, and arrested landings. All of these maneuvers were supported by Rockwell Collins' TTNT equipment, which enabled digital communications between the carrier and the F/A-18D, without human intervention.

"Successful autonomous carrier landing scenarios for unmanned aircraft require pinpoint navigation accuracy as well as absolute minimum data link latencies to ensure that the X-47B tracks and adjusts its flight pathbased on deck movement," said Bob Haag, vice president and general manager of Communications Products for Rockwell Collins. "Our TTNT technology delivers very low latency, precise navigation and ad hoc networking capability that directly enabled this demonstration of carrier capable unmanned aircraft."

The F/A-18D used in the demonstration was equipped with a subset of the avionics and guidance, navigation and control software that will allow the X-47B to perform precision landings on the carrier, he added.

UCAS-D prime contractor Northrop Grumman designed, produced and is currently flight testing the X-47B. As part of the program, the Navy, Northrop Grumman and Rockwell Collins conducted a series of tests of an integrated communication and navigation package. The UCAS-D aircraft/ship integration demonstration is focused on digitizing current communications and navigation information flow to incorporate capabilities required for unmanned flight operations aboard a carrier, with minimal impact to existing hardware, training and procedures.

TTNT is an advanced tactical data link providing an airborne networking capability for warfighters. It has been used in demonstrations on more than a dozen airborne and ground platforms, including the F-16, F-22, F-15, T-39, F/A-18, B-2, B-52, Airborne Warning and Control System (AWACS), Battlefield Airborne Communications Node (BACN) and E-2C Hawkeye.
Source: Rockwell Collins Press Release *(Contributed by Bob Kirby K3NT)*
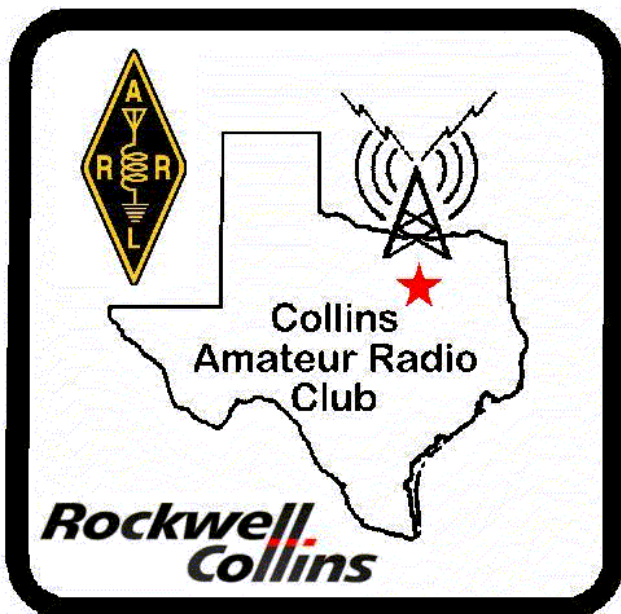
ockwell-Collins

Amateur Radio Club

Mail Station 461-290

P.O. Box 833807

Richardson, TX 75083-3807

TO:

CLUB STATIONS
(972) 705-1349

W5ROK   REPEATER
441.875 MHz   +5 MHz Input
131.8 Hz PL - RX and TX

W5ROK-1 PACKET BBS ROK Node
145.01 MHz

W5ROK-N1, W5ROK-N2 & W5ROK-N3 HSMM-MESHNET Nodes 2.4 GHz

Thursday, 22 September 2011

1700 Social   1730 Meeting

**Methodist Richardson Medical Ctr
At Bush/Renner/Shiloh Intersection**

Second Floor Conference Room 200

NEXT SIGNALS INPUTS DEADLINE:
➔➔➔ **16 October 2011** ⬅⬅⬅