You never know what may happen when you have some sign of your ham radio hobby in a non-ham location. For WB2UDC, it led to the QSO of a lifetime.

The Nine-Minute QSO

Ham Radio Brings Space Down to Earth

BY BOB HOPKINS,* WB2UDC

Apparently, WB2UDC was looking over my shoulder as I wrote my December editorial on "Ham Radio Moments," since that issue hadn't even arrived in the mail when I received his article . . . about a particular "Ham Radio Moment" in his life, and how these moments can lead to much greater things. — *W2VU*

We've all seen it—the stare, the facial expression that develops frequently on those who innocently ask us something about ham radio. You know what I'm talking about, the glassy look, the slagging of the jaw, leading to eyelids at half mast, and often accompanied by the polite "Oh yeah" and the head nod. No doubt about it, ours is a hobby often difficult to explain to the non-believers. However, since most of us get so much enjoyment from hamming, we carry on and share the message—or should I say the passion—anyway.

I've been in that position many times over the years, and I have to admit that talking about ham radio is a part of the hobby I have always enjoyed. My goal is to engage the listener with the sense of adventure and excitement that I have experienced and then answer the questions about the details, concluding with some sort of live demonstration.

My story goes like this:

Patches

Patches . . . we've all seen them. They are symbols of many things—of achievement if you are a Scout or in the military, or perhaps of participation in a particular event or a reminder of a memorable adventure.

In the summer of 1995 I was walking across the small campus of Cooper Union in New York City, where I teach, with my colleague Day Gleeson, a professor in our Art School. I brought up the fact that the Scout Troop with which I was involved as a volunteer leader had a beautiful patch embroidered in many colors and worn proudly by its young members.

"I've got some patches," she replied, "patches from NASA."

"You've got patches from NASA?"

"Oh yeah. Don gave them to me. You know I have a brother-in-law who is an astronaut and I have some of his mission patches."

I was hooked! You have to understand, I am of that age when every young scientist or engineer got some of their inspiration from the space program. My generation knows all about the Right Stuff. Therefore, based on my unbridled enthusiasm, Day gave me a few extra NASA mission patches, and she also told Don Thomas, her brother-in-law, that she works with this nut who is a big fan of the space program.

As luck would have it, Day contacted me a few weeks later and said Don was

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Photo 1– Astronaut Don Thomas KC5FVF, returns the Boy Scout patch flown on the STS-70 mission to author Bob Hopkins, WB2UDC. (Photos courtesy of the author)

going on a mission, STS-70, and would like to take one of the troop's patches on the journey. How great was that?! I provided Day with a 6 inch diameter jacket patch and became very interested in STS-70. The summertime mission occurred during the troop's summer camp, so at our Wednesday night campfire, with the stars as clear as can be, I told the boys to look to the stars; somewhere up there is the orbiter Discovery with our patch.

STS-70 returned to Earth, and in September of that year I got another call from my friend Day. She informed me that Don would be visiting and would like to return the patch.

Not only did they take the patch on a multi-million-mile journey, but they're giving it back, I thought, and . . . *I get to meet an astronaut!* I hardly had enough time to prepare, but in the class I had later that afternoon, I mentioned to my students that at lunchtime the next day I was going to be visited by Dr. Don Thomas, NASA Astronaut. If they happened to be in the lab at that time, perhaps they would meet him as well. The next day there was quite a crowd.

Don returned the Scout patch (photo 1), as well as provided some of his own mission patches. In addition, he presented me with a certificate from NASA attesting to the Scout patch's journey. Since so many students were present, he graciously offered to give a short presentation on his mission and life as an astronaut. When we started to take photographs, Don went into my office and changed into his official blue NASA flight suit.

When all was finished and Don was ready to leave, he said, "I saw a telegraph key on your desk." Now my desk is a mess. I do have a Vibroplex bug sitting on top (photo 2), but how he saw it in my "paper full" office I'll never know.

"Are you into ham radio?" he asked.

"Oh yeah. I'm WB2UDC."

"I'm KC5FVF, Foxtrot Victor Foxtrot. I do ham radio from the shuttle. Maybe I'll work you sometime."

I don't have to tell you what kind of reaction he got from me, but needless to say, this added to an already fabulous experience for me.

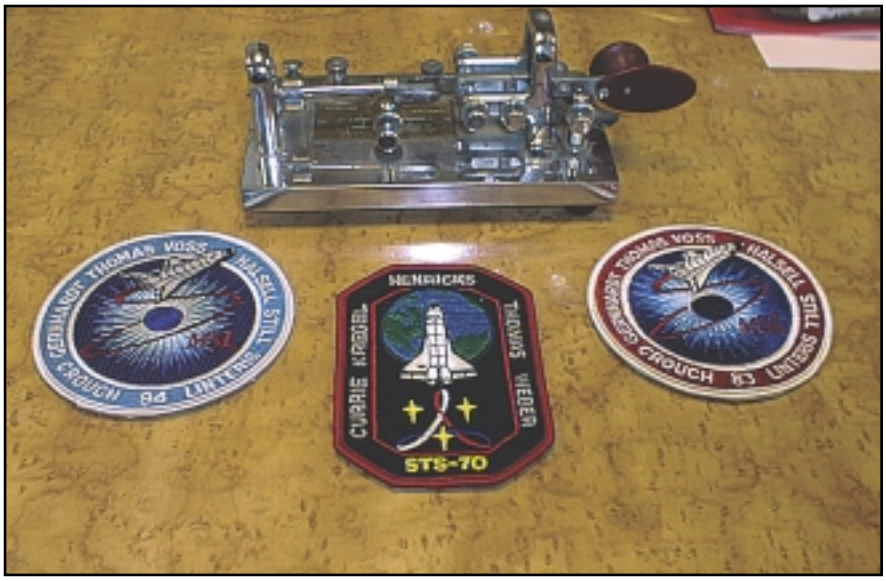

Photo 2– The "bug" that caught Don Thomas's eye and mission patches for STS-70, STS-83, and STS-94. I moved the bug off my desk for the photo.

A Scheduled Contact

Turn the calendar ahead a year to the summer of 1996. I got another call from Professor Day Gleeson.

"Don is scheduled for another mission, STS-83. He will be doing the SAREX experiment and would like to contact my daughter's school, PS 9, by ham radio. Don suggested that I ask you to help set it up. Are you interested?"

What a question! Of course I was interested. STS-83 was scheduled for the spring of 1997, and even though I'm mostly a QRP CW guy and had hardly a clue as to what I needed to do to make this happen, I did not hesitate to agree to the project.

Day's daughter Asja was in the third grade at the time, and although I have given many ham radio demonstrations to kid groups, third grade was younger than any before. My initial plan was to have three or four meetings with the teachers and students starting six months before the QSO. At these meetings I'd teach a bit about ham radio, how people communicate, and work with the students in developing questions they could ask Don when the contact occurred. There were 120 third graders, four classes of 30 each. The three to four meetings exploded to 12, since I had to meet with each class to make the experience effective. The goal was an educational experience that would be fun and informative regardless of whether we actually would be able to make the QSO.

I have been involved in education for over 30 years. I must say that teaching third graders is a whole lot more challenging and exhausting experience than I'm used to in the "ivory towers" of the university. Those dedicated professionals who teach elementary school will always have my respect. It was pure joy for me to work with the students, but I was pooped at the end of each of my visits.

I covered a variety of topics, including how people communicate, what ham radio is all about, how the study of radio helped me in math and science, and finally the space program and the shuttle. Given the short attention span of this age group, I needed to talk less and interact more. For example, to demonstrate Morse code we played "Stump Professor Bob." This game involved a laptop computer running a CW program. The student would type a line of text, "hit enter," and the text would be beeped out at about 10 words per minute. With nothing up his sleeve, and

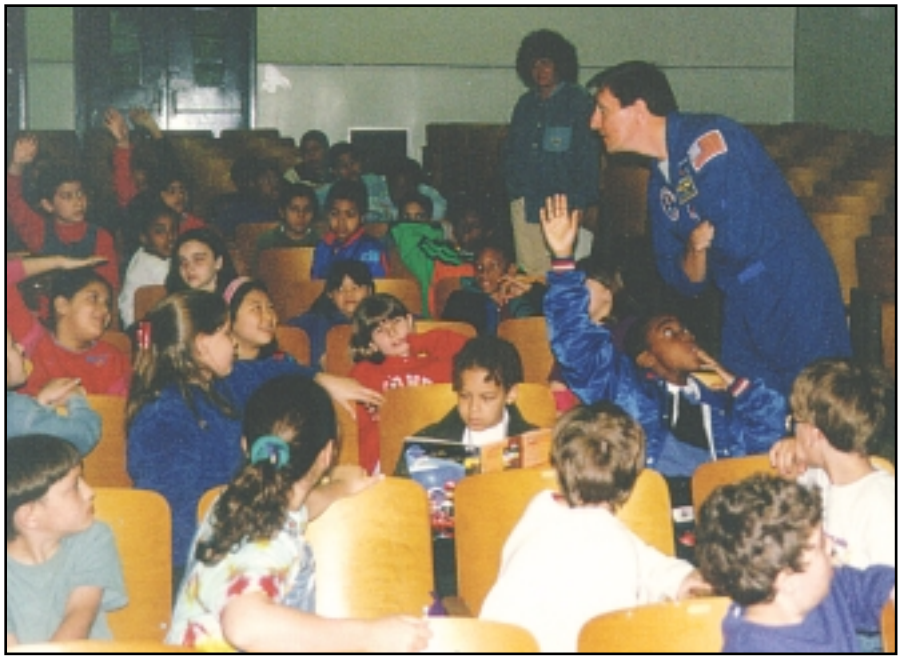

Photo 3– Don, KC5FVF, discussing his STS-83 mission with students of PS 9.

certainly not looking at the keyboard or screen, Professor Bob (me) would copy the CW and translate for all to hear. This was a big hit! They were very impressed that I could even copy ahead and even play the censor at times. I distributed copies of Morse code, and some kids actually translated their next day's assignment into dots and dashes. "Secret" codes fascinate kids of any age.

As the big day approached, I was getting excellent support from the AMSAT SAREX team. My mentor, Allan Spitzer, N3TCM, was very supportive and patient. My plans included bringing the students from PS 9 to Cooper Union to use our own multimedia facilities. The actual QSO would be via telebridge (a super phone patch), since the shuttle would not be visible to the New York City area on this mission. At first, the telebridge idea was disappointing, because I had thought I'd like to set up the antennas and rigs, etc., but that would have distracted me from the students. I then thought, a QSO is a QSO no matter how long "the cable to the rig" might be.

We rehearsed with NASA many times, patching the audio into the sound system for the classroom and having clear and "broadcast"-quality audio. The students were ready. One of their assignments was to write a question to submit to their teachers. We got over 100 questions! Now this was going to be a short contact. The shuttle would only be visible for the QSO for about nine minutes. The students had to be coached in advance so as not to use up the whole contact repeating questions. The teachers chose the specific students who were to actually ask the questions, as time did not allow for all 120 to hit the microphone. Buses were chartered to get the kids from PS 9 to Cooper Union. All we needed now was *The Contact.*

STS-83, Columbia, launched on April 4th at 2:20 PM. Our QSO time was about a week into the mission. Over and over I tried to imagine how the event would play out. I even set up backup programs at Cooper if for some reason the QSO didn't work, and was prepared with a "plan B."

Being prepared is a good thing. There was a problem on Columbia. Early into the mission the orbiter developed problems in one of its fuel cells. This was a critical system, and although backup was available, the NASA controllers felt it best to shorten the mission and bring Columbia home. What a disappointment. However, the crew and the orbiter were not in grave danger, and it is easy

Photo 4– "Professor Bob" discussing the NASA website with the students of PS 9 on the day of the contact.

to understand that NASA puts safety at the top of their priorities.

PS 9 was contacted. The students had to be told the crew was safe, but unfortunately, the contact had been scrubbed.

Plan B

Undaunted, I felt something additional needed to be done. I planned on another visit to PS 9 with one of my students, Mary Alestra, KB2IGG. We would set up and operate 2 meters from each of the classrooms.

Before the planned demonstration, however, I received yet another special phone call. Day informed me that Don would be coming to New York City the next week. One of the things he wanted to do was meet with the students and answer all their questions. He wanted me to sort of be the Master of Ceremonies, since I seemed to get the kids pretty worked up on my visits.

Don showed up, we had a big assembly with all the third graders, and questions were asked and answered (photo 3). Also, I had another eyeball QSO with KC5FVF. No one was disappointed. Towards the end of the assembly, I produced a couple of 2 meter HTs. I gave one to Don up on the stage and took the other outside, and with over 100 students and faculty watching, WB2UDC and KC5FVF made contact. It was no big DX, but an enjoyable ham event nonetheless.

Another Opportunity

This is not the end of the story. At the conclusion of the assembly, as we were leaving PS 9, Don said, "There is a chance we will refly the mission in the summer. If we do, would you like to go to the launch?" You can guess my answer! Sure enough, NASA designated STS-94 a reflight of STS-83 with all the experiments and projects the same—including SAREX! One difference for me: I was going to see the launch.

STS-94 was scheduled for the summer, and school was not going to be in session, so more work needed to be done to ensure participation. The Parents Association of PS 9 plus the classroom-to-classroom 2 meter contacts kept the level of enthusiasm high among the students and teachers (photo 4).

The STS-94 mission began on July 1, 1997 at 2:00 PM. What an incredible experience. To see, to feel, to hear the shuttle launch is truly something difficult to translate into words. A shuttle launch is sort of like "Woodstock for Engineers." It is a celebration of technology, design, and teamwork. All systems go! (My favorite launch photo, featured at the beginning of this article, is also on my QSL card; see photo 5.) Our QSO was scheduled for July 15 at 9:20 AM New York time.

We began our drill again, inviting all the students and their families to Cooper Union. We also invited the press and a variety of official types. The teachers had lined up the students and questions. We rehearsed the use of our multimedia classroom several more times with "SAREX mission control." We used a phone patch to actually connect the telebridge signal to our PA system. The classroom was state of the art, with two large rear-projection displays. One would show the position of Columbia, the other NASA's mission-control website.

Photo 5– The current QSL of WB2UDC, a photo taken by the author of the launch of Columbia STS-94 on July 1, 1997.

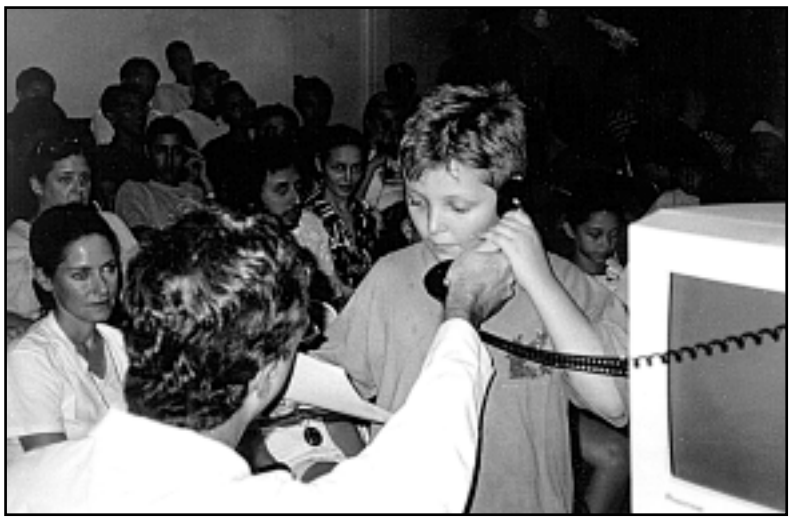

Photo 6– "Can you see the Great Wall of China from the Shuttle?" This was one of the questions asked of the astronauts on STS-94 during PS-9's nine-minute contact.

The moment was approaching. Ten minutes before contact we established a connection with the telebridge conference center. This time, unlike our previous rehearsals, the audio signal was weak—too weak, in fact, to hear over our new, fancy high-powered public-address system. In an effort to adjust the gain on the PA, the system went into audio feedback. This caused the public-address system to shut down!

I had no idea this was going on behind the scenes. Had I known, I might have had a heart attack! However, our ever-resourceful Paul Tummolo, KC2KDA, sprang into action. He pulled the fancy amplifier out of the rack, replaced it with an old standby tube-type amp, and hooked up all the wires at lightning speed, only to discover he was one jumper wire short. Two minutes before the scheduled contact, Paul spotted a discarded twist tie on the floor of the studio. He picked up the tie, stripped off the paper with his teeth, took the resultant piece of wire, and placed the final jumper on the amplifier.

"Thirty Seconds . . . are we go for contact?" At that instant the familiar white noise of 2 meters filled the classroom and . . . "We're go for contact."

I could feel the sweat running down the back of my shirt, and then a signal sounding way too realistic, more like a rare DX station, broke through the noise and the QSO began. Student after student came to the mic and asked questions about life in space (photo 6). The time passed way too quickly, and our nine-minute window began to close. The entire audience shouted out a final 73, and "KC5FVF this is WB2UDC in the Big Apple; thanks for talking to us" ended the contact.

That Familiar Feeling

Those nine minutes gave me back the same feeling I had had 34 years earlier when my first CQ was answered. I became a kid again. What a gift!

For the next hour or so we discussed ham radio, space travel, engineering, and the importance of science in elementary school. We had excellent press coverage. Not all the eyes in the audience were dry. I explained to the kids that our voices were heard on Columbia, and NASA felt education was so important that they committed time and resources to make this happen.

It is almost impossible to repay everyone for this experience. The words *thank you* do not seem to be enough. What I can do, however, is continue to tell the story—an adventure in learning that probably benefited the teacher more than it did the students.

So there you have it. That's my story, made possible through the generosity of a great team of volunteers. Don Thomas—scientist, engineer, space traveler, and amateur radio operator—is an American hero who works very hard at what he does.

Ham radio can make the study of science fun. It is important for young people to experience joy in learning, and what better way than this? What we do cannot just be our secret. We have to share the wealth and tell our story. This one is mine. What's yours? ■