

Experiences in Early Broadcasting

by Al Smith (Silent Key)

This article comes to you through the courtesy of Jack Iverson, K0EWW. Jack took me aside during the Antique Radio Club of Illinois Radiofest XXII meet (held last August in Elgin, IL) and handed me a manuscript to look at. It was an autobiographical piece written by Al Smith, an old friend of his who had since passed on. Jack wanted to see it published and asked if The OTB would be interested. I took it to a quiet corner of the hotel and began reading. It was written back in January, 1990 and traced Al's career in radio broadcast engineering, beginning from the early awakening of his interest in radio and following his struggles to obtain work during the Depression and his progression to more and more responsible jobs in the Industry.;

I don't know if Al was ever a member of AWA or if any of our present members knew him. But people who lived and worked during Al's era are rare today and the ones who are still around are leaving us fast! I felt his story would be worth preserving and am pleased to include it in this issue. Al was not too careful about giving the states in which some of the cities mentioned are located. But it's a fair bet that most--other than Sioux City, where I believe many of the street locations mentioned are to be found--are in Nebraska, where he spent much of his working life.

Though Al's comments have been somewhat edited for brevity, I've tried to include all of the names of people he came in contact with. If any of the names or other aspects of Al's story resonate with you, let me know! I'll be glad to include your comments in a future issue--mfe.

I grew up on a farm in south-central Nebraska, becoming hooked on radio in the 1920s during visits to a neighbor who had an Atwater Kent battery "three-dialer." It took a 100-foot antenna up as far as possible, along with a long metal ground rod, to get decent reception. I remember hearing KDKA in Pittsburgh, KFX in Hastings, NE, WHB in Kansas City, WOAW in Omaha, WSB in Atlanta and even a high-powered station in Havana, Cuba. Stations sometimes shared time on the air to reduce interference, and occasionally would shift frequency without getting permission from the government. There were also special nights when the local stations would remain silent so their listeners would have an opportunity to listen for DX.

Early Radio Activities

I was introduced to ham radio through a high-school friend whose brother had a station. Around the same time (in 1930), I signed up for an NRI (National Radio Institute) course and began servicing broadcast sets--which were nearly all battery operated. In 1933, I received an amateur conditional license and became W9PEX (later and currently, W0PEX). In 1934, I received a First Class Radiotelephone license but finding a job as a radio operator in the depths of the Depression wasn't easy.

While filling several temporary and part-time positions at radio stations in Iowa, Kansas and Nebraska, I continued to service radios in my home town. A lot of my work involved converting battery sets to use low-drain tubes to eliminate the need for a large storage "A" battery.

About then, Zenith introduced a farm set that required no "B" batteries, just a relatively small storage battery that powered everything. Those who bought this set received a certificate allowing the purchase of a Wincharger generator for \$10.00.

This kept the battery charged, and some farmers even managed to run a couple of house lights from it along with the radio.

By about 1935, rural areas were being electrified and farmers could buy AC sets with single-knob tuning and powerful dynamic speakers. This was the time of the "golden age of radio" with the big network evening shows like Jack Benny and Amos and Andy and daytime soaps such as "Oxydol's own Ma Perkins."

But there were still a lot of battery sets to be serviced. I would frequently load up my car with Ray-O-Vac "B" batteries and drive out into the countryside to sell them. During these sales calls, I would often pick up radios to take back to the shop for servicing. At one time, I was selling more batteries than any other Ray-O-Vac dealer in Nebraska.

My First Full-Time Job

In 1936, I finally landed a full-time engineering job at station KMMJ in Clay Center, Nebraska. This was a daytime-only station on the frequency of WSB, Atlanta's clear channel. There was no interference between the stations during the day.

Soon afterwards, I married Helen, my girl friend of many years. The job itself was quite interesting because almost all of the station's programming was live. Dance bands would play once or twice a week for free just to give them the exposure that would lead to paid dance dates in the area.

KMMJ had a 1000-watt Western Electric transmitter powered by a motor-generator set. A three-phase motor drove generators that produced filament, plate and bias voltages. An identical set was kept as a spare, and the use of the two sets was alternated each day. I had the daily job of cleaning and maintaining the off-line unit.

In the winter, heated water from the transmitter's water-cooled final was run through radiators to warm the transmitter room. The antenna was an "L" type run between two 150-foot, self-supporting steel towers. In the evening, when the station went off the air, the antenna was disconnected and grounded.

There was frequently a very large static electricity spark at the contacts of huge grounding knife switch when it was closed--caused by friction generated during dust storms. Dust was also a big problem in the generators and transmitter. With no air conditioning, windows had to be kept open as much as possible during the summer.

The station frequency was crystal controlled--with the crystals operated in ovens kept at 55 degrees centigrade. Still in the transmitter room, but no longer in service, was the highly accurate (within 1000 Hz) calibrated wavemeter that had been used to check frequency prior to the installation of the crystals.

Engineering at KMA

Later in 1936, I was unemployed again--probably because I couldn't copy and type 25 wpm CW well enough to copy the wire-service news reliably--a duty that was required of all station operators. I went back to repairing radios for awhile, but a few months later was employed at station KMA in Shenandoah, NE--which was expanding.

KMA had a large auditorium/studio complex set up so that the audience could watch the entertainers--this station also used all live talent. In the evening the auditorium was used as a movie theater. KMA had a huge farm and small-town

audience and was into direct sales of all kinds of merchandise, from live chicks to tires, by the boxcar load.

The station was housed in a beautiful two-story building with an apartment upstairs for the chief engineer. A 488-foot vertical antenna was fed from a new 5000-watt RCA transmitter. I have vivid memories of the night when one leg of the antenna tower had to be jacked up to replace the huge insulator it had rested on--a touchy operation to say the least. The insulator had developed a slight crack that allowed moisture to enter and de-tune the antenna.

KMA had been a shared-time station, but obtained full-time status by buying KGBZ at York, NE, with which it had been time sharing. In the spring of 1937, I was out of a job once more, caught in a downsizing that took place after construction for the expansion of KMA was completed. But this time I was out of work for only about a week, when I went to work for KFAB-KFOR in Lincoln.

Complex Switching at KFAB-KFOR

This was quite a different type of operation. KFAB was a CBS affiliate; KFOR was a Mutual Network affiliate. However, both stations shared the same studios. To complicate matters, certain programs were sometimes fed to station KOIL in Omaha. Switching was accomplished by a preset system managed by a single operator in Master Control. The necessary changes were set up ahead of time and were accomplished, at the proper moment, by the push of a button.

These stations used some live remote programming. KFOR carried an organ concert from the Lincoln theater every day at noon. KFAB aired a multi-microphone service from a local church on Sundays, and also broadcast football games. We also fed dance bands to the networks after 10:30 p.m., a common practice among network affiliates.

It is interesting that KFAB operated on 770 kHz, the same frequency as WBBM, the CBS station in Chicago. In order to prevent interference during evening hours, both stations had to broadcast the same program and their carrier frequencies had to be maintained within a fraction of a cycle of each other. The frequencies of the two stations were locked together via an audio tone transmitted from the WBBM transmitter to the KFAB transmitter via a telephone line. Each station was given fourteen seconds out of the 30-second station breaks. If WBBM had a local program at night, it paid KFAB to remain silent during that period.

Later, KFAB traded frequencies with WJAG in Norfolk, NE, which had been broadcasting on 1110 kHz. The lower frequency helped Norfolk's local coverage, but WJAG had to remain off the air at night. KFAB then moved to Omaha and began operations on the higher frequency with 50,000 watts of power.

The KSCJ Years

In October, 1937, we moved to Sioux City to take advantage of Chief Engineer Steve Dier's offer to join KSCJ for five dollars more a week. The KSCJ studios were located above the Westside Harness Company, which had a window display featuring a big white horse. The station opened at 6 a.m. with a recording of a rooster crow, signalling the beginning of the "Town Crier" program. This was an informal, three-hour program of information, news, interviews and recorded music hosted by Ray Murphy and Rodney Dean.

These early studios were draped for acoustical purposes. I ran the control board,

playing recordings and taking phone calls. I was amazed at the number of calls received from listeners--a new experience for me. Double button carbon mikes were still in use, and they had to be tapped occasionally to unpack the granules and restore decent sound quality. We also had condenser and dynamic microphones.

Popular remote programs were *The Man on the Street*, Joe Hale's reports from the stockyards and Don Stone's "Toller Starlight Room" broadcast. We also used to broadcast corn-husking contests in the fall. To cover these contests, the telephone company would supply a connection terminated in a reel of wire mounted on our tractor-pulled wagon. Also on the wagon were a remote amplifier and an announcer who had just enough room to stand. The wire was paid out as the wagon moved across the field to follow the action.

The KSCJ transmitter had recently been moved from Prospect Hill to a site north of Leeds along Highway 75. The 5000-watt main transmitter and 250-watt auxiliary were housed in a modern building containing a small apartment. The antenna was a 300-foot, self-supporting vertical insulated from the ground. Power was reduced to 1000 watts at night.

Soon after the move, plans were underway to build new studios and also install a directional antenna to protect other stations on the 1330 kHz frequency. This would allow full-time, 5000-watt operation.

A storm took down the 300-foot vertical while construction of the directional antenna system was underway. It was replaced with a guyed 300-foot vertical--the tower for which, along with the three other towers for the new system, had been purchased from the Wincharger Corporation in Sioux City. Tuning, adjustment, and proof of performance of the array took most of 1941.

Two more towers were lost in 1941--one in a storm and one pulled down accidentally by Dr. Victor J. Andrew of the antenna design firm, who ran over a guy wire about 4 a.m. one morning, thinking it was a sunflower! After replacement of the tower, all of the tuning had to be done over again. I was Acting Chief Engineer at the time because Steve Dier, a National Guard Officer, had been placed on active duty just previous to the start of World War II.

Before the new array could be placed in service, we had to show the FCC signal measurements made from a plane circling the antenna. Finally, we received authorization to operate with 5000 watts day and night. In 1941, nearly all stations were required to shift frequency, and KSCJ moved to 1360 kHz--which is their present frequency as of this writing (January, 1990). All radio stations also reduced power to 90% of that authorized to conserve final tubes.

I was being kept very busy building new studios and assisting with the teaching of radio theory and operation at Morningside College. There was a shortage of trained technical people for the armed services and industry, and broadcast technical people were teaming up with local colleges all over the country to remedy this lack. Radio amateurs also helped the war effort in this way. In my area I recall that Dick Pitner, W0FZO, was very much involved.

After the war, there was a lot of interest in FM, and KSCJ installed a 3000-watt FM transmitter at its old Prospect Hill location. The antenna was a joint Wincharger-KSCJ experimental project. RCA had developed slot-type, tower-mounted, circular

antennae, and we installed three of these slot sections on one face of a standard Wincharger triangular tower. These were fed in phase, giving an effective radiated power of nearly 10,000 watts.

The programming consisted largely of transcribed music played at the transmitter site. We would pause between numbers to show how quiet and free of interference the new mode was. The poor quality of the then-available FM receivers was a problem, and we had difficulty selling enough time to pay for station operation. After a few years, the transmitter was shut down and sold.

Transition to TV

By that time, Don Dier had returned from military service, and in 1947 I was hired by Carlton Corbett to build KCOM, a new AM station on 620 kHz south of Sioux City in NE. This would make the third AM station in the area.

I really started from scratch with this project, helping to survey the land and determine the placement of the four transmitting towers. I even got involved in the installation of the ground system, tower foundations, coax transmission lines, etc. The towers were made locally by Tower Construction Co., originally the Wincharger group. All studio equipment was Raytheon. KCOM went on the air in 1948.

The station was strong on sports and farm broadcasts. It had a number of remote pickups from neighboring towns as well as from churches in Sioux City. KCOM was sold in 1954 and is now (as of January, 1990) operating as KMNS. About this time, I became involved in the construction of another new station in the area, KTIV television.

KVTV (now KCAU), another TV outlet, had gone on the air in 1953. KTIV followed in 1954. Our studios were at 10th and Grandview and the transmitter was at 54th and Rustin Streets. The 550-foot tower was made in Sioux City by Tower Construction Co., and it was topped by a six-bay Super-Turnstyle RCA Antenna. The transmitter was a DuMont 25-kW unit, one of the first designed for color operation.

We had planned to be on the air for the 1954 World Series, but didn't make it because of the poor signal on the microwave link from the studio to the transmitter. The problem was caused by a large tree in the path, and was eventually corrected by raising the tower supporting the microwave reflector from 100 to 140 feet.

Our hours of operation were basically from 4:00 pm to 10:30 pm, ending with the 10 o'clock news. The first evening shows were all NBC: *People are Funny*, *The Liebman Spectacular*, *Television Playhouse*, and *The Loretta Young Show*. We also carried such programs as *Pinky Lee*, *Howdy Doody*, *The Sid Caesar Show*, *Robert Montgomery Presents*, *Milton Berle* and *You Bet Your Life* as well as a variety of local programming. Our studio was equipped with the first Vidicon camera for movies and slides. In May of 1955, at a time when most stations were operating with less than 25 kW, we went up to our maximum authorized power of 1000 kW.

At this point, Al's story jumps ahead 10 years to 1965--ed

1965 was a year of construction, carried out in conjunction with KVTV. Translator booster stations were installed at Norfolk, Neligh, and O'Neill--in NE--to bring better TV to these communities. The translators at Spence, IA were updated. Later in the year, KTIV began operating from a 2000-foot tower east of James, IA. (Another project carried out in conjunction with KVTV.)

The tower was a complex engineering project. The FAA would not let us use existing maps to locate it. We had to survey from the original bench marks and obtain the exact ground elevation. The locations and elevations for the guy anchors had to be determined within inches because the cables were cut to length before shipping. Bob Engelhart, Chief Engineer, and I worked with Finley and Rath on all these surveys.

Since this was before the days of calculators, our math was done using 7-place log tables. We all had to agree on every calculation or we did it over. The only real accident that occurred during construction happened when I fell off a stepladder onto a concrete pier--breaking my foot. I finished the job on crutches.