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Including Radio Shopper

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Radio Roots Discovered at Tampa Bay

620 Site – 1932

Current 620 Site – Gandy Causeway, Tampa Bay

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Past, Present and Future

It has often been said, correctly, that a society can never understand where it is going unless it understands how it arrived at this point and place in time. The same principle is true in regards broadcast technology.

As we move into the more complex transmission issues presented by IBOC, for example, one of the most important keys to understanding our jobs is grasping the concepts that underlie the technology. We need to learn about the technology and techniques involved in tuning our facilities to achieve the best possible air product.

Unfortunately, as has been often lamented, a major effect of deregulation has been a marked reduction in staffing levels at stations all over the country, as well as the loss of many experienced broadcast engineers. That cannot have a positive effect on the level of technical knowledge available at many stations. In plain English: When one engineer is tasked to care for six or eight stations all by himself, there is precious little time to think, study, and learn about the entire system. The workweeks of many engineers are consumed merely putting out "fires."

With fewer and fewer people really understanding things like directional antennas, who is left to train the next generation? Whether the industry is "up to" developing workable solutions is up for debate.

One thing is clear. **Radio Guide** sees its mission to be here to help make sense of the technologies, pressures and needs of the working engineers as we move into the future.

What do you see as the issues ahead? What do you want to know? Take a moment and let us know at editor@radio-guide.com. Let us grow together!

Radio History by the Bay

by Barry Mishkind

Broadcasting Roots Uncovered at Tampa Bay

[Is there time yet to save an historic site where a major aspect of broadcasting started 80 years ago? Ron Rackley has been hoping to get permission for an historical marker to be placed there, before the site and installation which started a revolution in station construction is lost to the developer's blade. Read on for the details.]

[TAMPA, Florida - May 2003] Directional Antennas are common in broadcasting. We use them for signal enhancement or signal reduction. From the yagi type antennas used for auxiliary services to the multi-tower arrays used to "shoehorn" AM stations into markets with ever increasing power, directional antennas permit operation where non-directional activity just could not accomplish the technical requirements.

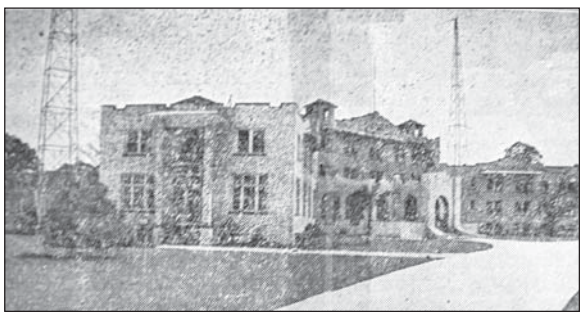
Unfortunately, once installed, most directional antennas seem to be given little attention. They work so well, one consultant suggested we might soon run out of engineers who truly understand them.

Yet in a true "they said it couldn't be done" story, the very first directional antenna used in broadcasting was almost not finished. Nay Sayers thought it was impossible to set up and run; it would be just a vain pursuit.

DUNEDIN DAYS

The story begins in 1925 with George H. Bowles, a Real Estate entrepreneur in Dunedin, Florida. As the West Coast of Florida began to be developed, there was a need to get people to buy property and move down to retire in the sun.

Bowles somehow learned about Walter Tison, a ham operator who had been instrumental in providing the first transmitter for WSB in Atlanta. Tison, no longer attached to WSB, was seeking to sell his transmitter to another potential broadcaster. Bowles brought Tison and his 500 watt transmitter to Dunedin, where it was installed on the roof of the Fenway hotel. Amid appropriate fanfare, WGHB went on the air on December 10, 1925.



Fenway Hotel – 1926 *Dunedin Times*

As with most early stations, at first the studio was on the roof with the transmitter, accessible only via a long ladder. Just in time for the "Grand Opening" a studio was finished at ground level, so dignitaries would not have to climb the ladder. The impact was immediate. During the inaugural broadcast, some 425 telegrams were reportedly received from 36 states and Canada.

Unfortunately, the real estate boom in Florida was starting to falter, which in turn created cash flow problems for Bowles. Forced to sell his interests in the Fenway and the radio station, it was moved to Edward Haley's Fort Harrison Hotel in Clearwater. Re-christened WFHH in early February 1927, the station essentially was operated by the Clearwater Chamber of Commerce. Six months later, a station in Boca Raton died and they got the call sign they really wanted: WFLA – "West Florida."

WFLA did not operate alone for long. Although it had a good allocation on 850 kHz, in addition to the half dozen other area stations like WDAE, WFLA had to justify its existence to the Federal Radio Commission (FRC). Since all stations were essentially non-directional at the time, only a limited number of stations could operate at night without excessive interference. There was tremendous pressure on the FRC to eliminate those stations operating only part time, and replace them with facilities that promised to use the increasingly crowded dial to the full.

The solution at the time was to sell a half interest in the station to a neighboring Chamber of Commerce. The St. Petersburg C of C quickly agreed to pay $6,000 to share the transmitter. Taking the calls WSUN (Why Stay Up North?) to lure visitors, the St. Petersburg station was permitted three days a week, and alternate Sundays for their operation on the new, and better frequency of 590 kHz. From there, the sister stations, now WFLA-WSUN, were moved to 620 kHz with 2,500 watts daytime, and 1,000 watts at night, beckoning Northerners to enjoy the sun and warm Gulf waters.

Although there were few other stations on the 620 frequency, one of them belonged to the Milwaukee Journal. Seeking to increase its signal to 5,000 watts, WTMJ asked the FRC to either abolish WFLA-WSUN, or cut its power. Eventually WTMJ went to court, and the US Court of Appeals directed the FRC to adjust WFLA-WSUN to protect WTMJ's service area. The FRC, an agency with limited control over the broadcast industry, responded by reducing WFLA-WSUN's power to 500 watts daytime and 250 watts night, essentially depriving them of their desired listeners.

THE FIRST DIRECTIONAL ANTENNA

At that point, the future operation of WFLA-WSUN looked real bleak. Without access to listeners in the north, there was little value to the Chambers of Commerce in operating a radio station. They even considered turning in the license. But Walter Tison was not giving up. He approached the situation in two ways. First, he applied for a huge increase in power for the station, WTMJ's court order not withstanding. Then, he contacted Commander T.A.M. Craven, the consulting engineer for WFLA-WSUN, for assistance in designing and constructing a directional antenna.

While there had been experiments on directive receiving antennas, and some transmitting facilities, it was mainly in short wave, point-to-point usage. Furthermore, some engineers derided the concept of using a directive antenna at AM frequencies, suggesting the real problem was the way the WFLA-WSUN signal went across the Gulf of Mexico and "turned" up the Mississippi River Valley, to reach Milwaukee. Others simply said the ionosphere did not have anything like a smooth surface, and the resulting propagation would not be as anticipated.

Craven, who would go on to serve as the first Lead Engineer at the FCC, and later a Commissioner, enlisted the aid of Ray Wilmotte, a British engineer. Wilmotte had done quite a lot of study into the way directional antennas worked, and felt this was the right option for WFLA-WSUN. Wilmotte was so sure of himself that he agreed to be paid only if he was successful. Craven agreed with Wilmotte, and together they undertook to construct the antenna. Calculations were carefully made regarding the groundwave and skywave signals toward Milwaukee.

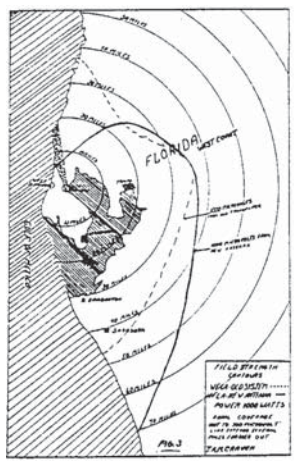
The tower bases and guy anchors were laid along what would become the Courtney Campbell Causeway in Clearwater in March 1932, and tests began in May of that year. A 200 foot self supporting tower was constructed on either side of the road, a quarter wavelength apart, in line with the bearing toward Milwaukee, 346 degrees. The RF circuit was quite simple, with the transmission lines cut to quarter-wavelength, and routed in a curved way to the towers. One tower was coupled from the transmitter with a coil to shift the signal -45 degrees; the other was coupled with a condensor, to shift the signal +45 degrees. The phase angle between the two towers was 90 degrees. The result was a tight cardioid pattern, with the null at 346 degrees, toward Milwaukee.

An engineer was sent out in the field with such meters as existed then, as well as radios. Even with such a simple array, the tune-up did not go as quickly or as easily as expected. It soon became apparent the constructors had not fully taken mutual impedance factors into account, as even the relatively primitive bridges available showed different antenna base impedances. So, much of the "tuning" was done by making adjustments until the signal "faded out" at the location of the monitoring engineers.

In the end, it turned out Wilmotte was right in his calculations, and a deep minima was obtained. In fact, the antenna worked so well that the FRC inspector in Atlanta, who was to measure the frequency of the station, instead had to ask if WFLA-WSUN had authority to be off the air. He could not hear the station at all!

WILMOTTE'S SUCCESS

The two tower WFLA-WSUN directional antenna was a real success. And it operated for 18 years from the site on the causeway, accompanying the entry gate as a sentinel marking the entrance to Clearwater. The cardioid pattern sent a strong signal to the north while reducing the signal toward Milwaukee well below required levels.



Craven's drawing of WFLA-WSUN radiation pattern.

Quite a few transmitter logs have been saved from the operation of the plant, and the stability of the antenna can be seen today.

Wilson Welch, Clear Channel DE with WFLA-WSUN logs from 1934-1939.

Of special interest is some of the terminology used in the logs. Engineers carefully noted the operating parameters, and special situations.

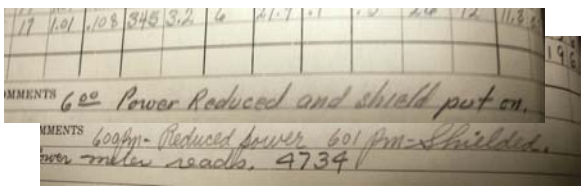
(Continued on page 6)

Radio History by the Bay

Continued from page 4.

Among the logs are notes related to repairs done, even the reduction in power used during the later stages of World War II. Perhaps to describe the effect of the directional array in terms better understood in 1932, Tison often referred to it as a "shield" or "shielded transmission," to indicate a "shield" kept the signal from going to Milwaukee. Dutifully, the engineers noted each day when the array was "shielded" or "shield put on." I did look at quite a few of the logs, but none of them said "shields up." Apparently, no Starfleet officers worked at WFLA-WSUN!

The two stations continued to send joint southern greetings to folks up north for about 8 years. By 1941, the Clearwater Chamber of Commerce had had enough, and sold its half interest to the Tampa Tribune, which promptly changed the station's "home" to Tampa. With both entities wishing fulltime operation, separation was not long in coming. WFLA moved to a 940 plant (later 970) in Tampa, while WSUN stayed on 620 when they finally split in January 1941. In 1950, WSUN moved into St. Petersburg proper, at the site shown on the cover, along the Gandy Causeway.



Portions of the WFLA-WSUN logs.

Today, both facilities are owned by Clear Channel Communications. The call letters on 620 are now WDAE, a call sign long used in Tapma by the station on 1250. The Gandy Causeway site saw an increase to 10,000 watts in recent years (to combat interference from Cuban broadcasts), still without sending excessive radiation toward Milwaukee. Over on 970, the WFLA calls continue, with the power recently increased to 25,000 watts day/11,000 watts night, into five towers of a six tower array shared with WHNZ (1250).

THE SEARCH

Ron Rackley, the consulting engineer for the stations, has long had an interest in the history of these stations, but especially in the WFLA-WSUN 620 facility from 1932. As noted, this was the first directional antenna used for broadcasting in the world. Although he knew the original location was along the Courtney Campbell Causeway, the exact location was not readily apparent. Rackley, and Wilson Welch, Gulf Coast Director of Engineering for Clear Channel Radio, wondered if any of the original site remained. They sought any information available as to the exact location, and hunted for clues.

Finally, Ron discovered an old picture of the site near the causeway, and using the photo as a guide, Welch finally discovered the right location. A sewage plant now stands on the site of the south tower, however, the original base for the north tower of WFLA-WSUN was hidden in a clump of trees in a field next to a gas station. Clearly visible was the date "Mar 8 '32," when the tower bases were poured.

Rackley and Welch, along with others, are seeking to have an historical marker placed on this site, to commemorate the start of this first of all directional antennas, and the men who conceived and built it. Currently, a sponsoring agency is being sought. An announcement will be made in **Radio Guide** if and when permission is granted, for those wishing to contribute to the proposed marker.

I wish to express my sincere appreciation to Ron Rackley of du Treil, Lundin & Rackley, Wilson Welch at Clear Channel, and Vincent Luisi, Director of the Dunedin Historical Society and for their kindness in sharing their time and information in search of the history of the WFLA and WSUN.

Little Did I Know

by Donald E. Kimberlin, NCE

[TAMPA, Florida - May 2003] Little did I know all those years ago that I would return to Tampa Bay, traveling with Barry Mishkind to visit and research sites involved with the world's first DA.

Forty-six years ago, when a new, state-of-the-art, picturesque 1950 DA of (then) WSUN straddled the highway entrance to St. Petersburg, I was in college, and really proud to have been accepted into the small coterie of broadcasters around Tampa Bay.

At the time, having been issued First Phone license number 531 at Tampa meant more to me than knowing its connection with names like Tison, Mitchell, Holey and Wilmotte. I had heard WSUN had "the first something-or-other." But, little did I know the "first" at WSUN had been a DA. And not until forty-odd years later did I find out it was not only the first in the US, but the first AM DA in the world.

Walter Tison was quite a fellow. After serving as a WWI Navy radio operator, and a stint in the Merchant Marine, Tison built the first broadcast station in the southeast (WSB in April, 1922). Over time, Tison had spawned about half the AM's around Tampa Bay: stations with callsigns like WFLA, WALT, WTIS, WTAN and others.

Walter Tison

A couple of years later, Tison brought his 1922 WSB transmitter to Dunedin, Florida, to set it up in a hotel full of Florida bootleggers and real estate promoters, and become a significant part of Florida's real estate boom and bust. As manager of WFLA and various other stations, Tison inspired awe from us young guys. Tison *was* Tampa Bay Broadcasting.

Until discovering the whole WSUN/WFLA DA story, I never knew the illustrious background of my own station's (WTSP) consulting engineer, Walter Holey. Holey had been part of the FRC's team of engineers who observed and measured the success of the world's first DA from Atlanta. He certainly had first-person relations with Tison, Mitchell, Wilmotte and even the illustrious Commander T. A. M. Craven, a Washington, DC area consulting engineer who went on to become the FCC's first lead engineer, later rising to the office of FCC Commissioner.

Craven was the link between Tison and Raymond Wilmotte, a British expatriate who had been instrumental in developing direction finders. Wilmotte brought his brilliance and innovation to bear in designing a "shield antenna" for WFLA-WSUN as the first practical application of Sommerfield's Theory. Until retiring in 1995, Wilmotte continued to distinguish himself working for the US military, RCA, and the FCC, on projects as diverse as UHF TV, mobile and satellite communications, and HDTV.

Today, almost a half-century later, I finally can realize what all these men and their colleagues contributed to the art and science of broadcast engineering. Hence, I am humbled to be able to view even such a minor remnant of their work as a dated cement tower base. I surely hope the world will remember their work for a longer time than my memory.

Don Kimberlin is a NARTE Certified Engineer, based in Landis, NC. He has written on many technical topics, both current and historical, and loves to go hunting for history.

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