

A big step ahead for WDNC, Durham

North Carolina station jumps from local 250 watter to powerful regional voice on both AM and FM



Control room in new dual AM-FM transmitter building for WDNC and WDNC-FM. Console for control of both transmitters in foreground, 5 kw AM transmitter in right rear, and audio and phasing equipment at left across the back of room. The 10 kw FM transmitter faces into room from side opposite the AM equipment.

IT'S A RETURN engagement for WDNC of Durham, North Carolina. Exactly seven years ago, in May 1941, *Pick-ups*, predecessor of the *Oscillator*, hailed this station in the beautiful, prosperous Piedmont city. In 1941 WDNC was, as it is today, a smartly run, highly successful enterprise, a CBS outlet for the area, which had won national notice for alert promotion. A Western Electric 310B transmitter produced the station's allotted 250 watts of r-f output, which served an estimated potential audience of 165,000 persons in the Durham area.

Today, WDNC makes its appearance on a completely new level of service and opportunity. On February 28, 1948, its signal power was increased to 5 kw—and at the same moment, a companion signal of 36 kw effective power on FM went into action! A new dual AM-FM trans-

mitter plant was completed and on the air for WDNC with a 5 kw AM Western Electric 405B-2, and a 10 kw Western Electric 506B-2 FM transmitter.

There are two main chapters to the story of WDNC and WDNC-FM in the new full-grown size:

- (1) Its service area is naturally increased many times over, with an estimated potential audience of 1,400,000 persons for its well balanced local-and-network programming;
- (2) Its combination AM-FM transmitter plant is a splendid example of complete, effective planning, literally from the ground up, for dual operation, a product of the design efforts of the Raymond Wilmotte organization of Wash., D.C., with Associate Paul De Mars supervising the job.

WDNC was the first broadcast station in Durham. It was originally WRAM of Wilmington, N. C., and was moved to Durham in 1934 to start a new career under the new call letters.

It has been owned since 1936 by the Durham Herald Company, publishers of the *Durham Herald* and *Durham Sun*. Carl C. Council, President of the Durham Herald Company, has pushed hard for the "big voice" that the station now possesses. He stated what the new transmitters mean to the ownership as follows: "We believe that we have now given Durham's radio broadcasting voice as wide a coverage as is possible today. We obtained the best permit we could for Durham. We went the limit to provide the finest plant, with the best equipment obtainable. Now we are deeply conscious of the increased responsibility arising from our new operations. We want the people of our area to know that we will at all times try to operate the station for the highest interests of our community".

From Architecture to Broadcasting

Among other assets of the station which moved from Wilmington to Durham was J. Frank Jarman, then Commercial Manager, who became Manager in 1935 and has remained in that post ever since. The inferred connection between the success of the station and the fact that Frank Jarman has been its Manager for the past 13 years, is an accurate one. This architectural engineer (North Carolina State, 1929) who progressed from a career as commercial artist to become a manager of broadcast stations, is known not only as the "daddy of radio in Durham", but as one of the mightiest "movers and shakers" in the business. In 1941, when asked for the secret of success in broadcasting, he said "well balanced programming". Fully alert to the needs of his community, Jarman has continued to give listeners of the station a varied fare, in which the network programs of CBS and the local programs which make the station a part of the community have occupied the earnest attention of the programming staff.

Prominent in the "local" fare which is part of the station's regular service are the sports broadcasts which WDNC has emphasized for many years. These cover not only the football, baseball and basketball contests involving Duke, University of North Carolina, North Carolina State



Kenneth Taylor, Chief Engineer
WDNC and WDNC-FM.



Carl C. Council,
President, the Durham
Herald Company.



J. Frank Jarman, Manager
of WDNC and WDNC-FM.

and Wake Forest, but a complete gamut from Soap Box Derby to marbles, from tennis to track, with fencing, golf, swimming, and boxing thrown in. Anyone who has been in North Carolina and met any number of inhabitants of that progressive state knows that the sports programs of the "Big Four" occupy a good part of their waking thoughts and conversation. WDNC is on solid ground in giving its listeners a thorough coverage of the many athletic contests in which intersectional rivalry and in many instances, national interest, are involved.

Naturally the station's newspaper ownership gives it an intimate connection with sources of news, and news broadcasts are featured. The newscasters are drawn from the regular staffs of the two papers. WDNC's experience in this respect parallels that of most U. S. stations today: regular news has become an indispensable part of balanced programming.

Record Library — Ted Lewis to Spike Jones

Manager Jarman's "balanced" program fare further includes recorded music of every variety, from straight long-hair to the latest swing, produced from an outstanding collection of some 25,000 recordings. A sizeable number of the records were brought to Durham with the original move

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Sweeping modern exterior of new transmitter building for WDNC and WDNC-FM is expression of efficient planning which made it ideal dual AM-FM transmitter plant.

A Big Step Ahead for WDNC

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of Station WRAM from Wilmington, and have been in service as long as 20 years. New records of interest are added as fast as they come on the market.

A growing and highly significant class of programs are those which WDNC originates in its own area for distribution on a national scale by the Columbia network. Here is a kind of reciprocity that can have only the most beneficial results for WDNC, and for broadcasting in general. The station with its enlarged service area covering some 37 counties in North Carolina and Virginia has become the distributor of "national" programs for one of the major networks, to a section which is large, prosperous, full of beauty, and local pride, with an admirable balance between industry and agriculture. At the same time, the station can act in the reverse role by letting this fine section of America speak in its "local" voice to the rest of the country. As examples, the 45-voice chorus of North Carolina College, and the Fayetteville State Teachers College Chorus, two local musical organizations of which the community is proud, are both going on network shows through WDNC. As every part of the country "speaks up" more and more in this way, radio broadcasting will be correspondingly enriched.

Telling the Community About FM

When the FM operation, the AM increase to 5 kw, and the shift of frequency from 1490 to 620 kilocycles on AM, were all approved, the promotion department took on its biggest job. The station had to tell its old listeners that a change in dial position was coming, and had to alert its vast number of potential new listeners to the new voice they would soon find at "620". In addition, the FM operation required an educational campaign, in line with the experience of many stations opening on FM, that a majority of listeners will not understand the necessity for an FM receiver in order to tune in the FM broadcasts. Further promotion was built on the special qualities of FM as a medium for broadcasting.

To carry these messages to its potential audience, WDNC used the widest variety of media: billboards placed on state highways; car cards in the Durham and Raleigh buses, which carried a "teaser" caption such as "Soon . . . You'll

Tune . . . 620"; match books which had the word "Soon" on the outside, and a brief story about the new transmitters on the inside; as well as regular advertising in the daily papers throughout the area, and a whole barrage of special announcements, growing in number, as the new operation approached, over the old 250 watt channel itself. For advertising agencies and clients, a weekly mailing campaign carried such devices as a card with a miniature golf tee and the caption "Soon WDNC will tee off at 5,000 watts", or a miniature pair of dice showing seven points with the message "It's a natural . . . WDNC and 5,000 watts".

Technical Planning Pays Off in New Building

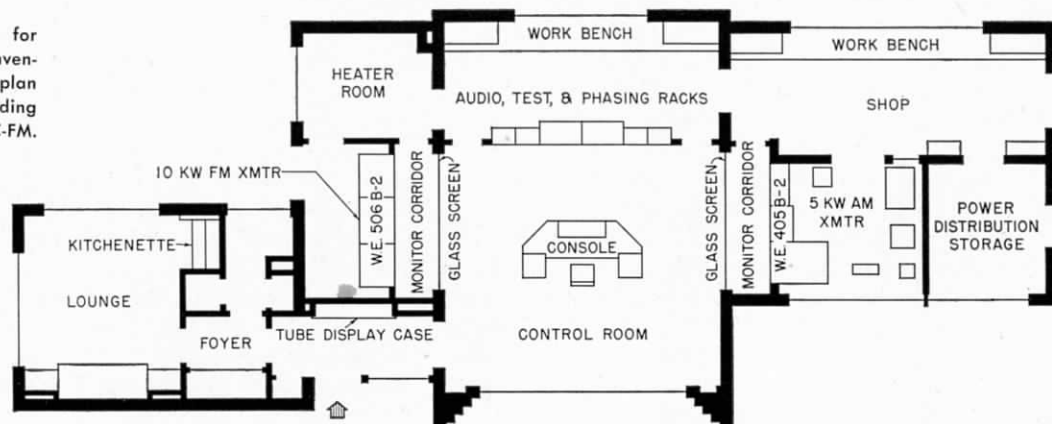
WDNC's remarkably fine new transmitting plant, six miles from the center of Durham, is an excellent example of the efficient installation that can be made for dual AM-FM operation, with thorough planning for that purpose from the very beginning. Technical planning of the installation, as carried out by Mr. Wilmotte, Mr. De Mars, and their engineers, included not only designing down to the last detail, but seeing it through from the first shovelful of ground to the final "proof of performance" that officially put the new transmitters on the air. In the architectural design of the building itself, the Wilmotte engineers had associated with them the firm of Deigert and Yerkes of Washington, communications architects who are known to readers of the *Oscillator* by the "Transmitter Buildings with a Future" featured in the September 1947 issue.

The floor plan of the new building is shown below. The two transmitters face each other from opposite ends of the control room, each having a monitor corridor and glass screen in front of it. With the audio, test, and phasing equipment across the back of the room, a single operator at the transmitter console in the center is conveniently situated to watch the whole plant in action.

The specially constructed console itself is novel in that it puts in front of the operator all essential meters for monitoring both transmitters. This scheme was worked out by the Wilmotte engineers in close collaboration with Western Electric audio and transmitter specialists, and represents a fairly simple revamping of the standard Western Electric 5 kw AM console to fit it to the new dual role.

On the console are the controls and meters for the two Western Electric 1126C limiter amplifiers; modulation

Careful, direct layout for greatest operating convenience is apparent in plan of new transmitter building for WDNC and WDNC-FM.



meters for both AM and FM transmitters; a VU meter which can be switched to the incoming program line for either transmitter; and input switching facilities for audio lines, microphone, and transcription equipment. In addition, the usual master switches for both transmitters are included.

The convenience and efficiency of the operator have been considered not only in the control console, but in every feature of the technical installation and the building itself. The control room has been designed for a minimum noise level so that accurate aural monitoring is facilitated, and the operator does not suffer from "noise fatigue". The two Western Electric 728B speakers used as monitors, one for the program on each transmitter, are mounted directly over the control console. Because of the excellent acoustic conditions in the room, it is ordinarily possible by "selective listening" to monitor the transmitters individually, even with both speakers in operation. If the operator desires, however, he can use individual controls mounted on the console to fade out one speaker while listening to the other.

No Afterthoughts on the Audio System

The complete advance planning of the audio system in the building produced the highly desirable low audio noise level and operating convenience, *without* any necessity for rearrangement or "improvements" after the system was installed. As explained by Mr. Wilmotte:

"In the ordinary course of events, when a transmitter plant is expanded, the audio system is expanded to match by throwing in an amplifier here, a new conduit there, with frequent trials and almost invariably a lengthy, sometimes desperate cut-and-try process to get the noise and cross-talk down to tolerable levels. At WDNC, under the able direction of Paul De Mars, we were able to do the whole job for the two transmitters in the ideal way. We made a complete system design in advance which will take care of the plant as far as we or the management can see, with noise, cross-talk, distortion, all 'designed out' to levels substantially better than FCC requirements."

A single-wire and ground system connects all audio equipment, with the ground to the building at only one point for the whole system. All conduit was positioned accurately on the plans, with electrical and mechanical characteristics in mind.

The antenna system comprises a three-element array for AM, with the Clover-Leaf antenna for the FM transmitter mounted on top of one of the AM towers.

The building, as can be seen on the floor plan, has ample shop and storage space in addition to the actual operating areas for the two transmitters, and a lounge and kitchenette for the operating staff. In its efficient layout and its long, sweeping modern exterior, it represents the very finest in contemporary transmitter building architecture.

From the very beginning of its plans for expansion, the management of WDNC was determined that it would have the finest transmitter plant that the most careful planning could produce. Western Electric is proud that its transmitting equipment not only served WDNC throughout its period as a 250-watter, but was chosen for the central role in such a superb modern transmitting plant.

How to Boost FM

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on Wheels", a weekly dramatic program written and produced by Ira Walsh in cooperation with the D. C. Traffic Safety Department; and many others.

WWDC is also known as the "Sports Station" of the Capital city. Coverage has been given Washington Senators baseball, ice hockey, basketball and football. There is a daily All Sports Parade program. A number of highly popular disc jockey shows have been developed, with such recording-and-comment personalities as Jackson Lowe, the "Mayor of Connecticut Avenue," Milton Q. Ford, who calls himself the "Capital Crackpot"; Les Sand, known as the "Yawn Patrol Man"; Norman Gladney, Mark Austad, Willis Conover, and Bill Cox.

Helen K. Mobberly, National Sales Manager, who directed the "Mr. FM" contest so tellingly, started in radio in 1931 with NBC in Washington, as Secretary to the Sales Manager. She advanced to Assistant Sales Manager for the NBC outlet, then in 1940 went to WINX as Sales Manager, performing the feat of opening that station on the air with \$150,000 of time sales already on the books. She has been with WWDC since it opened, and has been National Sales Manager since 1943.

It was appropriate that Chief Engineer Ross Beville should open this story, because he and C. R. Shaffer, Transmitter Supervisor, along with the Western Electric engineers, put intense effort and skill into the problems of installing and testing the 10 kw transmitter, the 3 1/8-inch, 400-foot transmission line, and the six-bay Clover-Leaf with its new tower.

Ross Beville was born in Texas, but 1935 saw him in Washington at the Capitol Radio Engineering Institute, after his infection with radio by the "ham" virus. After graduation he held a progression of jobs in broadcasting and in the electronics industry: transmitter engineer, WIBG, Philadelphia; Engineer, Philco Radio Corp.; design engineer, Globe Manufacturing Company; Ass't. Chief Engineer, WINX, Washington; Senior Industrial Specialist with WPB during the war; Chief Engineer of WWDC and WWDC-FM since 1943.

One of his most important interests has been the development of "satellite transmitters", and WWDC's AM booster on 250 watts reflects his belief that boosters are the answer to low-power coverage on AM. He helped install the first "satellite transmitter" authorized by the F.C.C. . . . that for WINX, which went into operation in 1940. He has written extensively on this subject and served on the RMA Committee on Satellite Transmitters, and on the NAB Engineering Executive Committee.

With three transmitters in regular operation, and two of them—the two AM transmitters—on for 24 hours every day, Ross Beville has the kind of job he likes. "I enjoy keeping WWDC and WWDC-FM at the peak of performance," he says, "we have fine equipment. Most important, however, is the fact that with our booster on AM and our 20 kilowatt FM signal, we have an assured basis for our operation as a leading independent station in the Washington area. We are all 'bullish' on the future of our station."