

**Wilbert B. Smith**

**His Work in Broadcast Engineering in the Radio Division of the  
Department of Transport**

*by William J. (Bill) Wilson*



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Wilbur (*sic*) B. Smith came from Vancouver and worked under J.W. Bain head of the Radio Broadcast Measurements group. On Mr. Bain's retirement around 1945 he took charge of that group.

Wilbur's work in connection the implementation of the North-American Regional Broadcast Agreement, Washington, 1950 (NARBA) contributed tremendously to the success of AM radio broadcasting in Canada. This agreement established channel sharing criteria for each of the four classes of broadcast station that were to use the 535-1605 KHz band. Wilbur undertook to ensure first of all, that the radio frequency propagation characteristics used to determine the coverage of AM broadcast stations and based on ground wave conductivity and skywave propagation data were accurate as far as Canada was concerned. Secondly, he insisted that the engineering design and construction of AM broadcast antenna systems, related proofs of performance and maintenance were so well done that Canadian broadcast stations would not interfere with or experience interference from broadcast stations of the other NARBA countries. The result was that AM broadcasting in Canada including North America became technically better than AM broadcasting in the rest of the world as anyone who has listened to AM broadcasting outside the NARBA region, in Europe for example, will tell you.

Wilbur was not sure that the ground conductivity curves for the AM broadcast band frequencies given in the technical literature written prior to 1940 and then available were truly correct. Especially in the Great Lakes region of North America this was of great concern to Canada if the coverage of Canadian broadcasting stations was to be properly protected by United States broadcasting stations and vice-versa. By measuring and analyzing the performance of many broadcast station in that region, with the assistance of G. Clement Ireland and others of his staff, he came to the conclusion that ground conductivity in the Great Lakes area varied considerably. In the Lake Superior area it was about equal to that of fresh water. On the way down to Lake Ontario the conductivity improved considerably. Wilbur put this down to the increasing pollution of the lake water as it flowed toward the St. Lawrence River and the Atlantic. Broadcast station design engineers were then required by the Department to take this new ground conductivity data into consideration in their antenna system designs.

Too, in those early days of radio prior to World War II there was very little information on the measured strength of night-time skywave signals in the AM broadcast band received from distant stations in

southern latitudes. This information was essential if the night-time performance of Canadian broadcast stations operating on shared channels were to be properly protected. Wilbur set up a research program to get this information. He arranged for his and other DOT Radio Regulations staff to continuously record at numerous locations across Canada the signals of U.S. broadcast stations operating on various U.S. clear channels in the 535-1605 KHz band and to measure their night-time signal strengths over long periods at these locations. In this way he was able to assemble the information needed to establish the night-time signal strengths of U.S. broadcasting stations operating on channels which were to be shared with Canadian broadcasting stations. In effect his work supplemented work done in the United States between 1935 and 1946 and augmented available knowledge by covering propagation in a northerly direction over much greater distances than were possible in the States alone. This information was presented to the NARBA preparatory conference in Montreal in 1949 and accepted by the final NARBA conference in Washington in 1950. This ensured that U.S. stations would not interfere with the designed coverage of Canadian stations. Indeed, his work resulted in Canadian stations getting a slight protection edge over U.S. stations.

These two studies really brought the then data regarding propagation up to date for Canada and enabled Canadian engineers responsible for the design of the directional antenna systems to design, build and prove in multi-tower arrays that met all the protection requirements of NARBA. The result of this was that Canada developed a group of very skilled engineers specializing in broadcast station design, construction and maintenance work. When the successful performance of Canada's AM broadcast stations became known the other signatories of NARBA allowed Canada to lift the power limitations on Canadian broadcasting stations allowing many of them to go to 50 KW and thus considerably improve their coverage in Canada.

Wilbur built up a first rate engineering team headed by J.T. Chrome assisted by W.G. Robson, W.R. Dormer, D.M. Skanes and D.W. Johnson and others to look after the technical evaluation of all engineering briefs submitted to the Department. I was later told by the head of the national association of broadcasters that Canadian broadcasters much preferred to deal with this Radio Regulations group rather than the other broadcast regulatory body in Canada.

In 1953 the Department's Radio Division was reorganized and management of the radio spectrum used by all non-departmental radio services was made the responsibility of the Radio Regulations Division under the management of Mr. C. M. Brant, Controller of Radio Regulations.

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