One More LOADING COIL

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Using the BC-610 tank coil as a variable center-loading coil for high power.

←The coupling system used by W6KOG with the revised "Master-Mount" antenna.

MUCH HAS been said and written about the relative merits of this antenna or that antenna for mobile operation on 75 meters. However, the majority will probably agree that some form of base or center loading is desirable.

The author used a commercial version of a center-loaded whip for some time, with fair success. The main disadvantages were the inability to tune the antenna (without tuning or matching networks) and the inability of the coil to withstand the power in use. The rig employs an 813 in the final, plate-modulated by 811's. The power input is 150 to 180 watts, depending on the battery voltage. Not only were the I^2R losses excessive but the insulation would break down across the base of the coil due to the extremely high voltage present. The latter is, of course, no discredit to the manufacturer as the antenna was not designed for use with this much power.

After some thought and perusal of available material, the coil assembly shown in the accompanying photograph was made up. Basically, it consists of a 2.0 to 3.5 megacycle final tank coil from a BC-610. This is the coil that has a frame around it constructed of fiber rings and strips. The coil was modified in the following manner: The jack-strip assembly was removed and discarded. The center-tap connection was broken and the variable coupling link connected in series with the two halves of the main inductance. Nine more turns are added to the coil—three on one end and six on the other—to make a total of 41 turns. Then, by using the original loading coil form with the wire removed and a pair of chrome-plated Model A Ford hubcaps, the new unit was assembled.

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Using a grid-dip oscillator, and with the variable link swung to approximately the 45 degree position, the coil was pruned to resonate the antenna at 3975 kilocycles. By swinging the link back so the coil axes coincide, the resonant point is lowered 100 kilocycles. This is a very fine situation as it allows one to tune the antenna over a major portion of the 75 meter phone band. In fact the whole band can be covered, but above 3975 kilocycles and below 3875 kilocycles there is an appreciable reactive component which must be tuned out by the final tank.

The antenna is coupled to the transmitter by means of a four foot piece of RG8U and a three turn variable link at the tank coil, as shown in Figure 1. This coupling arrangement could be improved, but further complexity doesn't seem worthwhile. Over the most used part of the band, the antenna loads the transmitter to operating values with the tank coupling link only half way in.

Results

It is interesting to note that there is hardly any detectable RF below the coil. The antenna can be grasped below the coil without any feeling of RF or noticeable detuning of the antenna. Grasping it above the coil, however, is not recommended unless one has a desire to make like a neon lamp. This is in accord with antenna theory, as we have a grounded quarter wave with minimum voltage and maximum current occurring at the base. Properly tuned and adjusted, this transmitter and antenna will light a 15 watt fluorescent tube at a distance of 6 feet.

Installation was completed at 11:00 pm, and within one hour, Seattle, Washington, Los Angeles, California, and a station in New Mexico were worked from Sacramento with gratifying reports. No definite measurements have been made

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LETTERS

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Editor, CQ:

There was no intention on my part to slight any of the research work done by the Wright Air Development Center. If the people at Wright feel that they were left out in my article, I am very sorry.

The material from which I wrote was given me by experts at Boeing Airplane Company in Seattle, and by the public-relations division of that firm. In it was included the photographs and drawings mentioned by Captain Fisher; if these were not properly credited in publication, that is very unfortunate. Possibly it was a printer's error, for I certainly take care to see that ALL material I use or submit is properly credited.

As to who foresaw the need for flush-mounted antennas, the statement I used was the one I got from the people at Boeing. I imagine the situation in that respect varies from research center to research center—and since it was a Boeing story from my standpoint, that was how I wrote it.

Allow me to say that the B-50 Superfortress, Boeing's medium bomber, still is flying with many protruding antennas. Boeing's speedy B-47, however, skims through the air at near-sonic speed without ANY antennas sticking out. Shall we say the EVERYBODY now recognizes the need for flush-mounted antennas?

Louis R. Huber, W7UU

(We can blame the printer for a lot of things, but the omission of the photo credits was entirely and regrettably our fault. Ed.)

CONTESTMANSHIP

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ting something, and *Clickmanship* (especially effective against local Opponent). But these are proper subjects for a more extended treatment.

Perhaps this brief resume will be successful in suggesting how the vast possibilities inherent in contestmanship can add to the pleasure and efficiency of amateur operating. As Kerl has put it, "Als Betrage gewendig sind, so musst Mann." How true!

LOADING COIL

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on the coil but experience has shown it to be a substantial improvement over the original.

The idea of using a BC-610 coil is not original. Hams in the Los Angeles area have been using them for some time with and without various capacity devices, and it was from one of these fellows that the author first learned of the idea. The only claim to originality is the adjustable feature and adaptation of the Model A Ford

hubcaps. Admittedly, there must be some hysterisis and eddy current losses in the metal end-pieces, but they don't appear to be excessive and the "dressed-up" touch is sufficient compensation.

Further Thoughts

Needless to say, the wind resistance of the coil is quite high, and under some weather and driving conditions, a guy becomes almost a necessity. The author is contemplating the installation ot a small chrome-plated chain with midget strain insulators.

If anyone feels disposed to try something along these lines, the 1.5 to 2.0 megacycle BC-610 coil might be a better deal as then one could just remove turns until the desired inductance is obtained. As an additional hint to any soul hardy enough to install such a monstrosity on his automobile, much time and repititious speechifying will be saved if one has a mimeographed sheet prepared to hand out to the inquisitive hordes who give out with the inevitable question—what's that, television? As so many people have pointed out, if the coil doesn't perform up to expectations, it can always be used for a portable canary cage.

In case anyone is wondering as to the balance of the transmitter lineup, a 12 volt battery with its own voltage-regulated generator furnishes the primary power. A BD-77 dynamotor (12 volts in and 1000 volts @ 350 ma. out) powers the final and modulator while a pair of synchronous vibrator supplies (12 volts in and 300 volts @ 100 ma. out) handle the low power stages.

ROTARY BEAM

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feet below the 10 meter one. The center of gravity of the entire assembly is thus lowered well below the point of support, which makes it very stable. This method also eliminates the need for a second boom. If you insist on more than two elements on twenty, this will not work; however, many operators agree that beyond two elements there is only a theoretical db. or so for each extra element, MAYBE. Unless wide spacing is employed, tuning will be required to realize even this slim advantage, and in the meantime construction problems have skyrocketed. For the practical case, then, it looks as if two elements on twenty represents the most results per unit effort and cost.

The present array at W4MXP is shown in the photograph. It was completely assembled on the ground except for the twenty meter elements, and was light enough to be hoisted and mounted by one man. The dimensions of the affair are such that it is easy to reach all the cone insulators of the 20 meter antenna. The folded dipole and director for it were then hoisted up and attached by screwing the two cone insulators in place on the crosspieces.

Results? Well, this is the first array we haven't decided to change after six months' use.