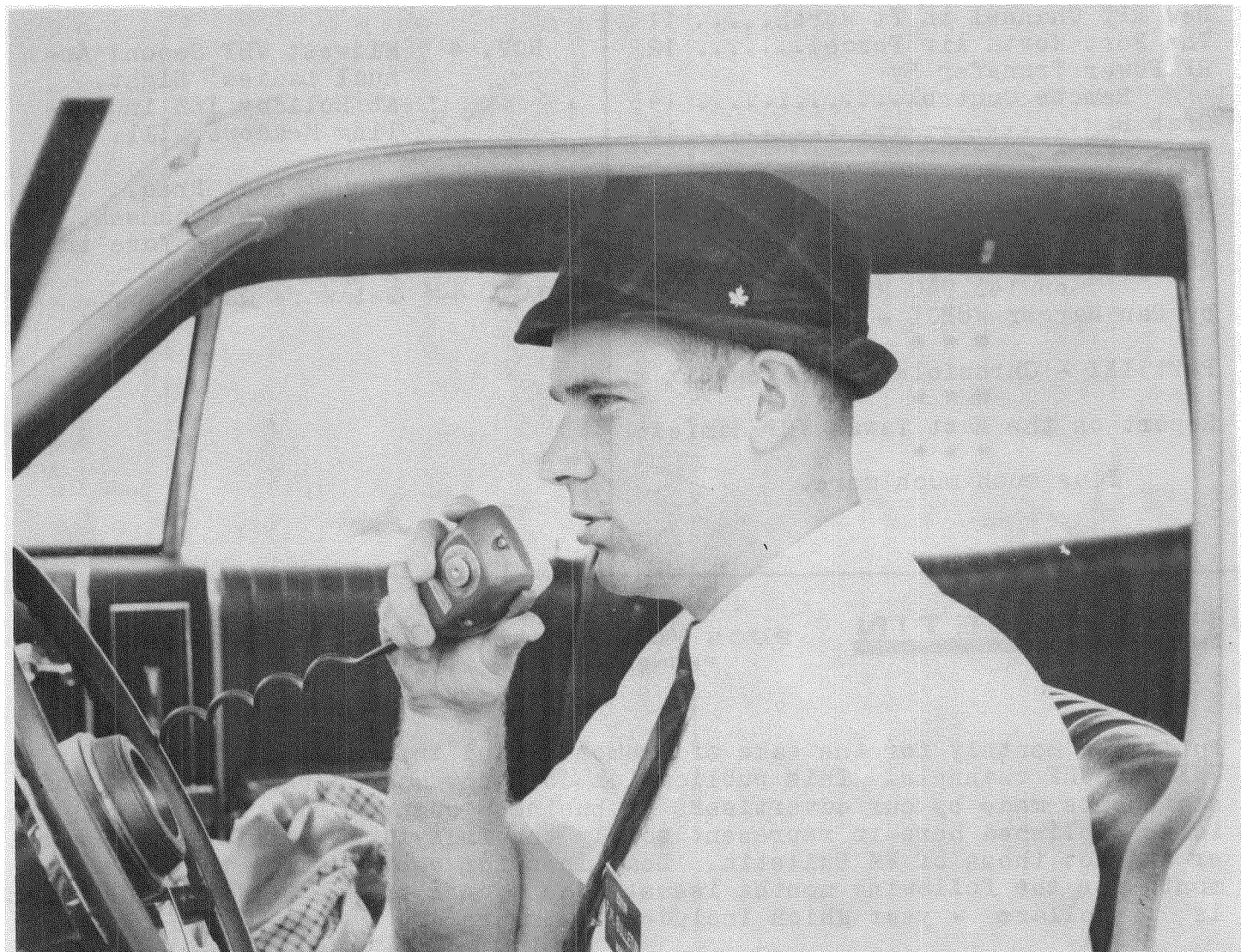


FM BULLETIN

REPORTING ON AMATEUR FM ACTIVITIES
2005 HOLLYWOOD-GROSSE PTE., MI. 48236



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NEXT MONTH

An All SOLID-STATE FM Transceiver
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by Dan Harger W8BCI - Lansing, Mich
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* * *
Report on the East Tawas VHF Hamfest
* * *
Plus much much more.

COMING EVENTS

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Convention.
- NOV. 5 Roanoke Div. ARRL
Convention.
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Banquet in Tecumseh,
Ont. Canada. More info
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FM BULLETIN

2005 HOLLYWOOD, GROSSE POINTE, MI. 48236
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Articals, Stories and your comments are needed for print. Share your ideas!

EDITOR & PUBLISHER.....Michael Van Den BrandenWA8UTB

PLEASE!!! THANK OUR ADVERTISERS-----

LOS ANGELES AREA REPEATER

This information is supplied for comparison with the Baltimore area repeater, the details of which were published in the last issue of FM Bulletin.

REMOTE CONTROL:

The control frequency is 442.12. If necessary for emergency control, any operator may call the repeater telephone number (unlisted) and let it ring a specific number of times. If the telephone at the remote site rings no less and no more, all remote equipment will shut down completely except for the control frequency receiver. Two-digit pulse trains are used to control all equipment. The signals are transmitted in decimal format using a conventional telephone dial as a formatter. Tone frequency is 2850 Hz. All remote equipment may be controlled by any one of six tone-equipped mobiles, but the prime control is assigned to the fixed site at K6MVH in Ontario, California.

OPERATION:

The basic repeater (146.34 to 146.94) may be used by any operator with FM equipment set up for such use. No special tones nor encoding equipment is required. The UHF repeater and remote base stations are operated by the few individuals responsible for service and maintenance of the in-band repeater.

TYPES OF EQUIPMENT:

General Electric MC-306 (Pre-Progress Line) receivers and transmitters are used for the UHF channels. (All units have been modified per the diagram in the last FMB so that ovens are used for added stability!) The tone decoder is a standard Motorola unit which drives a two-axis stepper to pulse any one of 100 available function relays. At present, there are about 25 operational functions, including those few duplicated by landline dial-in.

1. Sessions, K., GE & Motorola Units for 450 MHz Amateur Use, FM Bulletin, Aug '67

OPERATIONAL DATA:

Function	Unit	Power	Operated from	Antenna	Separation	Elevation
1	146.34 repeater rcvr		Contr fr 442.12	Gndpln 40 ft	2K ft fr xmtr	3K ft
2	146.94 repeater xmtr	40W	146.34	Gndpln 40 ft	2K ft fr rcvr	2.8 K ft
3	146.76 remote * xmtr and rcvr	30W * 120W 1 kW	442.12	Beam * Gndpln 35 ft	None necessary	2.8K ft
4	* 146.82 and 146.94*remote xcvr	15W* 1 kW	442.12	Beam Gndpln	None necessary	2.8K ft
5	448.82 xmtr (Talkback)	25W	442.12 plus whichever rmt is turned on	6 dB Com Products (omnidir)	10 ft vert from rcv ant.	2.8K ft
6	442.12 rcvr (Control)			Same as above	Same as above	2.8K ft
7	Standard telephone *		442.12/448.82 Duplex, ansd or initiated fr 442.12 MHz.			

* SELECTED FROM REMOTE CONTROL POINT BY TRANSMITTED CODED PULSE TRAIN

NOTE: 146.34-to-146.34 operates continuously, independent from functions 3 through 7

L.A. GETS REPEATER

.... AND PROBLEMS

REPEATER

Los Angeles has finally joined that elite group of metropolises with open-ended FM repeaters. Last week W6FNO went on the air at Radio Ranch, California repeating 146.34 to 146.94 MHz on a full-time basis. The successful deployment of the 34/94 machine terminated a 2-week concentration of effort, much of which had seemed futile and unrewarding at times.

The repeater was initially installed as a one-cabinet system at the K6MVH remote facility, using a transmitter donated by Don Milbury (W6YAN), identification and timer protective devices constructed by Jack Bankson (WA6JXG), a receiver strip donated by Neil McKie (WA6KLA), and a receive crystal donated by Gardner (Gar) Harris (W6AXM). Absence of cavities and the profusion of radio signals in the building degraded the receiver's performance to such an extent that weak to moderate signals on the input were unusable. In addition, the transmitter itself desensitized the receiver during operation of the repeater by more than 20 dB.

The repeater owner (K6MVH) took the problem to Fred Daniel (W6NQS) who operates a two-way FM sales and service center, and who also maintains some weatherproof enclosures less than one-half mile north of the MVH remote site. (Fred also coowns a portion of the building which houses the repeater, and has a second station license assigned there. The repeater is identified with this second station call (W6FNO).

At any rate, Fred carefully examined the receiver and pronounced it dead on arrival. Then he really began to move.

Fred donated a fully crystallized, tuned-up Progress Line receiver, and allowed it to be installed in his own commercial facility. Ken Sessions and Gar Harris went to work stringing cable in the rattlesnake- and tarantula-infested wilderness of brush that separates the two sites. And by Sunday night, the repeater was fully operational.

PROBLEMS

Problems started the night the repeater was installed. During repeat operation, a funny crackling sound appeared on the output -- a nonuniform, occasional crackling. Few noticed it and only one or two operators made any comments.

And the next morning it was gone. So the problem was attributed to gremlins and dismissed. But with dusk, it returned. This time more noticeable than ever. A couple of hotshot technicians zipped up to the repeater site to troubleshoot and heal. Into the night it got worse, but the service aces could find nothing. The tubes checked out OK, the voltages were right, and there was no correlation between the occurrence of the sounds and the localization of any of the servicemen's tapping. When it was too dark and too late to continue, the boys decided to give it up for the time, and vowed to return the following day. After all, the repeater was usable, even if it was plagued with the unidentifiable crunching noise.

As might have been suspected, the noise was gone the following day, and the repeater performed beautifully, except for an occasional dropping off the air momentarily. But no one cared about that. Anxiously, the radio doctors awaited nightfall.

As the last ray of sunlight was shadowed by the horizon, the noise returned. And the analysts really began to theorize. An over-the-air conference tied up the repeater for some time, while armchair technicians -- with varying levels of competence -- speculated as to the source of the evil and raucous interference. Diagnoses varied from "receiver desensitization" and "moisture-susceptible component" to "temperature sensitivity" -- each of which seemed plausible to some degree.

The conference was quelled without warning. After a particularly severe rattle, the transmitter was silent. And the technicians once again made the trek to the hill.

Their efforts were hampered by a sudden and violent storm, which poured water into open tool boxes and made the towers strain against the wind. Giant hopping arcs of lightning caused scary but spectacular displays of brilliance and deafening crashes.

The activities of the other technicians during the gale can't be stated with certainty, but this writer was huddled in the rear seat of an automobile in the fetal position.

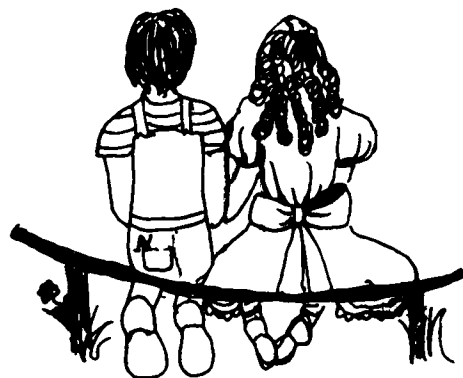
After the storm subsided, the boys wrung themselves out and went back to work. The receiver, as noted previously, was separated from the transmitter by nearly half a mile. So one operator monitored at the transmitter while the other made receiver measurements.

The receiver was OK. The carrier-operated relay triggered with each incoming signal, and the contacts appeared to be in good shape. But the transmitter never received the signal for relay closure. A series of subsequent ohmmeter readings showed the receiver/transmitter interconnect line to be open, and the answer began to become obvious.

Someone traced the keying wire from the transmitter out of the building to the edge of the wilderness where it ran up to the receiver. He tugged it and felt no countering resistance. So he began to reel it in, and found there was only about 120 feet attached. Examination of the length of cable showed at least five total breaks of all conductors. The cable itself looked as if it had been through a threshing machine. It was torn, bent, cut, and shredded.

The source of the crackling sound, for the edification of aspiring repeater owners who want to bypass the miseries of those of us who pioneer: Rabbits and deer eating the cable.

EVERYONE LOVES



PETER PAN SHOES

17015 KERCHEVAL

GROSSE POINTE, MICH.

BILL CHIARAMONTE -- KBYCQ

REMOTES/REPEATERS and mobile control

By KEN SESSIONS

Whenever the subject of mobile control arises, someone will always be there with this nugget of wisdom: "You can't control a repeater from the car. Part 97.43 of the FCC Rules and Regulations specifically states that the control shall be effected from a fixed site."

Well, it's high time for some air-clearing! The FCC has never said it is illegal (or even frowned upon) to control a repeater or a remote base station from a moving vehicle. The FCC, in my opinion, doesn't care if you control your machine from a tricycle -- as long as the regulations about control are fully adhered to. Sound contradictory? Well, it isn't...and here's why:

First of all, there is no mandate (and there never has been) that says control must be exclusively accomplished from a fixed site. The law is intended to assure that an amateur operator will be able to cut off his remote system when its emissions stray from legality. Thus, a licensed monitor at the fixed control point is definitely a requirement. (A licensed monitor, incidentally, means an amateur who has been specifically licensed to control the remote equipment.) But any licensed amateur can operate and control and switch and play with the remote stuff all day long without breaking the law -- as long as the fixed control point is equipped to override the mobile if necessary for master control, and the fixed point is manned by the delegated responsible person or persons.

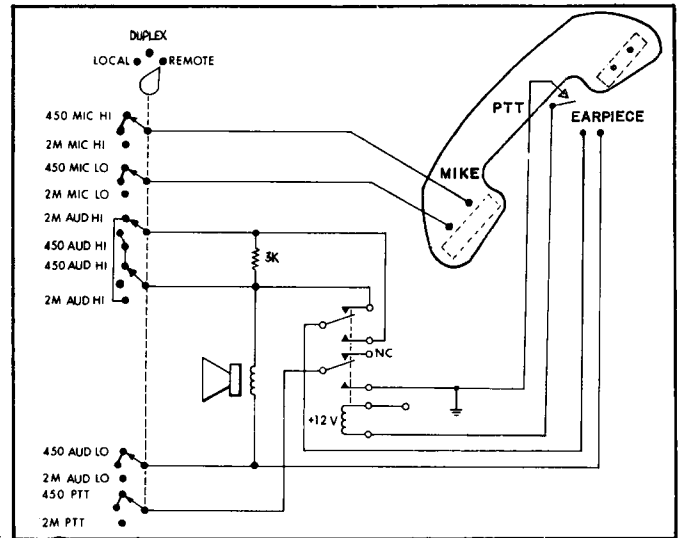
Now that the legality of mobile control has been established, we can get on to the meat of the text: a technique for effective control and monitoring of remotes and repeaters from vehicles.

The control mobile unit should have the capability of monitoring both the UHF control repeater's output and the remotely operated base station's signals. Many operators simply mount a transmitter/receiver unit for each band in the car and keep both turned on. These operators are readily recognizable by their incessant feedback squeals.

A better approach is pictured in figure 1. This switching system not only offers the advantage of feedback-free operation, but it allows the use of a single handset rather than two individual mikes.

Here's how it works:

The local-duplex-remote switch is placed in the desired position. (Local in this case would mean two-meter operation direct from the mobile.) If the remote equipment is activated, the operator will transmit (local position) on two meters while



his speaker is shut off, but he will monitor the two-meter signals on the handset earphone as they are transmitted from his remote UHF transmitter, or "talkback." (Not quite true for duplexed UHF gear, but this is discussed below.) During his transmissions, if a stronger signal comes on the channel, he'll be able to hear it and can wait until the frequency is clear before continuing. Or he can switch to the remote position and resume. When he releases the push-to-talk switch, the speaker and the earphone are reconnected to the two-meter transceiver for direct monitoring.

In the remote position, the opposite case occurs. The talkback is monitored until the push-to-talk button is pressed, at which time the speaker is shut down and the earphone is connected to the local two-meter unit.

If the UHF mobile equipment is set up for duplex operation, the speaker continues to receive two-meter and UHF signals during UHF transmissions, but the two-meter signals are substantially cut in volume. During two-meter transmissions from the car, the speaker is fed with reduced-level audio from the UHF rig. Duplex simply means that the UHF transmitter operates simultaneously with the UHF receiver. This condition is a virtual necessity for operators using remotely controlled telephones.

Feedback, the chief problem with duplex operation, is minimized in the control design shown here by reducing the speaker volume in the duplex mode. Since the headset will be used during duplexing, the volume at the speaker can be greatly reduced without compromising listening ability. The 3K resistor in the schematic can be increased or decreased in value to yield just the right amount of drop in audio to stop feedback effectively.

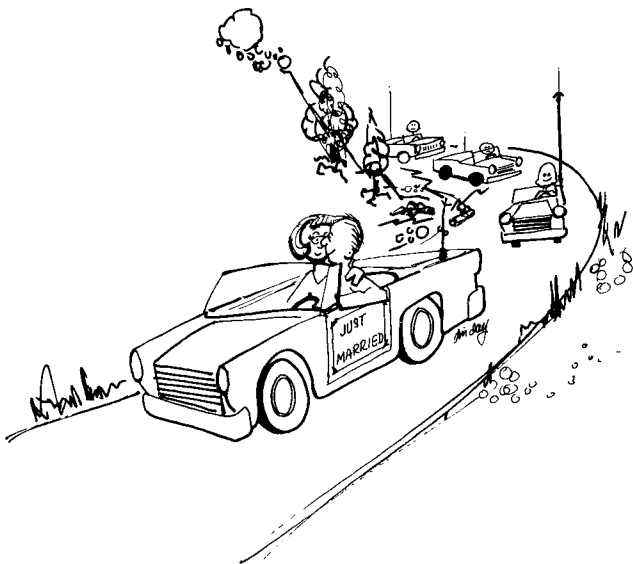
CHRONICLES OF SEVEN-SIX

By - Ken Sessions K6MVH
Cartoons by Jim Day

II. FUNTIMES

Things weren't always bad on seven-six. You could often bear witness to good, clean, honest sport. Like the time K6TVE got married. While Gene was standing at the altar inside the church, a few of his friends turned on his mobile rig. They started his engine for him, then goodnaturedly wedged the push-to-talk switch on his microphone so he would be transmitting a continuous signal.

Gen's mind was on matters far more pleasing than amateur radio, so he wasn't even slightly aware that an impromptu transmitter hunt was about to take place. He benignly drove toward his prepared honeymoon cottage, giving no thought to the light on the rig which twinkled brightly as he and



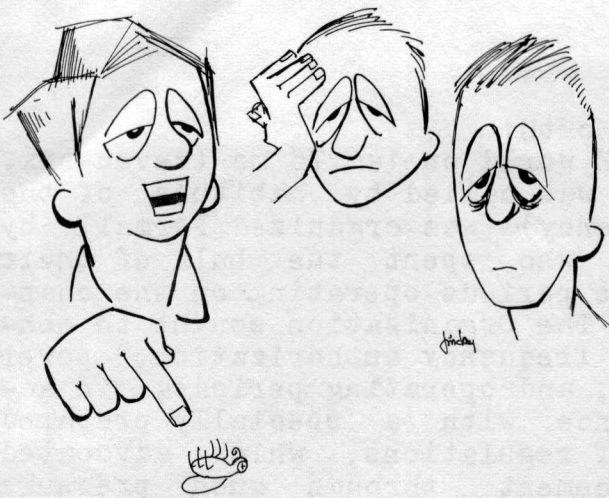
Last Month:

The FM world on 146.76 mc (seven-six, as it was called by habitués of the frequency) was organized formally by those who spent the bulk of their active periods operating on the channel. The Organization sought to control frequency authorization, power level, and operating periods, in accordance with a specially prepared set of regulations, which advocated enforcement through such pressure tactics as boycott, deliberate interference, and verbal censure. The restrictions imposed by the Organization caused wrath that begat wrath. And all the while, the FCC was waiting...watching...

his bride modulated the steady signal.

Gene forgave the naughty seven-sixers about three in the morning, when they gathered for a hamfest at his secluded mountain retreat. (Unfortunately, his bride didn't seem too taken with this first exposure to amateur radio. As a matter of fact, no one's heard good old Gene on the air since that night.)

Or take the time the mystery carrier transmitted for better than five hours on 146.76 mc. The incident gained rapid notoriety, and at the third hour hordes of hams mobilized to track down the jammer. The source of the signal became known during that five-hour siege as the Black Transmitter. When the offending station was found and the Black Transmitter finally silenced, the chief operator, Terry (WA6SXR) entertained everyone with his unlikely explanation of the incident: While he was away for the day, a moth had flown into his transmitter at home. (He always left the filaments on.) In flitting hither and thither inside the rig, the moth became suddenly and inadvertently electrocuted. The dead bug fell, by mere chance, into a sensitive plate relay that keyed the push-to-talk.



Implausible? of course! But certainly an ingenious bit of spontaneous creativity. Under some duress, SXR threw a party for the mob of hostile seven-sixers -- right there on his vacationing neighbor's poolside patio.

In my early days on seven-six -- before I knew the ins and outs -- K6CHR occasionally addressed stinging little epithets to me. His words were cleverly phrased and were carefully selected to make me look like a boob (a relatively easy task, considering the material with which the potter potteth). These clever little verses and bits of poetry increased daily in length, and at last I felt an intense need to retaliate.

But in so doing, I decided to strike out against all I considered bad on the channel. So I wrote a bulletin which was designed to elicit responses from all those whose calls I included. The stations I mentioned in my "bulletin" are all fast friends now, but at that time I could see nothing lovable in their respective operating habits. I noted, over a period of time, that WA6UCG was subject to an occasional slip of the tongue when under undue pressure from various external sources resulting in the transmission of words sometimes heard in churches but in a different context.

I considered WB6PQQ to be a hoax perpetrator. He was so renowned in this area that few of us actually believed he was lawfully licensed. He had had the channel in an uproar but a week or two earlier when he came on the air saying that he was being arrested

and booked for some crime he didn't commit. A delegation of us looked pretty foolish when we attempted to bail Marty out and found that he hadn't left the warmth of his cozy hamshack. And Marty was backed by K6KIX in that bit of deceit.

I was looking for an excuse to nail KIX anyway. He was pretty evil, I figured, because he'd been working on a Kilowatt rig which produced a particularly raunchy sounding during my important transmissions.

As a last-minute gesture, I decided to write a few choise words about Vern Thompson, W6ZJU. I couldn't figure Vern out. When he talks to you on the air he sounds like he's laughing up his sleeve. And he'd been coming up with some pretty scary talk about frequency ownership, private coordination of channel spacing, and the like. Besides, Vern seemed to be about the most respected and imitated station on frequency, in spite of his seeming lack of sincerity.

So I wrote a bulletin which pointed out the less sterling character traits of these individuals:

(Bulletin) →

Well, the bulletin was not without reprisals. Apparently it was heard by everyone who operates the Preferred Frequency. Everyone who knew those whose calls were mentioned seemed to derive some sadistic pleasure from hearing it. Someone had recorded the message, and had re-played it several times.

But those who were called out in the bulletin felt the bite of truth in spite of the gross exaggerations. They were a trifle bent out of shape. WB6PQQ announced that evening that he was preparing to drive to Ontario with K6KIX to "Silence MVH."

My placid wife Helen was little more than annoyed at first, but when the signal strength increased and the voice making the threat was obviously

-BULLETIN-

QST, QST, QST. The seven-six founders announce commencement of an educational course entitled "Extended Sessions in Applied Interference." This capsule course teaches the secrets of effective malpractice in three weeks, and includes formal classroom and on-the-air training in such subjects as:

1. Establishing Initial Hatreds
2. Nonjamming Uses for Small Signals,
(Including such subtle techniques as badgering, innuendo,
and false accusation)
3. Discrediting Decent Operators.

These courses are taught by such craftsmen as K6CHR, WA6UCG, K6KIX, and WB6PQQ. Some of their more noteworthy contributions to the degradation of amateur operation are listed below:

K6CHR is noted for his effectiveness in driving better operators to insignificant frequencies. Single-handedly, with the help of but a single walkie-talkie, he needled an impressive list of amateurs until they gave up hamming altogether.

WA6UCG, a newcomer to the ranks of Supernasties, is best known for his recently released book, "The Proper Use of Profanity to Put Your Point Across."

K6KIX is the recognized authority on blatant lies. He has developed secret methods for creating dirty, broad, distorted, and ultrapowerful signals. With an accomplished aura of innocence, he airs these "signals" under the ridiculous guise of low power. Some of his other notable achievements include: (1) participating in hoaxes, (2) inciting a riot, (3) jamming for fun and profit, and (4) maligning responsible amateurs.

WB6PQQ is a journeyman shyster, specializing in two-faced friendships, rumormongering, and the engineering of elaborate hoaxes and frauds. His exploits are too numerous to annotate, but they include the perpetration of every vile form of frequency misuse yet conceived.

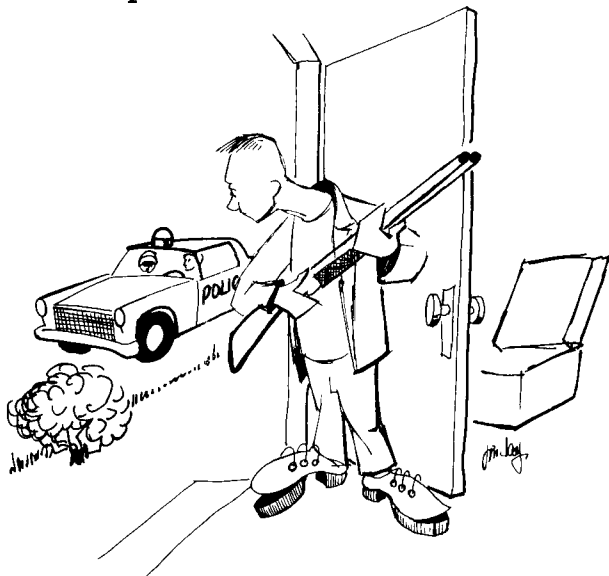
During the final week of this class on applied misuse of frequencies and signals, students will be afforded a special treat, when W6ZJU will conduct a short seminar. His discussion will encompass such facets as:

1. Claiming and owning large portions of the spectrum.
2. Tactical maundering for confusion of friend and foe.
3. Improper use of recording systems.
4. Breaking supersecret repeater control codes.
5. The art of subtle variation in transmitted signal strength to avoid detection during this transmission.

The course is free, and is conducted nightly on 146.76 mc. The first session has probably started during this transmission.

"We're coming, MVH," they said.
"We're going to kick in your door and
smash your teeth in."

Helen wasn't the only one who was
scared! I borrowed a loaded rifle
from a friend and returned home to
stand guard at the door. Helen, in
the meantime, had telephoned the
local gendarmes, who dispatched two
vehicles post haste.



As it happened, the police converged
at about the same time that Marty and
Dick (my two would-be assailants) ar-
rived. And I found I was again the
victim of a PQQ hoax! He very laugh-
ingly announced that he was driving
over to see his girlfriend, who lived
a mere two blocks from my house. It
was an ideal opportunity, he thought,
for a practical joke.

Helen reluctantly invited them in
while I dismissed (with no small
amount of embarrassment) the two
carloads of police officers.

Needless to say, the episode was a
source of great amusement for the
seven-sixers. And a day never passes
that someone doesn't make me wince
just a little with a subtle allusion
to the "Bulletin Caper." Though I
didn't know it at the time, that
bulletin heralded in a new era in the
Organization's organization.

Next Month: BIRTH OF THE NEWS
(part 3 of 9)

WHY 3 MIN. I.D. ?

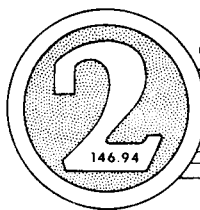
By Harry R. Hughes K7VNV

The ARRL proposal for call sign
identification is utterly without
redemption. Why should a repeater
have to ID itself three times as
often as the stations that are using
it? Once every ten minutes is suf-
ficient and would serve as a remind-
er to the stations that are using it
to do so themselves.

As usual these rules changes will
probably be decided on the basis of
comments of many people, many of
whom have never had anything to do
with repeater operation, and that is
why we may have three minute ID
intervals.

A little comment on logging require-
ments for amateur repeaters. Keep
it as a technical log only. All
transmissions through any repeater
have already been logged by the
stations that are using the repeater
and besides this complicates the
operation of a remote unattended re-
peater. The repeater does not initi-
ate anything its self and therefore
logging what is said through it
means nothing.

To sum it up a repeater should have
its own call sign, it should have a
responsible trustee to look after
its operation, unlimited access oper-
ation should be permitted, the log-
ging requirements should cover the
necessities and leave out duplicat-
ion, and I believe that an unattend-
ed automatic repeater should have
some provision for automatically
monitoring the transmit frequency
so that it will not clobber any com-
munications that may be in progress
there. I suppose there are lots of
other things that could be said but
we will leave that for another day.



Genesee County Radio Club

2 FM GROUP

Coffee Club
Sundays 8:30 AM
Emergency Net
Wednesdays
8:00 PM

By- Gloria Sturm K8WKE

Flint, Mich.

The 2 meter FM station has been installed at our local weather station. We are working in conjunction with the Shiawassee County Radio Club and our 24 hr. monitoring station is on the air now. Bob Farnum, W8OGR will be able to handle traffic on all bands.

The G.C.R.C. was honored with the presence of W8UTB, Mike Van Den Branden - Editor and Publisher of this FM BULLETIN and Glenn Pohl, K8IYZ as our guest speakers for the last club meeting. We enjoyed their company.

I would like to take this opportunity to thank all those who took part in the East Tawas VHF Hamfest, making it such a wonderful success. The Tawas Radio Club is to be commended for such a beautiful job well done. I would also like to thank the Holland Hotel for their hospitality. The banquet was so wonderful and the dance was great. Most of all I would like to express my thanks to all those responsible for making it possible for me to win that 60 Watt GE Base rig that was donated by Gregory Electronics, 249 Route 46, Saddle Brook, N.J. 07662. It's still hard to believe.

I have been to many Hamfests, but never have I experienced the warmth of togetherness that was shown at this event. We may in some eyes be classified as VHFers or chatter boxes rather than fellow hams, but I challenge any other group to equal or top the VHF Ham Fest, using the same size group that put this one on.

HATS OFF EAST TAWAS. We down below, think a lot of you up there.

NEW RPT CHANNEL IN FT. WORTH, TEXAS

By Leslie Norman WA5HWW

An increase in local two-meter activity during the last several months has necessitated the establishment of a second channel (input 146.16 - output 146.76) in addition to the original channel (input 146.34 - output - 146.94). Many thanks for much hard work in establishing this new channel go to Walt Williams, W5YUO

The local two-meter group was host for the semi-annual VHF-FM society meeting the last week-end in July. The meeting was held Sunday afternoon in the KC Club room at Seminary South, although the room was open all day Sat. and Sunday with local and out-of-town hams coming and going all day.

Approximately 80 people from all over the state of Texas, and a good delegation from Oklahoma attended the meeting. George Munsche, the President of the organization from San Antonio presided over the business meeting and an excellent program was presented by the Tulsa group.

The Tulsa group had a slide show with a taped commentary called "The Tulsa Repeater Story" which was an excellent presentation - well executed, informative and interesting. This show merits being seen by anyone interested in radio activities. The story depicts what one group was able to do from the beginning days of their repeater to the present system where they are an essential part of their community, performing many community services, Civil Defense activities, etc.

The women who attended were entertained with another very unusual and interesting slide show given by Yvonne Lowrie, who showed slides she and Max (W5HES) made on their recent visit to Africa, and gave a very delightful commentary about the trip.

THE FORT WORTH AIR FORCE

BY Leslie Norman



An "EXPO Expedition" of flying, hamming, KC Club members in a group of four light planes flew to EXPO 67 at Montreal, Quebec, Canada, the first part of July. Their itinerary included Bentonville, Arkansas (where a nice breakfast visit with Olin Huff, W5BCB, was enjoyed); St. Louis, Chicago, Niagra Falls, Ontario, Watertown (N.Y.), Montreal, Albany, Poughkeepsie, New York City, Washington and Winnsboro (South Carolina).

The group was comprised of Walt and Neta Williams (W5YUO & K5BLP), George and Barbara Williams (WA5KTO & WA5QEA), Bruce and Leslie Norman (WA5GUB & WA5HWW) and Bill and Juanita Larsen whose interest in Ham Radio is rapidly increasing.

Two meter FM communication was maintained between airplanes piloted by Walt, George, and Bruce. Two Meters makes good communication airplane to airplane as it will easily cover a distance of 300 miles or more. We chatted cross country with hams on two meters all along the route, in fact communication plane to plane was sometimes difficult because all the ground troops wanted to get a word in with the air force.

We left Walt and Neta North of the border for an extra day, and got in touch the next morning via two meters while we were all headed down the Hudson River toward New York City. While our 4 airplanes were flying the Chicago lake front area looking at the apartments and boats along the shoreline we were talking with one of the residents of one of



LEFT:

Bruce WA5GUB



LEFT:

**Walt & Neta
W5YUO & K5BLP**

RIGHT:

**George & Barbara
WA5KTO & WA5QEA**

the apartments who was watching us fly by.

Some of 75 meter portable operating was done on the trip also. One contact proved to be very valuable in that it resulted in a phone patch to the Flight Service Station at Albany. Bruce made contact with a ham who lived in Scotia, N.Y., and worked in Albany, on our last nite in Montreal when we were formulating our plans for departure, and the detailed and excellent weather information and advice we received pertinent to our return flight the next day was very helpful.

A pleasant surprise was in store for us at Albany the next afternoon. The same ham and his wife invited the group to their home for supper and an evening visit with their family .

They both went to considerable trouble for us, as Joyce rapidly created a delicious meal, Don drove a number of miles, picked us up at our motel in Albany, drove us to their home in Scotia, and returned us to Albany. They were a very warm and wonderful family and we enjoyed our visit in their home very much and appreciated their letting us share an evening with them. Of course part of the evening was spent in the ham shack where Don enjoyed chatting with friends in Maryland and Joyce talked with their daughter who was visiting in Maryland.

To sum up our expedition - the scenery was great, hamming was enjoyable and functional, and after a brief rest, the Fort Worth Air Force will be ready to attack the big wide wonderful world again.

RIGHT:

Bill & Juanita



RF POWER TRANSFER
BY REMOTE CONTROL

© 1967

Ken W Sessions Jr. K6MVH

Remotes and repeaters traditionally run low power. And why not? Usually, low power is all that is required; the remote transmitter is situated on a tall building or at a mountaintop location, so blanket coverage is obtained by elevation -- and extra power doesn't buy more than devastating electric bills. Most owners of repeaters and remote base stations will agree, however, that an occasional power increase is highly desirable.

Suppose, for instance, that a repeater user is operating a mobile in a fringe area. It would not be too difficult for him to increase his mobile power temporarily to get into the repeater. But what benefit would he gain if he were unable to hear the repeater output?

Or suppose that an operator is conversing with another station through the repeater, but other stations are talking "direct" on the repeater's output channel. As likely as not, the repeater could "get through" without disturbing the other communicants if the output power level were increased for a few minutes.

It is neither economical nor legal to run high power continuously without a specific need. (Perhaps you're justified in considering it a necessity to run high power continuously to help stamp out the AM RACES net -- whose channel comprises as many frequencies as operators -- but the FCC doesn't necessarily see things our way.) In any case, boosting transmit power as required is in keeping with the FCC regulation which states, in essence, that transmitter power should be limited to no more than that required to maintain communications. Further, your ability to decrease power will be respected by

other operators on the transmit channel. They will realize that your high power capability could be exercised on a continuous basis, but out of consideration for other FM'ers, you normally run the lowest power level practicable.

A typical benefit of the multipower-level capability is the reduction of design compromises during initial construction and installation of the remote equipment. An owner who knows he will be able to increase his repeater or remote output power on command will be less likely to install a system that runs even moderately high power on a continuous basis.

Power level changing can be accomplished in many ways, from the simple expedient of circuit switching in the power supply (effecting a voltage change on the final) to automatically "patching in" an add-on power amplifier (the most impressive approach).

There are a number of vital elements to consider when designing a system for control of an add-on amplifier. One of the most important of these is comparing the normal output power of the remote transmitter with the input power requirements of the add-on amplifier.

When the normal output exceeds the drive requirements of the amplifier, a means must be provided for reducing it. This can be done in several ways. The easiest method is to back off on the loading of the basic transmitter so that its normal output will automatically match the drive-power requirement. But this is compromising the capability of the repeater transmitter.

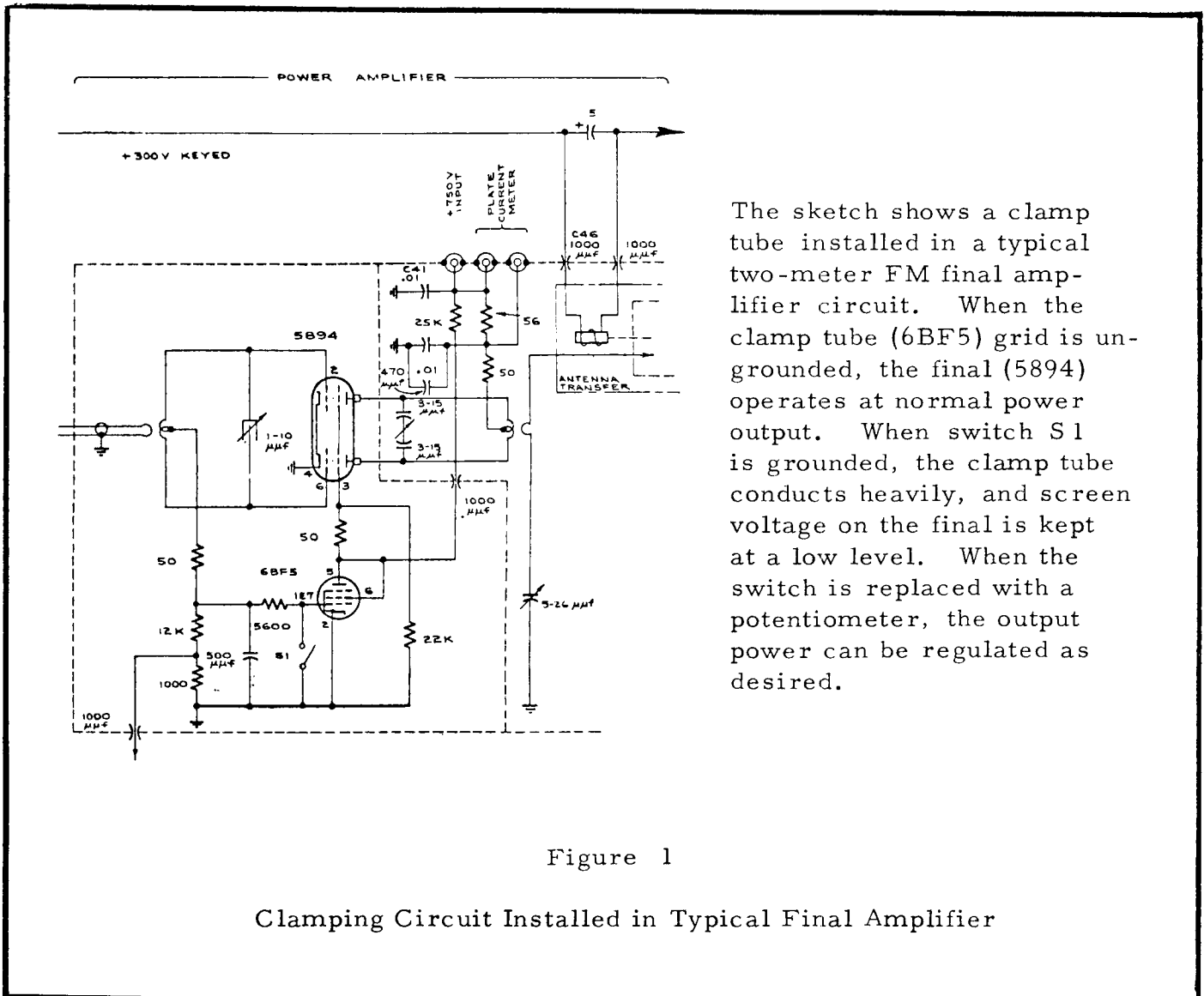
Another method is to use a resistive network as an artificial load at the time of power transfer. But this approach is inferior because the characteristics of the resistors are difficult to match exactly with those of the antenna, and the result

will be an off-resonance condition in one position or the other. In addition, any variation in the power amplifier grid tuning will greatly affect the input load impedance. Since the transmitter will be operating at its maximum output, even a slight off-resonance condition will wipe out the transmitter's final amplifier in short order.

The most satisfactory solution is to use a clamp in the screen circuit of the final such as that shown in figure 1. When the grid of the clamp tube is grounded, the transmitter output is limited to a fraction of its full capability. By inserting a

variable resistance between the clamp tube grid and ground, the output can be safely adjusted to any level desired. The clamp will be preset, then, so that when the add-on amplifier is switched on, the clamp is also energized -- and the transmitter output automatically drops to the exact output necessary to properly drive the add-on amplifier.

If the power amplifier is a commercially built unit with its own integral power supply, the turn-on/turn-off problems are simplified. For a remotely operated base station, here are the functions which must be performed:



The sketch shows a clamp tube installed in a typical two-meter FM final amplifier circuit. When the clamp tube (6BF5) grid is ungrounded, the final (5894) operates at normal power output. When switch S1 is grounded, the clamp tube conducts heavily, and screen voltage on the final is kept at a low level. When the switch is replaced with a potentiometer, the output power can be regulated as desired.

Figure 1

Clamping Circuit Installed in Typical Final Amplifier

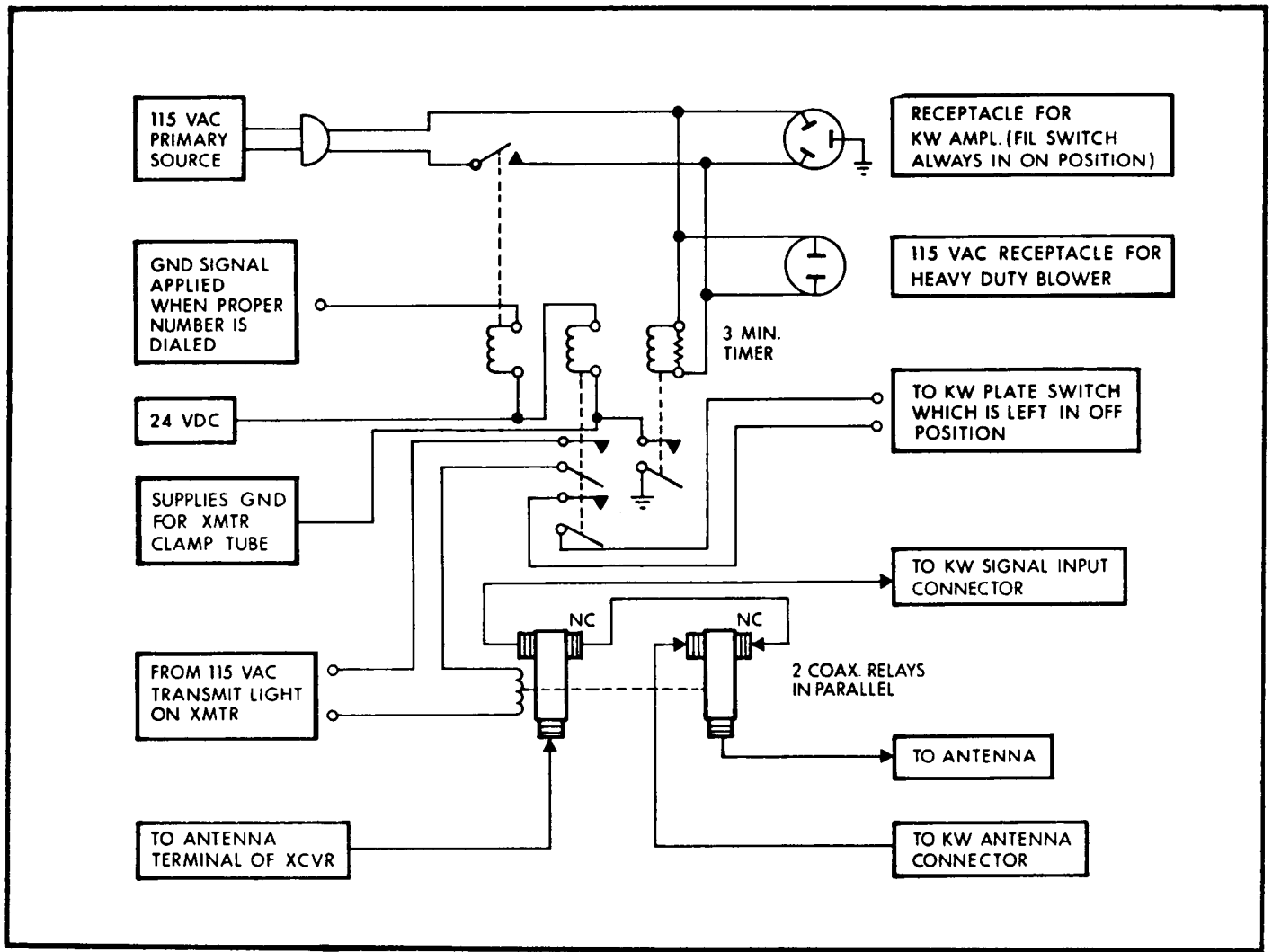


Figure 2. Circuit for Remotely Transferring to Kilowatt Class C Amplifier

On "amplifier turn-on" command, the basic receiver and transmitter must remain in service until the amplifier filaments are warmed sufficiently for power transfer to take place. After warmup, the receiver must remain connected to the antenna until the push-to-talk circuit is energized. During transmit, the output signal must be fed into the add-on unit, and the add-on unit must be connected to the antenna. And, of course, the clamp circuit must be energized so that the transmitter output now meets the input requirement of the amplifier.

Figure 2 shows how these functions are performed on the author's remotely controlled two-meter base station. The add-

on amplifier is a Johnson Thunderbolt kilowatt, operating class C. The base station is a 30-watt (output) DuMont FM transmitter/receiver combination. As shown, the Thunderbolt primary power switch is left in the on position, and the plate switch is turned off. A 28-volt relay is placed in series with the ac input to effect filament switching. The contacts of a timer-driven 28-volt relay short the plate supply switch after warmup. The balance of switching takes place on a push-to-talk basis. Turn-off of the amplifier is achieved by simply removing the ground signal from the key switching relays.

Another method of power control can be effected in the power supply circuit of the

basic transmitter by switching from full-wave rectification to a bridge circuit. Doubling of the voltage on the final doubles the plate current -- and the result is a power increase by a factor of 4.

Figure 3 shows how to accomplish this function. As shown, plate voltage is switched at the unfiltered output so the filtering is connected to whichever voltage source is selected. The transformer centertap of a bridge circuit yields a full rectified dc voltage equal to half the bridge output. Thus, a switchable relay in the circuit allows selection of either high or low power.

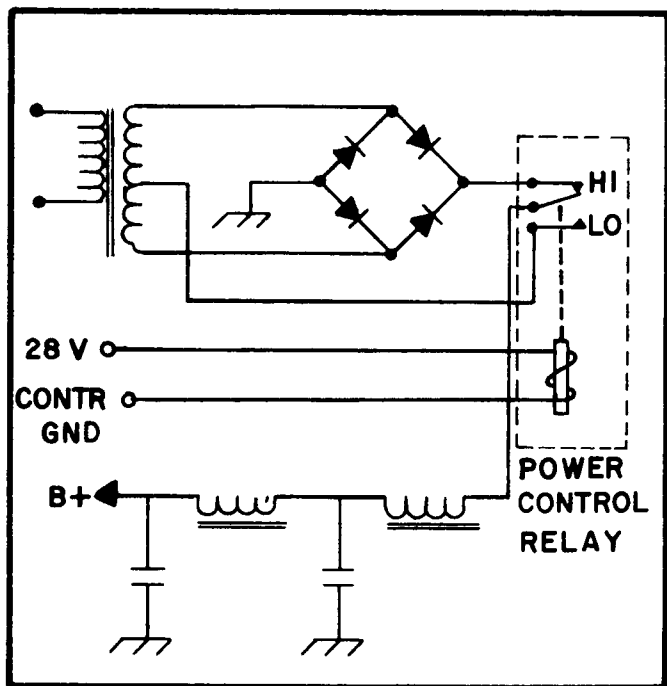


Figure 3. Power Supply Switching

If both power-shift systems are used (power supply switching and power amplifier add-on), a means must be provided for returning the transmitter to its normal level before the amplifier is used. Diodes do this job nicely. If low power is the normal level, the high power function (with voltage switching) is a temporary function. A diode should be connected from the amplifier add-on command signal source to the power supply switching relay so that the "normal power" function is enabled each time the amplifier is energized.

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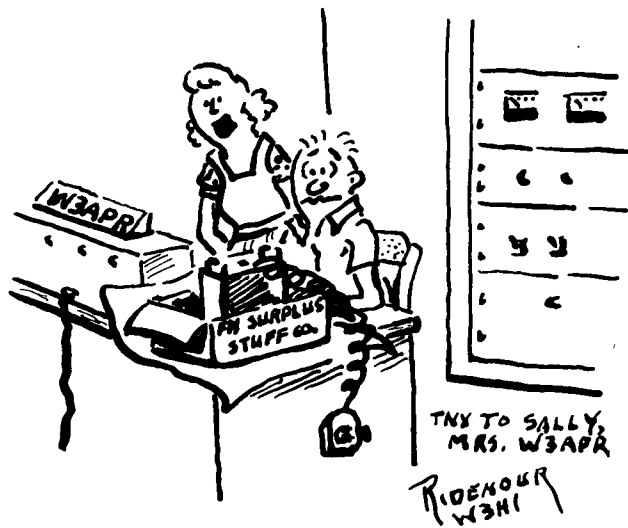
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When I said OK, I thought FM meant fine music!

October 1, 1967

FM Bulletin
2005 Hollywood
Grosse Pte, Michigan


Dear Sirs:

I would like to congratulate you and your staff for producing such a fine publication as FM Bulletin for the Amateur FM enthusiast. The big question I am asking myself and many others here on the west coast is "Where have we been during issues 1 to 6." Issue 7, you see is just being received and widely discussed among FM and FM mobile relay people here and of course lauded for your coverage in a field we have felt we were almost the only interested parties. Since the demise of another particularly good paper printed in Virginia by people employed at General Electric there has been a void unfilled by Amateur FM publications, which appears to have been more than adequately filled by FM BULLETIN. I am enclosing a check for a one-year subscription (\$2.00) and request you send as many back issues as are currently available as initial part of the subscription. Please omit No. 7.

Amateur FM activity here in California is, as you may have heard, intense. The two major centers of population, San Francisco and Los Angeles, each have several remotely controlled retransmitting installations operating on Amateur Radio Service frequencies. These installations are operated by organized groups and individuals, are varied in approach both technically and operationally, and are classed into types well known by professional land mobile people. That is to say we have remote base stations operated via 450 MHz links, fully automatic mobile relays using carrier, pulse tone, and CCTS tone (subaudible), and of course landline-controlled base stations. All the VHF-UHF bands are used except 225 MHz which is quite problematical due to lack of commercial equipment to apply and because of high power radar interference. Selective calling and control is common with digital tone, transitional digital tone, and pardon the TELCO term - touch-tone methods used for further system efficiency.

Last year eighteen of the presently organized groups in the central and southern part of California formed an organization known as the California Amateur Relay Council for the purpose of exchanging ideas, encouraging a high level of accomplishment, assisting new groups to organize and operate, mediate and solve mutual problems operational and technical, assist in frequency selection and orderly spectrum management of users, and promote harmonious relations among ourselves and those with whom we share the VHF-UHF Amateur bands. As 1967 Chairman of the Council I must admit that the success of the initial idea has been most rewarding and beneficial to all of our members whom we represent. This is cautiously estimated at 500 persons involved in FM Amateur Radio although there are still a few groups not members and of course individuals not members of any Club. Amateur FM as you may suspect is organized group effort rather than individual effort; in this respect it is quite advanced. Thanks to this of course due to our "electronic communities" centering in the San Francisco Bay and Los Angeles-San Diego areas. I am sure if it were not for Atomic Energy, Missiles and Space, Microwave-Solid State-Integrated Circuit Companies, and Research and Development efforts in the field of electronics there would be considerably less effort spent weekends and after 5 developing such amateur systems. And while self-examining not to be forgotten is unusual encouragement and talent from the Land Mobile field itself.

Very sincerely yours,



Robert Kelty, Chairman
California Amateur Relay Council
2661 Carol Drive
San Jose, Calif. 95125

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WANTED.....SX-62 Rcvr in Excellent Condition. WA8IPK - 4349 Bramford, Utica, Mich. 48087 .

FOR SALE..Motorola 50BR In Mint Condition with remote panel-on 146.940 WA8UIT - Dave Goodman, 3305 De Sota, Cleveland Hts., Ohio.

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FOR SALE...Tickets for the Past Pres. Banquet in Tecumseh, Ont. Can. on Nov. 10, 1967 at 8pm Being held this year at Rendezvous Tavern 7324 Riverside Drive, Dinners feature:Steak, Fish, Froglegs, or Shrimp. For more info Write or call - Wray WA8DOJ 30214 Jefferson St Claire Shores, Mich Phone 293-1692

FOR SALE..Motorola- 5V 12 volts on 146.94 MHz with cables etc. ready to go. Contact K8IYZ in Detroit, Mich.

WANTED.Column Writers, for FM Bulletin on:

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DX on FM
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NOTE.....Date changed, on this months issue a month ahead to catchup with mailing time. The number stays the same, in order. It is taking three weeks for everyone to get their issue in the mail.

WANTED..150 Mc FM rcvr to convert to 2 meters Cheap! any condition! Contact- W8MO

WANTED.....your ads Hams selling FM gear, will like the free ad rate and Dealers and others will find our rates well worthwhile. Grab bag rates are:

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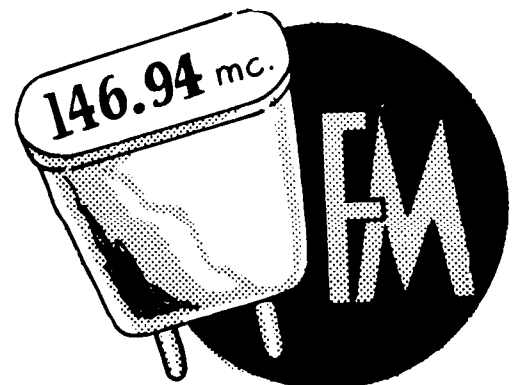
ANYONE MOBILING...along U.S. Hwy 98 on the Fla. Gulf Coast from Panama City to Pensacola can usually make a contact after 5 pm weekdays, & all day Sat & Sun. on 146.940 MHz.

DAYTONA BEACH, FLA..can be added to the FM map! 15 stations are operating mostly GE Progress lines on 146.94 & .76.

WANTED.....We are preparing a listing of the Top 10 FM DXers to be run each month, everyone please submit log info on a FM contact in each state. Each VE area is counted as a state. VP7 will also. 2-6-& 432 will have its own listings.

WATCH FOR....Next month An ALL SOLID-STATE FM TRANSCEIVER ON 146.94Mc everyone will want to build this gem. ALSO part three of the CHRONICLES OF SEVEN-SIX

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