Radio Guide

Radio's Technology Forum June 1996

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It really is a master "jump-site" for almost every broadcast technical website available. We believe that this site is the best (if not the only) website of its kind. It is without a doubt, the best reason for you to get on the Internet, if you haven't already. We're convinced!

You can find it at:

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Ray Topp

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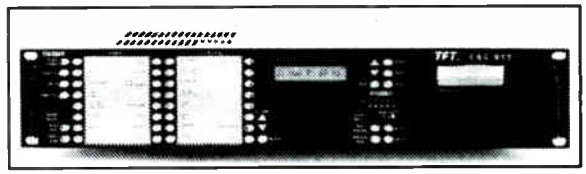

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World Radio History

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June 1996 Volume 8, Number 6

Radio Guide Publication

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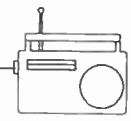
The FCC Forum



From FCC Website: http://www.fcc.gov

MASS MEDIA ACTION
April 12, 1996
The FCC Proposes to Extend the License Terms of Most Broadcast Station to Eight Years
(MM Docket No. 96-90)

In order to implement new statutory provisions of the Telecommunications Act of 1996, the Commission has proposed rules which would extend the license terms for television and radio stations to eight years, with the exception of experimental broadcast station license terms which would remain one year. The lengthened license terms would reduce the burden to broadcasters seeking periodic renewal of their licenses, as well as reduce the associated burden on the Commission, and eliminate the current difference in license terms between radio and television stations.

The Telecom Act provides that broadcast licenses may be granted for terms "not to exceed" eight years for both television and radio stations, but does not require the Commission to use the maximum permissible time. The Commission proposed granting broadcast licenses for the maximum term, consistent with past practice. Current Commission rules provide five year license terms for television stations and seven year license terms for radio stations, the previous statutory maximum terms.

Also consistent with past practice, the Commission proposed to continue issuing licenses for experimental broadcast stations for a term of one year. The Commission noted that a longer term would not be warranted for this class of station.

The Commission also proposed a method to incorporate license term changes into the existing schedule of renewal cycles without disrupting the synchronization of the process. Broadcast license renewal applications granted after the effective date of a decision in this proceeding would be for a term of eight years, and renewal applications filed as part of the current renewal cycle, and that have been granted only the maximum seven-year license term, would be extended to a term of eight years.

Action by the Commission April 11, 1996, by Notice of Proposed Rule Making (FCC 96- 169) Chairman Hundt, Commissioners Quello, Chong and Ness.

- FCC -

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The FCC Forum

From FCC Website: http://www.fcc.gov

Mass Media Bureau Engineering Databases Are Now Available Over the Internet

As part of its continuing effort to provide public access to information over the Internet, the Commission has now made the Mass Media Bureau's AM, FM, and TV Engineering Data Bases available through the Internet. The data base files have been compressed by using the program gzip. The program gzip is available from the directory pub/util on the FCC site. The data bases are sent to the FCC internet site each Friday and are available in zipped form after 12:00 noon on Friday.

The AM Engineering Data Base contains engineering parameters of AM stations (licenses, construction permits, and applications) in the United States, Canada, Mexico, etc. The record layout description is contained in file amdiction.txt, which is in an unzipped ascii text file. The zipped data file name is amdata.dat.gz.

The FM Engineering Data Base contains engineering parameters of FM stations, FM translators, FM boosters (licenses, construction permits, and applications), vacant channels, and proposed amendments to the Table of Allotments for the United States, Canada, and Mexico. The FM data are contained in three files. The record layout description for the three data files is contained in file fmdiction.txt, which is an unzipped ascii text file. The zipped data file names are: fmfxeng.dat.gz, which contains the primary data; fmfxengcmnts.dat.gz, which contains comments associated with certain records in the primary file; fmfxda.dat.gz, which contains directional antenna tabulations associated with certain records in the primary file.

The TV Engineering Data Base contains engineering parameters of TV stations, TV translators, TV boosters, Low-Power TV stations (licenses, construction permits, and applications), vacant channels, and proposed amendments to the Table of Allotments for the United States, Canada, and Mexico. The TV data are contained in two files. The record layout description for the primary TV data base is contained in file tvdiction.txt, which is an unzipped ascii text file. The zipped data file for the primary data base is tvdb.dat.gz. The record layout description for the TV directional antenna tabulations is contained in file tvdadiction.txt, which is an unzipped ascii text file. The zipped data file for the TV directional antenna tabulations is tvdadb.dat.gz.

The data files and descriptions are contained in the ftp directory: pub/Bureaus/Mass_Media/Databases. This directory is at the Commission's anonymous ftp site, ftp.fcc.gov.

For questions concerning the content of the AM or FM data, contact Gary Kalagian, (202) 418-2789; or e-mail gkalagia@fcc.gov.

For questions concerning the content of the TV data, contact Nai Tam, (202) 418-1657; or e-mail: ntam@fcc.gov.

For questions concerning the FCC internet, contact Jorden Brinn at (202) 418-0507 or e-mail: jbrinn@fcc.gov.

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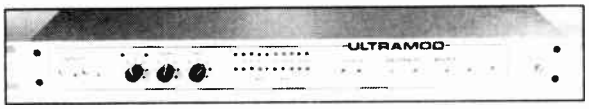

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For further information contact:

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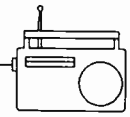
World Radio History

FCC Tower Registration

John Bredesen — Chief Engineer, KLCC, Eugene OR [503-726-2224 or e-mail jab@efn.org]



Last year the FCC proposed a radical revision of the Part 17 rules. The purpose was to streamline the antenna tower clearance procedures, and to simplify the rules concerning construction, marking, and lighting of antenna structures. The hope was that it would not only make life easier for the troops in the field, but also would reduce the workload for the FCC itself. By instituting these changes, the Commission was seeking to significantly reduce the number of filings requesting changes to antenna structures; expedite application and notification processing; and increase safety in air navigation. In 1993, the FCC reviewed over 16,000 applications and notifications, many of which reported changes to the same antenna structure. (For example, under the present rules, if the height of an existing tower were changed, all lessees of the tower would need to file an amendment.)

The FCC has proposed to simplify the current antenna structure clearance process with rules requiring registration by antenna structure owners, rather than by licensees using the structures. The proposal would make licensees responsible for compliance with all tower rules, but on a secondary basis, to ensure compliance if the tower owner fails to correct any violation.

Let's review the *present* requirement for tower licensing and registration. Currently, the FCC's antenna clearance process requires identifying the location and height of each antenna structure that is either more than 200 feet (60.96 meters) above ground, or that may interfere with a nearby airport runway, and obtaining a determination from the Federal Aviation Administration (FAA) as to whether the structure is a potential hazard to air navigation. The FAA may recommend that the tower be permitted to be built only to a lower height, recommend painting and lighting specifications for structures that are potential hazards, or both.

The FCC imposes the FAA specifications as **requirements on the authorization of each licensee using the structure**. There are variations and exceptions to the above, but they are made on a case by case basis.

Note that even if there are multiple users of a tower which requires painting and/or lighting, **each** individual licensee is responsible of maintaining the structure even if the owner of the antenna structure is being paid big bucks each month for its use. It doesn't matter if the owner has agreed to be responsible for the maintenance of the tower; if that entity doesn't live up to the agreement, **all** lessees are likely to be held responsible. Fines can be sizable, running at times into the tens of thousands of dollars. Behind all of this is the fact that it's considered extremely tacky for an airplane or helicopter to crash into the tower because the lights weren't on, or the paint had faded.

The new registration begins on July 1st, 1996. On or after that date, all new or altered antenna structures meeting the **registration criteria** must be registered with the Commission prior to construction or alteration. Existing structures (studied by the FAA and cleared by the FCC prior to July 1, 1996) must be registered during the two year period between July 1, 1996 and June 30, 1998.

The FCC has modified FCC Form 854 to reflect the new process. The new form will be used to provide a specific application for registration to be filed by the antenna structure owner, instead of each licensee or permittee. The registration will set forth coordinates, height, a unique registration number, and painting and/or lighting specifications, where applicable. The revised Form 854 will also be used by the antenna structure owner to:

1.) Reflect an increase/decrease in height of structure.
2.) Correct coordinates.
3.) Reflect change in existing painting/lighting specs.
4.) Notify the FCC of the dismantling of the structure.
5.) Notify the FCC of a change of ownership.

The new registration program begins, as mentioned above, on July 1st, 1996, and continues through June, 1998, during which time tower owners will have an assigned period of either one or two months (depending upon the number of towers in the combined area) within which to register any towers. Registration will proceed on a state grouping basis. For instance, here in Oregon (as well as New Hampshire, Wisconsin and West Virginia), towers must be registered during the window of November 1 to November 30, 1997. The first two states out of the chute are Michigan and Montana which must register from July 1 to July 31, 1996. Texas is the last one on the list and is scheduled for May and June, 1998.

Regardless of who determines the location and height of the antenna structure, the owner is responsible for ensuring that all the information being provided is correct. The owner must provide a signature on the registration form, except when filed electronically.

If a single entity owns multiple antenna structures in different states, the FCC has provided a mechanism to waive the state by state filing requirement. The request for waiver should be filed at least 30 days prior to the first applicable fining window. It must state why the waiver

(continued on page 5)

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FCC Tower Registration

Continued from page 4

would be beneficial; it must list, by state, the total number of structures, when the owner will be ready to file, and whether filing electronically or on paper.

Along with this information, the waiver applicant must file FCC Form 159 and include a waiver fee of $125.

AM Broadcast Arrays

Each applicable tower within an AM broadcast array must be *individually* registered. In most cases, however, antenna structure arrays are studied by the FAA using a single set of coordinates representing the "center" of the array, or possibly the structure closest to a nearby airport. Thus the coordinates referenced by the FAA in its determination of an array may differ from the site coordinates of the antenna structures within the array. Often antenna structures within the same array are assigned different painting and/or lighting specifications.

Electronic Filing

The FCC's Wireless Telecommunications Bureau (WTB) recently developed an interactive electronic filing and remote access system for certain WTB services. The first version of the software already allows the public to file FCC Form 175 and FCC Form 600 via computer. The interactive electronic filing system will generally be available 24 hours a day and allow owners to register electronically, as well as to review previously filed registrations.

In order to perform the electronic filing function, you download the software from the FCC. You will need at least a 486 machine with 16 MB of RAM, at least 18 MB of disk space, several blank 3.5" floppies and a modem. The system must be running either Windows 3.1 or Windows for Workgroups 3.11 in enhanced mode. At this time, the FCC will not support Macintosh, OS/2 or Windows 95 or any Windows emulation. The software, available as of June 1996, will be available either through the Internet or the FCC Bulletin Board System. Once the software is installed on a computer, an applicant will file FCC Form 854 by accessing the FCC's wide area network via a standard telephone line (not the Internet) which will probably result in a long distance telephone charge if the call is made from outside the Washington DC area. Normally the registration form must be signed by the owner. In the case of electronic filing it is felt to be impractical to require the owner to personally type his or her name during each electronic submission. Therefore, either the owner , or the owner's designee, may type the owner's name in the signature block when filing electronically.

The owner may designate a separate entity to survey the location of an antenna structure, complete FCC Form 854, or undertake any other administrative duties involved with registration. However, the owner — not the service company — must sign the registration form (except for electronic filing) and is ultimately responsible for ensuring that all information provided to the FCC concerning the antenna structure is complete and accurate. Likewise, the owner may designate a separate entity to maintain and monitor the painting and/or lighting mandated for an antenna structure, with the proviso that, once again, it's the owner that's ultimately responsible if the structure is not maintained properly.

According to the FCC, each FCC licensee using a registered antenna structure should be familiar with the requirement set forth on FCC Form 854R (the actual after-the-fact registration form). In the event that the structure owner is unable to maintain the prescribed painting and/or lighting, e.g. **in cases including but not limited to abandonment, negligence, or bankruptcy**, the FCC would require that each tenant licensee on the structure undertake efforts to maintain painting and/or lighting **upon request by the FCC**. In addition, if a licensee has reason to believe that the structure is not in compliance, or that the owner is not carrying out its responsibility to maintain the structure, the licensee must immediately notify the owner, notify the site management company (if applicable), notify the FCC, and make a diligent effort to ensure that the antenna structure is brought into compliance.

In case the location or height shown in the Registration (FCC Form 854R) differs from that shown on a licensee's station authorization, the licensee must notify the appropriate FCC licensing bureau. Licensees are not required to submit a fee when correcting site data. RG

You may contact the FCC's **Forms Distribution Center** at (800) 418-3676 to obtain registration form FCC Form 854.

You also may contact the FCC's **Fax-on-Demand** system, to obtain a copy of the form, by calling (202) 418-0177 from the handset of your fax machine. Request the index to find out the document number for the form.

You may also e-mail registration questions to: mayday@fcc.gov

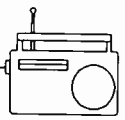
The Web Page where information for this article was obtained may be found at:

http//www.fcc.gov/wtb/antstruc.html

World Radio History

What About DAT?

Gordon Carter — C.E., WFMT, and Owner, Professional Audio Services [312-279-2071]



It's time for a quick quiz:

1. Do you currently used DAT machines at your radio station?

2. Do you intend to use DAT machines at your radio station?

3. Is there any possibility that you will ever use DAT machines at your radio station?

If you answered "yes" to any of the above questions, read on. If you answered "no" to any of them, you should probably read the rest of this anyway.

For those of you who don't know what DAT machines are, they are a Digital Audio Tape machine. Sometimes they are referred to as RDAT for Rotary head Digital Audio Tape. They use a small tape cartridge, slightly smaller than an 8 mm video cassette. The tape is slightly narrower than 8 mm tape as well.

If you were to look inside a DAT machine, you would find that it looks a lot like a VCR, only much smaller. Besides the size, there are some major differences. VCR's use a 270° head wrap, while DAT only uses a 90° head wrap. While VCR's have some sort of tracking adjustment (either mechanical or electronic) DAT's have none. Of course, DAT's do not record video, just two channels of audio.

I won't get into how they work, since books have been written on that subject, and we only have a limited amount of space here. If you are interested in checking this out further, I would suggest your local library or a good bookstore.

Many radio stations have begun using DAT's primarily because of the high quality and small package of the recorded material. They are great for remote recordings as well, since some portable machines are only slightly larger than a pack of playing cards. The more rugged machines are a bit larger, but they are still smaller than the laptop computer on which I am writing this article.

DAT is truly a high fidelity medium, using 16 bit linear coding. Consumer grade machines record only at a 48 kHz sampling rate, while professional machines are usually switchable between 48 kHz and 44.1 kHz (the standard used on CD's). Some machines have a long play mode, where they run the tape at half speed and record at a 32 kHz sampling rate, with some sort of compression to reduce the coding to 12 bit. But even this mode is quite good. Most people cannot distinguish one mode from the other in blind listening tests.

Another advantage of DAT is cost. Blank tapes cost about half of what open reel tape costs, for an equivalent time. The machines are also as cheap or cheaper than analog machines, besides taking up less room. You can easily put three DAT machines in the space of one reel-to-reel machine.

Unfortunately, there is no free lunch. After a brief "honeymoon" with DAT, most stations are finding that all is not as it should be. Perhaps you remember all the hype about CD's, how you could do almost anything to them and they would still play? How long after you got your first CD player did your friendly neighborhood jock put his greasy fingers on the face of the disc and all you had was Skip City? The same type of thing happened with DAT, but the problems are not quite so easy to find.

Unfortunately, the instruction manuals for DAT machines are not the best written things in the world. They usually tell you everything you ever wanted to know about how to operate them (including all of the obscure buttons on the machine), but they don't say much, if anything, about maintenance. In fact, I don't know of any DAT machine that comes with any sort of maintenance manual. You have to pay extra for a service manual; then, when you get that manual, it tells you everything you wanted to know about taking it apart, which parts are where, and doing routine adjustments, but it gives you absolutely *nothing* about troubleshooting.

As near as I can tell, what they really want you to do is send the machine back to them for repair (this could take weeks, if not months), or attend a servicing seminar at a cost of over $1,000 just for tuition. Of course, the class is in the other part of the country, so you have to come up with air fare and hotel bills as well. Quite a price to pay for information to service a machine that only costs a thousand or so dollars.

After using DAT's for a number of years, I can give you a few tips that may help keep you out of trouble. First of all, when you buy your machines, make sure you work with a reputable dealer who will support you after the sale. Sometimes even the best manufacturers come up with "lemons" that no one can fix. It is a big help if you have a dealer who will go to bat for you with the manufacturer, especially if you are one of the first ones to find that the "latest, greatest" machine you bought will never work right. By the same token, be sure you buy from an authorized dealer. If you don't, the dealer won't have any "clout" with the manufacturer. In fact, the manufacturer may not honor the warranty if you don't buy from an authorized dealer.

(continued on page 7)

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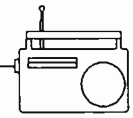
What About DAT?

Continued from page 6



Once you get your DAT machine (or machines), you don't have to invest in training and special test tapes. If you don't want to go through training or buy test tapes, you should find a good service technician who will talk to you. This may be at the manufacturer's service center, a dealer's service center, or an independent shop. Ask others, who have some experience with DAT machines, who they would recommend for service. Once you have found a good technician, talk to him and let him know that you want a complete report on the problems he finds and what he does to correct them. Keep a record of your problems, the symptoms, the causes, and the solutions. This may help save you some money in the future.

One of the most useful items you can find out from the technician is how to access the machines internal diagnostic codes (if any) and what they mean. Many machines have such codes that will help tell you what is wrong, in the event of problems. Some of them also have internal timers that show you the accumulated time on the heads. This is important, as you will see in the next few paragraphs.

If your machine does not have an internal timer, a good investment would be to install one. I have found that keeping track of the elapsed time on the heads is important to head off problems. If you have to install a timer, I would suggest buying a timer module from a place such as Digi-Key. They have a nice self-powered timer (10 year life) for about $30.00 each. All you have to do is connect a few wires, and it works.

There are two ways to install the timer. One would be to mount it in the machine on the rear panel. You can wire it to the remote control connector (I am assuming you bought a pro model with a parallel remote connector) inside the machine. The down side of this is that it may void the warranty on the machine. You may want to check with the manufacturer if in doubt. Or you could wait the 90 days (the standard warranty period) and then install it. If you don't want to cut a hole in the machine, you could mount the timer on the back with some stick-on Velcro and wire it to the remote connector.

DAT machines are a bit different from analog machines in a number of respects. The most noticeable, from a maintenance standpoint, is that a DAT machine will probably not deteriorate gradually. Being digital, it will work fine until it reaches the point where it can't correct the problems any longer, and then give you all kinds of grief (probably messing up a program on the air). Unless you want to pull the machine out of service periodically, and open it up and check it out, there is only one way to prevent such problems from happening. The best way I know of to prevent problems with DAT machines, is to institute an aggressive maintenance program based on hours of head usage.

Different manufacturers have different recommendations for maintenance, so you will have to find out what it is for your machine. If you can't find a manufacturer's schedule of maintenance, you may want to try the following:

Clean heads & tape path (use a cleaning DAT) — 10-20 Hrs.
Replace heads, pinch roller, check guides — 1000-1500 Hrs.
Replace motors and important gears — 5000-6000 Hrs.

Remember that these are just guidelines. You will have to find what works best for your machines. Also remember that using a cleaning DAT is the easiest way to clean the heads, but accelerates the wear on them. If you can get away with a longer cleaning interval, do it.

There is one other way to avoid problems with DAT machines. Use good quality tapes. Again, check with other users or your service technician for some suggestions. While most of the tapes only come from two or three factories, regardless of brand, some are better than others. Many of the poorer grades of tape will leave excessive amounts of dirt on the heads and will accelerate wear and problems on the machine. They may also have excessive dropouts which may cause on-air problems.

Some people feel that data grade DAT's are better than audio grade. I won't bother getting into the middle of that discussion here, but I would like to warn you that some machines will not accept data grade tapes. The tape is thinner than audio grade DAT, and some machines have sensors to prevent using such tapes.

I hope that I haven't scared you away from DAT — that was not the purpose of this article. I was just trying to share my experience with you, so you don't get caught by surprise. DAT's are handy, good, and relatively inexpensive. While I don't think they will be around for a long time, they appear to be one of the more practical media that is currently available. Probably in, a few more years, they will be replaced by recordable CD's, hard disk storage, or something else that we haven't even thought of. For the moment, though, they are a viable alternative to analog tape. RG

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