

FEATURE



With the decision to axe the community radio experiment, many pirates are now coming back on the air. We therefore thought that now was a good time to explain how to set up a pirate station in London today (in theory of course - you wouldn't really want to do something like that would you now?).

We're going to start off looking at how a live operation would work, before going back to taped stations in a later issue. We begin this month with building a studio.

STUDIO EQUIPMENT

The main rule is Keep It Basic - these days it's pointless using expensive studio gear if the DTI are only going to confiscate it. Simpler equipment can be just as effective, although presenters will have to work harder. 95% of listeners won't even notice the difference! Any complicated production work can be carried out in a more comprehensively equipped studio which never goes on air. Programmes and adverts from this studio are then played on cassette from the on-air studio.

So, what sort of gear will you need? Well, first you'll want a mixer. Most pirates use budget models from Tandy, HH or Phonics, costing anywhere from £50 to £150. These are usually designed for disco work, so most DJs will be used to operating them. Next, you'll need turntables and a switch box - just a box with two mains switches, which supply power to each of the turntables. Go for reasonable quality, but simple, turntables - such as those from

Technics or similar. Above all, remember that decks should be easy to use.

Don't bother with jingle machines unless you are sure of the security of your studio. Although much simpler to operate, both jingle machines and cartridges are expensive and time-consuming to replace after a raid. Instead, use a pair of identical cassette decks with a countdown or tones on the tape for manual cuing by the presenter.

CHECKLIST

1x Mixer
 2x Turntables
 (incl. cartridges)
 2x Cassette decks
 1x Microphone
 1x Receiver
 2x Speakers
 1x Clock

Plus switchbox for turntables
 connecting leads

Microphones need some time spent choosing them to determine which will sound the best. A mid-range mic - costing around £50 will probably be adequate for most stations. Don't forget a stand, most stations use an anglepoise stand fixed to the table holding the equipment.

Finally, ensure you've got a decent radio to make sure the signal's going out OK - some people continue for ages before discovering that the rig's blown up or been confiscated by the DTI!

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KISS-FM'S STUDIO - TYPICAL OF MANY OPERATIONS

Most of the studio equipment you'll need can be easily obtained in an afternoon's trek down the Tottenham Court Road or Edgware Road (usually cheaper as there aren't so many gullible tourists / visitors). Don't forget to buy connecting leads - and make sure these won't fall apart easily and cause endless breaks in transmission.

STUDIO SITE

Choose this carefully. If you're sure that your link system is secure and the DTI won't know the names and addresses of any of your staff, then you're probably safe to use a house belonging to one of the presenters. Alternatively, hire a cheap bedsit or office somewhere, making sure you aren't going to disturb the neighbours with a constant trek of people going to and from the studio day and night. Explaining

to them what you're doing could prove difficult.

BUILDING THE STUDIO

Make sure that the studio contains only the bare minimum needed for broadcasting. Let's assume that you're starting with a completely empty room. First of all, paste cork tiles / thick carpet / egg boxes (if you really can't afford anything else) on the walls and put a carpet on the floor to reduce echoey effects. Next, you need a table or two to put all the equipment on, and a comfy chair for the presenters to sit on.

All the equipment needs to be easily reached by the presenters. The usual layout is to have the mixer straight in front, with the cassette recorders stacked in front of

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that. The record decks are then placed to the right and the left, with the switch box next to the mixer. Keep audio (especially microphone) cables away from any mains leads if you want to avoid nasty mains hums appearing. Remember, that it's much easier to trace faults if there isn't a rat's nest of cables...

For monitoring of the transmitted signal, use a stereo receiver (tuner + amplifier) with the speakers placed on the wall in front of the presenter. With the volume kept at a reasonable level, and a unidirectional microphone aimed away from them there shouldn't be any feedback problems.

Often a table on the left will be used to put records, tapes and papers on. Use racks to house cassettes of jingles and adverts, if you want to avoid problems with DJs hunting through a mess for the commercial they're meant to be playing.

A phone is very useful, and can be linked up with the mixer via a suitable interface - though ensure the studio number is known by as few people as possible and never given out over the air. If people are calling in to the station for competitions, etc, arrange another phone number for them to call. Then, if it is required to take a caller live on air, the person manning the other phone will take down their number and pass it on to the studio who call them back. This also has the advantage of reducing problem callers on the air...

Programme schedules, advert schedules and other important notices should be placed on the wall where they can easily be seen - this is where the cork tiles have another use. If presenters are busy, they want to easily find out the details they want, not hunt through wads of paper.

Of great importance, is to remove everything from the studio once you have finished with it. Listeners' letters should only be brought in for the duration of a programme, and on no account should any material relating to financial matters be present in the studio. Playlist records can be left in the studio, but all others should be left with caution.

Most of this is common sense. Above all, keep the studio CLEAN. A happy DJ makes for a happy programme (I feel like a McDonalds' training manager saying that...).

TO THE TRANSMITTER

The next stage after the signal leaves the mixer is the compressor. This is a device which prevents loud passages from distorting at the transmitter. This needs to be of a special design for FM Radio use to be effective. From there the signal passes to the stereo encoder, if it is required to broadcast in stereo. The signal then passes to the transmitter chain.

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READERS ARE REMINDED THAT THE OPERATION OF UNAUTHORISED TRANSMISSION EQUIPMENT IN THE UK IS ILLEGAL, AND CARRIES A MAXIMUM FINE OF £2000 AND/OR A 3 MONTH PRISON SENTENCE

ON-AIR

ON-AIR

THE
RADIO
GUIDEPOP

Electron Radio
/104.3MHz UHF

Radio Gemini
/105.8MHz UHF

Radio Neptune
/1566KHz MW

Spectrum Radio
/90.2MHz UHF

BLACK MUSIC

Radio Badger /91.8FM

Direct Line Radio
/105.5FM

JAR Radio /97.85FM

JBC/105FM LWR/92.5FM

Kiss-FM/95.3FM

People's Choice/103.5

FAS/105.5FM TKO/90.9FM

Trax-FM/103.3FM

ROCK

Alice's Restaurant
/93.0MHz UHF Stereo

HMR
/94.2MHz UHF

(come on! you can
do better than
that!!!!)

VARIOUS

London Greek Radio
/105.1MHz UHF

Radio Memphis
/1260KHz MW

Sina Radio
/90.7MHz UHF

Radio Wapping
/97.0MHz UHF

MIXED FORMAT

Radio Gemma/90.3MHz UHF

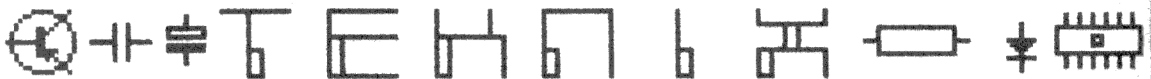
Newtown Radio/90.6MHz

Starpoint Radio/88.6MHz

Thanks as usual go out to everyone who contributed this month, especially Chris Miles, Clive Glover, Mark and all the anonymous voices on the Voicebank.

We try to make the On-Air section as accurate as possible, however occasional errors do slip in. If you can correct any of fill in any gaps then call 01 400 8282 or write to us.

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Last month we took a look at building a studio, this month we turn our attention to the transmission equipment.

First of all, you'll need a transmitter site. This should ideally be in a high location to enable the signal to get out well over the coverage area - which is why most of London's major stations can be found congregating around Westow Hill and Church Road in Crystal Palace.

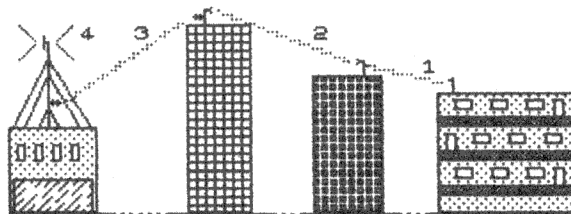
Usually a station will hire a small office, which will be used solely to house the

prove even more difficult.

Next, you need to consider how you'll get the signal from the studio to the transmitter. The main priority is to ensure the studio is as difficult as possible to trace, so DJs won't get caught and fined large sums of money. To do this you need a series of complex, hidden links.

The first one from the studio will be the most secure, maybe infra-red (like TV remote control units) or possibly an even safer method. This may then be followed by a microwave link to take the signal across town,

- | | |
|---|----------------------------|
| 1 | INFRA RED LINK FROM STUDIO |
| 2 | MICROWAVE LINK |
| 3 | UHF LINK |
| 4 | UHF BROADCAST SIGNAL |



transmitter. A high mast will be erected on the roof and cables will link the antennas and transmitter equipment together.

Finding a suitable site will prove the most difficult task. You'll need to have a friendly landlord who won't mind the 80 foot mast on the roof, the regular visits by the DTI to remove your transmitters, and your visits in the early hours of the morning to replace them! In the light of the recent court case involving London Greek Radio (see page 25) this may

where it's converted to UHF for the final trip to the transmitter site.

The DTI will need to work backwards from the transmitter site to detect the links. The UHF repeater is usually fairly easy to locate - which some small stations haven't yet realised. Microwave links are more difficult, but given time they can be found. Basically, the higher the frequency, the more difficult it is to find the

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LEFT: KISS-FM RIGHT: TKO

transmitter, but the DTI are now capable of finding just about any radio signal after importing new tracking gear from the USA last autumn.

Infra-red links have the advantage that they are undetectable unless you find the transmitter or receiver - the army uses them for secret communications in battle! Even once they've found a receiver it won't always be easy to find where the signal is coming from.

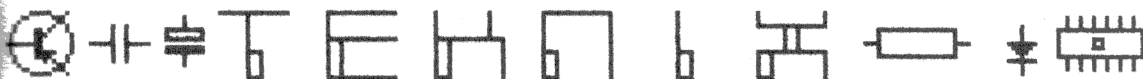
As you can see, it takes time to locate these pieces of equipment. And if the station is only operating one day a week, they may disappear before the DTI have finished got very far down the chain. With equipment hidden on buildings, finding the precise location may be even harder.

Pirates still have the leading edge over the DTI, but

they're catching up slowly on present methods. However, pirates are moving on all the time. In the future we may see lasers being used as links (not as far fetched as you think!). Lasers outside the visible range are completely undetectable and can travel large distances which makes it extremely difficult to find the transmitter.

So, how much does this all cost? Starting at the studio (see last month) you could expect to pay around £400 or so for a reasonably decent set of equipment. Link equipment would come to around £400 also, depending upon its complexity. A mast and antenna system could be typically around £500, depending upon the exact type, height and antenna gain. Then finally, you could expect to pay around £250 per transmitter. Total cost: around £1,500. Sure beats the 1/2 million for ILR!

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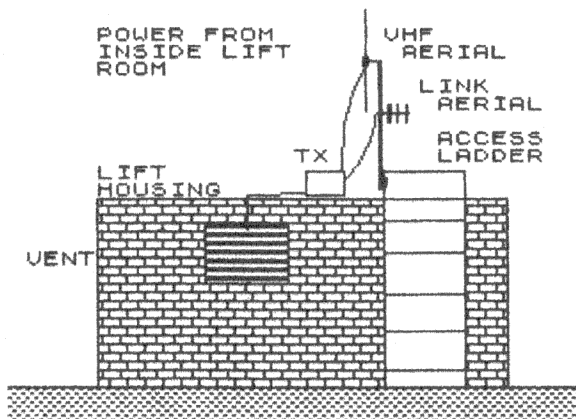
This month we tie up a few loose ends from the last two months, with a look at live tower block broadcasting, as opposed to fixed site operation.

Tower blocks have two big advantages: they're tall so stations don't need high masts and there's no way of finding out the owners of the equipment. On the minus side, the DTI don't need warrants to enter tower blocks, but as a warrant for a permanent site lasts a month anyway they have nearly as easy access - once they've broken the door down!

Basically the operation is much the same with regard to links, etc. - see last month - but instead of an office,

place to attach the aerial. This may be a specialist design, or more simply a two element FM receiving aerial stripped of one of its element sets. This is attached with gaffer tape to a suitable pole, which in turn is attached to an access ladder, communal aerial or other suitable point. The antenna to receive the UHF link, usually a cheap TV aerial, will be mounted just out of the way of the other.

The transmitting aerial is connected with as short a lead as possible to the transmitter, so as little as the signal as possible gets lost on the way. The transmitter will be housed in a suitable, cheap, metal container - such as the infamous



there's a rooftop! Getting onto the roof is a comparatively easy matter. To enable easy access for the fire brigade, all council blocks use a master key. These originally came from caretakers or, more commonly, obliging lift engineers, but most people copy them from other pirates these days.

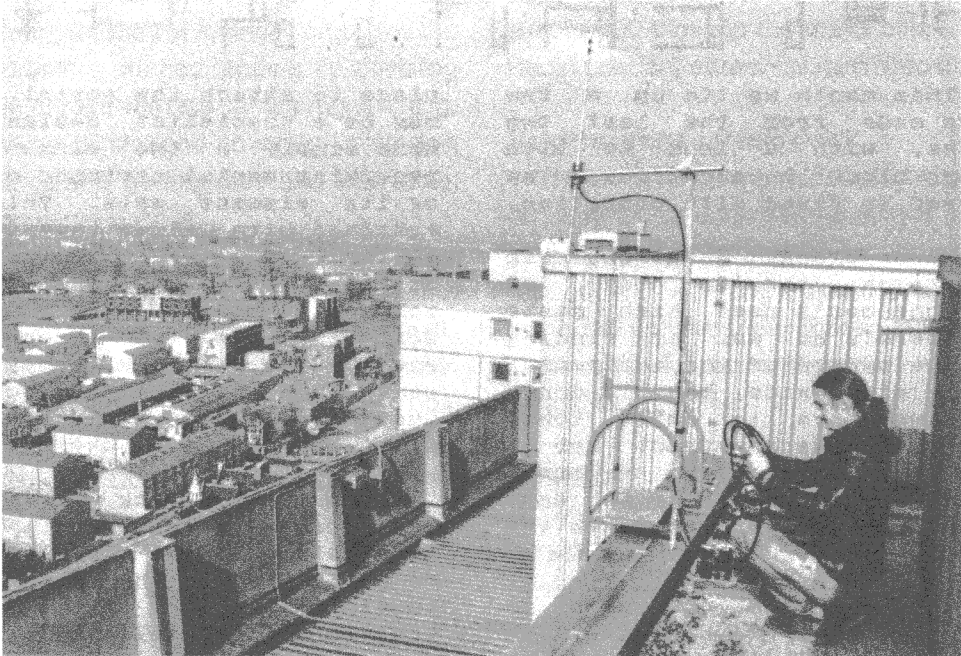
Once on the roof it's simply a matter of locating a suitable

biscuit tins - with more gaffer tape round it to keep out the rain.

Power for the transmitter will usually come from the mains. A lead will be run through ventilation grills, suitable holes, etc. to a suitable power point, often a cleaner's socket, light fitting, etc.

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ALICE'S RESTAURANT SET UP ANOTHER TRANSMITTER SITE

Some stations prefer not to operate live, but instead use taped programmes from the transmitter site. The method is largely outdated, but for some small stations it's the only choice, and does have advantages if the operators have good eyesight and are quick on their feet as they may be able to save the equipment from vanishing into the DTI's overflowing vaults. However, most pirates aren't willing to sit out in the rain, wind and snow anymore and prefer the immediacy of live broadcasting.

Instead of the UHF link receiver and aerial, a cassette recorder is used, with programmes put on C120s. A good look-out will need to be kept to avoid the DTI. Staff have the choice between staying by the transmitter to whisk it away as soon as they see the DTI coming, or going up to the roof for tape

changes only, though that increases the risk of being spotted by caretakers who are liable to jump to the wrong conclusions...

If a station can't afford to lose a transmitter, then it may be possible to quickly remove it, store it in a flat or cupboard and hide / vanish. The DTI used to be more interested in getting the equipment, rather than catching someone, but this has now changed, so pirates have to be much more careful. If they see the same faces around each time they raid a station, they're much more likely to take action these days.

Having now covered VHF broadcasting, we continue next month with a look at Medium Wave stations, which haven't really changed much in nearly two decades!

<<<< CONTINUED NEXT MONTH >>>>