The BROADCASTER

Newsletter of the Broadcasting Directorate

No. 2. July 1985

BRISBANE

NEWCASTLE

SBS

Bringing the world back home

WOLLONGONG

ADELAIDE

The Broadcaster

The Broadcaster is the in-house Newsletter of the Broadcasting Directorate and is published three times a year to inform and recognise the people who make up this organisation.

Articles appearing in The Broadcaster do not necessarily reflect the views of the management of Telecom Australia.

Written and photographic contributions are welcome. All material should bear the contributor's name and location and be directed to:

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Editorial

One of the pleasant duties of being Editor of The Broadcaster has been to receive so many calls and messages from readers who expressed congratulations and best wishes for continuation of the magazine. My thanks go to the Co-ordinators who work so hard in collecting material and putting together items for my consideration.

So many callers suggested that the magazine be increased in size to widen the variety of topics that it has left me with no alternative, notwithstanding the extra work load involved.

With many of our stations celebrating their diamond and golden jubilees, there was a strong demand for articles on the early days of these stations. In fact, broadcasting nostalgia and humorous anecdotes exceeded all other themes.

To satisy these pleas, the number of pages has been increased to 16, but I am heavily dependent on you, particularly staff in the field, to sit down and pen me an article. If you are unable to fully develop the theme, just let me have a broad outline and I will take it from there.

Good reading.

JACK ROSS
Editor

Contributors to this Issue:

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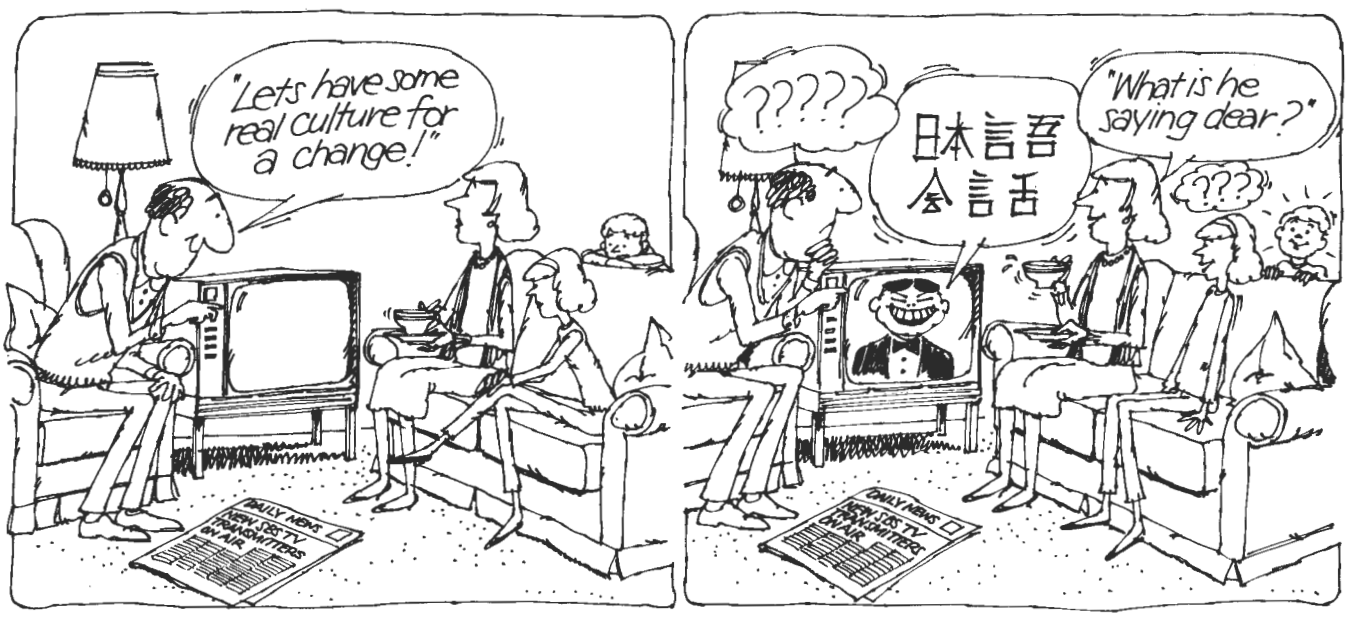
Front cover: Television towers, Brisbane, Newcastle, Wollongong, Adelaide.



Leon Sebire

From the Director's Desk

This issue makes a feature of our little known involvement in the provision and operation of transmitting facilities for the Special Broadcasting Service. Many of our readers will not have experienced reception of the multicultural television programs of the SBS and for those resident in the path of SBS extensions an interesting experience is in store.

As novel as SBS television programming is, so too have been the solutions which have been prerequisite to providing the technical facilities in a climate of political urgency. Not only have we pioneered high powered UHF television broadcasting in Australia as an overlay on stations not designed to accommodate it, but we have set records in the execution of demanding design and installation tasks with which Telecom broadcasters have been faced.

The files at Central Office give testimony to the early efforts of our NSW and Victorian Branches with an unprecedented number of letters of appreciation and praise for the efforts of all concerned. These are from Members of Parliament, Departmental Heads and those concerned with the production and presentation of programs and I have no doubt the past performance of Telecom broadcasters has been a strong factor in obtaining favourable Government decisions to expand multicultural television into a second National television service in years to come.

To those who worked so hard to establish the facilities so far I offer my grateful thanks. By your resourcefulness and enthusiasm you have set standards of performance which surely make yours "a hard act to follow".

LEON SEBIRE

Station Roll Call

ABWV-5A MT DUNDAS

Television station ABWV-5A is built on the peak of the Dundas Range 35 km to the north of Hamilton and provides television coverage of Victoria's Western District.

Surrounding the Dundas Range is lush pastoral country that has been established by generations of grazing families who are the descendants of settlers who pushed inland in the mid 1800's. Today the area makes claim to the distinction of being the 'wool capital of the world'.

Construction commenced in 1979 and commissioning took place on 28 July 1981. Mt Dundas was the first high power National TV station designed to operate as an unattended automatic station.

Until February 1983 when construction of the 158 metre mast and the upper stack of the antenna system was completed, the station operated on an interim antenna. The mast was previously used at Black Mountain, Canberra and erection of its upper 100 metres at Mt Dundas was carried out by Victorian Radio Lines staff after the private contractor, who was originally engaged to carry out the work, was unable to fulfil his obligations.

Twin NEC transmitters type PCN-1213 AL operate in a main-standby configuration. Marconi automatic monitoring equipment is used to monitor transmitter performance. An alarm is generated by the ITS analyser equipment when parameters of the video signal exceed preset limits. If a transmitter fault occurs the NEC transmitter control equipment automatically switches the standby transmitter into service.

Lookout Hill staff are responsible for routine and specialist maintenance at Mt Dundas.

Off air reception of Mt Dundas is used to provide an input signal for the network of translators which service Portland, Warrnambool, Coleraine and Casterton.

A stereo FM transmitter was commissioned at the station on 1 May 1984.

KEN JOHNSTON

3WV DOOEN

Victoria's largest regional MF transmitting station 3WV is located 375 km from Melbourne and about 12 km from Horsham. The station was officially opened on 24 February 1937 by the Postmaster-General, Senator A.J. McLachlan, his opening address being relayed via land line from Adelaide. The people of Horsham participated in the opening by providing a variety of entertainment which was broadcast direct from the Horsham Town Hall.

The transmitter was a 10 kW STC type, employing low level modulation. The antenna was constructed by Johns and Waygood and is 200 metres high with an armature top of 18 metres diameter. As there was no commercial power available at the time, the station operated from power generated by two 6VCR RUSTON HORNSBY diesels, each capable of producing 133 kVA.

An AWA 2 kW transmitter was installed as a standby in 1950, and was replaced in 1959 by an AWA BTM-10. Also, in 1959 mains power was connected to the station and in the following year the original STC transmitter was replaced by the present 50 kW STC type 4-SU-38A.

The station staff from 1937 to 1959 consisted of three Radio Technicians, three Diesel Mechanics, a Cleaner/Gardener and an Officer-in-Charge. Since 1966 the station has been remotely controlled and monitored from the National television station at Lookout Hill, near Ararat where Rod McKinnon is OIC.

The site on which 3WV operates was formerly a part of the 'Molyneaux' property, and was acquired for 16 pounds an acre. Local folklore has it that the owners of the property objected strongly to the station being constructed at that site, as they thought that the mast would interfere with their view of the mountain range to the south.

The ABC has a studio in Horsham, from which local programs are regularly broadcast. The bulk of the program material, however, originates from the Melbourne studios.

BILL CHILCOTT

News Round Up

2BL BROADCASTS AM STEREO

On 1 February 1985, 2BL Sydney commenced stereo transmissions of Radio 1 programs, using the Motorola C-QUAM standard. This coincided with the officially authorised date for the commencement of AM stereo in Australia.

The stereo exciter and modulation monitor were originally installed at 3LO in Melbourne, however, a late decision to convert 2BL to stereo meant that "digits had to be extracted" to meet the target date. The exciter and monitor arrived on site on 30 January, less than two days prior to commissioning date. The preliminary compatibility tests on 3LO assisted greatly in the conversion of 2BL.

Assistance came from all directions, Central Office Operations, 3LO Melbourne, NSW Engineering and Operations Sections and 2FC/BL staff.

The local staff at 2FC/BL not only did most of the installation, but provided valuable local knowledge and suggestions.

We are often asked why the conversion of 2BL to AM stereo was noteworthy — after all, the Commercial stations seem to be well established in this new technique.

The main factor is the age and design of the 2BL transmitter (1950's vintage), rendering them less broadband than the more modern units which the Commercial operators have converted.

The usual "target date approaching jitters" accompanied this project. Program lines, though ordered in advance, proved a source of anxious moments, as the on air date approached.

The service, since conversion, has virtually performed trouble free with only a few minor problems.

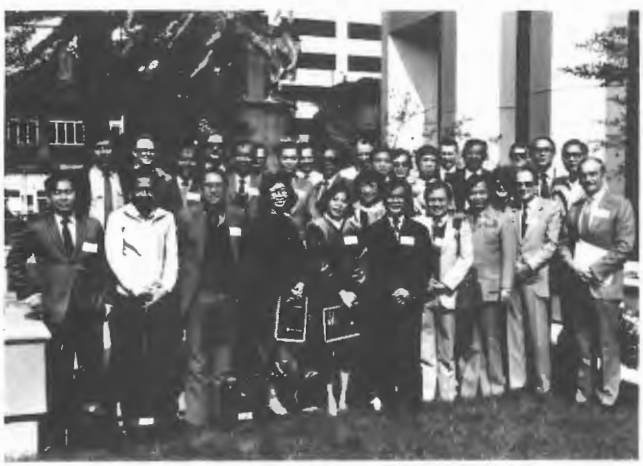
BOB BARRETT

ASEAN BROADCASTERS STUDY TOUR

Recently the Central Office of the Broadcasting Directorate played host to 22 high level broadcasting administrators from ASEAN countries. The participants were on a study tour arranged by the Australian Development Assistance Bureau and were from broadcasting organisations in Singapore, Malaysia, Thailand, Brunei, Philippines and Indonesia.

The group visited all major broadcasting organisations in Australia and during their visit to Telecom were addressed by the Director Broadcasting on the role of Telecom Australia in National Broadcasting. During an informal morning tea the visitors had the opportunity to meet with members of staff. This provided a relaxed forum for discussion of common problems in broadcasting and was greatly enjoyed by visitors and Directorate staff alike.

LEON SEBIRE



ASEAN Broadcasters Study Tour Group and Central Office Staff.

CYCLONE GRETEL POUNDS DARWIN

Cyclone Gretel passed through Darwin in the early hours of Saturday 13 April but although damage in the city was considerable, particularly to the electric power distribution system, the broadcasting facilities escaped with only minor damage. Lessons learned from Cyclone Tracy just over ten years ago and new construction practices paid good dividends.

Local station 8DR broadcast throughout the critical period and although staff were rostered on for attendance, no repairs had to be effected. The television station ABD6 and the FM station also stood their ground and continued transmissions uninterrupted.

At Radio Australia on Cox Peninsula the high winds resulted in the stretching of some steel ropes and steel cored aluminium conductors of the curtain antenna systems, but these were subsequently corrected by retensioning operations. Bridges on two of the four wire transmission lines were blown out of position. The only log periodic antenna rebuilt from salvaged parts following Tracy was badly damaged. Fifteen dipole elements of a total of 60 were damaged with one dipole falling to the ground.

Although there was some water ingress through timber windows of the Administration Building and through the roof line transition of the Transmitter Hall there was no damage to equipment. Power via the submarine cable remained on with only a few short breaks.

Because of the high sea and the wind it was not possible for staff to undertake the 10 km crossing of the harbour until the afternoon, resulting in a transmission down time of 8½ hours for the day.

GRAHAM SHAW

BROADCASTING ACCOUNTING INVESTIGATED

Following on recommendations at the 1984 Management Services Conference, a Working Party was formed to investigate and report on ways to improve finance and accounting procedures within the Directorate.

The Working Party comprised Bill Paraska, Resources and Budgets Officer NSW; Mel Pressley, Resources and Budgets Officer SA; Kevin Buckland, Manager, Management Services WA and Charlie Slidders, Senior Programming Officer Central Office, with Harry De Souza, Manager, Programming and Resources Central Office being available for consultation and guidance on the Directorate's aims and objectives in the financial area.

Working Party meeting in Perth. L to R — Bill Paraska, Don Purdy SBM WA, Kev Buckland, Chas Slidders, Mel Pressley.

The deliberations and decisions were guided by the following Terms of Reference:—

- To identify all categories of expenditure which need to be costed;
- To make recommendations on which expenditure categories, including administration, should be debited against the several appropriations, i.e. to operations and maintenance, capital works, etc.;
- To examine the matter of plant accounts and make recommendations on such as considered appropriate;
- To make recommendations concerning the establishment and appropriation of overhead charges, both in respect of Broadcasting activities and for services provided to Broadcasting by other Telecom areas;

- To make recommendations concerning methods to be used in deriving charges for labour, materials and incidentals;
- To make recommendations on the form of accounting reports required by the Directorate and other areas, e.g. Department of Communications, etc.

In addition the team investigated matters which were considered as complementary to the Terms of Reference:—

- The aspect of accounting for Broadcasting receipts;
- The implications of a Costing System based on methods of direct costing.

The Working Party completed its work in February and although all States were not involved in its deliberations and investigations it considered that the recommendations it put forward will be universally acceptable.

Meetings were held in Melbourne, Perth and Adelaide.

KEVIN BUCKLAND

WE SERVE THE "CROSS"

On the 14th Floor of the Hyatt Kingsgate Hotel in beautiful downtown Kings Cross Sydney, there are two translators, one for the ABC, Channel 43 operating on 653.25 MHz, and one for the Special Broadcasting Service (SBS) Channel 54 operating on 737.25 MHz.

Along with the three Sydney Commercial TV channels, the five co-sited translators are housed in a prefabricated building on the roof of the Hotel, alongside the building's lift motors and air conditioning plant. A common antenna radiates the combined output of all five translators.

The view from this platform can only be described as breathtaking, as it provides a 360° panorama of Sydney, ranging from magnificent harbour views, to a full sweep to the Blue Mountains.

Since television was introduced to Sydney in the early 1950's some areas of the heavily populated eastern suburbs have been bedevilled by poor reception from the normal VHF TV service.

View of city buildings and Domain from transmitter level Kings Cross.

With the introduction of the translators, these difficult areas now receive clear pictures in the UHF band.

The two translators receive their programmes from ABN Channel 2 and SBS Channel 28, which are in direct line-of-sight across the city to Gore Hill.

Both translators are 150 Watt NEC type TB-1150 UU, and have proven to be extremely reliable in operation. Their operation is automatically monitored by ADAM units, linked to a computer in the monitoring and information centre at ABN2 Gore Hill.

Maintenance is carried out weekly from ABN2, and there is no shortage of volunteers to perform this task.

Rumour has it that all the maintenance techs are now on first name basis with most of the "girls" who work the Cross.

LEN GREENING

WILD LIFE GRASS CUTTERS

In the March issue of The Broadcaster, reference was made to the flock of sheep or mutton grass cutters at Radio Australia Shepparton. At 5LN Port Lincoln on the southern tip of Eyre Peninsula in South Australia, kangaroos and an emu serve the same purpose. The wild life has also become a local tourist attraction.

It all started in January 1974 when five Murray grey kangaroos were donated by a number of local residents. Unfortunately tragedy struck in 1980 when a pack of dogs entered the property and killed all the kangaroos but one.

In February 1981, the Whyalla Fauna Park donated four red kangaroos and the Kirton Point School donated an emu known as Elly by the staff. Abdul the surviving Murray grey and station pet now shares the property with Big Red, Old Red, Bluey, Little Lady and Jo. Recently Old Red was feeling off colour but the local Vet pumped some vitamin E into him and he is now fit and making short work of the loads of fresh grass clippings which local residents bring to the property.

IAIN FRASER

Four of the Grass Cutters.

ABC DIRECTOR VISITS DARWIN

The ABC Director of Radio Australia Peter Barnett, accompanied by ABC Darwin office staff Neil Deer and Andrew Warren, paid a brief visit to Radio Australia Cox Peninsula on 17 April.

In an interiew with the Northern Territory News Mr Barnett emphasised the importance of the Darwin transmissions, particularly into China where the Chinese authorities estimate there are 20 million listeners in Southern China alone.

A program receiving heavy emphasis is an English language lesson series, being the first of its kind authorised by the Chinese Government. The first 80,000 booklets printed to accompany the lessons were snapped up immediately.

ROSS KEARNEY

Pictured at Radio Australia, Cox Peninsula are, L to R — Andrew Warren, Ross Kearney, OIC, Neil Deer and Peter Barnett.

Engineering Highlights

A QUARTER WAVE LINE FOR TV FEED

Dalwallinu is a medium sized wheatbelt town approximately 250 km north of Perth. Radio reception is no problem in Dalwallinu as there is an MF national radio station 6DL just outside the town. TV reception however is a problem. The closest station is at Moora approximately 100 km away and interference is often caused by a high power commercial TV station at Mawson approximately 250 km away. The problem is aggravated by the obstructed path from Moora.

Planners considered that a translator to serve the area would be practical if the receiving antenna could be high enough to receive a direct signal from Moora. The transmission would be at UHF and to provide a reasonable area of coverage the transmitting antennas would need to be at a height just below the MF radiator sectionalising point.

Base of 6DL mast showing transition of TV cables from the insulated catenary wire to the live mast.

The receiving installation consists of a twin Yagi phased array at a height of 75 m connected by 22 mm coaxial cable to the translator in the 6DL transmitter building 200 metres from the mast. The Yagis are spaced to be in phase for signals from Moora and in anti phase for signals from the commercial station at Mawson. For transmission a 75 mm coaxial cable feeds a UHF Bogner slot antenna mounted 150 m above the ground.

A number of techniques are available for using an insulated structure as a combined MF radiator and support for TV antennas. However, the most popular involve the use of lumped components or a transmission line section.

In the lumped component method, the TV coaxial cable is formed into a coil between ground and the insulated mast base with the inductor being tuned to resonance at the MF frequency with a parallel capacitor. The high impedance in the resonance condition results in only small change to the tuning of the MF antenna. However, this arrangement requires that the transmitter be located close to the base of the mast particularly for UHF transmissions. In the case of the 6DL site, this would have required provision of a building, extension of power mains and an access road.

The 140 metre long elevated short circuited quarter wave stub.

For the transmission line method, the coaxial TV cables are connected to the bottom of the mast each a distance of a quarter wavelength from the mast, then earthing the cables at that point. This shorted quarter wave line then represents a high impedance at the mast with minimal effect on the antenna tuning. A quarter wavelength at the operating frequency of 6DL (530 kHz) is 140 m.

The transmission line method was adopted for this project. There was sufficient space to install the line between the mast and the existing building. To take account of the cable loss, a 75 mm diameter cable was selected for transmission. This kept losses to the same value as for an installation using lumped components at the mast base. The overall cost was less using the transmission line when taking building and other costs into consideration.

The quarter wavelength coaxial cables are attached to a catenary wire with the catenary wire and coax outers connected to the mast at one end and earthed 140 m from the mast. The catenary wire is suspended from steel poles by insulators. The poles are approximately 3 metres high so that the cable is well out of reach. A copper bus bar is run from the earth at the base of the mast back to the quarter wave earth point to provide a positive return path. The quarter wave earth point is also connected to two earth radials on either side.

After installation only minor retuning of the MF antenna tuning unit was required. This was ascribed to stray effects associated with the catenary such as the capacitance of the support insulators.

The antenna systems and cables were installed during January - February 1985 and transmission commenced 1 March 1985.

TERRY SELLNER

Details of support for insulated catenary wire carrying live coaxial cables.

The Special Broadcasting Service

During the term of the Whitlam Government social experimentation in the field of "ethnic broadcasting" created considerable public demand and expectations for broadcasting services to meet the requirements of those Australians who have adopted English as their second language. Although several Government funded radio stations were initially established to provide foreign language radio programs (2EA and 3EA) it soon became apparent that this was a domain which could be well handled by public or community broadcasters. In consequence, although 2EA and 3EA were established in 1975 in Sydney and Melbourne and low powered "radio repeaters" were added at Newcastle and Wollongong in 1979, there has been no further development of Government funded foreign language radio services in recent years nor is any planned at this time.

The Fraser Government after coming to office, was quick to perceive the interest of relatively large sections of the community in "foreign language" broadcasting and set out to explore the prospects of a Government funded television service providing programs of (to use a then coined phrase) a "multi-cultural nature". The ABC was invited to prepare proposals for such a service but at that time the Commission was faced with a number of other commitments and problems and was unable to respond with the true enthusiasm expected by the Government. Consequently, the Government established the "Special Broadcasting Service" with a charter to "provide broadcasting and television for such special purposes as are prescribed".

By late 1979, the SBS in conjunction with the Department of Communications, had produced plans for the provision of UHF television services in Sydney and Melbourne and Telecom commenced design and provisioning of the transmitting facilities required. However, subsequently when it became evident that few of the potential viewers had television receivers capable of receiving UHF transmissions, the then Minister for Communications determined that the UHF transmitters were to be duplicated with Channel O VHF transmitters and that programs would be "simulcast" in both the VHF and UHF bands until the Channel O transmissions could be phased out some two years later.

With less than nine months then to go until the announced on air date of October 1980, Telecom broadcasters were faced with a "back to the drawing board" situation to redesign and provide for the establishment of both Channel 0 and Channel 28 TV facilities at the Gore Hill and Mt Dandenong stations which had been initially designed for only Channel 2 operation.

Tremendous staff efforts led to the stations meeting the target requirements with several days to spare. Only interim transmission antenna systems were possible because of restricted tower capacity and this has been responsible for restricted coverage since that time.

The SBS television transmitting facilities have since been extended to Canberra, Cooma and Goulburn and recently we commissioned transmitters in Brisbane, Newcastle, Wollongong and Adelaide. Plans are well advanced for extension of the service to Hobart and Perth and later to Darwin.

LEON SEBIRE

A SHOCKING STATEMENT

Judge: It is claimed by the complainant that you deliberately gave him a 2000 Volt shock from the transmitter and as a consequence he has been unable to sit down ever since.

Defendant: He lies, Your Honour. I never touched the man. "Sparks" Harrison and "Flash" Gordon pinned him to the floor and connected two wires using alligator clips to his buttocks.

All I did was to operate the high tension button.

The Cryptic Broadcaster No 1

Across

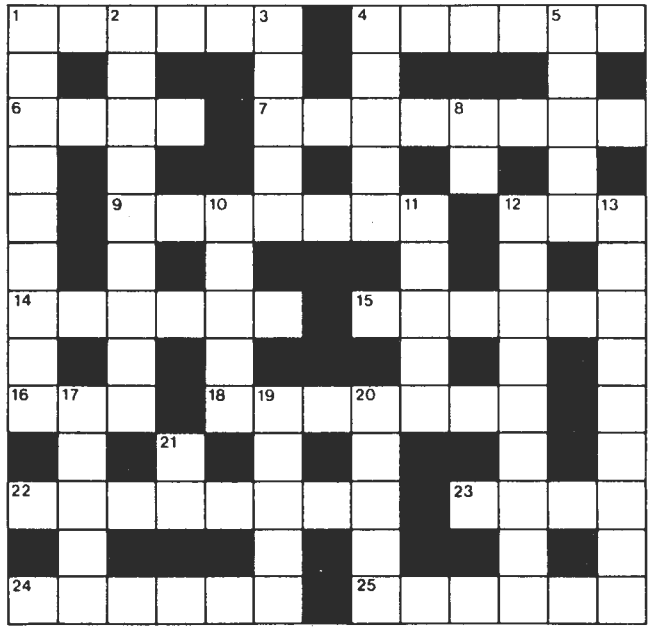
1. Indicators may be found in some terse words (6)
4. Semi-Lulu with a visa will see it all (6)
6. Laid back for a face plate (4)
7. Undo used light stopper near the gate (8)
9. Given to study without you to find the starting point (7)
12. Technical training days should be reduced for help at times (3)
14. They are usually used in pairs but not often in radio systems (6)
15. Bone up on the fencing equipment about a steamer (6)
16. A more recent outlet (3)
18. To dump all the tapes use a core jet (7)
22. Look intently without any hurry to give a very good viewing for an amateur (8)
24. Don by the sea — as one with the elements (6)
25. A nut about opposing points (6)

Down

1. Combined signals from load teams will get a message through (9)
2. Strain MST maybe but sends away would be better (9)
3. Almost circular but a point must be scored by exchange (5)
4. Six and five hundred with epsilon zero (5)
5. Taped like an expert not like a novice (5)
8. Definitely backward this unit (2)
10. Unite to unravel this knot (5)
11. The dash or the dot contain the answer (5)
12. Check points for stations rather than rallies (4, 5)
13. One of these here or there may be required to delay the leader (5, 4)
17. Man of letters, fifty and a world body make a good match (5)
19. In earlier times there were fields full of them but now they are few and far between (5)
20. It should be easy to scent out the difference here (5)
21. Uninterrupted oscillations which are often interrupted (2)

LEW GRUBB

The Cryptic Broadcaster No 1



Expansion of SBS Transmitting Facilities

EXPANSION OF SBS TRANSMITTING FACILITIES

The transmitting facilities of the Special Broadcasting Service (SBS) were recently expanded when new transmitters were commissioned in Brisbane, Newcastle, Wollongong and Adelaide. These stations use 25 kW UHF transmitters supplied by Philips and manufactured by Pye in the United Kingdom. The transmitters are physically about the same size as the older NTS 10 kW VHF transmitters, although the NEC UHF transmitters in use in Sydney, Melbourne and Canberra are much larger.

The transmitting systems at these new locations operate, as a matter of Government policy, in the UHF band. The SBS is currently the only television operator providing high power wide coverage services in UHF.

All transmitters use klystrons as the final amplifying device and although initially more expensive compared with tetrodes, they generally have better reliability, improved electrical stability and long life performance, typically up to 60,000 hours. To ease installation problems when a klystron does finally need to be changed, the replacement klystron is mounted in a special trolley and wheeled into the transmitter cabinet. The klystron is 1.295 m in length and must be handled with care.

Separate but identical transmitters are supplied for the vision and the sound signals. However, under emergency conditions it is possible to put both vision and sound through a single transmitter, although at reduced power, to allow repairs to be made to the faulty transmitter. This is technically known as multiplex reserve operation.

The efficiency of these transmitters is only about 25%, which is very much lower than modern VHF units. This has required substantial upgrading of the main power supply systems at Newcastle and Wollongong. There is also consequently a large heat load to be absorbed and this is arranged by a complex vapour phase cooling system with stringent demands on the purity of the water used.

The output of the transmitter feeds the antenna through a single 150 mm coaxial cable. This is twice the size of the biggest cables used for other television services. The size is essential to minimise the high attenuation of UHF signals in cables and the need to cater for a number of transmitters to share the one antenna in the future.

The preferred type of antenna is a multi-level array of broadband panels. Worldwide tenders were called last year and a contract was awarded to a South Australian company, Hills Industries. The Hills' design mounts the basic panels inside a cylindrical fibreglass radome, which, because of its shape, significantly reduces the wind loading on the existing towers compared with the conventional approach of mounting panels on a four-sided steel column.

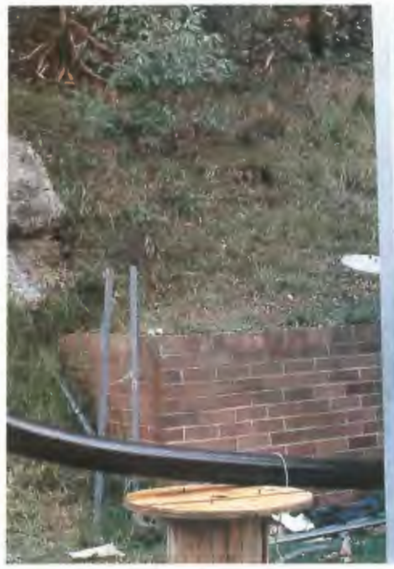
Pending upgrading of the towers, a low wind load slot antenna was installed at all centres as an interim measure.

ADELAIDE L to R, Denis Collins STO Elec/Mech., Bruce McGowan Supvg. Engr., Ray Dineen OIC Installation.

ADELAIDE
Senior Draftsman Brian Turner.

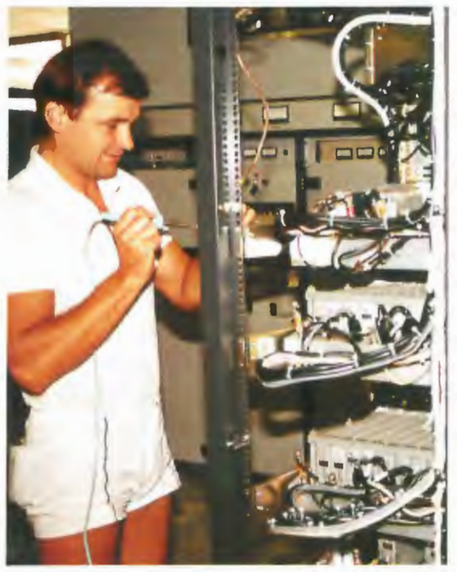
ADELAIDE
L to R, Ray Dineen, OIC Installation, Jim Cullen.

ADELAIDE
Combining and Switching Unit — Ray Dineen.



NEWCASTLE
L to R, Ross Foggon LS3 and Wolfgang Micke Engineer 2.

WOLLONGONG
Bill Putsey STO1 Construction.



NEWCASTLE
Andrew Bilski Technician.

BRISBANE
L to R, Des Eckford, Jeff McConachie.

BRISBANE
L to R, Des Eckford, Jeff McConachie, Cliff Easterbrook.

BRISBANE
Peter Cusack (back), Paul Lamprecht.

BRISBANE
L to R, Des Eckford OIC Installation, Dave Boreham, Chris Jeffrey OIC ABQ2.

Staff News

WESTERN AUSTRALIA

If you are thinking of going surfing in the West, be warned. A recent early morning jog along City Beach ended in disaster for Perth State Broadcasting Branch External Plant Engineer Alan McCarthy.

After a vigorous run, Alan decided that a quick swim would cool him down. However, he was no match for those enormous breakers which sweep in and pound the coast. One such wave picked Alan up like a piece of match stick and dumped him. Result — A broken bone in the ankle and a miserable six weeks hobbling around on crutches with the ankle loaded with a plaster cast.

All the Perth office staff recently joined Registry Assistant Trish Hearne in celebrating her 21st birthday. State Broadcasting Manager Don Purdy presented Trish with a bouquet of flowers on behalf of the staff. All later assembled at a nearby Chinese restaurant for a very enjoyable luncheon. Congratulations Trish.

Fellow Engineers Doug Blackney and Robert Deacon commiserate with Alan McCarthy.

SOUTH AUSTRALIA AND NORTHERN TERRITORY

After completing a four year term at Radio Australia Cox Peninsula, Ron Falkenburg A/g Engineer 3 took a well earned 3½ months holiday and has resumed in the Adelaide office. Ron and family returned to Adelaide by car at a leisurely pace detouring to Yulara to see Ayers Rock and spending Christmas Day in Alice Springs.

The Northern Territory Office welcomed John Wilkins Engineer 3 when he took up duty after service with Services and Field Engineering Branches. John's expertise in the training area will be put to good use in oversighting training courses for recently appointed Radio Australia staff.

Don Heylen STO2 Buildings and Denis Collins STO1 Electrical/Mechanical recently inspected three new buildings under construction in the Northern Territory for the HF broadcasting service and discussed a number of options with Assistant Broadcasting Manager Graham Shaw and SLO1 Jim Finch for accommodation of the Radio Lines group in Darwin.

Rumour has it that Don and Denis were about to make a clean sweep of the casino but had to leave hurriedly to catch the plane.

Another visitor to the Territory was Rod Jolly, STO1 Audit and Advisory. Rod accompanied by Barrie Morton STO3 Northern Territory made a whirlwind inspection of transmitting stations at Nhulunbuy, Elcho Island, Borroloola and Groote Eylandt in a small chartered plane. They were caught up in the middle of cyclone Sandy and anyone but the brave would have chickened out.

Some stations in the Northern Territory keep Rod Jolly on his toes. When he opened the door at the Warrego Mine station he was greeted by a large goanna at least a metre in length ready to fight for its territory. Rod was unable to determine how the monster got into the building which is built of brick with concrete floor and roof and a well sealed door. The only means of access into the building was via 15mm openings in the ventilator system. The filthy condition of the floor indicated that the goanna had been there for some considerable time and apparently had existed on insects which came in through the ventilator.

Brian Scholz Personnel Officer has been promoted to Personnel Manager Operations Department. Ian Boscence from Buildings Branch is currently acting Personnel Officer.

QUEENSLAND

Kent Lechmere, Engineer 2 Broadcast Engineering and Construction, was married in March to Samantha Kent a graduate of the Queensland Institute of Technology, joined Telecom in 1982, and getting his priorities straight, threw in his lot with broadcasting. More at home with microwaves and computers, he is nevertheless rapidly learning about triodes and half wave verticals used at lower frequencies.

A new recruit to Queensland broadcasting as Engineer 2, Greg Dowling has spent most of his career so far in RAAF engineering. The coffee table conversation these days frequently relates to Canberras, Neptunes and radars which is a welcome change from Adams, Tetras and Actts.

Up at ABRQ3 Mt Hopeful (Rockhampton TV) Technician Keith Kowalski was recently married, and took off with his wife Loretta on a motorbike honeymoon to chilly Tasmania. They had an interesting tour, camping out when the weather permitted, and saw a lot of places off the usual tourist track.

CENTRAL OFFICE

The Broadcasting Directorate's Central Office was relocated to 484 St Kilda Road, over the weekend of 9-11 March, 1985. Not all of the staff working in Broadcasting stayed to enjoy/endure the (in)convenience of working away from the central city area.

Staff of the Programming and Resources Section has been very much depleted by departures. Yvonne Rabel has gone to join Anne Grant at the Information and Publicity Office whilst Neil Ryan, Mike Hedley, Leanne Dennis and Phil Roberts have followed Les Davis to Commercial Services. Julie Hood commenced Maternity Leave and on 11 April gave birth to a girl. Congratulations, Julie.

Some of the departures have been offset by the arrival of John Frankland (from Broadcasting, Victoria), and Stewart Read (a fixed term employee). Other arrivals include Carmelo Costa, Russell Edwards and Rod Brough, whilst Keith Malcolm and Ian Albury have transferred over from the Department of Communications.

NEW SOUTH WALES

"Welcome Aboard" to new staff who have joined us — Sharon Brew Acting Clerk 4, Stuart Watson Technician, Bill Papadatos Engineer 1.

Staff departures include Bill Wilkinson Assistant Technician from ABQN5, Dan Bender STO1 Engineering and Construction, Pierce Miller Technician from ABTN1, John Robertson Radio Lineman Engineering and Construction, Brian Martin TO1 from BSC. We wish them well.

Jenny, Bill Paraska and Carol.

The Management Services Section also lost two valuable staff members — Personnel Officer Jenny Boland and Assistant Works and Costing Officer Carol Reilly. A farewell function was held at the Bowlers' Club on 12 April 1985. Most office based staff attended, showing appreciation of their efforts with Broadcasting Branch and giving encouragement for their success in future endeavours. Acting Administration Manager Bill Paraska, presented farewell gifts to Jenny and Carol.

Hobby Corner

TURNING GRASS

To fashion something — big or little — to feel its shape grow under the hands — to be able to say at the finish, "I made this" — IS TO LIVE.

Those words appeared on the front cover of the first issue of The Homecraft Magazine published in Melbourne in June 1925 for the hobbyist. They are just as true today — 60 years later. The following article contributed by Ian Gibbs Draftsman Grade 2 Western Australia, shows what he has achieved with his hands. Ian lives in the outer Perth suburb of Roleystone with his wife Jasmine and their two children:

Woodturning is an interesting hobby in its own right, but when you have a unique medium to turn such as "AXANTHORRMOEA" it enhances the satisfaction.

Assorted bowls.

"Axanthorrmoea" or as it is more commonly known, Blackboy or Grasstree, is unique to Australia, and the variety most suitable for turning is found in the Southwest of Western Australia. Blackboy is part of the Lily family and grows a maximum of 25 mm per year. It can grow to 5 metres in height.

The inner core of a Blackboy is soft and fibrous whilst it is growing, but as it dies the inner core hardens to a point where it is suitable for turning. To get an inner core large enough to turn requires the Blackboy to be many hundreds of years old and to be dead for at least 20 years.

Ian Gibbs (front) with fellow Draftsman Kevin White.

The finished Blackboy turning is totally unique in grain structure with colours varying from black to a light gold. It is almost impossible to get any two Blackboy centres with the same grain structure.

As natural bushland is being reduced, it becomes increasingly difficult to obtain Blackboy centres, which is why Blackboy woodturnings are quite expensive to buy commercially.

Finishes commonly employed include clear polyurethane, sanding sealers, French polish, beeswax and cedar oil.

IAN GIBBS

Museum Gems

FIRST INTEGRATED CIRCUIT

One of the most interesting radio tubes in the Telecommunications Museum in Adelaide is a Loewe type made in Germany in 1926.

It was described in an article by one author as the world's first integrated circuit. It contains in one envelope all the elements of three separate triode tubes and all resistance/capacitance coupling components for a simple wireless receiver.

The only external components required are antenna tuning circuit, loudspeaker and battery power supplies.

Loewe Radio Tubes, 1926.

Each resistor and capacitor is separately encapsulated in glass, presumably to preserve the vacuum against out gassing of these components.

The circuit provides an object lesson in economy of components to enable the tube to be mounted on its six-pin base. The base has sliding contacts (not plug-in) and uses a bayonet fitting base with three staggered locating dowels.

In Germany in the 1920s, there was a tax on the use of broadcasting receivers, the amount of tax being determined in part by the number of tubes in the receiver.

The Loewe Company capitalised on this condition and designed a series of multiple tubes, which were shown at the Berlin Radio Exhibition in 1926.

Sales of the OE333 receiver which was designed around the 3NF tube is reported to have reached one million in 1926.

Sale of the tube was greatly stimulated by the company's offer to repair any burnt out filament at a nominal charge, and at the same time replacing the other used filaments. The tube operated with a filament voltage of four Volts and a plate voltage of 135 Volts.

William A. Gold, a former Broadcast Engineer in SA writing in Electronics Australia January 1976 said: "It would be a cynical electronics engineer of today who did not concede that Dr Siegmund Loewe — engineer, inventor and founder of the Loewe Opta Company of Berlin — was the man who first gave the world its first cost effective integrated circuit and successfully mass produced more than one million such IC's half a century ago."

JACK ROSS

Profiles

Vince Thompson State Broadcasting Manager (New South Wales) joined Amalgamated Wireless A/Asia Ltd. Sydney as a Cadet Engineer in 1943 and following part time study obtained formal engineering qualifications. In 1950 he joined the Postmaster General's Department as an Engineer and over the years became associated with a wide range of communications engineering projects and activities, including Long Line and Telephone Exchange Installation, and Radiocommunication and Broadcasting installation, operation and maintenance.

Vince was the first State Broadcasting Manager to be appointed on formation of the Broadcasting Directorate in 1983. Prior to that he was Supervising Engineer, Radio.

Vince is married with four adult children and his main activities are music, reading, tennis and when finances permit, travel.

Vince Thompson

Bob Barrett

Bob Barrett, Broadcasting Operations Manager (New South Wales) began his career in the Postmaster General's Department as a Technician-in-Training at Homebush in the "Class of '51".

From Technician to Senior Technician and thence to Supervising Technician and STO, Bob spent a ten year period of shift work at the Redfern Radio Terminal.

Bob was appointed STO3-in-Charge of the Waverley Radio Terminal in 1976, where with his customary energy, he became involved with the Computerised Surveillance System for the Radiocom Network SORA project, while at the same time running the Terminal.

During 1981, Bob became the Principal Technical Officer Radio Section. At this time the Broadcasting mantle descended upon him as well as the Radiocommunications responsibilities.

When the Broadcasting Directorate was formed in 1983, Bob became its first Operations Manager.

Sport has always been an important part of in Bob's life; having played representative hockey in his youth, he is now President of a large Squash Club at Engadine and enjoys playing competition squash and teaching juniors how to play the game.

Mike Stevens, Broadcasting Engineering Manager (New South Wales), joined the Postmaster General's Department in August 1972 as an Engineer Class 2 in the Radio Section after being employed as an Applications Engineer with Texas Instruments in Munich, West Germany.

The nine years in the Radio Section provided him with valuable experience in the installation of television transmitters and translators at various locations throughout NSW, as well as some extremely valuable and, at the time, unique experience in the installation of satellite earth stations for the RATV service.

He remained with the Radio Section until January, 1981 when he was promoted as an Engineer Class 3 with the Radiocommunications Systems Section, Construction Branch.

He returned to the newly formed Broadcasting Branch as an Engineer Class 3 on transfer in July 1984 and was provisionally promoted to the position of Broadcasting Engineering Manager on the retirement of Albert Ambery in January of this year.

Mike is married, with two children. His leisure activities include bushwalking and fishing.

Keith Nisbet, Manager Management Services (New South Wales), joined the Postmaster General's Department in 1938 as a Telegraph Messenger. He gained part qualification for promotion as Postal Clerk but prior to achieving the required speed in Morse code transmission, enlisted in the RAAF on finally gaining leave from his "reserved occupation".

He served overseas for four years as a Wireless Operator/Air Gunner in Canada and the United Kingdom and on discharge in 1946 qualified for promotion as Clerk and was transferred to the Engineering Department.

He later gained the Certificate of Office Supervision and studied for the APO Certificate Course in Administration, qualifying in Administration and Organisation, and Effective Communication.

Keith has been associated with the Broadcasting area since taking up duty as Sectional Administrative Officer, Radio Section in 1974 and has been keenly interested in the development of the Broadcasting Branch since its inception.

He is married with one daughter, two sons and three grandchildren. His leisure activities include gardening, tinkering in his home workshop, touring, golf and fishing.

Mike Stevens

Keith Nisbet

Albert Ambery former Broadcasting Engineering Manager (NSW), came to Australia in 1956 from the United Kingdom where he was employed as an Experimental Officer (Engineer) with the Department of Scientific and Industrial Research. He took up duties in the then Postmaster General's Department as an Engineer Class 1, Internal Plant Planning Section on 4 January 1956.

He was transferred to the Radio Section as an acting Engineer Class 2 in September 1956 where he was engaged on the installation and maintenance of the Broadcasting network. He was promoted to this position in May 1959.

Albert Ambery

Albert took up duties as the Engineer Class 3 in charge of the Broadcasting No. 3 (Television) Sub-Section in June 1971, and remained with Radio Section, being responsible for installation and operational activities with the Broadcasting network until, with the setting up of the Broadcasting Branch he was promoted to Broadcasting Engineering Manager in October 1983.

He continued in this role until his retirement in January 1985.

No doubt Albert regards his retirement as a well deserved rest and an opportunity to indulge himself in his hobbies of travelling, bushwalking, sailing and gardening. However, to his colleagues in the Directorate, it represents a loss of 30 years accumulated experience in Broadcasting and Radiocommunications. They all extend to Albert sincerest wishes for a long, active and healthy retirement.

From the Back Room

CENTRAL OFFICE LABORATORY

No organisation with an involvement in broadcast engineering could function effectively without an adequately equipped laboratory and competent technical staff to carry out necessary tests, observations, measurements and developmental work.

Modern day laboratory work is a good deal less lighthearted than it used to be. Rough approximations are less acceptable, and chapter and verse have to be quoted for everything.

Those of you who have been involved in running a laboratory will know that some developmental projects end up in a blind alley and may be branded by cynics as failures. However, we should take heart from Thomas Edison who knew the real meaning of the word "failure" in laboratory work. He considered it just a temporary event.

When Edison was attempting to develop a storage battery he tried over 10,000 experiments and none of them worked. One of his financial backers criticised him for all the wasted time. Edison said, "Why, I have not failed at all. I've just discovered 10,000 ways that won't make a battery".

Ian Albury STO2 now in charge of the Central Office Laboratory has contributed this interesting article. Ian came to the Directorate from the Department of Communications Laboratory and before that was TO2 at the Brisbane ABQ2 transmitters. Prior to Ian taking up duty, Graham Ward, now in Adelaide, controlled the laboratory.

The Central Office Laboratory, or more precisely the Test and Evaluation Centre, provides a number of supportive functions for the various Branches of the Directorate.

The main roles of the laboratory are the evaluation of broadcasting equipment to ensure that it conforms to specification, project developmental work and to act as a pool for the storage of specialised test equipment.

Manufacturers or equipment suppliers frequently offer their equipment for evaluation in response to Telecom tender schedules. Their equipment is then subjected to a number of tests, inspections and measurements in the laboratory. Extreme care must be exercised by staff to achieve the best measurement accuracy available from test instruments held in the laboratory.

The type of equipment encountered for evaluation covers not only the complete range of specialised test equipment needed for the maintenance and installation of television and sound broadcasting services but also the equipment needed to provide these services such as translators, antennas etc.

Occasionally, equipment is needed to perform a specific function in the maintenance of the broadcasting system. If there is no commercially available equipment, the laboratory has the facilities to design and construct prototypes of the equipment required to do the task. One example of this is a three-tone intermodulation test unit designed and constructed in the laboratory for use in checking the performance of television translators.

The laboratory maintains a pool of test equipment which is available on request for loan to State Broadcasting Branches. This arrangement makes the best use of the Directorate's test instrument facilities in cases where the high capital cost would prohibit the purchase of a rarely used but necessary instrument for each State. A modern sophisticated test instrument can cost up to $70,000.

Current Projects

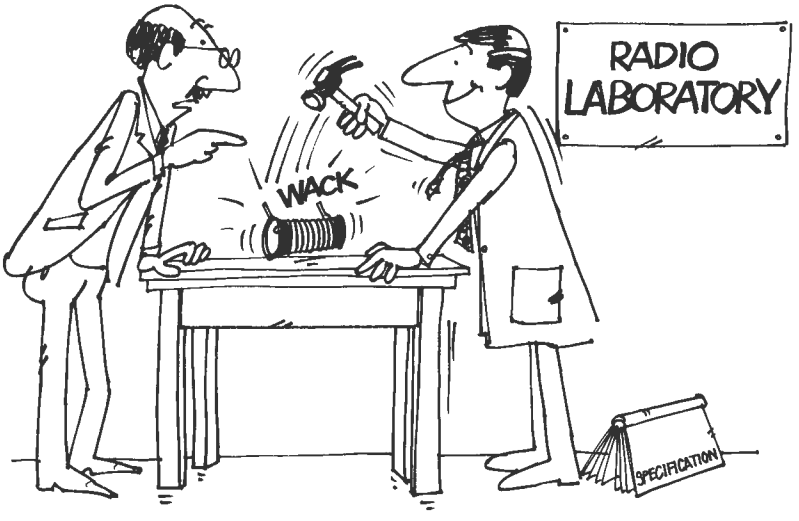
Many interesting projects are currently in various stages of development but one of particular interest is the construction of a number of VNG Standard Frequency Receivers. These receivers are designed to operate from the 7.5 MHz or 4.5 MHz standard frequency transmissions from VNG Lyndhurst, Victoria and provide an accurate 1 MHz output signal which can be used as a reference to allow adjustment of the time base clock on counters, frequency synthesisers etc. Even though the emitted carrier frequency of VNG is maintained to an accuracy of 1 part in 10^{11}, the accuracy of the received signal will be degraded due to propagation conditions, especially around sunset and sunrise. It is estimated that, for 70% of the time, the accuracy of the 1 MHz reference signal will be better than $\pm$ 5 parts in 10^9.

Another noteworthy project is related to AM stereo development. An AM RF driver using HEXFETS to facilitate stereo experiments using some of the earlier types of broadcasting transmitters in the National Service is in an advanced stage of construction.

Previous Projects

Space is not available to detail all of the projects in which the laboratory has been actively involved in recent times but some of particular value in the advancement of our broadcasting activities have included noise temperature measurements on NEC LNA's, design and construction of ACTTS, construction of ADAM monitor, development of frequency changer (CH5A to CH5), RATV carrier-to-noise alarm, FM stereo modulation monitor and many others.

IAN ALBURY



Supervisor: "Stone the crows man - why are you hitting that inductor with the hammer?"

Workman: Well Sir, the specification says the inductor should be tapped every six turns.

Let's Play It Safe

CYCLONE WATCH IN WESTERN AUSTRALIA

During the summer months the general topic over morning tea in the Perth office of the State Broadcasting Branch is "How is Jacob doing?" or "Where is Gertie this morning?" This conversation does not relate to people, but to the seasonal problem in the North-West of Western Australia — CYCLONES.

In the past, considerable damage has been done to North-West towns by cyclones as a result of wind, rain, flooding, etc. However, of prime importance to Broadcasting personnel is Radio Australia at Carnarvon. Carnarvon has been the target for some direct hits by cyclones over the years and this has resulted in considerable damage to houses, banana plantations and vegetable crops.

With the installation of Radio Australia at Carnarvon — RACAR — in 1975, the protection of the antennas and masts is of concern during the cyclone season. If it is anticipated that a cyclone will strike Carnarvon or due to its close proximity cause high winds, Broadcasting Linemen are flown post haste to the site so that the antennas can be lowered and secured on the ground.

General procedures which are adopted on the formation of a cyclone and the commencement of a cyclone WATCH are as follows:—

- The cyclone path is tracked using information provided by the Perth Tropical Cyclone Centre.
- The information recorded includes; the position of the cyclone centre, the rate and direction of its movements, the distance of gale force winds from its centre and the estimated maximum wind speed of gusts.
- Senior Broadcasting Branch staff are alerted when a cyclone is being watched. Lines staff are notified and if necessary placed "on call".
- Calculations are made to estimate the expected arrival time at RACAR of gale force winds.
- Lines staff travel to Carnarvon 48 hours before the expected arrival of gale force winds. This is because even a heavy breeze can make the lowering of the antennas a hazardous and difficult operation. The lowering must be carried out in daylight conditions and wind speeds of less than 30 km/h.
- If wind speeds are expected to exceed 100 km/h all antennas are lowered, starting with the largest (antenna no. 1).
- The lowering of the four antennas is normally completed within one full working day.
- After the cyclone has passed and weather conditions permit, the antenna system is inspected for damage. Taking into account transmission requirements and availability of coverage from Radio Australia Shepparton, maintenance is then carried out on the antennas before raising them to their working positions.

MIKE DALLIMORE/KEVIN BUCKLAND

THE FATE OF RUFUS McGOOFUS

By J. H. Reed

Rufus McGoofus knew radios by heart;
He could put them together — or take them apart.
A handy mechanic was he to have 'round,
For he knew his profession right up from the ground.

Now Rufus McGoofus was one of those guys,
Who were always infernally radio-wise.
He would look at a set and remark: "You poor boob,
You ain't got no trouble, you need a new tube".

The worst of it was that Rufus was good.
He tamed the wild radios that no one else could.
He'd tinker around in a manner erratic
And when he got through there would be no more static.

Oh, Rufus was clever — and Rufus was shrewd.
But as the years sped he got more and more rude.
It meant not a thing to his business existence
That he couldn't abide the least bit of resistance.

So Rufus McGoofus got sure and then surer;
His place as an expert secure and securer.
If possession of knowledge made greater men meeker,
It just made McGoofus turn up his loud speaker.

One day Rufus McGoofus, in very good form,
Was repairing a set in the midst of a storm.
He was right at his best when fate — the grim jester
Caught him squarely without any lightning arrester.

Yes, Rufus McGoofus knew radios so well
He got to believe he was smarter than hell!
So now on the blistering roof of Gehenna
He is fixing the devil's own radio antenna.

(Adapted from Radio Retailing, November 1930.)

Letters to the Editor

Contributors to Letters to the Editor are reminded that full names and addresses must be supplied. Letters should be brief and to the point. Long letters may be edited. The Editor's decision in respect of the suitability of letters for publication in The Broadcaster is final and no correspondence on the Editor's decision will be entered into.

Sir,

I have two suggestions which may help to continue the high standard of interest you have set in the first issue of The Broadcaster.

Firstly, you could start a section for 'Letters to the Editor', but with a difference. Each letter writer should enclose a photograph, plus brief details of his/her career in PMG/Telecom. This would be of interest to many people, as well as the chosen topic.

Secondly, letters discussing hobbies or sports of popular appeal could become separate sections in the magazine. Amateur Radio would be a popular hobby amongst radio people.

Geoff Baron
STO1 ABMNO COOTAMUNDRA

(After the current senior Management 'Profiles' series has run its course plans are to follow on with a series on District and Station OIC staff. We certainly would like to hear from staff about their hobbies, trips, sports and achievements — Editor.)

Sir,

Copies of The Broadcaster arrived here today.

Congratulations from Northern Territory staff on a most professional publication.

We look forward to the next issue already.

G.W. Shaw
MANAGER NORTHERN TERRITORY

Sir,

I should like you to know that the first issue of The Broadcaster has been extremely well received in Victoria. I believe it will go a long way to establishing a sense of purpose amongst our staff, and building morale in readiness to solve some difficult problems.

We thank you for your obvious dedication to the project, and look forward to the next issue.

J. A. Lush
STATE BROADCASTING MANAGER — VICTORIA

The Cryptic Broadcaster No1 Solution

1 M	E	2 T	E	R	3 S	■	4 V	I	S	U	5 A	L
O	■	R	■	■	O	■	I	■	■	■	D	■
6 D	I	A	L	■	7 U	N	D	O	8 U	S	E	D
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14 T	W	I	S	T	S	■	15 F	O	S	S	I	L
E	■	T	■	I	■	■	■	R	■	T	■	A
16 S	17 B	S	■	18 E	19 J	E	20 C	T	O	R	■	Y
■	A	■	21 C	■	A	■	E	■	■	A	■	L
22 S	L	O	W	S	C	A	N	■	23 A	C	M	E
■	U	■	■	■	K	■	T	■	■	K	■	A
24 A	N	O	D	E	S	■	25 S	E	N	S	E	D

Sir,

Bouquets! Let me congratulate you and your staff for the well presented edition of The Broadcaster magazine. After all these years in broadcasting, it is great to read a magazine of such quality, full of information re our profession, with excellent colour photography and printed on first class paper.

Being at a one man staffing situation, it is great to feel an atmosphere of togetherness developing, not only in NSW, but between all sections of the Broadcasting Directorate. Keep up this fine production and best wishes for future editions.

R. Lewis
TO2 2KP KEMPSEY

Achievers

GRAHAM THE BASEBALL WHIZ

Graham Shaw, Assistant Broadcasting Manager Northern Territory has been an active baseball player and coach for nearly 30 years.

His impressive record includes:—

Player:
- played every season since 1956 including more than 400 A grade games.
- played A grade baseball in Adelaide for the University of Adelaide and Goodwood Clubs (night baseball premiership).
- represented Darwin in Northern Territory Championships five times.
- represented Northern Territory at Australian Baseball Championships in 1983.

Coach:
- Northern Territory State Team coach 1981.
- Australian Team coach against visiting Japanese team 1983.
- Club coach for several seasons for both Seniors and Juniors.

Administrator:
- Director of the Northern Territory Baseball League and a committee member of the Australian Baseball Federation.
- Life Member of Post-Tel Institute Baseball Club, Darwin.

Career Highlight:
- Donning the Australian uniform 1983.

The Future:
- Heavy program of administrative responsibilities will take up most of his future baseball energy along with coaching his son Justin, a budding champion in the junior team.

During a visit to the United States on official business Graham found time to watch some of the great US teams in action. One highlight was a visit to the Houston Astrodome where he saw an exciting match played between the Houston Astros and the Cincinnatti Reds. On the side, Graham collects baseball caps and now has a fine collection to show his friends.

Graham Shaw goes into bat.

Broadcasting Milestones

4QG BRISBANE

When 4QG went on air at 8 p.m. on 27 July 1925 it was the only station in Australia controlled by a Government and operated solely as a public utility. From the earliest days, when broadcasting was talked of as a commercial possibility, the question of its use for minimising the isolation problems for people in country districts was considered, and when it was thought that technology had progressed far enough, the Government acted quickly to provide a station in Queensland.

The station was owned and controlled by the Queensland Radio Service, a sub-Department of the State Government, the holder of the A Class broadcasting licence. Station Director was Mr J.W. Robinson and Chief Engineer Mr F.W. Stevens.

A temporary 500 Watt transmitter and a single studio were provided in the Executive Building George Street pending the provision of a high power transmitter and professionally designed studios. As mains power was direct current, a motor-generator set was provided to power the technical facilities.

4QG transmitter, 1926.

On 22 April 1926 the station began operations from the State Insurance Building, George Street. The whole of the top floor was taken up for broadcasting purposes and included administrative offices, reception halls, studios, laboratories, transmitter room and workshops.

The transmitter was manufactured in Sydney by Amalgamated Wireless (A/Asia) Ltd and was similar to units provided by the company for 2FC Sydney, 3LO Melbourne, 5CL Adelaide and 6WF Perth. It was rated at 5000 Watts (plate input). The Main Magnifying Unit or Power Amplifier employed four large glass envelope air cooled triodes type MT7A in parallel. The Modulator which employed Heising Choke method of modulation used ten MT7B type tubes in parallel. Some years later the final stage was converted to use a water cooled 4220C type tube.

The antenna comprised two copper wire cages fed in parallel at one end to form an L configuration. The cages were supported by two 30 m high self supporting steel towers with spreader arms. The antenna was nearly 70 m above street level.

Frequency control by quartz crystal was not part of transmitter technology at the time and regular checks of the operating frequency, 780 kHz, were carried out by operating staff using an absorption type wavemeter. The movement of the antenna in the wind and the presence of staff and mobile objects in the vicinity of the oscillator stage often caused large frequency deviations.

Like most early broadcast transmitter installations on tops of buildings, earthing was a problem and many tales are told by staff of spectacular effects which could be produced by striking arcs on the metal of the transmitter cages. Staff shocked many visitors by their antics in lighting a cigarette with a drawn arc.

Two studios were provided, one large and one small. The larger studio was naturally lighted and heavily draped. It was mainly used for bands, orchestras and choirs. The smaller studio was draped with lighter materials and used for speeches, lectures and solo items.

The station was taken over by the Postmaster General's Department in 1930 when the Federal Government set up the National Broadcasting Service. In 1942 transmissions were transferred to Bald Hills, a northern suburb using a locally made transmitter.

A new broadcasting centre was established at another site in Bald Hills in 1948 with 4QG operating with a new STC 10 kW type of 4SU-11A transmitter. In 1963 the transmitter was replaced by a 10 kW type 4SU-64 unit.

The transmitter shares a 198 m high top loaded radiator with the other metropolitan station 4QR. Shortwave transmitters VLQ and VLM are accommodated in the same building.

DOUG SANDERSON

Senior Engr. Doug Sanderson's children David and Elizabeth admiring the present 4QG transmitter.

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