

The

BROADCASTER



Newsletter of the Broadcasting Directorate

No. 7

March 1987



5AN/5CL BUILDING AND GARDEN



STATION CALL SIGNS IN FLOWERS

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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Front cover: Station garden 5CL/5AN Pimpala

Editorial

It had been planned that this issue of The Broadcaster would feature the commissioning of the new MF station at Charleville in Western Queensland, but due to circumstances beyond our control, the feature article will now appear in the July issue.

As a replacement, we are showing the result of efforts by one enterprising OIC in beautifying the station building surrounds.

There are not many broadcasting stations these days which display magnificent gardens, but years ago in the heady days of broadcasting, it was commonplace.

Some stations where I recall having seen outstanding gardens or tree-lined driveways include the Bald Hills Radio Centre where staff regularly sent sheaves of gladioli to the office, 4SO Southport with a glorious display of exotic shrubs, 4AT Atherton and its tropical garden, the tree-lined driveways at 4RK Rockhampton and 5CK Crystal Brook and the tantalising fragrance of 8DR Darwin's driveway carpet of frangipani flowers.

If there are any stations with displays worthy of publication, we would be pleased to hear from the staff.

JACK ROSS
Editor

Contributors to this Issue:

Leon Sebire	Steve Mardle
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Fred Cromie	Jack Ross
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Station Roll Call

ABSQ1 PASSCHENDAELE RIDGE

Station ABSQ1 officially known as the Southern Downs service is located at Passchendaele Ridge on the edge of the Darling Downs about 140km south of Toowoomba and just north of the New South Wales border.

The district was settled by returned soldiers after the First World War and such names as Amiens, Bullecourt, Pozieres, Messines, Bapaume and Passchendaele Ridge were given to settlements in the area. Apples are the main product, but stone fruit and grapes are also grown. A small wine industry has been established.

The station is pleasantly situated on a granite boulder strewn ridge surrounded by pine forests, and the guyed tower supporting the antenna systems is a commanding landmark from the State's premier fruit growing district, the Granite Belt. Although the Granite Belt extends for 64km from Dalveen in the north to Wallangarra in the south, its width is only 16km. The region's Apple and Grape Harvest Festival is held in March every even numbered year.

ABSQ1 on Channel 1 serves the large towns of Stanthorpe, centre of the fruit growing industry, Warwick, on the edge of the Darling Downs wheat, sorghum and grazing areas, Texas and Inglewood. It also provides a good signal over the border for interested NSW viewers at Wallangarra and Tenterfield.

At an altitude of 980 metres, it is perhaps not surprising that occasional snow falls. The antennas ice up and large chunks of ice sometimes fall to the ground. So far, buildings and station plant on the ground have escaped damage.

The National Service was commissioned in July 1966 using AWA type transmitters providing an ERP of 100kW. The building also houses the transmitters of SDQ4 operated by a Toowoomba based commercial company.

ABSQ1 is a staffed station with Stanthorpe being the hometown.

DOUG SANDERSON

4QS DALBY

Station 4QS Dalby is situated on the Darling Downs some 80km west of Toowoomba. Explorer Allan Cunningham first saw the open rolling plains of fertile black soil in 1827 after travelling overland from Sydney and named them the Darling Downs after Sir Ralph Darling, the governor of New South Wales at the time. The Darling Downs produces most of Queensland's grain.

The station was the third National Regional station in Queensland when it came on air on 17 October 1939. It featured a half wave lattice steel radiator, a water cooled transmitter giving 10,000 watts into the antenna and an above ground copper tube coaxial transmission line.

The graceful mast, still the most efficient in the State is 218m high and apart from a shaky start when the base insulator fractured on the day before opening, has never given a moments trouble. Not so the coaxial line which, being mounted on concrete pillars, was subject to seasonal warping as the black soil expanded and contracted. It was subsequently replaced with a standard six wire line.

At times there was trouble with ice in the transmitter cooling water. The area is prone to very severe frosts. The transmitter was a fine old style STC model with a water cooled linear final stage housed in a spacious brick building, the walls of which occasionally require a bag or two of plaster to fill in huge gaps. The vast transmitter hall seems almost empty now with a new enclosed power board and a pair of 5kW STC 4SU-55 transmitters. The transmitter is linked to the ABC studio located in Toowoomba the largest city in this region.

The station has always been staffed with a residence being provided on site for the Officer-in-Charge.

Future plans include the use of the station as the headquarters for the Dalby Broadcasting District to cover stations in south-western Queensland.

DOUG SANDERSON



Leon Sebire

From the Director's Desk

When National television stations were established in the late 1950's and early 1960's, our predecessors were greatly concerned at the technical difficulties which were expected in the operation and maintenance of this complex system with its then new technologies. The perceived solution was to carefully select our most competent technical people and submit them to relatively short specialist courses before outposting them to the remote mountain top transmitting sites involved. These skilled and able station staff members demonstrated so well the high levels of responsibility entrusted to them that it was not long before they tended to become the 'forgotten few'. The isolation of the stations, the social and domestic pressures imposed by constant shift working, problems of inadequate schooling for children, loss of cultural involvement, and a general lack of exposure to what was occurring elsewhere to Broadcasting development have, over the years, exacted a heavy toll on this group.

Late in 1986, arrangements which hopefully will, in part, correct this situation, were successfully negotiated between Broadcasting management and the major staff association representing station staff. With the advent of highly reliable and automated equipment, and the implementation of Broadcasting Maintenance Districts, the way is now clear for a large proportion of our isolated station staff to 'come in from the cold' progressively over the next few years.

We must not forget the problems which will be faced in the assimilation into the main stream of Broadcasting of our colleagues who have served us so well at our frontiers. I trust that all will lend a hand to ensure that the necessary readjustments will occur in a spirit of co-operation and friendship, for which our Broadcasters are noted.

LEON SEBIRE



EXCELLENCE THROUGH PEOPLE

News Round Up

MANAGER ADMIN VISITS DARWIN

Tom Harrison Manager Admin Central Office visited Darwin late last year and inspected a number of Broadcasting facilities in the area in order to familiarise himself with the living, transport and working conditions of the 45 staff who make up the Northern Territory Section of the South Australian Broadcasting Branch.

One of the centres visited by Tom was the Radio Australia transmitting station on Cox Peninsula. He travelled across Darwin Harbour by the boat normally used by the staff and although sea conditions were relatively calm he was able to appreciate problems, that both day and night shift staff have, when winds are high and seas are rough. OIC Terry Said escorted Tom over the complex and explained various aspects of transmitter maintenance, frequency changing, aerial switching, stores control and other aspects of the station operation.

TERRY SAID



Tom Harrison on Site.

SA CORPORATE CUP

The SA Broadcasting Branch entered a team of eight runners in the 1986 Eyewitness Corporate Cup conducted along the banks of the Torrens River. The team comprised staff from Engineering and Construction, Broadcasting Operations, and Management Services Sections.

There were seven competition runs spread over the period 6th August to 29th October followed by a Fun Run for which no points were allocated. The team was Number 55 in a total of 428 and they ran under the name of 'The Broadcasters'.

Brian Turner Senior Draftsman received the Broadcasting trophy for the Most Outstanding Runner. Other participants who also received trophies were Derek Colvin, Chris Fox, Rod Jolly, Steve Mardle, Angela Strain, Ian Boscence and Wayne Croft.

STEVE MARDLE



L to R: Ian Boscence, Derek Colvin, Brian Turner, Steve Mardle, Chris Fox, Angela Strain, Rod Jolly.

PERTH CORPORATE CHALLENGE

Each year Western Australia's Department for Sport and Recreation organises the Perth Corporate Challenge as part of the 'Life. Be In It' campaign.

In 1986 there were 57 organisations involved in the competition and the State Broadcasting Branch competed as part of the overall Telecom effort.

There were five team events, mini-cricket, touch football, running, tee-ball and swimming, held throughout the year. Each event was held over a period of six weeks, and with the exception of running, each had two categories, male or mixed.

Broadcasting entered each mixed event and 'carried the points flag' for Telecom in all but the mixed swimming. Telecom was placed fourth overall in the 1986 competition, with Broadcasting contributing 113 points towards Telecom's total of 345. The fact that the Branch carried nearly one third of Telecom's total points is quite an achievement, especially considering that Broadcasting Branch competitors could only be drawn from approx. 30 city-based staff.

The Branch's efforts did not go unnoticed by the organisers of the competition, with the result that the Branch won the 'Participation Award'.

KEVIN BUCKLAND



WA Broadcasting Branch Corporate Challenge Participants.

RADIO TRANSCENDS SOCIAL BARRIERS

Recently, my wife and I attended a very formal reception in one of the stately homes of U.K. We had reached that stage in conversation with an elderly Lord X hyphen Y where discussion was waning due to language difficulties (we are Australian — the Lord very British), when he announced that he was an active radio amateur. At that fortuitous moment, a fellow broadcasting delegate from the Caribbean, who I knew to be a dedicated 'ham', approached. Being ever the opportunist, I introduced the parties, pointing out their shared interest. The following dialogue ensued.

Lord X-Y: "Most plazed tue meerk yure akwentenz zir."

Caribbean delegate: "Sorry old man — I missed your handle."

Lord X-Y: "Golf Echo Omega Romeo Golf Echo Oh Em."

With that cue my wife and I slipped away. An hour and a half or so later as we made our farewells, they were still at it, discussing the merits of the 'Fox Tango One Oh Something' which is presumably some sort of transmitter known to these people.

Ah! Radio is a great leveller.

LEON SEBIRE

Broadcasting Conferences

CBA AND ABU CONFERENCES

The Commonwealth Broadcasting Association (CBA) and the Asia-Pacific Broadcasting Union (ABU) were both established for the purpose of information exchange between international Broadcasting member organisations. Both are comprised of major broadcasters from more than fifty countries. Australia is involved primarily by membership of the Australian Broadcasting Corporation (ABC), a founding member of both organisations.

Telecom Broadcasting makes significant contributions to the technical considerations of both of these bodies via the ABC, and has for many years, provided delegates to assist the ABC in the periodical conferences held in the international CBA and ABU forums.

The CBA is possibly the most prestigious broadcasting organisation in the world. It was formed in London in February 1945 and is an association of Commonwealth countries pledged to work for the professional improvement of broadcasting in member organisations through collective study and mutual assistance. It maintains a permanent headquarters staff under the control of a Secretary-General in London. General conferences of the Association are held every two years to discuss and exchange ideas, information and experience on all aspects of radio and television broadcasting in programming, administration and engineering. The most recent meeting was held in Edinburgh, Scotland, during October 1986.

The ABU comprises the large majority of radio and television broadcasting organisations in the Asia and Pacific regions, and as associate members, all the principal broadcasters of Europe and America. The ABU maintains a Secretary-General's Office and Technical Centre in Kuala Lumpur, Malaysia, and publishes a Newsletter, and the ABU Technical Review, both at bi-monthly intervals. Major conferences are held annually with the latest being in Istanbul, Turkey, during November 1986.

The Director Broadcasting, Leon Sebire, accepted an ABC invitation to join both of the 1986 conferences as an ABC delegate, and accompanied by his wife Jenny, visited both Edinburgh and Istanbul to participate in the Engineering Committee deliberations.

At the CBA Edinburgh Conference, the Director and fellow ABC delegate, Bruce Window, presented and led discussion on a total of fourteen papers covering such diverse technical topics as the measurement of phosphor colours in television picture tubes and Australian experience with the effects of rainfall on the performance of a satellite service operating in the 12-14 GHz frequency bands. Similarly, thirteen papers were presented by the Director and ABC delegate Doug Grant, at the ABU Istanbul conference.

At both conferences a Telecom paper describing the recently completed HF vertical incidence broadcasting service in the Northern Territory was received with great interest, and led to considerable discussion. This paper was augmented by a handout of copies of the November 1986 issue of *The Broadcaster* which carried a feature article and photographs of these facilities. Not surprisingly, a number of requests from both CBA and ABU member organisations to be included on future mailing lists for *The Broadcaster* have since been received.

Conferences ran for a little over a week, providing a very crammed program for the discussion of papers. Nevertheless, the organisers had arranged a comprehensive program of after-hours receptions, dinners and social events presenting excellent opportunities to see some of the sights and renew acquaintances with old friends. A social highlight of the Edinburgh conference was a Sunday trip on the paddle steamer *Waverley*, down the Clyde from Glasgow. It was a day of snow, strong and icy winds, but a good time was had by all. During the cruise the Director recorded a ten-minute interview with BBC Scotland on his impressions of broadcasting in Scotland, and comparison with the Australian situation.

LEON SEBIRE

Logo Competition

BROADCASTING LOGO

From the very start of the formation of the Broadcasting Directorate, many staff have indicated a desire for the Directorate to have a logo that would provide a visual identification of what we Broadcasters do in our role as Telecom employees.

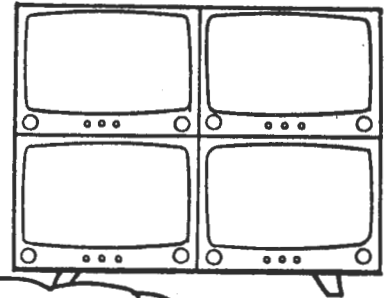
Although the matter has received some consideration from time to time, approval has now been given for us to proceed with the design of a National Broadcasting logo.

To enable all staff to have an opportunity to make a contribution towards the production of a suitable logo, it is proposed that a competition be conducted through the columns of *The Broadcaster* inviting staff to submit designs for consideration.

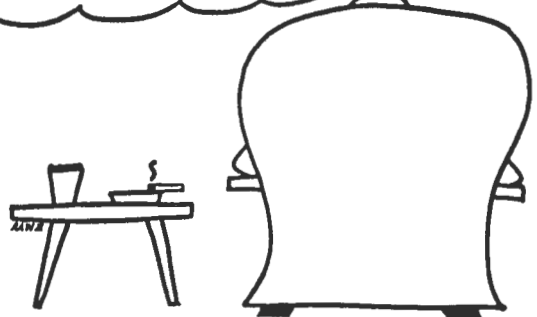
A cash prize of \$50 will be awarded to the winner of an original design.

The design objectives are as follows:

- (1) The logo is to identify the Broadcasting Directorate as being:
 - (i) Involved in sound broadcasting and television technology.
 - (ii) Progressive.
 - (iii) Part of Telecom organisation.



**I'M WATCHING FOUR CORNERS
WHILE DESIGNING A LOGO**



- (2) The Telecom symbol should be incorporated in the design and be in Telecom Gold colour in accordance with the Telecom Corporate Identity Program. All other symbols, markings or words may be in any appropriate formats or colours, but must be tasteful.
- (3) The design should be as simple as possible and be suitable for economical reproduction by printing, painting, etching, embossing, weaving etc. in either an expanded or reduced size format.

The winning entry will be selected by a Broadcasting staff panel of three judges to be nominated by the Director.

The final design accepted as the Directorate's logo will be determined after consultation with the Director, Public Relations, to ensure that the design complies with the Corporate Identity Manual.

Entries close on 29 May 1987, and should be forwarded to:

The Editor
The Broadcaster
GPO Box 1621
ADELAIDE SA 5001.

Engineering Highlights

SBS UHF ANTENNAS

A high power UHF antenna for the Special Broadcasting Service was installed on the ABW2 Bickley tower Perth during July 1986 followed by a similar installation on the ABS2 Mt. Lofty tower Adelaide in August.

The antennas were developed and produced by Hills Industries in Adelaide and designated type OFRC-8. All testing was carried out at Hills O'Sullivan's Beach test range and the units were shipped to the two sites completely assembled.

The installation work together with some tower strengthening at Bickley was carried out under contract by Electric Power Transmission Pty Ltd of Sydney with on-site supervision by local Broadcast Lines groups.



Antenna at Hills Industries Test Site, Adelaide.

The antenna is an omnidirectional panel array made up of eight levels of four around. It is supplied complete with a 1.2m diameter fibreglass tube which provides mechanical support for the array, weather protection and also provides a round surface which gives the least windload for the antenna cross section.

The antenna is built up in two halves with each having a 6.1/8 inch EIA input. The average power handling capacity of each half is 40kW giving a total capacity of 80kW.

The nominal gain in Band 4 for the array is 13.5dBd. The array has been factory matched to give a VSWR of better than 1.06:1 in each half of the channels 28, 31, 34 and 40. The VSWR over the band 520-650 MHz is better than 1.1:1.

As a precaution against potential radiation hazards local Broadcasting Branch staff carried out measurements to ensure that the Contractor's workmen were able to undertake the work in a safe environment.

In the installation of the antenna, the Contractor used a side mounted jib crane and lifted the 10.55m long fibreglass encased structure to the 100m level in less than four hours. A travelling gantry atop the tower then took over the three hour lift to the summit.

ALAN McCARTHY/JANIS OZOLINS



Lifting to 100 m Level with Side Mounted Jib Crane.



Lifting to Top of Tower with Travelling Gantry.

Automation

ACTTS — THE LAST WORD

Automatic monitoring and control systems have been in use with Telecom Broadcasting for several years. Three different types of units are currently in use, all of which operate over the Telecom switched network to report alarm conditions to a Monitoring Information Centre.

The simplest of these units is the Television Translator Alarm or Tetra. The Tetra is an automatic calling, automatic answering alarm system, originally intended for use at unmanned translator and Remote Area Television sites. However, it has also been used at other types of broadcasting installations. Alarm data is encoded by varying the frequency of transmitted tones, and the duration of the tone bursts is varied to produce a station identification code. These tone bursts can either be decoded by ear, or by using an electronic decoder and lamp display system. The Tetra has an additional feature whereby a sample of the station audio can also be transmitted over the switched network for subjective evaluation by staff at a remote location.

The second of the systems currently in use is an Automatic Dialling Alarm Multiplexer or Adam. In addition to the facility to transmit data in the form of audible tones, as with the Tetra, this type of unit is capable of transmitting data as coded alphanumeric characters in accordance with CCITT standards.

This makes it possible to have a computer based Monitoring Information Centre with the ability to automatically answer incoming alarm calls, and log this information for future retrieval.

The most sophisticated monitoring system currently in use is the Automatic Control Testing Telemetry System or Actts. These units are capable of detecting changes in station status, changes in station analogue levels, or of automatically controlling the turn on, and turn off of transmitting equipment

according to an event table of seven days duration. This system is therefore capable of full station control and monitoring with no, or very limited staff intervention. As with the Adam and Tetra, if an alarm condition is generated this is reported to the Monitoring Information Centre via the switched network. The Actts can also be used to control various station operations, under the control of staff operating the computer terminal at the Monitoring Information Centre.

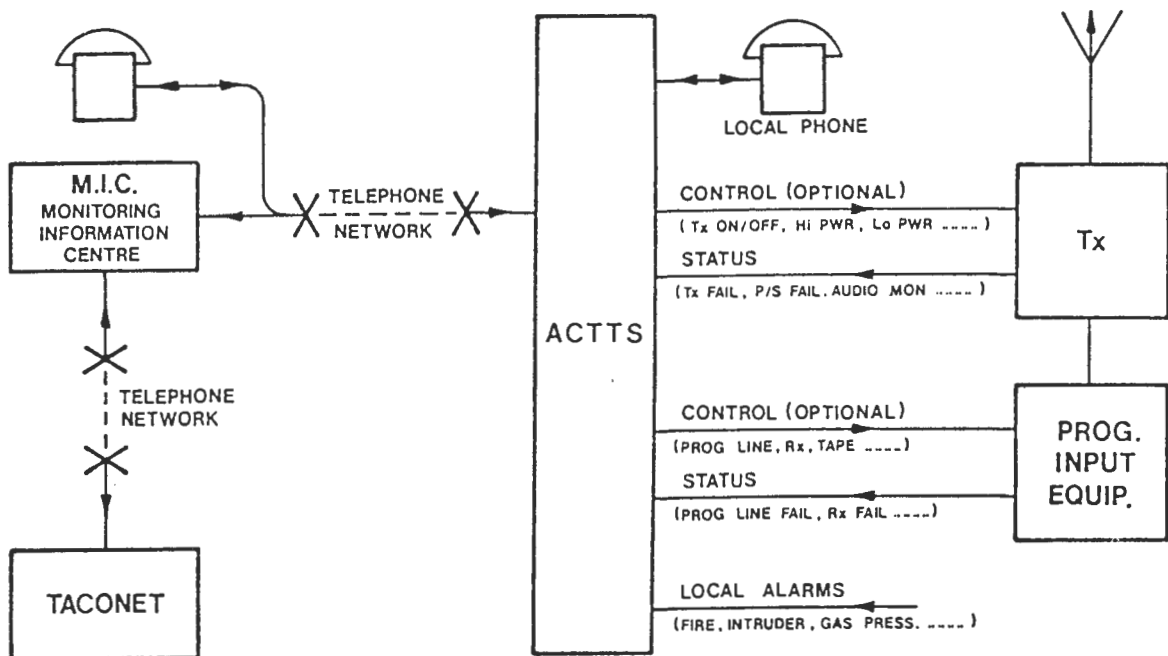
Needless to say, the design concepts of the Actts system varied many times during the course of development and ultimately the "testing" requirement was dropped in favour of making the system more widely applicable. It was also difficult to keep pace with the rapidly changing technological environment and operating requirements of new transmitters. The final physical design and system software was completed by Norman Franke and Graham Smith working under the guidance of John Hodgson.

The software for the Actts consists of two parts: one is called the Personality Module and is different for each site; the other remains the same for all units.

Following excellent work of the staff at Lookout Hill TV station in Victoria, each State is now able to alter the Personality Module and so produce their own versions of the Actts software using Hitachi Peach Computers.

Each remote Actts unit must talk to a parent computer at the Monitoring Information Centre (MIC). This computer is a much more powerful one than the remote units and has enough memory to store records from many Actts units. The Pascal software used on the MIC was also written by the Forward Studies team to run on an NEC computer. Work is currently being done to copy this program onto the familiar MICA terminals so that the information reported by the Actts can be automatically recorded on the Taconet operations systems. This will mean that the Directorate can be more responsive to answering questions regarding problems encountered in the broadcasting network.

WAYNE CROFT/GRAHAM SMITH



TYPICAL ACTTS INSTALLATION

Serving Rural Australia

5MV — THE RIVERLAND

Station 5MV is located at Berri in South Australia and was commissioned in 1957 to serve an area on the Murray River called the Riverland. The main settlements include Berri, Renmark, Loxton and Waikerie.

The station was originally provided with two 2kW Philips transmitters feeding a 40m mast and operating on a frequency of 1590 kHz. A local ABC studio was provided at nearby Renmark. The station was staffed with the OIC living on site but is now maintained by District staff located at TV-station ABR33 Loxton.

The name Riverland was originally a trade name for premium quality citrus fruit grown in the area under irrigation but its use subsequently broadened. It is now used to describe the River Murray Valley and the irrigation lands that extend back from the river at various locations.

Irrigation settlement on the Murray arose in response to serious drought conditions which had affected dry land agriculture intermittently following establishment of South Australia. The severity of one of these droughts in the mid 1880's caused a retraction of settlement in the north of the State and a reappraisal of attitudes towards irrigation which previously had been negative.

An innovative step in opening up the land to working class people was the Workingmans Act of 1885. It provided for settlement of labourers under Crown leaseholders on properties up to 20 acres (8.1 ha). The system was known as the "blocker" system and people who worked the properties became known as blockers.

The Government gave approval in 1887 to the Chaffey brothers, two Americans who had developed large irrigation systems in California, to develop a system near Renmark. The Renmark Irrigation Colony was formed but due to a number of factors including damage to channels by yabbies and the long distance to markets the scheme was not a success. The company went into liquidation but the Government stepped in in 1893 and created the Renmark Irrigation Trust, a self governing body which took over the operation of the complete works at Renmark and performs these functions to the present day.

The principal crops grown in the district are citrus, stone fruits and vine fruits with citrus being very important. Renmark and Berri citrus has an Australian wide reputation for quality. The main varieties grown are Valencia and Washington Navel oranges. Other citrus include grapefruit, mandarins and lemons.

Total plantings of citrus in the Riverland exceed 7500 hectares with the number of trees being more than 2 million. This is equivalent to 27 percent of the entire Australian crop. About 70 percent of the crop is processed into juice or concentrate.

MICHAEL MACKINTOSH



Typical Citrus Plantation.



Station 5MV.



Fruit Juice Processing Factory.



The Big Orange Tourist Attraction.

C-QUAM STEREO SYSTEM

In October 1984 the Minister for Communications formally sanctioned AM-Stereo transmissions in the medium frequency band and at the same time, proclaimed that Australia would adopt a single transmission standard based on the Motorola C-QUAM system. The official commencement date was to be 1st February 1985.

At the station end, the C-QUAM equipment comprises an exciter and a modulation monitor. The exciter produces the signals needed for stereo operation of the transmitter. From stereo audio input, the exciter generates an audio drive signal for the transmitter's modulator and an RF signal to replace the transmitter's crystal oscillator output. The resulting transmitter output is a quadrature amplitude modulated signal that is compatible with all existing AM detectors.

Left and right audio input to the exciter are equalized to match the transmitter response curves and matrixed to produce L+R and L-R audio signals. The L+R audio and a zero-phase carrier are fed to an in-phase "I", suppressed carrier modulator. The L-R audio and a quadrature carrier are fed to a quadrature "Q", suppressed carrier modulator. A 25 Hz pilot tone used to turn on the stereo decoders also is fed to the "Q" modulator. The output signals of these modulators are summed and the zero-phase carrier is re-inserted to produce a quadrature amplitude modulated (QUAM) signal.

The QUAM signal is then stripped of its amplitude variations by a limiter, leaving only a phase angle modulated carrier. This carrier is input to the RF chain of the broadcast transmitter, replacing the crystal oscillator signal. The L+R from the exciter is input to the transmitter's modulator. Here the phase angle modulated carrier is amplitude modulated by the L+R audio to produce the C-QUAM signal.

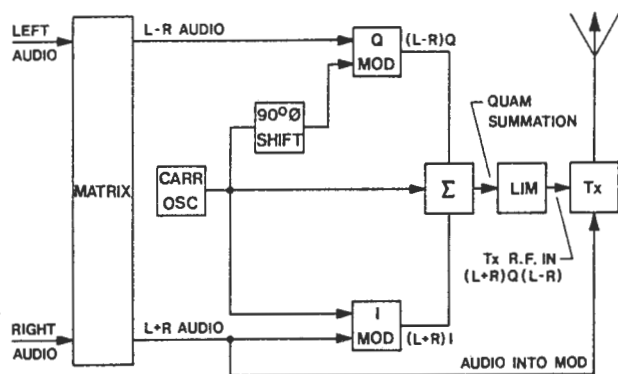
The stereo modulation monitor provides all the demodulated signals necessary for proof of performance when used with standard AM proof equipment.

The ABC recognising a need to keep pace with the Commercial radio sector, was anxious that Sydney station 2BL should be able to transmit stereo transmissions from the outset.

Tests were conducted with a 3LO standby transmitter and after determination of transmitter modifications the exciter was transferred to Sydney and installed with the 2BL 50kW transmitter in time for the official starting date.

Station 3LO was next to be equipped and was followed by 2CN, 2NC, 4QR, 5AN, 6WN, 7ZR, and 8DR.

FRED CROMIE



C-QUAM STEREO EXCITER

PLANNING OF HF BROADCASTING BANDS

The operation of High Frequency Broadcasting (HFBC) in the frequency bands 5950 and 26100 kHz is universally governed by the Radio Regulations which include prescriptions for all kinds of radio services, established and agreed by the telecommunication Administrations of the world on the occasion of World Administrative Radio Conferences (WARC).

The short wave or high frequency (HF) broadcasting bands have been over-loaded for many years, particularly during morning and evening peak listening times. Additionally HF broadcasting Administrations have no obligation, under the present Article 17 of the Radio Regulations other than to advise the International Frequency Registration Board (IFRB) of an intention to broadcast on a particular frequency. The only restraint against jumping on a frequency already in use by another Administration is the possible consequences of retaliation in kind. The WARC HFBC met in January/February 1987 to try to agree on a way to regulate the HFBC spectrum.

The WARC was actually the second session, WARC HFBC-2. An earlier session, in 1984, established the principles, technical criteria, and outline for a computerised planning method, to be developed and tested during the intersessional period. For the testing phase many Administrations, including Australia, have provided information on their requirements for the period 1987-1990. If all goes well we will, one day, see HF broadcasting schedules for all Administrations promulgated by the IFRB. However there are some major political and practical hurdles to be cleared first. For example:

- Will certain broadcasters agree to stop jamming international broadcasts to their own people? Jamming indirectly causes problems for all broadcasters.
- Will all Administrations agree to abide by the new planning process? Many countries presently broadcast outside the international broadcasting bands, in contravention of the Radio Regulations.
- Will the major Administrations agree to reduce their requirements for spectrum and reduce power so that smaller or less well off countries can have a go?
- Will the planning method work, after all, the planning task is huge and complicated. Take, for example, the possibility of unintentional interference over great distances.

One could be forgiven for thinking this new planning method will mean the demise of frequency scheduling officers — not a bit of it! If anything, the job becomes more difficult because the computer has to be told when, and by what means, broadcasters wish to mount transmissions. Unless care is taken, requirements can be deleted, with the consequence that transmitting plant may have to be left idle for several months and some RA program producers deprived of an outlet.

The push for centralised planning has come from small scale broadcasters and developing countries unable to compete with the giants, USSR, USA, China, W. Germany and Britain. Some third world countries are heavily dependent on HF for internal broadcasting. Unfortunately the large broadcasters have little to gain, in the medium term at least, and would like to see the present "free for all" maintained. Australia, being geographically well placed to serve most of its major target areas, is unlikely to be seriously disadvantaged either way.

The Broadcasting Directorate was heavily involved in preparation for the WARC HFBC-2 through the Australian Preparatory Group.

We will keep you advised of developments from time to time through the pages of The Broadcaster.

CHRIS DOBSON

Top Garden

When the new Metropolitan Transmitting Centre for Adelaide was commissioned for 5CL/5AN at Pimpala in 1961 it was in a rural setting with very few houses in sight. Within 15 years, the station was completely surrounded by new housing development, a four-lane highway had replaced the gravel country road which passed the property, and a large shopping complex had been erected opposite the station. Originally, the site was so isolated that a house was erected on the property for the Officer-in-Charge.

The transmitters had operated from a site a Brooklyn Park, an Adelaide suburb, but due to housing development and establishment of an airport nearby, decision was made to build a new centre with upgraded transmitters at Pimpala, about 20 km from the city centre.

Ever since his transfer to the station in 1974, OIC David Carthew had visions of transforming the site into a picture-book station. He started off with a flock of sheep to keep the grass and thistles in check on the 24 hectare antenna farm accommodating the 172 metre dual frequency top loaded mast which is the main radiator for the 55 kW 5CL transmitter and the 55 kW 5AN transmitter. Separate standby masts are also provided.

When there was a hint from residents whose properties were adjacent to the station that the neighbourhood needed a bit of smartening up, David sprang into action. He embarked on a program of landscaping, establishment of lawns and gardens, as well as tree planting. Two other staff members, Jack Gilbertson and Jack Nicholls, also threw in their lot, and within a short period it was evident that the neighbours and others had noticed the difference. People began to talk about 'an oasis in the desert' and there was a procession of retired experts making visits to the station on the weakest of excuses to offer their advice on the correct way to swing a pick, the best poison for nutgrass, and foolproof methods to get rid of caterpillars, aphides and hundreds of other pests which had suddenly descended upon the site.

When the site began to look as though caring people worked there, the local Council announced that it intended to conduct a garden competition. This was just what was needed to make an all out effort for David's dream to come true.

Shovels and hoes were sharpened, cart loads of sheep manure were carted from the antenna farm, the nurseryman was hard-pressed to keep up the supply of seeds and seedlings, and sprinklers were kept going for the full 18 hours that the station was staffed.

On the Judging Day, the area surrounding the building was a picture. Lawns had been mowed like a bowling green, the flower blooms were at perfection, and there wasn't a caterpillar or aphid in sight.

The officials were delighted, and the garden was judged Winner of the Noarlunga City Council Industrial Section Garden Contest.

The Council was so pleased, they requested David to have an Open Day. The turn-up was beyond expectations. Hundreds of local residents enjoyed an afternoon walking around the garden and visiting the transmitter hall.

Included in the garden layout were six beds in the form of the station call signs 5CL and 5AN with a brilliant display of *Lutea Splendens*, a beautiful clear rich yellow, free flowering variety of *Viola*. A plaque erected in 1974 and mounted in the centre, commemorates the Golden Jubilee of 5CL.

In the transmitter hall, visitors were able to witness the transmitters in operation, see some of the large components held as spares, and also view a collection of vintage wireless equipment of the 1920's and 1930's.

JACK ROSS



A Carpet of Stocks.



Colourful Cinerarias Under the Trees.



Red Hot Pokers and Violas.



Beds of Multicoloured Violas.

Achievers

BLUE WATER SKIPPER

*I must go down to the seas again, to the lonely sea and the sky;
And all I ask is a tall ship and a star to steer her by,
And the wheel's kick and the wind's song and the white sail's shaking,
And a gray mist on the sea's face, and a gray dawn breaking.*

*I must go down to the seas again, for the call of the running tide
Is a wild call and a clear call that may not be denied;
And all I ask is a windy day with the white clouds flying,
And the flung spray and the blown spume, and the sea-gull's crying.*

These verses from John Masefield's poem *Sea Fever* were enough to convince any school boy who had salt in his veins that there was only one life — a life on the ocean wave.

Jim Lofts a Technician is one of several Broadcasting staff with a long time interest in sailing. Jim is based at Radio Australia Carnarvon.



Jim Lofts (L) being Congratulated by Fellow Yachtsman Gordon Hall.

Carnarvon is 1000 km north of Perth with the nearest town north being 300 km away and the nearest town south, Denham, being 280 km by road, or if you are a sailor, 95 km. Being on the coast and blessed with an ideal climate for most of the year, it is not surprising that local Radio Australia staff are keen yachtsmen.

Jim has been particularly successful in competitions having won the Shark Bay Cup three times in a row. The Shark Bay Cup is an annual event and is the highlight of the calendar of the Carnarvon Yacht Club. The race is along the coast from Carnarvon southward to Denham.

Jim has been sailing competitively for some years and first won the Cup when he entered the race in 1984. He entered the race again in 1985 never expecting to win but after a fine piece of navigating and seamanship, he took the top prize. It was the first time in the history of the race that the Cup had been won twice by the same person.

Having achieved such distinction, Jim decided to go even better when he started planning for the 1986 race. He hand picked his crew and trained them as if they were preparing to defend the America's Cup. His efforts paid the pinnacle in dividend. The Cup was his for the third time, an achievement that will take a long time to surpass.

Commenting on the race Jim said, "It was a very tough race, the hardest time was when most yachts were virtually becalmed and went backwards on the tide".

GORDON HALL

Our Broadcasting Pioneers

MR. J.E. (JIM) TODD

Jim Todd commenced work with the Postmaster General's Department in Brisbane on 9th June 1924 as a Junior Mechanic. He was initially involved in country exchange installations and maintenance and spent the period 1927-34 in the Beaudesert district. Many are the anecdotes Jim relates about this period in his life.

On returning to Brisbane he gained experience on automatic exchanges at Central Exchange before deciding that broadcasting was the area where he wanted to spend the rest of his working life.

In 1935 Jim commenced work at the 4QG Studios which were then located in the old Taxation Building. The station had been originally established by the Queensland Government and taken over by the Postmaster General's Department in 1930 as part of the National Broadcasting Service. The transmitter and studios were located in the same building.

Jim later became involved in the installation of VLM and VLQ, the high frequency inland service transmitters located at Bald Hills Radio Centre.

During the war years he installed a Direction Finding station at Garbutt and the Magnetic Island terminal of a radio telephone system to Townsville.

In 1946 Jim returned to studio work and began a long association right up to his retirement. He served at Pennys Building, Alice Street and Toowong Studios and when he retired on 21st August 1964, Jim was Officer-in-charge of the ABC Studios.

JACK ROSS



Eric Nissen.



Jim Todd.

MR. E.L. (ERIC) NISSEN

Eric Nissen became interested in wireless, as it was then known, in 1922 after reading a copy of the magazine *Science and Invention* edited by Hugo Gernsback. Eric was living in Dalby at the time and the following year was busily engaged in building a three tube receiver. It was expected to be the first receiver in operation in the town but before Eric had it fully wired up a Senior Mechanic named Tom Smith was transferred to Dalby Exchange and brought with him a home built receiver.

In 1930 Eric received his Amateur licence after successfully completing the examination and was allocated call sign VK4XN which he still holds.

When work commenced on the installation of 4QS in the district in May 1939 Eric applied for a job and was taken on as an Exempt Mechanic. After commissioning of the station Eric joined the operating and maintenance staff. It was the start of an association with an STC 10kW water cooled transmitter that was to last until 1968 when, after 28 years of pumping distilled water through its veins the arteries hardened, and the transmitter was pensioned off to be replaced by a new twin 5kW model.

Eric was still working at 4QS when he retired in 1970 and now lives in Toowoomba, still within the service area of the station.

JACK ROSS

New MF Station

6KP ON AIR

Station 6KP situated at Karratha in Western Australia was commissioned in time for Christmas for the 10,000 people living in this remote town 1,600 km north of Perth.

Recent discoveries of large gas deposits off-shore from Dampier about 27 km from Karratha have resulted in a rapid influx of people to the area. The nearby towns Roebourne and Wickham have also benefited as a result of the new station installation.

The transmitter which operates on a frequency of 702 kHz is a Canadian built Nautel 10 kW solid state unit. It features a high level of redundancy and the design uses an FET output which is basically self protecting allowing the transmitter to operate under high VSWR conditions. A 10 kW dummy load was provided to allow transmitter testing to be carried out



10 kW Nautel Transmitter.

without use of the antenna system. Some initial problems were experienced due to the susceptibility of the transmitter to lightning damage and investigations and studies are continuing in order to overcome the problems.

The radiator is a modified structure obtained from surplus local material. It is a 90 m EPT type 63B mast with a one metre facewidth. The design work necessary to modify it as a base insulated radiator was undertaken by Senior Draftsman Ian Gibbs while guy and foundation designs were carried out by Bruce Cook of Central Office Structures group. Guy insulators are GY3 type with guy ropes at five levels varying in diameter from 14 mm to 18 mm. A considerable amount of concrete was employed in the thrust block and guy anchor blocks with the largest block taking 9 cubic metres of concrete.

An unusual feature of the station external plant was the employment of stainless steel wire in the earth mat. This was necessary because experience with earth mats in other sites



Mast Enclosure and ACU Building.

east of Karratha indicated a very short life for buried copper wires.

The transmitter building is a 5 m by 3.2 m fully insulated and air conditioned transportable structure with cyclone rating manufactured by Cavalier Porta-Built, a Perth organisation. The building is fitted with a Wormald series 2000 smoke detection system which is designed to disconnect power to the building in the event of a fire.

The antenna coupling unit building is a non-insulated 2.4 m by 2.1 m cyclone rated structure made by the same firm which supplied the transmitter building.

The standby power plant comprises a Dunlite 35 kVA alternator driven by a six cylinder Lister air cooled diesel engine. A fuel supply of 1,200 litres in an integral base tank plus an internal 220 litre daily service tank will enable the plant to run continuously under full load conditions for a minimum of 6½ days.

The building specifications and all electrical work including the diesel installation and commissioning were undertaken by Rod Gale and Peter Green of the Buildings group.

MIKE DALLIMORE



Diesel Building (L) and Transmitter Building.

Staff News

CENTRAL OFFICE

Director Leon Sebire spent an interesting five weeks overseas attending conferences of the Commonwealth Broadcasting Association in Edinburgh, Scotland, and the Asia-Pacific Broadcasting Union in Istanbul, Turkey. During his absence Max Chadwick acted as Director, and Les Rodgers State Broadcasting Manager Victoria filled in as Deputy Director.

Recent temporary transfers include Peter Sharpe from Queensland Broadcasting Branch to the Works Programming and Budget area of the Finance and Resources Section; Neil Cornell formerly Network Engineering, as Sectional Clerk Provisioning Section; and Craig Sandford from Construction Branch Victoria as CA4 Operational Services.

New arrivals to the Central Office arena include David Naismith Engineering Services Section as Engineer Class 2 on promotion from the Victorian Engineering Department; Rob Payton formerly with W.L. Meinhardt and Partners as Engineer Class 2 Engineering Services, initially on six months fixed term; Laurie Hatch from Western Australian Broadcasting Branch as ST01 Operational Services Section on promotion; and Abe Ajzenman on appointment as Engineer Class 3 Metropolitan Services Section after fifteen years as Engineer with the Government Aircraft Factory.

QUEENSLAND

Ken Alford and John Virtue, Engineers Class 1, have moved on to greener fields. Ken has moved into Telephony and John has moved to the U.K.

Welcome to Graeme Christie, first occupant of the new Principal Technical Officer position in the Broadcasting Operations Section. Graeme has been a radio man from way back, and returned to Broadcasting from the Mt Gravatt Radio-communication Centre.

Terry Comerford and his drafting team, Trixie Loeken and Paul Bernard, have shifted to new accommodation on the 4th floor. The shift became necessary to provide for new offices for the BOM and PTO on the 3rd floor.

State Broadcasting Manager Allan Garner resumed duty after a pleasant holiday sailing his new boat along the warm waters of the Queensland coast.

The installation group recently welcomed a new member to the staff when Paul Bulfin transferred over from the ABC Brisbane studios.

Other new members include Ian Burrows from Perth and Eric Poat from Port Hedland who transferred to the Emerald Broadcast Service Centre — home of 4QD and ABEQ11.

Wally Cathcart retired after long service at ABSQ-1 Passchendaele Ridge. Wally came to Broadcasting from the Toowoomba telephone district where one of his many functions was the maintenance of the local ABC studios.

WESTERN AUSTRALIA

Jeff Keith Resources and Budget Officer, is enjoying six months recreation and long service leave, and Ron Gabelish Personnel Officer, is filling the gap. Dave Brady moved into Ron's position.

Jim McNally Works Officer, transferred to Operations and Engineering Departments on relief duties while Geoff Tytherleigh Engineer Class 1, has returned to Engineering Department.

New arrivals to the Branch Office include Lisa Monks Secretary; Merran Barrett Clerk Class 1 from the Broadcast Technical Centre; Helen Scicluna Clerical Assistant Registry; Richard King Personnel Officer; Peter Collins Assistant Personnel Officer; Dave Brady Personnel Officer; Natallie Garbin Clerical Assistant Data and General, and Alastair Gellatly Engineer Class 1.

Hong Kong is proving popular as a holiday venue with Broadcasting staff. Recent trippers include Trish Hearne, Jeff Keith, Rod Gale, Natallie Garbin, Terry Sellner and Bob Howie.

VICTORIA

Several changes have taken place in the Broadcasting Lines group at Shepparton. Lines Officer Brian McKenzie has been promoted as SL01 in the Tasmanian Broadcasting Branch, LS3's

Peter Munro and Roy Bowditch transferred to Network Engineering while Radio Lineman Glen Clark resigned.

Recent retirements include Technician Keith McGrath after 38 years service at Lyndhurst Radio and T02 Brian Hawley Shift Leader at Lookout Hill TV station since 1971. Best wishes Keith and Brian in your retirement.

Lidia Aiello and Michelle Coombes of the office staff have transferred to the Network Engineering and Commercial Departments respectively.

Welcome to new staff who have commenced with the Branch recently; STO1 Harry Dreger, Clerical Assistant Debra Long, Technician David Robinson and Secretary Elizabeth Li.

TASMANIA

Glen Clements Administrative Officer severely damaged an Achilles tendon while training with the Telecom 'Coodabeens' basketball team. The colour schemes assumed by his leg were a sight to behold and their variations with time quite spectacular.

Len Som-de-Cerff from the South Australian Darwin office spent an enjoyable period during January providing relief for Senior Engineer Pat Alessandrini who was on recreation leave. Pat and wife Megan recently became the proud parents of baby Emma.

Milton Cunningham Broadcasting Operations Manager, recently enjoyed an extended period of recreation leave, and Graeme Wilmot OIC Ralphs Bay transmitting centre, performed the relief function.

NEW SOUTH WALES

Good luck to Melinda Conlon, former Works and Costing Officer who has left to pursue a career in writing.

Lyn MacDonald began maternity leave during February and all her colleagues send best wishes for the future.

Vic Audet has been appointed Supervising Engineer, Engineering and Construction Section, following the promotion of Mike Stevens to State Broadcasting Manager; Chris Cooper, Engineer Class 1, has returned from a six month rotation, and Bill Papadatos has been promoted to Engineer Class 2.

Bill Paraska has taken up the position of Manager, Management Services Section, following the retirement of Keith Nisbet, and Ron Johnson continues to act in the Broadcasting Operations Manager position.

Des Bell, the highly valued Cleaner at 2NU Manilla, retired after 14 years' service. Des, a qualified tradesman in his own right, kept 2NU and three other sites in tip top condition. In addition to the station OIC and staff, BOM Ron Johnson, Tamworth IPM Warwick Bowden, and family and friends attended the farewell.

SOUTH AUSTRALIA AND NORTHERN TERRITORY

Graham Shaw, formerly Manager Northern Territory Section, took up the position of Supervising Engineer Engineering and Construction Section, on 6th November following the retirement of Bruce McGowan.

Barry Morton, formerly Principal Technical Officer Northern Territory Maintenance Group, has been promoted to Manager Northern Territory Section, and Murray Fopp has taken up the position of PTO NT Maintenance Group.

Janis Ozolins Senior Engineer, visited Vanuatu in order to prepare a report on upgrading broadcasting services there, and on 9th January transferred to Brisbane following his appointment as Supervising Engineer in the Queensland Branch. Wayne Croft was appointed to the Senior Engineer position vacated by Janis.

Denis Collins STO Electrical has resumed duty following an assignment in Sri Lanka for the International Telecommunications Union.

Terry Said OIC Radio Australia Darwin, transferred to Adelaide to take charge of the Broadcast Installation & Service Centre following the promotion of Wes Graham to Broadcasting Operations Manager. Bill Chilcott of Radio Australia Shepparton acted as OIC Radio Australia Darwin, when Terry headed south.

Lew Grubb Broadcasting Operations Manager retired in January after nearly 45 years' service in radiocommunications, sound broadcasting and television. All the best in your retirement, Lew.

Pioneer HF Station

LYNDHURST RADIO

Following a visit to England by Postmaster-General Research Department Engineers in the 1920's, an experimental transmitter was established at Lyndhurst, Victoria in 1928. The experiments culminated in the establishment of a scheduled shortwave transmission using the call-sign VK-3LR from March of 1934.

Beamed to the remote outback of northern Australia, the service proved extremely popular providing news and entertainment to areas unable to receive capital city medium wave broadcasts.

With the advent of World War II, the station entered the field of regular international broadcasting. Although the call-sign "Australia Calling" was used, it was in fact the commencement of "Radio Australia".

In 1945 a third transmission was added using the call-sign of VLH. This service was also beamed to the north and offered an alternative to VLR.

The early 1950's saw the introduction of Sideband and Frequency Shift Keying equipment to provide a radio link from Melbourne to Perth. This supplemented the physical line connecting the two seaboard. It would also play a part in the Apollo space program in the 1960's.



Transmitter Hall.

The 1956 Olympic Games in Melbourne created the need to upgrade the antenna system in order to meet the broadcasting requirements of that event. A new line switch and antennas were installed to give the station greater flexibility in the busy transmission schedule.

Three RCA transmitters were added in 1958 permitting all services to be transmitted at a power level of 10,000 Watts.

In the mid 1960's, Lyndhurst was established as a Standard Frequency and Time Signal service. With the call-sign VNG, frequency and time information were disseminated simultaneously on two frequencies. Complex generating equipment at Lyndhurst, referenced to the Research Laboratories Caesium Beam ensured the high accuracy of these transmissions.

In the late 1960's the transmission equipment was modernised with the installation of eight new STC 10 kilowatt transmitters and the associated input and monitoring equipment. These improvements heralded the peak in transmissions from the station. The schedule provided two Radio Australia, two Time Signal Services and the Sideband link to Perth operating 24 hours a day, and two Inland services transmitting 20 hours each day.

With the completion of the microwave bearer to the West, the SSB equipment was used to provide a backup program facility to the Radio Australia transmitter at Darwin. Newer more powerful SSB transmitters (30 kilowatt) were installed for this service in the mid 1970's and also served the Radio Australia Carnarvon transmitters after Cyclone Tracy rendered Darwin inoperative.

Although the SSB service was intended to provide a backup program facility only, it proved extremely popular as far away as Europe, being far more reliable than the interference prone AM signals. Here, unintentionally, Lyndhurst pioneered the next mode of transmission to be regularly introduced to high frequency broadcasting, but not due yet for some years.

JOHN NOTT



Emergency Power Plant.



Technician Mark Chapman Operating Line Switch.



Control Room.

Profiles

BRIAN HALL

Brian Hall, State Broadcasting Manager Tasmania, began his career in radio when he joined the Postmaster General's Department in 1951. He commenced work as an Assistant Radio Inspector in the Radio Branch, which after splitting up of the various functions of the Department, became the responsibility of the Department of Communications.

After some years in the Radio Branch, Brian was successful in obtaining appointment as a Trainee Engineer in the Engineering Department. He duly qualified in 1961.

Brian then spent some twenty-two years as an Engineer in almost every line of activity in design, installation and maintenance of radiocommunications, sound broadcasting and television facilities throughout Tasmania. It was a period of rapid expansion particularly in the areas of sound broadcasting and television. A major television station was commissioned at Mt Barrow, many translator stations were installed throughout the State, new sound broadcasting regional stations went to air at Fingal and St Helens and frequency modulation stations were installed at Hobart and Launceston.

With the formation of the Broadcasting Directorate Brian was appointed State Broadcasting Manager of the Tasmanian Branch in 1983.

Married with three daughters who are also married, Brian is kept busy being a work horse for the grandchildren. He is a member of Rotary International and was recently made Patron of the local tennis club. He whiles away any remaining idle hours with lawn bowls, a personal computer, wood-working, and when weather permits, maintaining the garden.



Brian Hall.



Pat Alessandrini.

PAT ALESSANDRINI

Pat Alessandrini Senior Engineer, Tasmania, responsible for the professional engineering activities of the Branch, graduated from the University of Tasmania in 1978. Being interested in broadcasting as a career, he joined the Australian Broadcasting Commission in Hobart, but being unable to obtain a satisfactory permanent position, seized an opportunity to join Telecom. He joined Telecom as Engineer Class 1 in 1980.

Pat joined the Radiocommunications Branch and worked on various projects throughout the State. Following promotion as Engineer Class 2 he was placed in charge of the Radio Lines Group whose area of responsibility covered all phases of radiocommunications, sound broadcasting and television maintenance, installation and construction works.

One of his most important projects was overseeing the erection of the fibreglass radome around the main transmitting antenna at ABT2 Mt Wellington some 1270 m above sea level. The fitting of the radome was necessary to prevent damage to the TV antenna system resulting from heavy snow falls which frequently cover the site.

Pat joined the Broadcasting Branch in 1985 and still maintains a function with Radio Lines activities by virtue of his role with the Branch SLO External Plant Co-ordinator.

Pat is happily married to Megan, and when time and finances permit, enjoys travelling. He often plays a social game of tennis, but also seems to spend a lot of his free time collecting and restoring old motor cycles.

MILTON CUNNINGHAM

Milton Cunningham Broadcasting Operations Manager, Tasmania, commenced work in the Postmaster General's Department in January 1965 as a Technician-in-Training. Following completion of training, he worked with the Broadband Radio Installation Group working on various installation assignments throughout the State. He qualified as Senior Technician in 1971.

In an area with rugged terrain and lots of rain and snow, it is not surprising that Milton found himself in many tight corners and near-miss situations during his travels throughout Tasmania. On one occasion he was snowed-in at a television translator site on the mountainous West Coast during a blizzard reminiscent of Antarctica, and on another occasion he was lucky to survive a light aircraft crash on Three Hummock Island, a microwave radiocommunication repeater site in Bass Strait off the coast of North West Tasmania.

After these, and other close calls, Milton looked around for a safer environment in which to work. In February 1973 he transferred to the Technical Training Centre where he worked as a Technical Instructor for two years in the Advanced Training Section.

He later worked for a period of eight years with a group responsible for the technical audit of radiocommunication, broadcasting, analogue and digital transmission equipment throughout the State. As Officer-in-Charge of the group he became the Assistant Emergency Services Liaison Officer for the State.

In 1985 Milton joined the Broadcasting Branch as Officer-in-Charge of the Broadcasting Service Centre, and in January 1986 was appointed to his present position.

Milton and his wife Glenys have two children, both of whom attend primary school. He has been a keen and active member of the Army Reserve for a long time and has now completed 20 years of service. He currently holds the rank of Major and is the Battery Commander of the 16th Field Battery, Royal Regiment of Australian Artillery.



Milton Cunningham.



Glen Clements.

GLEN CLEMENTS

Glen Clements Administrative Officer Class 7, Tasmania, was born in Melbourne but at the innocent age of one year he migrated to Tasmania on the old passenger ferry 'Taroona'.

He joined the Postmaster General's Department as a Technician-in-Training but like most young recruits at the time his real ambition was to join the illustrious ranks of Officers in the Third Division. After only two years of the Technician-in-Training course he was successful in obtaining an appointment as Clerk.

Glen obtained wide experience in clerical/administration works in several Branches and on formation of the Broadcasting Directorate he threw his hat into the ring and was selected as Administrative Officer for the Tasmanian Branch.

Glen is happily married with three children and built his own home in the Hobart suburb of Rosetta. An avid basketball player and coach, and noisy supporter of the Hobart Tassie Devils in the National League, he is also an active member of the Army Reserve and was recently promoted to the rank of Captain in the Royal Australian Army Ordinance Corps.

Museum Gems

THE FRENCH 'R' TUBE

The French 'R' Tube was one of the first tubes used in transmitters and receivers during the early days of broadcasting speech and music by experimenters in Australia.

It was designed in France in 1915 by French engineers Michel Peri and Jacques Biguet from information brought back from the Western Electric Co in USA by a certain Paul Pichon an employee of the German Telefunken Co.

Pichon a Frenchman, earned his living by teaching French to the children of Count von Arco one of the founders of the Telefunken Company.

The company had sent Pichon to the USA to obtain information on tube development but on his way back, found himself in London the very day Germany declared war on France. Pichon returned to France and offered his services and information to the French authorities.

Samples of the new tube were sent to England in 1916. The standard tube in use in England at the time was a 'soft' tube developed by Captain Round of the Marconi Company. The English dubbed the new tube the French 'R' tube.



French R Tubes.

It was a superior high vacuum or 'hard' type and English companies immediately began mass production for military purposes. Firms which produced the tube include BTH, Ediswans and Osram-Robertson (later to be known as Marconi-Osram).

After the War the tubes became readily available to experimenters as war surplus material.

One enterprising South Australian imported a dozen of the tubes. One of these was given to Professor Kerr Grant at the University of Adelaide who developed a method of replacing burnt out filaments by cutting two small holes in the glass bulb by means of a blow flame and inserting a tool which he developed for the purpose. The vacuum was restored using a local vacuum pump and melting the glass to close the holes.

By 1922 licences had been restored and experimental sound broadcasting was in full swing. Although the 'R' tube was basically a receiving type, it was pressed into service as a transmitting tube with the plate glowing 'white hot'. No doubt this class of operation kept the Professor busy.

The clear tube on the left of the photograph was made in England in 1918 and used in a transmitter in Adelaide in 1923 to broadcast a concert given by the local Tramways Band.

The blue coloured tube was manufactured in France by the Compagnie General des Lampes in 1917 and designated Type TM.

In a typical receiving mode the tube operated with filament power of 4V at 1A and plate voltage of 50V.

JACK ROSS

Leisure Time

FISHERMAN'S PARADISE

Fish abound in Australian waters, both in number and variety. Fishing experts say there are over 3000 species and they come in many sizes, shapes and colours. Some inhabit deep ocean waters while others live in coastal and fresh waters.

Fish provide a fast expanding source of recreation and nowhere is this more evident than at Carnarvon, some 985 km north of Perth. Carnarvon is the site of a Radio Australia transmitting station and the home of staff who operate the facility. The transmitters are located on Browns Range, 13 km out of town. The site was originally used by NASA for the Apollo, Gemini and Skylab missions.

The most popular fishing spots are around Bernier and Dörre Islands in Shark Bay. There are many favourite spots but experience has shown that good hauls with little effort can be obtained in Red Cliff Bay and Hospital Landing off Bernier Island and at Disaster Cove and White Beach off Dorre Island. There are reefs in some areas but if care is taken in navigation the reefs will be found to be teaming with Cod and Coral Trout. Trawling with a silver spinner will quickly



Ron with some Beauties.

produce a catch.

The coves and bays abound with Snapper, Red Emperor, Cod, Mackerel, Tuna and Blubone as well as other species. For those staff wanting something different there are turtles, sharks, crays, scallops, oysters and prawns.

Huge prawns are in such numbers that the prawn harvest is worth \$20 million annually to commercial fishermen. Western Australia is Australia's leading fishing State, followed by New South Wales and South Australia.

At the right spots, schools of Mackerel can be seen in the depths of the clear water feeding on countless small fish with scores of gulls wheeling overhead to pick up the scraps as they come to the surface. Although professional fishermen invade the area during the Snapper season there is always more than enough for the amateur.

Staff have found that in order to quickly fill a bag all that is needed is a 12 kg tournament monofilament line, a treble 5/0 on a wire trace, a whole mulie and no sinker. Let the line out, and there isn't even time to flip the cap off a stubbie before the action starts.

RON BENNETT

From the Back Room

THE RADIO LINEMAN

The Radio Lineman requires a number of attributes not required in many other trades. He must be a skilled tradesman in many fields including the rigging and assembly of steelwork at great heights, the installation of massive reinforced concrete foundations, precision assembly of coaxial cable joints and connectors up to 150 mm in diameter, installation of earth station antenna systems, the brazing and welding of a wide range of metals and the painting of tall structures.

Many of these activities require that the workman be extremely fit in order to endure the physical discomforts of working in deep foundation excavations or hundreds of metres aloft being buffeted by freezing cold winds and the sudden attack of cramp. A moment's lack of concentration in a strict safety routine may result in a bad injury or even death.

The erection and maintenance of antenna systems and their associated tall masts and towers calls for a high level of skill, considerable experience and a head for heights. The erection of broadcasting and television structures, particularly guyed masts, calls for special knowledge in the behaviour of tall slender structures because of instability which may be introduced by temporary guying arrangements, wind gusts and the lifting and attachment of heavy steel sections during the erection process.

Notwithstanding the massive size of some components, e.g. base, sectionalising and guy insulators, particularly the oil filled types, they have to be handled with extreme care to ensure that they are not subjected to unnecessary or excessive stresses or knocks during installation.

A great part of the Radio Lineman's knowledge involves a clear understanding of the safety aspect of his work. The tech-

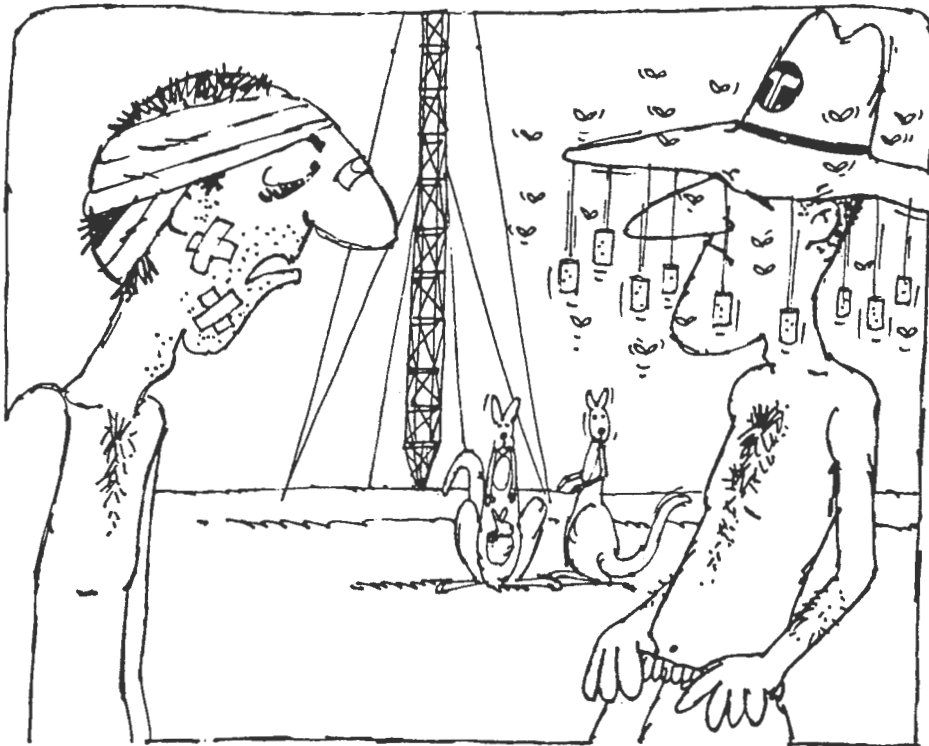
niques and procedures which have been developed over the years are invariably those methods which have been tried and proven to be safe methods. It says much for the workmen concerned and the practices which have been adopted for carrying out the work, that serious accidents have been so few. Factors which may make conditions unsafe include high wind, especially at the top of a tall structure, rain, a low and falling temperature favouring the formation of ice and the actual presence of ice on the structure.

Staff are not permitted to be on a structure during guy tensioning operations. When guys are being fitted to a new structure or being replaced on an old structure after maintenance, staff are required to descend and retire to a safe distance after the guys have been attached to the structure and before the free ends are pulled out to the anchor blocks. The fixing of guys to anchor blocks and the guy tensioning procedure is a very critical operation.

Many structures have collapsed or been damaged during these stages of the work. Many cases are on record overseas where staff did not leave the structure during this critical operation and following collapse, all were killed.

Radio lines staff have been involved in many outstanding restoration works following damage to structures. A 230 m dual frequency radiator in New South Wales was severely damaged when an intruder set off a charge of high explosive on the base insulator causing the base insulator to be demolished, seventeen of the guy insulators to be damaged and extensive damage to steelwork of the lower section of the structure. In another case, the epoxy base insulator of a 94 m sectionalised mast in Queensland exploded during transmission hours as a result of excessive heat build up. The sectionalising insulator fractured, leaving the top section of the mast resting on the edge of the insulator base plate. The restoration of both these structures was a credit to engineers and radio lines staff in carrying out the work effectively and safely.

ALEX BROWN



Foreman: "What happened to you? Did you fall off the mast?"

Rigger: "No - A gust of wind blew up and the blasted corks slashed my face!"

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

The reference to the collapse of the Mt. Burr mast in the July '86 issue of The Broadcaster brings to mind the extensive damage which occurred to a mast in Queensland just four months after the Mt Burr incident.

One morning at breakfast time in February 1966, the Officer in Charge of the newly installed 50 kW station 4QD Emerald Central Queensland rang his Engineer in Brisbane and reported that the base insulator of the main mast had caught fire and that the station was off air.

It sounded like an April Fool's Day jest, but it was not. The insulator was a highly flammable resin-like plastic and when it fractured, the 50 kW transmitter power caused a considerable arc and the insulator exploded.

The 4QD mast was a sectionalised lattice steel structure 94 m high and apparently the section insulator broke first allowing the top half of the mast to drop down and come to rest in a very precarious position on top of the lower section. The jolt probably caused the failure of the base insulator.

Station staff ran out a length of wire about a quarter wavelength long and tied it to a nearby receiving antenna pole. The 10 kW standby transmitter was fed into this and a few kilowatts radiated. Field strength checks showed 15 millivolts per metre at the mile post and 5 millivolts in Emerald town.

The far end of the long wire was only about 5 m above ground but 4QD was 'on air'.

It was unfortunate that the disaster occurred just prior to the erection of the permanent standby mast, but within two days an emergency wind-up Hill's mast was on site having been transported from Brisbane. The only feeder available was a length of recovered ancient armoured coaxial cable so power from the standby transmitter was restricted to 3 kW.

This produced a field strength of 220 millivolts at the mile measuring point and the temporary arrangement remained in service for about a month until the main radiator was restored.

With the 10 kW final wound back to 3 kW the driven tube didn't like it, and ran red hot in protest.

Needless to say, today 4QD has a sturdy porcelain base insulator as any self respecting radiator should have.

DOUG SANDERSON
SNR ENGR QUEENSLAND

Sir

Australia is indeed — and I fear no contradiction — a beautiful country.

Being part of the Broadcasting Branch for the past 14 years, involved in both construction and maintenance, I feel privileged that through the job I have seen and photographed some remote and scenic locations.

No doubt there are a lot of photographs floating around in slide collections etc. depicting the scenic beauty from broadcast station sites. Examples of these already published in The Broadcaster include Sydney city view from Kings Cross (July '85) and Tweed Valley (July '86).

Chances of a lot of us visiting these sites, especially Interstate are remote.

Could some consideration be given to include a one page or even a centre spread to the scenic delights of our sites? I'm sure they could be used to brighten up dull working environments and thus further publicise The Broadcaster.

PETER POLDER
A and A NORTH, NSW

(Our new series 'SERVING RURAL AUSTRALIA' which commenced in the November '86 issue may be of interest — Editor).

Let's Play It Safe

STRUCTURAL FAILURES

One of the many interesting items on the agenda of the External Plant Conference held at Central Office in October last year was an illustrated talk on the subject of 'Structural Failures and Lessons to be Learned', by Jack Ross.

The slides showed examples of failures of masts and towers in Australia, England, Finland and the USA, including the first recorded antenna failure which occurred in 1901 and the first recorded injury to a rigger, also in 1901.

In addition to failure of main structures, examples were shown of the failure of an epoxy base insulator which exploded and caught fire, a guy insulator which disintegrated following an arc, a guy rope which burnt through as a result of a sustained arc, a transmission line strain insulator which failed from aeolian vibration, an antenna strain insulator which broke due to travelling waves when a flock of birds took off simultaneously, coaxial cable damage by parrots, failure of antenna plastic ropes from environmental exposure and others.

It was pointed out that in an analysis of a large number of failures of masts and towers, there is in some cases a simple explanation for the failure but in others, it may be a combination of many factors such as:

- Incompetence
- Poor supervision
- Carelessness
- Insufficient knowledge of new materials
- Misunderstanding
- Environmental factors
- Excessive haste
- Unsafe work practices
- Lack of erection documentation
- Use of defective material
- Design oversight

Because of the general reluctance of individual engineers and organisations to publicise reasons for failures of structures, valuable lessons are not passed on to others engaged in the field. In many cases, the only information about a major failure is often bold headlines with a sketchy report in local newspapers. The findings of a subsequent investigation into technical or procedural aspects seldom receive wide distribution even among people or organisations who would benefit from an examination of the report.

There are however a number of lessons which can be learned from structural failures. These include the following:

- Only experienced people should be permitted to work on critical aspects of erection and maintenance.
- All critical work on the structure should be under constant scrutiny by a structural engineer and experienced foreman.
- Absolutely no procedural short cuts should be permitted.
- Full erection procedure should be provided to field staff, and the staff fully briefed regarding devices and techniques being used.
- There should be seasonal cut-off of erection activities.
- No staff should be permitted to work on a structure while guy tensioning operations are in progress.
- A photographic record should be made of important phases of the work.
- A reliable communication system should be established between the ground base and workmen on the structure.
- Work should not be undertaken when environmental conditions make it unsafe for staff or for the structure.

TONY WISSENBURG

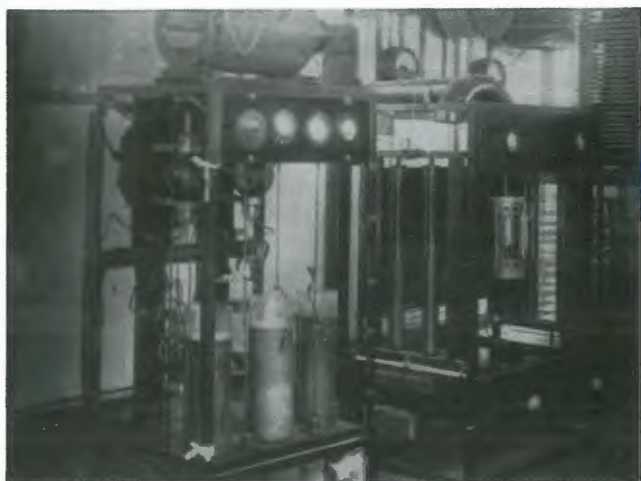
Broadcasting Milestones

3AR MELBOURNE

Associated Radio Company of Australia Ltd commissioned the first A Class broadcasting station in Victoria when 3AR went to air on 26 January 1924. The Company was involved in the manufacture and distribution of radio apparatus.

The station was installed at the Company factory at 51-53 a'Beckett Street but this proved to be a bad site. There was considerable interference from power mains, the earthing arrangement was unsatisfactory and the antenna system was inefficient resulting in low signal strength.

The Company obtained the services of Mr Donald McDon-



Master Oscillator and Power Amplifier Manufactured 1924.

ald, a well known Radio Engineer, to select a site and to construct a new station.

A site was chosen at North Essendon near the aerodrome and a 67 m lattice steel mast erected during July 1924. The mast supported one end of the antenna. The other end was attached to a steel gantry located alongside the transmitter building and a feeder taken to the transmitter via a lead-in porcelain insulator.

The transmitter had an input of 1600 Watts to the power amplifier which used a Mullard silica envelope tube. The oscillator was a Hartley type with frequency adjustments being made by a variable inductor. The transmitter was subsequently transferred to 7ZL Hobart when a new 4.5 kW model was installed at 3AR.

The studios were in Elizabeth Street and were fitted out with the latest microphones, high performance amplifiers and outside broadcast circuits to racecourses and football grounds.

On 1st March 1928, 3AR amalgamated with 3LO when the Dominion Broadcasting Co. was formed.

The station was taken over by the Postmaster General's Department on 8th August 1929 when the Government established the National Broadcasting Service.

Many improvements and introductions were made during the 1930's. These included the use of moving coil microphones for outside broadcasts and general service and ribbon microphones for drama plays, a Marconi Stille steel tape magnetic recorder, a Neumann disc recorder and multichannel outside broadcast amplifiers.

On 24 April 1939, a 10 kW STC type transmitter was installed. The transmitter was replaced in 1962 by an STC 55 kW main and a 10 kW standby combination and these units are still operational, sharing a 214m radiator with 3LO.

RUSSELL ROLLS



3AR Transmitter 1987.