

The **BROADCASTER**



NEWSLETTER OF THE BROADCASTING DIVISION

No. 12

November 1988



CAAMA STUDIO

The Broadcaster

The Broadcaster is the in-house Newsletter of the Broadcasting Division 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

Following the interesting article in the March 1988 issue by Geoff Beetham on The Night the Station Burnt Down I have received suggestions from a number of readers that more articles covering personal experiences by staff at broadcasting stations be included in The Broadcaster.

Readers told me of many experiences such as how a possum found its way into a transmitter during the night and broke every tube, the day when a horse kicked over the antenna matching unit cabinet in the middle of a heated argument being broadcast from parliament house and how a half cooked snake crawled out of a transmitter cabinet when the operator opened the doors to investigate arcing sounds.

There were many others, and I am sure they would make interesting reading.

Perhaps readers might like to take up the challenge and let me have some of their experiences for publication. It may be possible to support some stories with photographs taken at the time. These would be very welcome

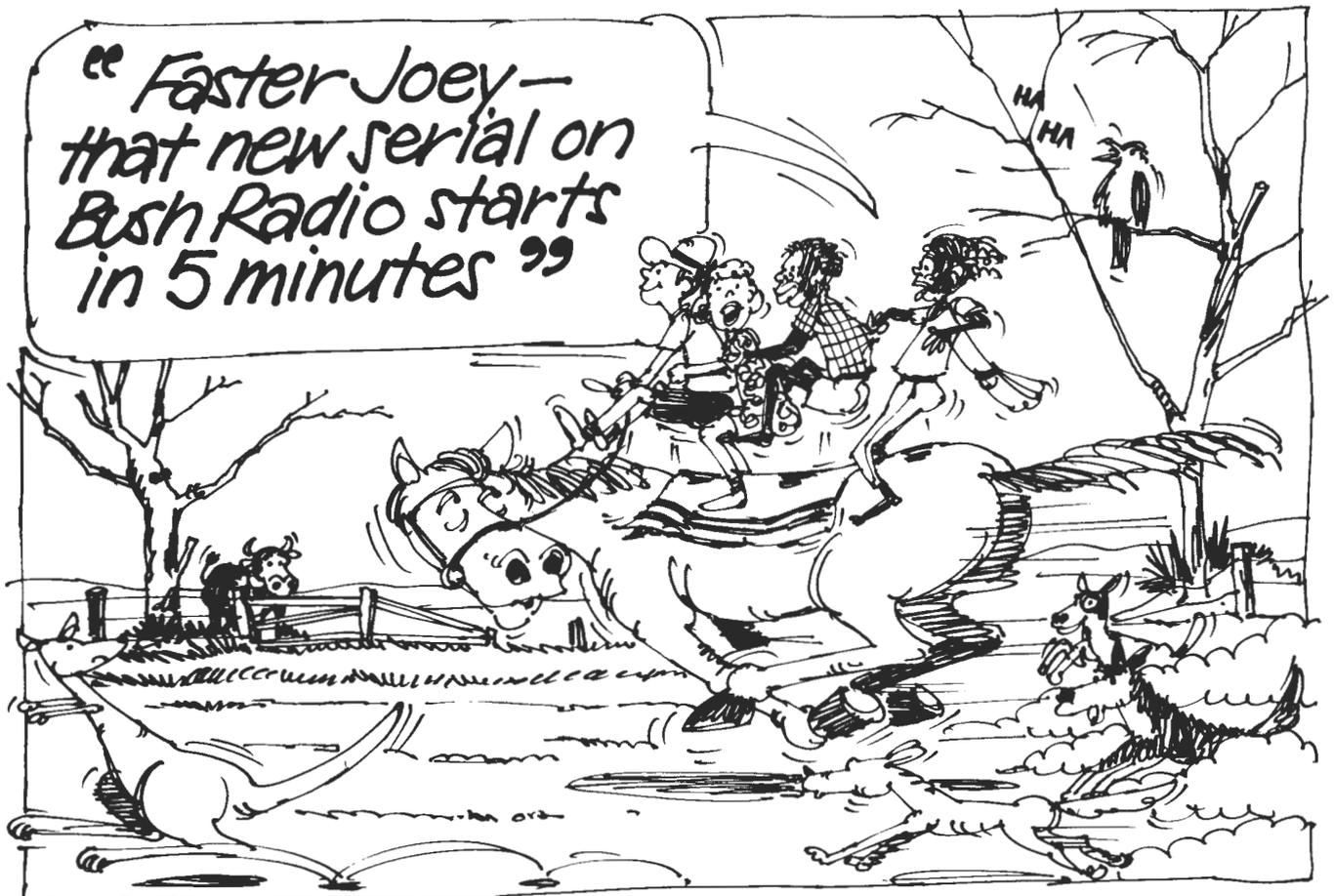
JACK ROSS
Editor

Front Cover:

CAAMA Studio Alice Springs – Agnes Young Announcer

Contributors to this issue:

Leon Sebire, Doug Sanderson, Bill Rohde, Wally Clair, Ken Moore, Syd Stanford, Jack Carnell, Ken Johnston, Simon Moorhead, Geoff Weilandt, Ray Weeks, Neville Brown, Denis Collins, Rod Cunningham, Wes Graham, Jack Ross, Terry Said, Graham Ward, Terry Wooster and Mike Dallimore.





Leon Sebire

From the Director's Desk

It is now a little over five years since the Broadcasting Directorate was formed as a free standing business entity within Telecom Australia and it is perhaps appropriate to review our performance and achievement against the objectives we initially set for ourselves. It has not been an easy five years as all of us have been required to adjust to the significant changes which have been necessary. At the same time we have been required to keep services operating and to continue to provide new services apace.

A notable achievement in the period has been the almost total abolition of shift working at national transmitter sites and the establishment of maintenance districts and centralised monitoring information centres, largely removing most of the disabilities under which most broadcasting operational staff have traditionally suffered. In concert with these initiatives we have dramatically increased productivity and efficiency. In just five years we have extended the network from approximately 450 to 700 services and at the same time reduced staff numbers from 1250 to a little over 900 at the time of writing. In addition, we have taken on and successfully completed a number of interesting and challenging "enterprise projects" for commercial broadcasters and "others" thus avoiding the recurring construction troughs caused by fluctuations in national broadcasting capital works programs.

All the above has occurred in a spirit of enthusiasm and dedication by staff of the Directorate and I express my gratitude for the efforts which have led to our significant achievements during the period.

As this will be the last edition of *The Broadcaster* for 1988 I would like to take the opportunity to extend to all staff, families, friends and readers my very best wishes for a happy Christmas period and a prosperous 1989.

LEON SEBIRE.

Station Roll Call

ABGV3 MT MAJOR

Situated on Mt Major some 30 km to the east of Shepparton, television station ABGV3 serves communities scattered throughout the Goulburn Valley in north-east Victoria.

Nestled at the base of the mount on one side is the small township of Dookie and on the other, the 2500 hectare Dookie Agricultural College. The rich red soil of the Dookie area supports wheat and sheep farming, while around the City of Shepparton and towns to the west are the vast orchards of peach, pear and apricot trees for which Goulburn Valley is well known. Irrigation has also made dairying an important industry, and the valley is one of the State's largest producers of milk and milk products.

Mt. Major is perhaps an exaggerated name considering it rises to a height of just 200 metres above the surrounding plain. However, because of the very flat nature of the area, from the top it provides sweeping views of the countryside. The mount has many rocky outcrops and is sparsely scattered with groves of trees.

ABGV3 commenced transmission on 28 November 1963 and is now supplemented by five translators serving townships in the mountainous areas to the east.

Twin AWA TVB-10 transmitters feed the Denki Kogyo antenna on top of a 120 metre mast. Installation of auto control equipment has been completed with the transmitters under control of the IDEC programmable logic controller and communicating with Sydenham MIC via an ACTTS unit. The site also provides repeater facilities for digital radio systems operating between Shepparton, Wangaratta and Yarrawonga.

Also located on the mountain top, though in separate buildings, are the local Commercial TV transmitters, SEC communications equipment, and police and ambulance radio services.

GEOFF WEILANDT

3WL WARRNAMBOOL

Station 3WL Warrnambool was commissioned on 4 September 1954 and became the third regional station in Victoria to become operational.

Warrnambool stands on Lady Bay at the estuary of the Hopkins River about 250km south west of Melbourne. It has a population of about 22,000 and is the centre of an important dairying, grazing and vegetable growing district. The city also has textile and clothing factories. Tower Hill, an extinct volcano 10 km west of the city is a State game reserve. It is the most recently active of the volcanoes that erupted and shaped Victoria's Western District in past ages.

Two identical Philips type 1648 transmitters of 200 watt output were installed to operate on a frequency of 1570 kHz. Air cooled QB3/300 power amplifier tubes were employed with the high tension being provided by mercury vapour rectifier tubes.

The radiator was a 30 m high vertical structure with 48 m top loading wires. It was connected to the transmitter by a 75 ohm buried coaxial cable.

In 1974 the Philips transmitters were replaced by a pair of STC solid state transmitters using 2N6371 output transistors. The units were combined in a parallel configuration to produce 250 watts.

The following year an improved radiator system was installed comprising a top loaded 31 m Decco mast with an extensive copper wire earth mat.

The operating frequency was changed to 1602 kHz in 1978.

Programs for the station normally originate from the ABC Melbourne studios but the program line is routed via the ABC Horsham studios so that local programs can be provided for the 3WV and 3WL transmitters as required.

Emergency program facilities comprise an auto start tape recorder with a pre-recorded program and also an off air receiver tuned to 3WV which transmits the same program.

JACK CARNELL

News Round Up

RON MITCHELL — RETIREMENT

Rawdon Mitchell – Ron to his friends – OIC South East Broadcasting District in South Australia retired after 41 years service with the Postmaster General's Department and Telecom.

Ron began his radio career as a Radio Officer in the British Merchant Navy during the Second World War after completing a crash course in radio and Morse code.

After leaving the service he came to Australia and joined the Department as a Technician at the ABC Adelaide Studios. Following later service in Darwin, he joined the television installation crew at ABS2 Mt. Lofty. He later installed ABGS-1 Mt. Burr where he became OIC and remained there until retirement.

A lively function for Ron and wife Elva was held in Mt. Gambier on 12 August attended by Acting SBM Graham Shaw, Section Managers, District Broadcasting Staff and several local organisations.

Gifts presented to Ron included, a set of book ends, a framed photograph and a mounted concrete core cut from the station floor with the inscription "Presented to Ron Mitchell by the staff of ABGS-1, – a concrete tribute to a quarter century of dedicated broadcasting service in the South East of South Australia."

WES GRAHAM



Ron and Elva Mitchell.

CHAIRMAN VISITS RADIO AUSTRALIA

Mr. Bob Brack, Chairman Australian Telecommunications Commission visited Radio Australia Darwin on 17th June. He was accompanied by Mrs. Joan Brack, John Huston State Manager Telecom South Australia and Northern Territory, and Mrs Maureen Huston.

The party travelled to the station via boat to Mandorah and thence by coach to the station, escorted by Rod Cunningham State Broadcasting Manager, Barrie Morton, Manager Northern Territory Section and Graeme Wilmot, Officer in Charge.

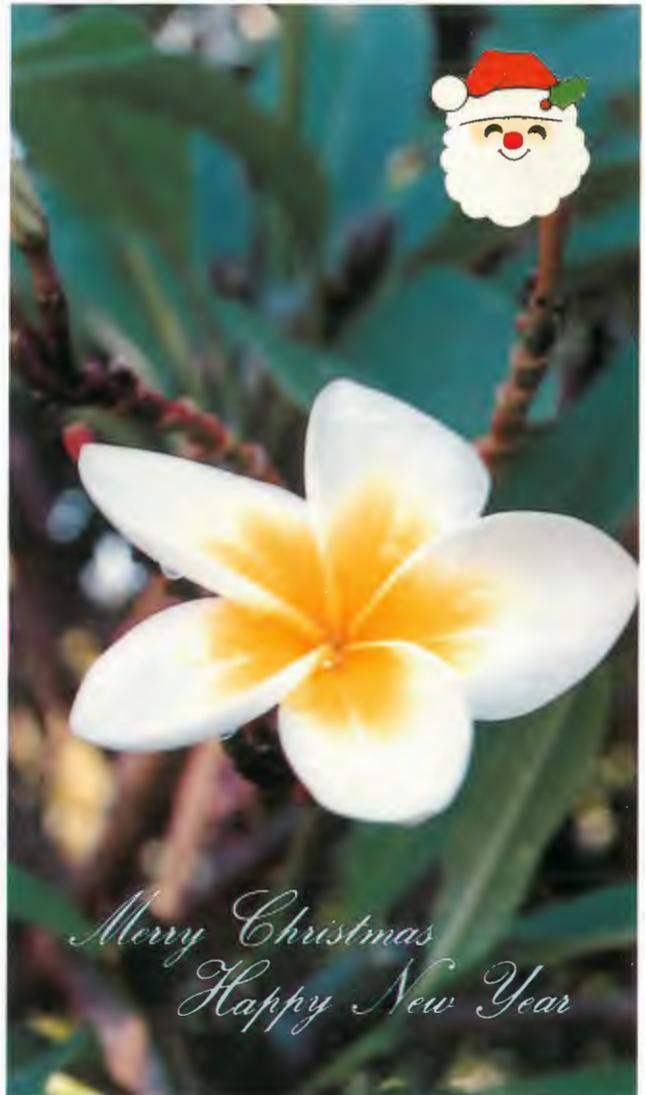
In addition to inspecting the transmitting facilities, the party viewed the station museum and the Charles Point Lighthouse adjacent to the property.

Included in the museum equipment are some early Traeger transceivers used at homesteads linked into the Flying Doctor Network. These were of particular interest to Mrs. Brack. She had worked with the Australian Inland Mission at Fitzroy Crossing in the Northern Territory and operated Traeger transceivers at station 8QE many years ago in the pioneering days of the Territory.

ROD CUNNINGHAM



L TO R. Graeme Wilmot, Barrie Morton, Mr. Bob Brack, Mrs. Joan Brack, Mrs. Maureen Huston and John Huston.



Merry Christmas and Happy New Year to all broadcasters from Northern Territory Section (Photo: Ralph Dennison Draftsperson Gr 2, Darwin)

VISITS TO ARGENTINA AND GUAM

Bruce Wilson, OIC Radio Australia Shepparton, recently returned from 7 weeks in Argentina and 5 days on the Pacific island of Guam.

Bruce led a Rotary Group Study Exchange team through the province of Cordoba in Argentina and studied a wide range of activities including industry, commerce, primary production and community life.

Radio Australia's South Pacific service provided good signals into the area and this provided a valuable link with home.

Bruce travelled throughout Argentina in 1977 and on this occasion he was able to compare life under an elected Government with that of the previous military control,

An extension of travel to Guam provided an economic method of visiting station KTWR. Shepparton and KTWR have been comparing notes on Harris SW100 transmitters for the past 6 years and this visit allowed Bruce to gain first hand information and data on transmitter conversion and modifications, as well as antenna system design, etc.



KTWR Transmitter building

Station KTWR is owned and operated by Trans World Radio. The programs are beamed to China and Australia using four 100 kW Harris transmitters feeding five TCI curtain arrays similar to those in use at Radio Australia Darwin.

Guam is a Territory of the United States of America and is an important Air Force and Naval base. It played a major role in the Pacific campaign during the Second World War.

The capital is Agana and the island which is about 48 km long and 6.4 to 13 km wide is located 2100 km east of the Philippines. Total area is 549 square kilometres and it supports a population of some 110,000.

Many of the forests have been cleared to make way for large air fields and for farming purposes. There are several small rivers on the island.

The climate is warm with average temperatures in the range 20 to 30°C. Rainfall averages 230 cm annually with most of the rain falling during the period May to November. Typhoons are frequent and sometimes cause considerable damage to property and facilities on the island.

Reception on Guam of Radio Australian transmissions from Darwin, Carnarvon and Shepparton was found to be excellent and this allowed a number of good signal comparisons to be made.



KTWR Antenna slewing switch

The visit was of considerable benefit to both parties particularly in relation to modification of Harris transmitters. Bruce is very appreciative of the co-operation and assistance provided by the local staff during his visit.

RAY WEEKS.

3GI – TRANSMITTER UPGRADE

Following commissioning of a new standby antenna at 3GI Longford, a 10 kW Nautel solid state transmitter replaced the old transmitter that had been in service for many years.

The PIE rack was manufactured at the Lyndhurst Installation and Service Centre and incorporates a duplicate input chain. Standby program is provided by a cassette tape player and an ABC apology tape. The station is supervised by an ACTTS unit which reports back to the Sydenham MIC.

The spacious Longford building facilitated a simple installation with the new transmitter being located in the transmitter hall alongside the existing units.

Cooling air is drawn into the transmitter hall where it is exhausted by a thermostatically controlled ceiling fan. A 50/200 ohm transformer matches the transmitter RF output to the 200 ohm open wire transmission line.

SIMON MOORHEAD

VINTAGE TRANSMITTERS REPLACED

Transmitters at 4QL Longreach and 4RK Rockhampton both installed in 1954, were recently retired and replaced by Nautel Amfet 10 solid state units.

The 4QL transmitter was an AWA BTM10 model and the 4RK transmitter was an STC 4SU-11A model.

At both stations the old main transmitter buildings have been abandoned and the new equipment is installed in small Logan prefab units.

At 4QL, a new coaxial cable feeder was installed to the standby antenna system and at 4RK, the original T antenna of 1931 vintage, was upgraded to accept full power on standby duty.

Considerable interest was shown by local ABC and other media at both towns on the new transmitters. SBM Allan Garner appeared on a Rockhampton commercial TV news segment

DOUG SANDERSON

BRACS

BROADCASTING FOR REMOTE ABORIGINAL COMMUNITIES

This year has seen the start of the BRACS project which is the first project to be undertaken jointly by a number of State Broadcasting Branches using the WA Branch as a "leadhouse" state.

By way of background, the BRACS concept came originally from the Department of Aboriginal Affairs. The Department was interested in providing a large number of remote Aboriginal communities with access to ABC television and radio services coupled with the ability to produce and rebroadcast their own programs.

Their interest stemmed from three major problems identified by the Department. These were:

- Not all ABC programs would be acceptable to Aboriginal communities and thus some form of editing was required.
- There was a need to promote the continued use of



First production model BRACS unit. Left, Senior Draftsperson Ian Gibbs right, STO John Gregory

tribal languages and thus by producing their own program in their own languages, the tribal language and customs could be preserved.

There was a need to provide activities for the young people in the communities and the production of video and audio tapes was seen as a useful and interesting activity.

The Department of Aboriginal Affairs approached the Broadcasting Directorate to develop a suitable low cost rebroadcast system which would provide the facilities which were required. The WA Branch was selected to design a suitable system and to then build and trial a prototype.

The design constraints were significant. Briefly the main criteria were:

- Cost to be less than \$35,000.
- To be easily packaged and transported.
- To be simple to operate and maintain.
- To provide a coverage area of around 3-5 km.
- To use the UHF band for television transmissions and the VHF band for radio.

The result is the unit shown in the photograph and considerable innovation was required in its design in order to keep the costs to the required level. This BRACS unit offers the following facilities:

- One TV channel using a 2 watt UHF transmitter.
- The ability to select National or commercial program for transmission.
- The ability to produce local programs using a VHS-C camera.

- The ability to edit tapes using two VHS VCR's.
- The ability to record from camera to normal VHS tapes.
- The ability to record satellite derived programs for preview before retransmission.
- The ability to retransmit any of the sources provided eg., satellite derived programs or tapes.
- The ability to put the camera "live" to air for local news broadcasts etc.
- One FM radio service using a 20 watt transmitter.
- The ability to transmit satellite delivered sound programs.



1.5m dish and mast with TV and FM antennas alongside equipment but

- The ability to make live announcements using the microphone.
- The ability to produce audio from cassettes using the dual audio cassette deck which can be used for editing or reproduction of cassettes.
- The ability to retransmit audio cassettes
- The ability to record sound programs for replaying at a later time.

In all the above cases the monitoring of programs can be undertaken without affecting the signal which is being retransmitted thus allowing the transmission of one source whilst another is being cued, monitored or recorded.

The unit also provides for an optional second TV transmitter to which would allow for uninterrupted transmission of the commercial program.

The respective state Branches will be undertaking the installations within their own states. The WA Branch, having undertaken the development of the prototype has been given the task of purchasing and packing the equipment which will make up the 60 BRACS units. Each unit is packaged into four crates and in total weighs about one tonne when fully crated.

The BRACS project is perhaps an example of the way in which more projects in the future can be handled, with one state taking responsibility for design and development work thus making the most efficient use of our valuable resources.

MIKE DALLIMORE

Engineering Highlights

PROTECTION EQUIPMENT CALIBRATION

High power broadcast transmitters such as those used at the Radio Australia installations require large amounts of mains power, and massive control equipment is part of the station facilities. Radio Australia Darwin which employs three 250 kW transmitters for example employs a large number of 11kV circuit breakers, both oil and air types, and in order to protect not only the transmitters but also the incoming mains facilities, protection equipment must be calibrated from time to time to ensure that it is functioning correctly.

The importance of regular relay testing with high power transmitter installations cannot be too strongly emphasised and particularly the initial station commissioning tests which set the pattern for correct operation of circuit breakers on the occurrence of faults.

A main station circuit breaker is a piece of apparatus which may remain inoperative for long periods, but protective relays are usually called on to operate even less frequently which makes the correctness of their operation of prime importance. The commissioning tests therefore should not only prove that the relay performs according to the ratings on its calibration plate, but that all instrument transformers and wiring associated with the protective scheme are correct.

If comprehensive initial tests are carried out then subsequent periodic tests need not be so elaborate, having as their chief purpose the proving that the relay contacts and mechanism have not suffered due to such causes as dampness, corrosion or dust.

Generally speaking, there are four methods which can be used for relay operation tests. These are primary current injection, secondary current injection, current transformer test winding and application of actual fault.

Primary current injection forms the most complete type of

injection test, including as it does both the primary and secondary windings of the current transformers which are thus checked in addition to the relays themselves. The most usual method of obtaining current for this type of test is from a special injection transformer, it then being necessary to make temporary connection to suitable points on the main circuit.

Secondary injection is a useful test which is easier to apply than primary current injection, and does not require such large currents, but it is not so complete in that the test does not include the transformer function of the current transformer nor would it show up any short circuit of the turns or terminals of the secondary winding itself. It is however a useful method and particularly valuable as a repeat test, obviating the necessity for heavy test equipment.

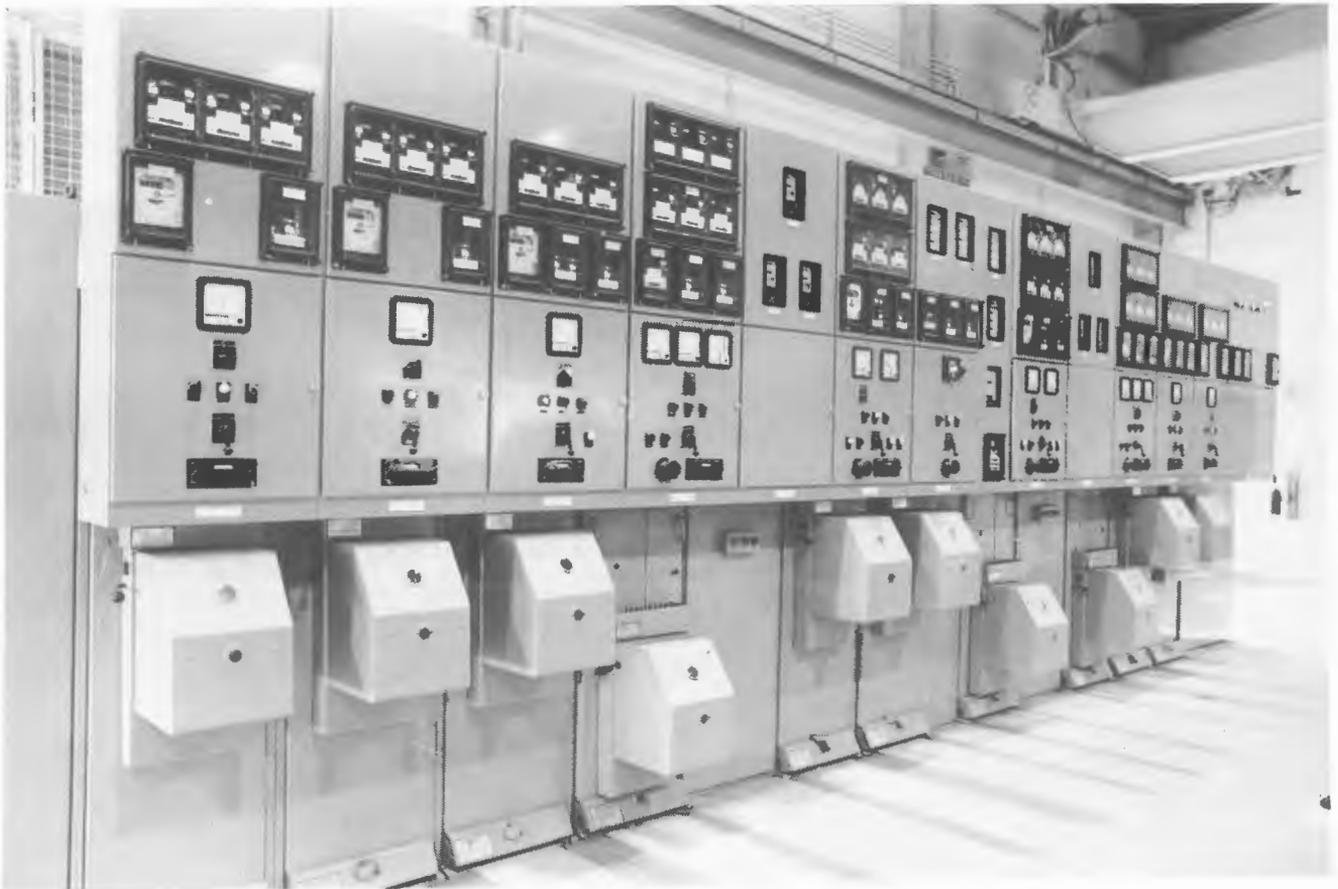
Where current transformers are provided with an additional test winding brought to test terminals, this provides a ready means of checking relays.

Application of actual fault test can only be carried out after due consideration has been given to such questions as availability of the circuit involved, time required for the test, control of voltage of the source of supply, and maximum possible short circuit KVA which might be expected during the test. It is a test which would normally only be carried out after completion of one of the injection tests.

Under actual fault conditions if correct tripping of circuit breakers takes place, the heavy currents which may flow in the relay coils will be of short duration. Under test conditions, however, it will be possible to maintain heating testing currents for much longer periods, and it is therefore necessary to guard against overheating of coils.

Commercially available relay test sets are available which incorporate automatic disconnection of the test current when set tripping levels are reached, thus guarding against overheating of coils. The test sets also have electronic timing features which provide a digital readout of the delay tripping time.

DENIS COLLINS



The main station switch board Radio Australia Darwin

Specialist Workforce

ENGINEERING SERVICES GROUP

The Victorian Engineering and Construction Section includes a multidisciplinary Engineering Services group that carries out a range of specialist functions. Based at Shepparton, the group comprises a fitter and turner, an electrical fitter and mechanic, two diesel mechanics, and a labourer, who are supervised by an ES&T Supervisor Grade 1.

The group was originally formed to operate and maintain emergency power plant and also electrical and other building engineering services equipment that was installed when the Shepparton station was constructed during the Second World War. The two Crossley 800 h.p. 400 kW 6600 volt engine alternator sets and the two Crossley 81 h.p. 50 kW 400 volt engine alternator sets that were installed in the 1940's, are still in service today.



Engineering Services Supervisor Keith Dahlberg at the milling machine

The role of the group was later expanded to take in the maintenance and fault rectification of standby diesel alternator plant at all National Broadcasting and Television Service stations and also radio communication repeater stations throughout the State. After the State Broadcasting Branch was created, the group reverted to responsibility for standby plant at broadcasting and TV stations only.

The mechanical and electrical skills possessed by the group make the Branch independent of the Telecom State Telepower Section in the areas of standby power plant and station electrical installations. The group's broad range of skills and experience are used in a variety of activities in addition to servicing standby plant, and include:

- Installation and commissioning of new and replacement standby power plant.
- Electrical installations associated with new broadcasting services.
- The maintenance of transformers, circuit breakers,

switchgear, switchboards, motors, generators, etc.

- Operation, maintenance and installation of mechanical aids, pumps, fuel storage equipment and building service equipment, including air conditioning plant, fire protection and security equipment, at Radio Australia and other broadcasting establishments.

- Maintenance of dehydrator equipment used at TV transmitting and translator stations throughout the State.

- Machining and fabrication of various complex transmitter parts such as tuning drives, insulators, contact fingers, parts for tube sockets and relays, etc.

- Servicing of vehicles for the Broadcasting Lines group and Radio Australia.

- Fabrication of steelwork for TV and FM antenna systems.

- Construction of aluminium and steel mast juries for the Lines group.

- Construction of MF antenna coupling units including the winding of coils and construction of coil formers.

The group's workshop facilities include a lathe, milling machine, guillotine, power hacksaw, press, electric arc and MIG welders.

The expertise of the group has been recognised by other State Broadcasting Branches. Members of the group have, for example, visited Radio Australia, Darwin, to carry out specialist maintenance on high voltage circuit breakers and also machined various parts and refurbished pancake inductors for the Darwin transmitters.

KEN JOHNSTON



Diesel Mechanic Steve Nankivell adjusting tappets on one of the Crossley 800 HP engines

Vacuum Capacitors

CERAMIC AND GLASS CAPACITORS

The use of a high vacuum as a dielectric in capacitors results in a component with unique characteristics, particularly suited to application in high power radio frequency equipment. The high dielectric strength and freedom from dust contamination, humidity etc., give the vacuum capacitor far higher voltage capability than air dielectric capacitors of similar size.

By employing a high vacuum as the dielectric, the spacing of the plates of a capacitor may be reduced to about one tenth of the spacing required for an air dielectric unit of comparable rating.

This results in a capacitor of extremely compact size. The smaller size also results in the reduction of stray capacitance and inductance which may have many advantages in circuit design. However, care needs to be exercised in the design of



Typical glass body capacitors

the holding or support brackets as a poor design can introduce considerable stray capacitance.

The greater capacitance range of vacuum capacitors is an important advantage in short wave transmitter design. A typical transmitter covering the 7-26 MHz band using an air spaced tuning capacitor would require at least one coil change to cover the whole of the band but a vacuum capacitor would enable continuous tuning over the band using only one coil.

The capacitor plates are in the form of two sets of concentric cylinders and in a variable unit their axial positions are controlled by the rotation of a shaft at one end of the capacitor. Accurately machined screw threads are employed to obtain an axial movement for expanding or contracting metal bellows which transmit the motion directly to one set of cylinders. The inner surface of the bellows is at atmospheric pressure and the out surface is at a very high vacuum.

The nature of the construction ensures that an approximately linear capacitance law is obtained over the specified range which can be extended slightly in both directions, although fringe effects do result in a slight deviation from linearity in the latter regions.



Concentric element

Vacuum capacitors are available in a wide range of capacities and voltages up to 5000pf in the 15 kV range, 100 pf to 55 kV and 200 pf to 120 kV. Current ranges are up to 1000 amps r.m.s. with water cooling.

One of the largest capacitors used in the broadcasting network is used at Radio Australia Darwin. It has a capacitance range 100 to 1600 pf and has a voltage rating of 50 kV peak and a current rating of 600 amps r.m.s. over the range 2-30 MHz.

In addition to employment in transmitters vacuum capacitors are widely used in antenna coupling units and in the case of 5CL/5AN at the mast sectionalising point.

JACK ROSS



Main tuning capacitor Radio Australia Darwin



Isaac Yamma and Clara Inkamala



Studio Centre



Bush Radio

Bush Radio

ABORIGINAL BROADCASTING

Remote areas of the Northern Territory were provided with broadcast programs for many years from high frequency transmitters based at Lyndhurst (VLH) in Victoria and Perth (VLW) in Western Australia. However Aboriginal access to the services was constrained by both an inadequate infrastructure and inadequate programming. Programs were normally orientated to the general community with little regard to an Aboriginal audience or Aboriginal language and cultural values.

Extension of medium frequency transmitters to Darwin, Katherine, Tennant Creek, Alice Springs and Nhulunbuy did little to redress the problem.

In October 1980 the then Ministers for Post and Telecommunications and Aboriginal Affairs agreed that a working party with officers from both Departments which had been established in 1977 to examine and report on Aboriginal broadcasting, should resume its work with wider membership and broader terms of reference.

The working party examined the extent and adequacy of then existing broadcasting services for Aboriginal people and developed policy guidelines and recommendations on short and long term strategies for the development of Aboriginal broadcasting.

About this time Aboriginal people in Alice Springs established the Central Australian Aboriginal Media Association (CAAMA). They began producing live and recorded programs for broadcast over a local public broadcast station and commercial station 8HA.

In 1982 a feasibility study was undertaken for a broadcasting network for Aboriginal communities in Central Australia. The study recommended the provision of a new studio and FM transmitters at a number of sites at outlying communities.

A network was subsequently established with 8KIN-FM Alice Springs being the main centre. The network broadcasts in stereo from 5 a.m. to 9.30 p.m. Monday to Thursday, and from 5 a.m. to midnight on Friday through FM transmitters at Alice Springs, Ntaria (Hermannsburg), Santa Teresa and Ali Curung.

At the same time the programs reach remote communities through National shortwave transmitters located at Alice Springs, Tennant Creek and Katherine. This is known by the Aboriginal people as BUSH RADIO although it is also known as the SHOWER SERVICE because of the particular way in which signals reach the listener via the ionosphere.

These short wave stations were commissioned during 1986 and transmission time is shared between CAAMA and ABC programs. The transmitters provide a continuous service.

Seven Aboriginal languages are broadcast by CAAMA. These include Eastern Arrernte, Western Arrernte, Warlpiri, Pitjantjatjara, Anmatyerre, Kaytej and Luritja. Programs in Aboriginal language make up about 90 per cent of short wave programs and 60 per cent of FM transmission time.

Because 8KIN and BUSH RADIO are not all-music stations, people tune in to find out what is going on. The music is a big part of CAAMA but it is the link rather than the main program material. Traditional stories in Aboriginal language are an important part of the program format. The station also makes use of syndicated English language programs from the Public Broadcasting Association of Australia.

CAAMA radio is run by 12 full-time staff and the Directors, with 10 casual announcers. A manager is responsible for all aspects of the service.

Helping to keep Aboriginal languages and culture strong is perhaps CAAMA's most important goal. From the beginning CAAMA recognised that the media is transforming Aboriginal education but has the potential to strengthen language and culture as well as the potential to destroy. The outcome depends crucially on Aboriginal people themselves producing the material that is broadcast.



Isaac Yamma Pitjantjatjara language broadcaster



Waiting to be interviewed



Pitjantjatjara Resource Centre

Our Broadcasting Pioneers

MR H. A. G. (HARRY) STANFORD

At the age of 21 years, Harry Stanford was working as a Fitter's Mate with the Australian Gas Light Co., and one day noticed in a Post Office window that an examination was to be held for Junior Mechanic in the Telephone Department.

He passed the examination and was posted to the Mosman Telephone Exchange just as the first World War started. Harry enlisted and was allotted to the Light Horse Signals.

After discharge from the Army in 1919 he returned to exchange work but when the P.M.G. department took over station 2BL from Broadcasters Ltd. as part of the National Broadcasting Service network, Harry was transferred to 2BL and began a long association with Broadcasting.

About the mid 1930's he shifted to 2CO Corowa as O.I.C. where like 2BL, the transmitter was powered by a room full of rotating machinery.

After two years at 2CO he transferred to Sydney as O.I.C. Studios, OB's and Recording where there was a staff of 25.

When Harry retired from the ABC Forbes Street Studios in 1958 he was Supervising Technician Grade 6 and had been Officer in Charge for over 20 years.

SYD STANFORD

(Since preparation of this article news has been received that Harry passed away on 24th September. Editor.)



Harry Stanford



Jack Read

MR J. V. (JACK) READ

Jack Read began his career in radio in Hobart where he worked in a radio and piano business. Jack had been keen to enter the broadcasting area of the Postmaster General's Department for a long time, but no examinations had been held for many years.

The opportunity came in 1936 when he sat for an examination for appointment as Mechanic Grade 1.

While waiting for the results, he was approached by Mr Bowden, Engineer responsible for broadcasting, and offered temporary employment at 7NT Kelso. Jack was so keen to get to the station, that he was on the train heading north next morning.

Shortly after commencing work at the station, the examination results were announced and he was appointed to the permanent staff. Six months later Jack sat for the Mechanic Grade 2 examination and was subsequently promoted to that level.

The morning war was declared, a detachment of troops arrived to guard the station. They camped in tents, and later in huts on the property. Gates were locked and when staff came on duty a sentry let them in.

In 1940 changes to the staffing arrangements at 7NT were implemented and Jack was given the choice of transferring to another broadcasting station, or to a telephone area in Hobart. He opted for telephony and retired as OIC Glenorchy Exchange in 1977.

JACK ROSS

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NBS in PNG

BROADCASTING IN PAPUA NEW GUINEA

Many broadcasters today are probably unaware that for 30 years, medium frequency and high frequency stations in Papua New Guinea were part of the National Broadcasting Service.

The first station 9PA opened in Port Moresby in 1944 and the last, 9WK Wewak was completed in 1973.

9PA was a 500 watt Dutch Philips transmitter operating on 1250 kHz into a simple T antenna at Wonga just out of town. The station was installed by Queensland broadcasting staff and initially programmed by the ABC in conjunction with Australian and the United States army staff, with the ABC taking over full control in 1946.

To spread the signal further, a 2kW STC high frequency transmitter was installed in 1948 and operated as VLT in the 7 and 9 MHz bands.

In the 1960's a new transmitting site was established nearby at Maigabu with the provision of a higher powered 9PA transmitter, an STC 2.5 kW unit. Two 10 kW transmitters were also installed and operated as VLT and VLK.

Maigabu was 41 hectares in area and featured a large transmitter building, a 65 metre MF radiator, rhombic receiving antennas and several vertical and inclined incidence antennas for VLT and VLK operation in the 3, 4, 9 and 11 MHz bands.

Local ABC program in English and Pidgin was used with occasional material derived from Australian MF and HF stations.

In September 1964 a new block of three studios with control and recording rooms was constructed at Wonga.

A third 10 kW HF transmitter VL8BM was added to Marigabu and operated by PMG staff for programs produced by the PNG administration and designed for indigenous listeners.

The Port Moresby stations were fully staffed at all times.

Over at Rabaul in New Britain, a medium frequency station was opened in December, 1962, breaking the radio silence with which the area had been blessed until then. Station 9RB operated on 810 kHz with a 2.5 kW transmitter into a 62 metre steel tubular radiator.

The ABC studios occupied a wartime building adjacent to the Rabaul wharves and the transmitting site was a few kilometres away at Kurakukaul among the coconut palms, overlooking Talili Bay.

A full scale site survey had been made from this place and from a disused Japanese wartime airfield at Vunakanau, using a test transmitter fitted in a large wartime vintage left hand drive van painted PMG red, which struck terror into the hearts of the local Tolai people.

Subsequently a 10 kW transmitter was installed for Administration programs and operated as VH9BR in the 3 and 5 MHz bands. The ABC also used this transmitter with call sign VH9RA for daily school broadcasts.

Rabaul remained a staffed station to the end.

The National service was expanded in the 1970's with the installation of AWA 2.5 kW transmitters at Lae, Madang, Goroka and Wewak. By this time the Administrations' microwave network was expanding so that the ABC Moresby programs were readily obtainable for rebroadcast.

Wewak was part of the NBS network for one day only as on 1st December, 1973, the Papua New Guinea Broadcasting Commission came into being, and the long reign of ABC/PMG came to an end.

This was a colourful phase of the history of the National Broadcasting Service and is now part of the heritage of broadcasting in our country.

DOUG SANDERSON

CHRISTIAN RADIO HOBART

In reading back copies of THEBROADCASTER, it is apparent – for obvious reasons – that most of the articles are about BIG stations and studios. I suggested to the Editor that he may be interested in publishing something about a smaller station to which he replied in the affirmative.

Here is the story, in brief, of 7HFC-FM.

It all started in 1974 when I resigned from the ABC where I had spent the previous fifteen years as Technical Services Director of both Radio and Television. The reason was a call from God to enter into full time Christian activity – although exactly what, was uncertain at that time.

We did have a building purchased in the name of HOPE FOUNDATION LTD. – a property in the heart of New Town, and inner suburb of Hobart. It had been used for some years previously as a Monastery by the Catholic Church.



On Air Studio 1982

Over the next few years, the then Government moved towards the establishment of Public Broadcasting with the options of Special Category Licences. It became apparent that an application could be made to provide a 'Middle-of-the-Road' music format to be interspersed with the Gospel message.

On receipt of the telegram from the Australian Broadcasting Tribunal in September, 1978 advising that our application had been successful, the saga of putting a station together really got under way. All we had was a pile of 'ex-disposal' equipment



Technician Wes Carpenter with NEC and Collins transmitters

from the ABC which had been purchased at auction for the princely sum of \$96!! It included many of the original Production and Control desks from the 1960 installation of ABT-2 which were made surplus during the colour conversion.

The original control desk was equipped with the TROUPER 8 channel mixing console, fed by two CE16" turntables fitted with ORTOFON pick ups – all ex ABC disposal – and two REVOX A77 and one TEAC 3300 reel to reel record/replay machines, plus an HITACHI cassette deck. It really is amazing

how little is needed to put a station to air – as crude as it may have been.

Since that pioneering time, a second fully equipped on-air studio has been constructed utilising the framework of the ABC Television Studio 71 Main Production desk and equipped with a QRK 10 channel console, Technics turntable, BE cartridge machines and B77 reel machines.

The original studio area has been completely upgraded with a YAMAHA 12 channel desk, OTARI 8 channel and 2 channel record/replay facilities, Technics turntables together with ancillary production equipment.

For the transmitting end, the Licence stipulated a maximum output of 1.5 kW e.r.p. We purchased a COLLINS 2.5 kW transmitter at a duty free price of around \$25,000. We didn't have a suitable site but came upon a piece of land owned by the City of Hobart adjacent to a water reservoir and at one of the highest points of Mt. Nelson – some 300 metres above sea level and overlooking the main city and suburban areas. A local building firm constructed a 3m x 3m 'hut' for only \$800 and Hills



Technician Wes Carpenter in workshop

Industries supplied the 36m tower equipped with a PHELPS DODGE antenna.

Telecom lines were installed from the studios at New Town, some 7 km distant. Final adjustments were still being made to the antenna system at 1.45 p.m. Sunday, 30th March 1980 – just 15 minutes before the scheduled opening time. A rigger was still up top when the transmitter had to be turned on – he claims he saw a few sparks on the way down.

Over the years, things have become more sophisticated, an



Studio building, New Town

NEC standby 300W transmitter was added plus all ancillary equipment needed.

It has been an exciting adventure after working with reasonably unlimited budgets with the ABC to seeing things tied together with 'pieces of string' but with a growth over the years to a compact workable and excellent sounding FM broadcasting station achieving the object of providing Hobart with good news and good music 18 hours a day, 7 days a week.

NEVILLE BROWN

CENTRAL OFFICE

With the establishment of the Finance, Accounting and Supply Branch and the Human Resources Section, a number of new arrivals have been welcomed to the Division. These include Marilyn Winoebank (Human Resources Manager), John Day (Principal Supply Officer), Martin Val (Senior Supply Officer) and Garry Ross (Senior Supply Officer).

Other new arrivals to the office include Qanile Meco (AO1) and Anthony Caferella (TA1) who have joined on a fixed term basis, Vittoria Saporito (Operations Branch) and Martin O'Donahue on transfer from the Victorian Branch.

Greg Woolstencroft and Camelo Costa both left on promotion to Corporate Customer Division while Norman Franke and Robert Mews transferred to the Victorian Branch.

NEW SOUTH WALES

Brian Cleary from Queensland relieved as State Broadcasting Manager for six weeks while Mike Stevens enjoyed a trip overseas.

Kel Stansfield acted as BOM during absence of Ron Johnson on a well earned one month's leave followed by a short stay in hospital for repairs. Ken Moore came down from Tamworth District to act as PTO for seven weeks.

A number of technical staff have left the Branch in recent months. They include C. Kemp, R. Gerdes, R. Quin, S. Watson, M. Spurr, M. Bardough, A. Bilski, C. Swan, W. Arnott, W. Biglin, M. East, L. Jones, P. Harris, B. Fischer and P. Mallow. Best wishes to all in your future endeavours.

Eight TOIT's were successful in the Part A examination. G. Wiseman successfully gained entrance to the TOIT course.

In the Clerical area, Christine Iliopoulos left for greener pastures, Melani Batholomeusz returned from overseas with piles of photographs and many exciting stories and Robert Valera and Phillis Hsia have joined the group hoping for a bright future with the Branch.

The Lines group has been expanded with the arrival of M. Fitzgerald and D. Patterson from Victoria and J. Stevens from Queensland to help with the additional work load created by the Equalisation program. SLO2 John Carsen retired after 31 years service and is now basking in the sun on the central coast.

Steve Brown left the Drafting group and John Behr, Senior Draftsperson returned to duty following three months leave including a visit overseas. Two temporary staff under contract, Brent Blackwell and Leon Jacks, recently joined the group.

WESTERN AUSTRALIA

Kevin Buckland, Manager Management Service left the Branch to take up a position of Manager, Financial Planning and Analysis with Telecom Network Engineering. Best wishes Kevin in your new job.

Don Purdy SBM recently visited New Zealand to examine the possibility of Division involvement in Broadcasting Projects in that country.

Recent retirements include Tom Reed, Jim Wilkinson and Bill Smallegange who collectively accumulated 105 years of service. All the best chaps in your retirement. Other departures from the branch include J. Somerville, P. Knight, A. Palmer, Rod Davidson and Trevor Hoy.

Steve Donohoe at RACAR became a proud father recently with the arrival of a bonny baby boy.

SOUTH AUSTRALIA & N.T.

During July, all Managers and District OIC's attended a Management team building seminar run by the firm Integro, at Wirrina, south of Adelaide. In terms of obtaining a better

perception and understanding of both their own and others' behaviour, all considered the program very successful. In the days following, people could be seen in the office imparting their new found knowledge to other staff.

Elsewhere in this issue is news of the retirement of Ron Mitchell, OIC for many years of ABGS1, South East District. Ron's replacement is John Dhu from Queensland. Ron Cichon (TO2) also from the South East District, has been provisionally promoted to a position with the Department of Transport and Communications, in Tasmania. The shortages at the District Centre have been overcome by the temporary transfer of Mike Macintosh, and Graeme Chirnside from BSC. In the west of the State, Martin Morris has accepted a transfer to Port Lincoln, joining the Eyre Peninsula District, where he will exploit the fishing opportunities in his spare time.

In common with other areas, a number of staff accepted redundancy proposals: Colin Biggs (Radio Lineman, redeployed) ceased from the office, Nick Vosnakis, John Scrapel, Brian Kennedy, and Milam Macksimovic (all Technicians) left BSC, while Des Hocking (TO2) finished at Radio Australia. Ansis Nitz (Technician) ceased worked at Mount Burr.

Stephen Prince (A2) joined the Branch as part of the handover of functions from Material Supply Department, and Karen Driessen (A1) commenced a fixed term of employment in the Admin Section to overcome a staff shortage.

QUEENSLAND

Several officers, all with about 40 years service each, have retired and handed in their valve testers. They include Keith Ross, Geoff Bucknell and Ian McManus. All the best in your retirement Keith, Geoff and Ian.

Pressure on the Drafting group has been somewhat relieved with Mike Pascoe joining the ranks of this hard working important group.

State Broadcasting Manager Allan Garner commenced some well earned furlough in August to undertake a leisurely cruise through the beautiful Whitsunday Islands.

Dave Southby, Terry Comerford and Janis Ozolins made a visit to Darwin to discuss with local staff some aspects of the proposed Radio Australian installation at Brandon.

Broadcasting Operations Manager Brian Cleary had a good look at the New South Wales Broadcasting Branch set up when he spent time in Sydney relieving the State Broadcasting Manager.

VICTORIA

Recently, Arthur Robinson OIC at Mt Tassie TV decided to retire and brought to an end his broadcasting career of 35 years. George Koschmann, Labourer at 3WV Dooen is now able to spend some more time caring for his sheep and cattle after retiring at maximum age with 15 years service.

In the Engineering and Construction Section, staff changes have seen Tom Jelliff promoted to Senior Draftsperson Gr. 2, Trunk and Country Engineering, Simon Moorhead promoted to Engineer Class 4, BCS (Nth) Metropolitan Division, Martin O'Donohue transferred to Central Office and joining the Branch from Central Office are Robert Mews and Norm Franke. Don Wallace was convinced to join his family's business and resigned after 26 years service. After working at Lyndhurst Radio and at Mt. Dandenong TV, Don joined the office staff where his major project was the introduction of the RF Safe Working Practices Manual. Congratulations are extended to the following Line Staff for their promotions - Ron Brown and Darren Patterson to Radio Lineman, Kevin Beanham to LS 1 and Jock McRae to Lines Officer.

New to the Branch are Peter Amiridis, Colin Davey and Esther Joseph, who are joining the Management Service Section.

Best wishes go to all staff on their promotions and transfers as well as to those who have opted to take a redundancy package.

The Good Oil

OIL MAINTENANCE

High power broadcast transmitters have many oil filled components. These include power transformers, modulation transformers and chokes, capacitors and mains switch gear.

Whilst some components may only use four or five litres of oil, others, particularly EHT and modulation transformers may have capacities of 4200 litres or more.

The oil serves a dual purpose, namely insulation and cooling, and close control of the quality of the oil is essential. Samples are taken regularly and tested either locally if facilities are available or sent to a control station with test facilities for analysis.

Whilst marked degeneration of the oil does not appreciably affect the conduction of heat, as long as sludge is not deposited on the coil-core assembly, its properties as a high class insulating medium are affected during operation by external factors, such as the intrusion of moisture and dirt and by ageing of the oil as a result of chemical reaction with atmospheric oxygen. The extent of such ageing depends largely on the method adopted to prevent the access of air to the oil.



Sampling oil

Ageing of the oil in service is due to chemical change in the constituents of the oil caused by oxidation of the hydrocarbons. Through various reaction stages, this leads to the formation of organic acids, in the course of which the dielectric loss factor rises. When ageing reaches a more advanced stage, solid products are deposited in the form of sludge.

Oil regeneration can be achieved by demisting, filtering and de-acidifying. Although systems employing throwaway filters are effective, they aerate the oil, resulting in significant reduction in transformer performance. Filtering techniques using edge filtering disc's, filtering preheated oil, and vacuum devaporizing, provide an effective and reliable regeneration process. The desirable level for water content after filtering is less than 10 ppm.

The acidity of oil is measured by recording how much alkali is needed to neutralise it. The alkali used is potassium hydroxide (KOH) and the number of milligrams of this required per gram of oil is the measure used.

The oil test equipment comprises an electrical test set which measures the breakdown voltage of the oil and a chemical set used for determining the acid value. New oil typically tests at 48 - 50 kV with a gap of 2.5mm and reconditioned oil at 45 kV. Acid values of 0.2 to 0.3 mg of KOH per gram of oil should give no trouble, but with a level of 1.0 mg of KOH per gram of oil, this is a sign that the oil should be regenerated.

TERRY SAID



Oil regeneration unit



Typical oil filled transformers 250kW transmitter



Voltage test unit

Alice in the Wet

BROADCAST SERVICES DISRUPTED

Who says the centre of Australia is a hot, dry, dusty place? On Thursday, March 31st, 1988, it certainly was not. With approximately 210mm rain falling within a 24 hour period in the Alice Springs area, the town and surrounding area was flooded. The Todd River overflowed cutting off the main highway, isolating the town from the airport and all points south, including two sound broadcasting transmitters and the television transmitter. It was the worst flood in many years.



Erosion around fence post

As luck would have it, the TV transmitter and the HF transmitter providing the Inland Service, both failed that morning. The local Telecom staff were asked to restore the services. Using a four wheel drive vehicle, they passed through the Gap by driving on the railway track, as the road was impassable. Because of torrents of water cascading down the hillside and the risk of falling rocks, it was not safe to negotiate the steep track to the top of the Gap, to the TV transmitter site.



Rubbish against station fence

They then attempted to drive the 15km to the HF transmitter down the flooded Stuart Highway. Police stopped them a few hundred metres from the site because of the flood waters, so the rest of the way was made on foot. After investigating the fault, they could not solve the problem and Darwin Broadcasting District staff decided to fly to Alice Springs.

The Alice Springs airport was overflowing with passengers unable to leave because of flooded roads, and catering facilities

at the airport had been exhausted. The airlines were refusing to book passengers into Alice Springs. Darwin Broadcasting staff were unable to fly there until the Police had given permission for this emergency visit.

It was late in the afternoon when staff arrived at the Alice Springs airport. After a wait of over an hour a hired 4WD vehicle arrived, and as the rain had stopped earlier in the afternoon the first stop was the TV transmitter. After negotiating fallen rocks staff made it to the top of the mountain and restored the service.

By this time the flood waters had receded enough to drive out to the HF site, which has the site name of Roe Creek. The normally dry Roe Creek, a few hundred metres south of the



The Todd River in flood

transmitter site was a raging torrent and had spread right across the transmitter site to a depth of about 0.8m.

The fault repaired, staff negotiated the flooded road back to town, where they found some of the streets still impassable.

Next day the HF site was revisited, the water had gone, but left in its wake was a considerable amount of soil erosion. Many of the posts in the manproof fence around the site, had been



Flooded local road

loosened by the soil being removed from their concrete bases and the fence had to be straightened.

A week later, the Todd River was almost dry, but the Alice was green.

TERRY WOOSTER

Broadcasting District

TAMWORTH

The Tamworth Broadcasting District covers the New England and North West Slopes regions of New South Wales. This area includes some of the best agricultural country in Australia producing sheep, wool, beef, wheat and most summer grain and oil seed crops. The largest cotton area in Australia is situated along the Namoi River in the west. Some lesser known products also originate in the region – coal from Gunnedah, pecan nuts from Moree, mead from Manilla and the Cubaroo Vineyards produce an excellent range of wines.

TV coverage is provided from the main transmitters at Mt. Dowe, in the Mt. Kaputar National Park covering the Nandewar Ranges. At a height of 1460 metres ABUN7 Mt. Dowe is the highest staffed TV site in Australia. Situated on the extinct volcano formed some 18 million years ago, Mt. Kaputar National Park provides many bush walking trails, picturesque scenery, camping grounds and cabins.

Mt. Dowe houses both National and Commercial TV transmitters (ABUN7 and NEN9) as well as radio communication facilities boasting the longest microwave bearer hop in Australia of 120 km to Tamworth as well as one of the shortest links of only 300 m to the National Park Rangers cabin.

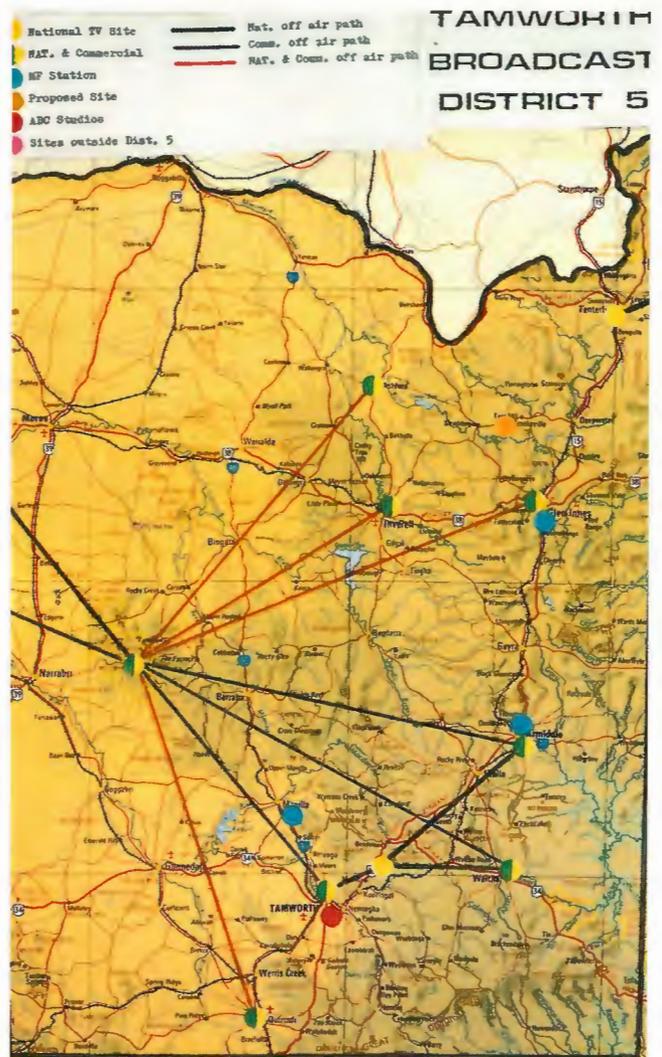
The District is served by the two main transmitters, 16 translators (7 Commercial and 9 National), two staffed MF stations—2NU Tamworth, and 2GL Glen Innes—one unattended MF station 2AN Armidale and one low power television transmitter. District staff also provide first-in maintenance to three radio communication sites on the Nandewar Range and to the ABC studios in Tamworth.



ABUN 7 Mt. Dowe. Staff: L TO R, Bill Metcalfe, Eric Brodrick, Col Henry, Bob Gerdes, John Bell, Maurice Boyce.



"The Golden Guitar", Tamworth



Tamworth Broadcast District map

The District was established on the 22nd January 1987 with a staff of 11 providing first-in maintenance to the three staffed sites and the Tamworth translator site at Bald Hill housing National and Commercial translators plus a national low power TV transmitter. First-in maintenance to remote translator sites at Tenterfield, Ashford, Inverell, Glen Innes, Armidale, Walcha, Moonbi and Quirind plus the MF station in Armidale is provided by the local Telecom technicians with all second-in maintenance and support being provided by the District staff.

The major tourist attraction would have to be the Country Music Capital of Tamworth which hosts the Country Music Festival and Awards each January.

KEN MOORE



Station building 2NU Tamworth

Profiles

IVOR CHAPMAN

Ivor Chapman Broadcasting Operations Manager, Western Australia was appointed Technician at the NBS Transmitting Station Hamersley in January 1962 where he worked on operations and maintenance of MF and HF broadcast transmitters, HF communications transmitters and associated speech input equipment.

Later in the same year Ivor transferred to the Derby Radio Terminal working on the Perth-Derby HF ISB system, the Derby-Yampi VHF link and emergency telerradio equipment.

After three years in Derby he moved to the Radio Installation Depot in Perth where he worked on several important installations and in 1967 began work as Supervising Technician Gr1 on the East-West Broadband Microwave Project.

In 1970 he transferred to the Mt. Yokine Base Repair Centre where he established facilities to service the East-West system and subsequently all new solid state microwave systems throughout the State.

Ivor moved to the Radio Section head office in 1974 where he provided technical support to the Senior Engineer and carried out acceptance testing of new radio communication services. Five years later he transferred to the new Radiocom Design Section and worked on many projects including the Hedland-Derby system, the Derby-Kununurra system and development of a graphics software package for path analysis.

With the establishment of the Pipeline Communication Section, Ivor was appointed STO 2 in the Section and subsequently promoted to STO 3. The work involved initially, design activities and later field installation of the system.

In May 1985 Ivor returned to broadcasting taking up the position of PTO Broadcast Operations District South. The district included 33 unmanned broadcast and television stations spread across the southern part of the State.

With the retirement of Bob Howie in August 1987 Ivor was appointed to his present position.

MIKE DALLIMORE



Ivor Chapman



Mike Dallimore

Mike Dallimore, Senior Engineer, Engineering and Construction Section Western Australian, joined Telecom in January 1980 after graduating from the University of Western Australia. Mike's reason for choosing a career in Telecom is crystal clear, "They were the first organisation to offer me a job."

He joined the North-West Engineering Section where he remained as a Class 1 Engineer for some 12 months, offering professional engineering support to this large Operations District.

He then began acting at the Class 2 Engineer level in a variety of positions throughout Telecom, and eventually began his career in Broadcasting in August 1981, when asked to relieve in a Class 2 position in this area.

After two years in the Broadcasting Installation area, Mike was appointed to the Class 2 level in May 1983. He subsequently moved into his present position of Senior Engineer in charge of external plant activities in December 1984, and was appointed to this position, which he currently occupies, in May 1985.

Mike is married and his main interests include his radio controlled boat, swimming, gardening, eating out and generally enjoying life.

TERRY SELLNER

Terry Sellner Senior Engineer Internal Plant Western Australia commenced working life as a farmer but after marrying the local school teacher decided to switch to engineering. He obtained assistance under the Cadetship scheme of the Postmaster General's Department and after graduating from the University of Western Australia with first class honours began work as an Engineer in 1974.

Terry spent some time in Perth North and then North West Engineering Section before moving to the Radio Section where he was engaged in broadcasting activities.

One of his early major projects was Radio Australia Carnarvon which was a high priority work to cover the gap left in the shut down of Radio Australian Darwin following damage by cyclone Tracy. He spent most of 1976 on the project being engaged in tuning of antennas and feeder lines and provision of the safety fence.

In 1979, Terry was appointed Engineer Class 2. He was RATV project engineer from 1979 to 1981 during which time 28 stations were built. He was appointed Engineer Class 3 in 1982 with responsibility for Installations. He is currently in charge of Internal Plant works.

Terry is married with three children and interests include vintage cars, travel, camping out, computers and electronics.

TOM REED

Tom Reed, STO3 and Officer-in-Charge of the Mt Barker Broadcast District Western Australia, began his technical career as a control room operator at the Perth studios of radio station 6KY in February 1947. Soon after this, Tom began his long association with Amateur Radio, gaining his Amateur Operators Certificate of Proficiency in 1952. He has maintained his association with Amateur Radio to the present day, being a foundation member of the Southern Electronics Group in the Mount Barker and Albany area where he worked as a Shift Leader at T. V. station ABAW Channel 2 from 1967 to 1971.



Terry Sellner



Tom Reed

Tom's career took a change in direction in 1953, when he commenced employment with the P.M.G.'s Department as Exempt Technician at the National Broadcasting Studios, Perth. He moved through the ranks, achieving promotion as Senior Technician at 6NM Northam, then as Shift Supervising Technician Grade 1 at ABCW Channel 4 Mawson near Quairading in 1964.

From this point onwards Tom remained with broadcasting, and has had a wealth of experience in all phases of the construction and maintenance areas.

Tom's wife, Betty and daughter Julie who is fond of horses, keep him busy and he divides his remaining spare time between Amateur Radio activities music, and the sea. Tom recently retired and now finds more time for these hobbies.

Tom is currently a member of the Wireless Institute of Australia, the Radio Amateur Old Timers Club, and has been associated with the Wireless Institute Civil Emergency Service and the Albany Sea Rescue Group.

Letters to the Editor

Contributions 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,

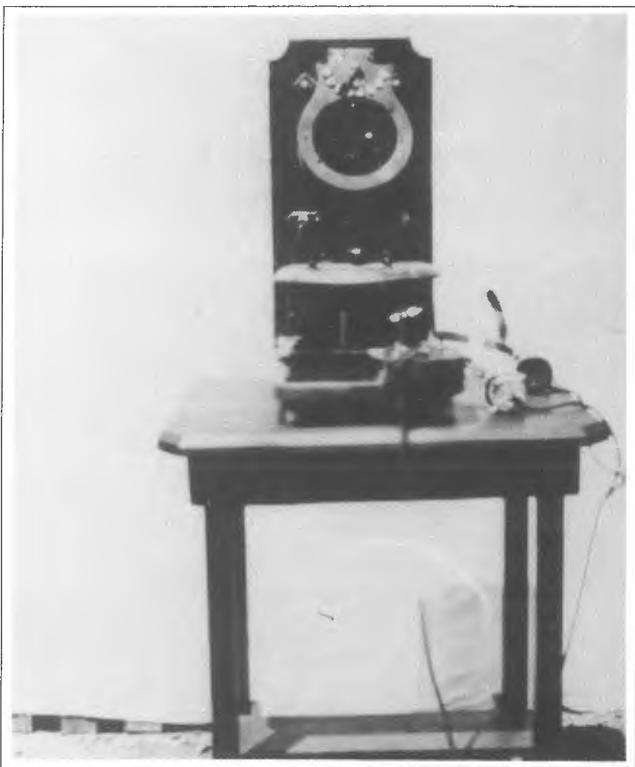
The article in the March 1987 issue of the The Broadcaster on the French R tubes made during the First World War reminds me of my grandfather Mr. W. Percy Ward who was one of the early wireless enthusiasts in South Australia where he held an experimental licence for his station at Clare.

In 1913 when he was an active experimenter there was very little wireless equipment available and most of the enthusiasts made their own equipment. Transmitting equipment was usually home-made induction coils or a Ford spark coil, whilst receiving equipment comprised various coils and tuning condensers and coherers or crystals for detection of the signals. Except for the coastal radio station VIA which went on air in 1912 there were very few signals to be received.

However, after Lee de Forest in the United States developed his three element tube in 1906, enterprising ships' crews working between Australia and the west coast of America acquired samples and brought them back to Australia for sale to local experimenters. Mr Ward obtained one of these tubes and although they were unreliable in operation due to the low vacuum, he was able to receive signals from one of the high power US navy stations. Another Adelaide experimenter who obtained a de Forest Audion tube at the same time was Mr Haire who had a station on the Empire Theatre rooftop.

When the First World War began, the authorities ordered the dismantling of all experimental wireless stations. The Army chopped down the enormous sausage aerial system poles, and took away the equipment. After the War only some of it was returned.

By occupation, Mr Ward was a ship's Chief Engineer, having obtained his certificate on 4 August 1899 while only 26 years of age.



Early crystal receiver constructed by Mr Ward

He carried out many wireless experiments while at sea before the days of wireless operators, and the photograph shows an early crystal set he used during those experiments at sea.

GRAHAM WARD

Sir,

Although I had been interested in wireless from about 1922, the first indication I received that it would become a career activity was a direction from Tom Armstrong, the local Senior Radio Inspector, to report for duty at 4QG on 3 February 1930. The station had been taken over by the Postmaster General's Department on 1st February as part of the establishment of the National Broadcasting Service.

I duly presented myself and was soon followed by Bob McLennan. For a time we were mainly involved with outside broadcasts.

As former station technical staff ceased they were replaced by Departmental personnel including Vern Kenna, Reg Baker, Jack Loth, Bert Cowling, George Carrier, George Macfarlane, Jim Schofield, 'Snow' Hendry and Arthur Clark who in due course became station OIC.

At the time that we took over, furnishings and appointments in the announcer's studio were rather sparse. The only microphone then in use was a Reis carbon type which covered the total requirement of the announcer on duty.

The announcer's procedure when reading the news was to stand in front of the microphone which was mounted on a tall, slim, non-adjustable stand, and hold loose sheets of paper in his hand. When he finished reading a sheet he moved it to one side and allowed it to flutter on the floor.

Assuming the next item was a gramophone recording, he would read the title from the disc and wait until the studio operator faded out the microphone. He would then pick up the microphone, place it in the flare of the gramophone horn, change the needle, wind the spring motor, start the turntable, place the acoustic reproducer on the disc and then give a nod to the studio operator who would fade-in the microphone.

The microphone when not in use was kept in a dessicator. Prior to each session it was placed in the studio, connected and tested. At the end of the session it was returned to the dessicator.

With the advent of magnetic pick-ups, twin turntables with spring driven motors were installed by Jack Biddle. These seemed to be somewhat of an improvement on the earlier gramophone set up.

One morning, the announcer advised Jack Loth that an odd noise was emanating from one of the motors. Jack investigated and in the course of inspecting the motor, a generous amount of thick black graphite grease shot out of the mechanism without warning, and covered his new white shirt. The motor having relieved itself, then behaved normally.

Initially, the station possessed one single channel OB amplifier which was unable to meet increasing demands. Vern Kenna and I constructed two twin channel battery operated amplifiers and we also made three carbon microphones which were look-alike copies of the Reis type.

The next item of interest was the replacement of four MT7A type 'football' air cooled tubes with a 4220C water cooled triode in the modulated amplifier of the transmitter. Engineers Sam Ross and Peter Dodds and Country Installation Roy Ferguson spent a couple of late nights after closedown, in company with members of the late shift - Jack Loth and myself - carrying out tests on the proposed modifications. These proved to be satisfactory and George Olsen proceeded with the permanent rearrangements during the next week or so.

A major improvement in the microphone position then took place with Cec Morris installing STC Condenser, 44BX Ribbon and 17A Moving Coil types. Cec then installed a Presto Disc Recorder.

At that stage I left 4QG and transferred to other duties including periods at 4RK Rockhampton and 4QN Townsville.

BILL ROHDE

Retired Supervising Engineer Radio Brisbane

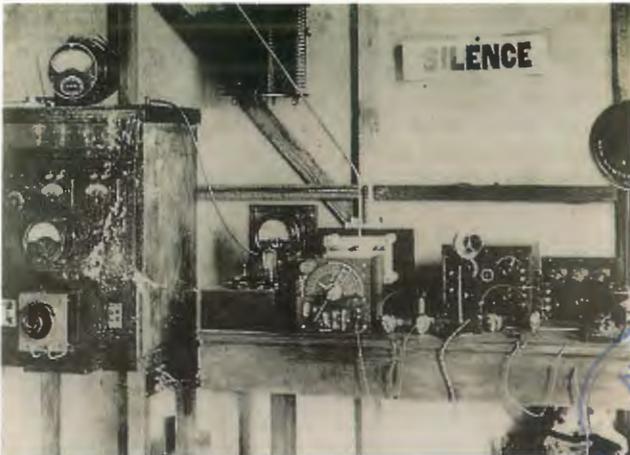
The Broadcaster, November 1988 — 19

Broadcasting Milestones

2BL SYDNEY

Station 2BL first began transmission using call sign 2SB. The occasion officially marked the commencement of broadcasting in Australia when the station went to air on 13th November 1923. The call sign was changed from 2SB to 2BL because of confusion with 2FC which began broadcasting 12 days later. The station licence was held by Broadcasters (Sydney) Ltd a group of radio manufacturers and dealers.

The studio and 500 watt transmitter were in the Daily Guardian Newspaper Building with the antenna being mounted on the building roof.



2BL equipment 1923 (Courtesy ABC)

When 2FC commenced trans that 2BL could not compete effectively. There was a great difference in transmitter power. Raymond C. Allsop a well known notable contribution to experim station 2GY. Allsop was given the task of designing and constructing a more powerful transmitter. He maintained a long association with the station by remaining until 1929 when it was taken over by the Government.

A site was acquired at Coogee and in 1926 a new transmitter was commissioned with 5kW input to the final stage. It operated on 353 metres (850 kHz).

The business was not very profitable and on 14 August 1928, 2BL amalgamated with 2FC to become part of the New South Wales Broadcasting Company.

With the formation of the National Broadcasting Service, 2BL was taken over by the Postmaster General's Department on 22 July 1929.

At the outbreak of the War it was considered that the station was too vulnerable to attack from the sea and a decision was made to remove it.

A site was acquired at Preston near Liverpool for the purpose of operating 2BL and 2FC, the other National station, from a common site. In 1946 a 10kW water cooled transmitter of STC design and manufacture using cascade linear amplifiers was installed on the site for 2BL.

Outputs from the two transmitters were fed via coaxial lines to a dual frequency coupling unit at the base of the radiator.

In January 1962, the transmitter was replaced by an STC 50kW air cooled transmitter employing high level modulation together with a 10kW standby unit.

WALLY CLAIR



Ron Johnson BOM (L) and Alex Hanlon OIC at present 2BL transmitter