

The **BROADCASTER**



Newsletter of the Broadcasting Directorate
No. 3. November 1985



SATELLITE BROADCASTING

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: Artist's impression of Aussat satellite over Australia. Courtesy Aussat Pty. Ltd.

Translator Station: Eneabba W.A.
Intelsat dish (L) in operation. Aussat dish being installed.

Editorial

We have all heard the saying, "Life was not meant to be easy". Well, for some broadcasting staff, simply getting to work was not meant to be easy either. Technical considerations have a major influence on the location of a broadcasting station — whether sound or television — and some sites are difficult to access by staff who may have to travel to and from there on a daily basis.

For most city people, getting to work might be a pleasant half hour journey in a bus, train or car, but for some of our field staff, the daily journey can be tiring, hazardous and indeed a challenge.

In this Issue, we highlight problems experienced by staff in travelling — if they can — during winter to and from work at Hobart television station ABT2. In a following Issue we tag along with the Radio Australia Cox Peninsula Clerical Assistant and show what hurdles she has to overcome in getting to the office on time.

This Issue completes our program for 1985. It certainly has been a year full of challenges, but I am extremely grateful for the tremendous support I have received, not only from our Director Leon Sebire, but also from the Co-ordinators, State Broadcasting Managers, my own office staff and especially my Secretary Jan Shirra.

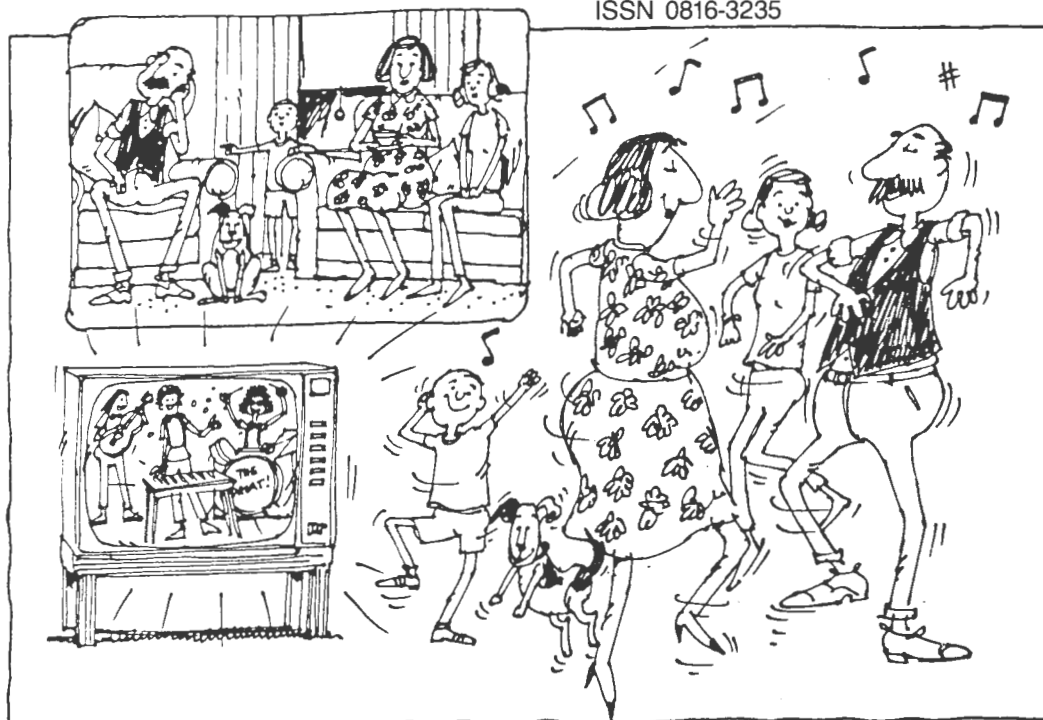
With the festive season approaching, we wish all readers of The Broadcaster a Merry Christmas and a Happy and Prosperous New Year.

JACK ROSS
Editor

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Leon Sebire	Mike Dallimore
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Doug Sanderson	Lew Grubb
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Ray Weeks	Terry Said
Brian Hall	Graham Shaw
Kevin Buckland	John Wilkins

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Satellite brings TV to the outback!



Leon Sebire

From the Director's Desk

As 1985 draws to a close, it is timely to reflect on our achievements over what might be described as the year in which the Broadcasting Directorate got 'its act together'. Although the Directorate was formed early in 1984, it has naturally taken some time for all of us to become accustomed to the new ways of working and revised inter-relationships, and to adjust to real, rather than previously perceived, requirements.

I believe the major 1985 highlights included the implementation of the new grading scheme for broadcasting technical grade staff and the regrouping of most of our operational resources into Broadcasting Districts. In addition to the continuation of the extension of ABC transmitting facilities, our new works have included a major extension of SBS television and the establishment of satellite earth stations at a large number of transmitter sites throughout the country. By the close of the 1984/85 financial year we, as the Broadcasting Directorate, had recorded a productivity improvement of approximately 10% against all previous broadcasting indicators. This is, of course, partly attributable to the major re-organisational changes which have been put in place, but, more importantly, to the enthusiasm of all staff who have so willingly embraced the new concepts and working arrangements.

There is still much to be done to overcome residual problems, and as with any organisation facing a changing environment and new technology, periodic review and adjustment will need to continue. Thanks to the work of 1985, I am confident that modifications of our present arrangements will, in 1986, be in the nature of fairly modest 'fine tuning'.

My regret for 1985 is that personal preoccupation with some of the fundamental and major aspects concerned with the future direction of broadcasting in Australia has prevented me from having the opportunity to meet with more of our Broadcasters at the workplace. Hopefully, I might be able to go some way towards rectifying this in 1986.

To all staff of the Broadcasting Directorate, their families and friends, may I offer my best wishes for the approaching Christmas season and the hope that 1986 will be an even better year for the Broadcasters of Telecom.

LEON SEBIRE

ABUN-7 MT DOWE

At an elevation of almost 1500 m television station ABUN-7 Mount Dowe is reputed to be Australia's highest staffed television station. The site is shared with Tamworth based Commercial station NEN-9 and Telecom radiocommunication equipment which includes repeaters linking the OTC earth station at Moree with Sydney.

The main service areas are the north western slopes and plains and the New England Tableland area of NSW including the regional cities of Tamworth and Armidale and large country towns Moree, Narrabri, Gunnedah, Inverell and Glen Innes.

Transmissions from Mt Dowe are supplemented by three on-line and five off-air translators.

The first television program to be transmitted from ABUN-7 took place on 29 March 1965. The Commercial transmitter went on air in September of the same year. The original twin AWA TVH-5 transmitters for both National and Commercial services are still in service.

Heavy ice build up on the long span power line feeders has been a problem ever since the station commenced operation. The local emergency power plant has been used for 2% of total transmission time since 1965. On one occasion the power line was out of service for almost a month.

ABUN-7 is a fully staffed site with a staff of eight, all of whom live in or near Narrabri, some 53 km by road, which for the most part is unsealed, steep, narrow and twisty.

Occasionally the road is closed or impassable for reasons as diverse as flooding, landslide, fallen trees, bushfires or heavy snow. In spite of this, there has been very little transmission time lost as a result of non-arrival of staff, although since last year a back-up auto start has been fitted to all transmitters.

MAURICE BOYCE

2CO COROWA

Station 2CO Corowa is located in the southern part of New South Wales on the Murray River near Albury. Although the call sign signifies it as a NSW station, the service area is quite large on both sides of the river. The program is sent to Corowa via Albury from the ABC studios in Melbourne.

The original transmitter was built by Standard Telephones & Cables Ltd and rated at 6.25 kW with 95% modulation. It was a six stage unit employing water cooled tubes in the final amplifier and EHT rectifier units. The antenna was a multiple tuned flat top type supported by two lattice steel towers. The station was commissioned on 16 December 1931 with mains power being supplied from the Corowa Municipal Council's power house.

The station currently operates on a frequency of 675 kHz with a 10 kW AWA BTM-10 transmitter.

One of the best remembered highlights of the station occurred in 1934 during the London to Melbourne Centenary Air Race.

After leaving Charleville on 23 October, one of the entrants, the 'Uiver', a Douglas DC2 of the KLM Royal Dutch Airlines encountered a fierce electrical storm which disabled its radio navigation system.

At 12.10 a.m. the 'plane was heard flying over Albury and it was evident that the pilot was looking for somewhere to land. The local residents sprang into action. The lights of Monument Hill flashed the word 'Albury' in Morse code and the Municipal Engineer also flashed the whole town lighting network. The ABC regional officer for 2CO broadcast an appeal for car owners to drive to the racecourse and to illuminate a landing strip with headlights.

At 1.17 a.m. the 'plane touched down and stopped just short of a fence but bogged to the axles.

On 2 March 1980 a plaque was presented to 2CO for its role in this historic event.

ALEX HANLON

News Round Up

QUEENSLAND TV INSTALLATIONS

A German FUBA UHF TV translator on Channel 49 has been commissioned at Mt. Tamborine to serve the Gold Coast with program being off air from VHF Channel 2 in Brisbane. A similar transmitter was installed at the same site on Channel 61 to carry SBS programs with the parent station also being in Brisbane. Both stations commenced transmissions in June.

At Black Mountain, Cooroy, just north of Brisbane, an early model Toshiba 500 Watt TV translator was replaced with a new NEC model. A similar change was made to the co-sited commercial station. Both translators receive program from parent stations at Mt Goonaneman. The equipment was originally in the microwave radio building but is now in a separate shelter built from prefabricated lightweight concrete slabs.

DOUG SANDERSON

INTERSTATION CO-OPERATION

The establishment of the Broadcasting Directorate opened up the way for more efficient use of the total broadcasting resources and for improved co-operation between stations, particularly those with common interests.

The Radio Australia complexes at Shepparton, Carnarvon and Darwin are good examples. They share a common interest in International broadcasting, utilise high power high frequency transmitters, and require specialised workshop facilities and expertise to maintain plant peculiar to high power radio engineering.

The Darwin station recently had a need to repair some damaged components and with the co-operation of Shepparton staff, Foreman Brian Bingham and Fitter Keith Dahlberg, refurbishing of a pancake inductor and prototype insulation structures were carried out.

Not only did this in-house work save thousands of dollars compared with other alternatives, but the quality of workmanship was equal to the highest available from any commercial engineering workshop. Plans are already in hand for further work to be undertaken on transmitter components.

TERRY SAID



L to R — Ross Kearney former OIC and Terry Said now Acting OIC examining a reconditioned pancake inductor.

VISIT BY SBS DIRECTOR

Brian Madeley Acting Director Engineering, Special Broadcasting Service Sydney, visited Adelaide on 26 June to inspect the Pye TVT Ltd UHF transmitter installed at Mt Lofty for the SBS and to attend a Civic Function given by the Lord Mayor of Adelaide in the Queen Adelaide Room of the Town Hall to mark the launching of SBS transmissions in Adelaide.

Brian's last visit to Mt Lofty was in 1960 when the ABS2 Marconi transmitters were commissioned for the National Television Service. At the time, he worked in the Central Office of the Australian Post Office in Melbourne.

BRUCE MCGOWAN



L to R — Ray Dineen OIC Installation, Brian Madeley, Bruce McGowan Supervising Engr, Roger Hedley, Actg OIC Mt Lofty.

WIFE TO THE RESCUE

Whilst travelling to work on the early morning shift recently, Steve Farrall A/g TO2, 6WA Wagin, noticed that a large branch had fallen across the open wire lines.

On arrival at the station, Steve found that he had no morning program, telex or 'phone. As the fallen branch was only 300 metres from 6WA's front gate, he tried jumpering the tangled mess, but was unsuccessful. With the program start time of 0530 hours fast approaching, Steve decided to use the off-air receiver, which was tuned to 6BS Busselton, as the program source.

With the open wire trunk lines back to Wagin cut, Steve tried to contact his wife, Chris, at their home in the Arthur River Exchange area. This exchange is connected to 6WA by an underground line. This move was successful, and his wife, with her customary good nature and a yawn, agreed to travel 25 km to Wagin to try and arrange repairs to the trunk route. As she neared Wagin, Chris met the local Line Foreman coming out of town as he had been called out by the local Exchange Technician. Chris was able to direct him to the fault, and as a result the program line was restored at 0650 hours, and the telex and trunks at 0740.

The only condition Chris demanded for payment was to be served breakfast in bed on Steve's first day off — it is reported Steve still has not had that day off!!

KEVIN BUCKLAND



Steve Farrall with wife Chris at the station.

ABC CHAIRMAN VISITS DARWIN

The Chairman of the Australian Broadcasting Corporation Mr Ken Myer AC DSC visited the Cox Peninsula transmitting station on Wednesday 12 June. He was accompanied by Mrs Myer, Mr R. O'Sullivan (ABC Manager for Northern Territory) and Mrs O'Sullivan.

Mr Myer was very pleased with the station facilities and said that the ABC would like to see Radio Australia transmissions to South East Asia, China and Japan expanded. It was his first visit to the station.

He met many of the staff on duty and was particularly interested in watching the transmitters operating under computer control during changes in target areas and programs.

GRAHAM SHAW



L to R — Terry Said Actg OIC, Len Som-de-cerff Engineer, Graham Shaw NT Mgr, Mrs Myer, Mr Myer, Mrs O'Sullivan, Mr. R. O'Sullivan.

MEETING OF BROADCASTERS

On 26 July a meeting was held in Perth of staff from the Western Australian Broadcasting Branch, Australian Broadcasting Corporation and Department of Communications to provide an opportunity for staff involved in the engineering side of the National Broadcasting Service to meet and to inform each other of recent and imminent changes to their organisations, roles and services, to review current broadcasting programs and indicate preferred directions for the future of broadcasting, to air for discussions any problems or items of special interest, and to determine if there was a need for on-going contact of this nature.

Those attending included Messrs Povah, State Manager ABC; Hull, Manager Radio ABC; Graham, DOC; Hullett, Zambotti, Hanson and Gonteff, ABC Engineering; Purdy, State Broadcasting Manager; Howie, Broadcasting Operations Manager; Buckland, Administration Manager; Chidgey, Supervising Engineer; Sellner and Dallimore, Engrs 3; McCarthy and Blackney, Engrs 2; and Deacon and Tytherleigh, Engrs 1.

Each organisation was allotted a brief period to address the meeting on subjects of their choice.

The State Managers of ABC and Broadcasting Branch spoke briefly supporting such interchange of ideas and the contact between the Broadcasting Professionals, and encouraged a continuation of such meetings.

KEVIN BUCKLAND



L to R — Don Purdy, Arthur Povah, Alan Hull and Don Graham enjoy refreshments.

4QG DIAMOND JUBILEE

An open day and barbecue was held at the Radio Centre, Bald Hills, on 28 July to celebrate the 60th anniversary of the opening of 4QG. It proved to be a very pleasant occasion with nostalgia being the order of the day. Included in the staff who had served 4QG with distinction in days gone by were Harold Oxford, Gordon Hall, Vince Henderson, Harvey Humphreys and Leo McCarthy.

During the preceding week, the ABC recorded interviews with many people, and put to air a 30 minute program on the pioneering days of broadcasting.

DOUG SANDERSON

AUSSAT AND RADIO LINES ACTIVITIES

The Broadcasting Branch Radio Lines groups moved into a new era of broadcasting external plant work with the advent of the Aussat receiving stations.

The type of antenna installation and the remoteness of many of the sites required that the groups be self supporting and highly efficient in their technical skills and techniques at the workplace.

A large number of sites were involved with many of those in Western Australia, New South Wales, Queensland, South Australia and Northern Territory being at very remote locations without any suitable aggregates or water being available on sites for the massive foundations.

The installation work was carried out by teams of 3 or 4 men and at most sites work was completed within 3 days.

The works in the various States were completed on schedule and the manner in which the Broadcasting Radio Lines staff tackled the tasks clearly demonstrated the efficiency, the resilience and the dedication of these people.

ALEX BROWN

YOUR BLOOD IS WORTH BOTTLING

Broadcasting staff have always been keen blood donors but the Director of the Red Cross Blood Transfusion Service has sought our help to build up the blood bank.

Blood donations are unique gifts and a priceless natural resource. In some countries, blood has become a marketable commodity and experience in these places indicates that the payment of donors and the consequent sale of blood to patients has resulted in mammoth health risks. In Australia, every unit of blood provided by the Red Cross Society's Blood Transfusion Service is given voluntarily by a donor. The donor is not paid, nor is the recipient charged for the blood concerned.

The average adult has about 5 litres of blood, and doctors agree that healthy people can give blood quite regularly. A donation is less than half a litre and donors may give this safely four times a year. Your body keeps on discarding and replenishing blood all the time whether you donate or not, so this amount is quickly replaced.

Emergencies happen every minute of the day. For each patient requiring a blood transfusion it is an emergency: the patient could die if the blood is not available.

How about it readers of The Broadcaster? Get the "Blood Bank" habit and give regularly three or four times a year. You may save your own life.

LEW GRUBB



Do you have an excuse for not giving blood?

Engineering Highlights

CONTROL AND MONITORING SYSTEM

When the Radio Australia Darwin station was commissioned in 1969 the three Collins 250 kW transmitters were amongst the first high power International broadcasting transmitters in the world to be computer controlled and monitored.

Because of the difficulty in providing on-going support and the availability of more advanced and improved systems, decision was made to replace the original Collins system as part of the rehabilitation works following Cyclone Tracy which resulted in the station being shut down in 1974.

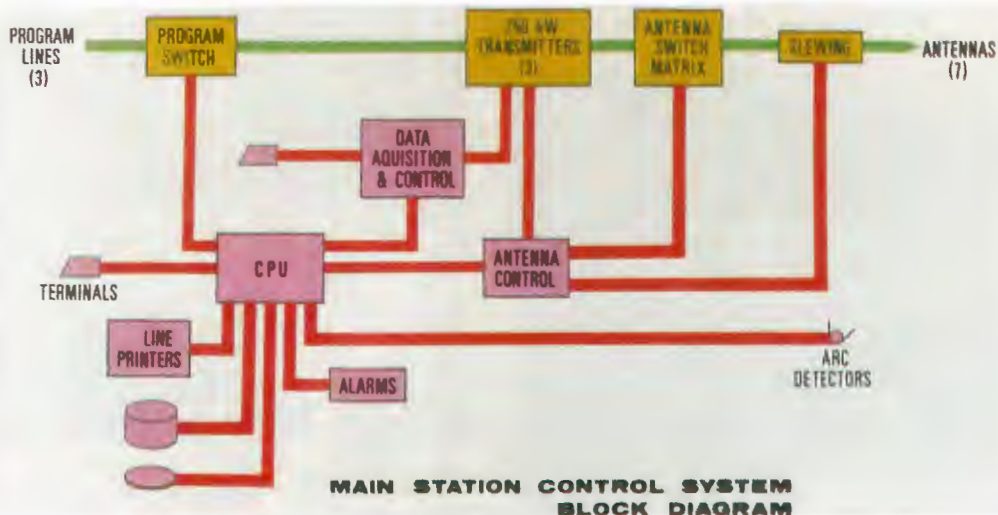
The specification for the new facility called for:

- full integration with an upgraded antenna switching/slewing system and a program line switcher.
- enhanced means of monitoring analog and digital signals from the transmitters.
- graphic displays for technical operators and station supervisors showing overall and detailed station systems status and value of important performance parameters.
- inclusion of program fail alarms and arc detector signals in the control process.
- production of more detailed printouts of day-to-day performance data and also analyses of historical data for management.
- considerably less regular programming and attention by technical staff.



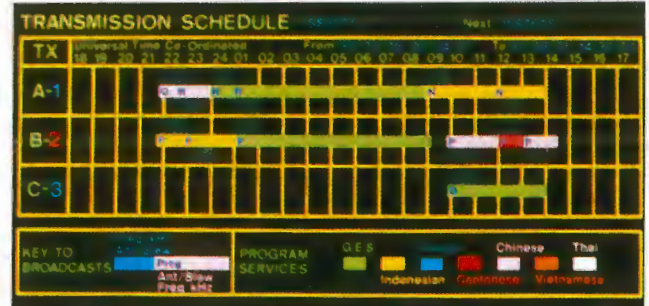
The diagrams show simplified block diagram and display formats of the new system which was installed by Tailored Computer Systems Pty Ltd of Melbourne. The main features of the system are:

- the central processor (CPU) controls the start-up, running and shut-down of the three transmitters according to the transmission schedule.
- the transmission schedule is inserted into the computer every two months. It covers the time, language, program line, transmitter and antenna to be used and the geographical direction of each transmission.
- the program lines from Radio Australia studios in Victoria are switched to the required transmitters.
- the seven antennas cover the broadcast target areas in an arc from north to north-west of Darwin and are accessible



to the three transmitters through the antenna switch matrix hut. In addition to selecting the required transmitter/antenna combination, the control system selects one of three directions in which each antenna can 'point'.

- each data acquisition and control unit (DAC) is a two-way interface between the original transmitter system and the new control system. Each unit contains a microprocessor which transfers control signals to the transmitter and operational data back to the main computer.
- the transmitting frequencies (exciters) are set via each DAC unit.



- arc detectors pick up flashovers within any transmitter and arcs on any antenna or transmission line, allowing the control system to reduce or remove power to the respective transmitter. A similar process applies in the case of a program fail alarm.
- a number of visual terminal units are provided for operators and supervisors with graphic displays of a variety of operational indicators and performance data. The latter are also stored in memory and available for output on line printers for subsequent analysis.

For the technically minded, the following are the system's vital statistics:

- CPU — Data General Eclipse S/120 host computer; real time Disk Operating System, programmed in Fortran 5.
- DISK DRIVES — 15 Mbytes Winchester hard disk and two eight inch floppy disk drives.
- DATA ACQUISITION AND CONTROL (DAC) UNITS (one per transmitter) — microprocessor-based, programmed in Fortran IV. Capable of stand-alone operation if required.
- RAMTEK intelligent terminals — for program inputting, graphic displays (11 provided) and emergency control purposes.
- LINE PRINTERS — for alarm and report production.
- ANTENNA CONTROL — new computer-driven system by Brown Boveri Corporation, for switch matrix control (up to five transmitters and nine antennas and test load) and three-way slewing of each antenna.
- PROGRAM SWITCHER — Microprocessor-based matrix, 16 inputs to five outputs.
- TONE ALARMS — generated within the host computer — integrated with the station P.A. system.

JOHN WILKINS/RALPH DENISON

Supplementary Communications Services

SUPPLEMENTARY COMMUNICATIONS SERVICES

The Department of Communications recently released for comment a discussion paper entitled Supplementary Communications Services (SCS) in Australia. It raises some interesting considerations and speculations for broadcasters.

'SCS' refers to additional one way services which can be carried on broadcasting systems. In this category are included such developments as Sub-carrier audio services on FM radio transmissions and Teletext in the television service.

It is not fortuitous that broadcasting services have considerable capacity to carry additional information in a variety of forms. The major component of cost in any broadcasting service is represented by the domestic receiving units (i.e. radio receivers and TV sets) which are present in large numbers and which must be kept relatively simple in design to minimise the total national cost of the service. Consequently in both radio and television broadcasting the full capacity of the transmission channel (the frequency and energy spectrum) is not fully utilised by the domestic receivers.

The simplest types of new supplementary services to add are of the data transmission type and these can be used for a wide range of applications such as paging, telemetry, facsimile and additional digital audio channels. The B-MAC transmission system being introduced for satellite broadcasting is a typical example of the ability to add supplementary communications services to a television transmission facility.

Obviously, there are regulatory problems to be overcome because decisions are needed as to when a communication service carried by a broadcasting transmitter ceases to be a broadcasting service and requires licensing under legislation other than provided by the Broadcasting and Television Act.

The future scope for SCS is enormous, and it will be interesting to watch developments in this area in the next few years.

LEON SEBIRE

Print Handicapped Radio

PRINT HANDICAPPED RADIO

Broadcasting Branch in NSW recently provided valuable support to the Print Handicapped Radio (PHR) organisation in Canberra.

PHR is a fully volunteer organisation and was initiated with the basic aim to help the blind, visually impaired and physically handicapped realise new skills, reduce their isolation and aid their integration into society, by way of a broadcasting service.

The scheme is aimed at encouraging the disabled persons to use the extent of their abilities in the same way as 'normal' people in order to earn a living and be self reliant and independent; to demonstrate to the general public that 'DISABILITY' does not mean 'INABILITY'.

Delays in the establishment of their own transmitting facilities led to an approach by the PHR for temporary assistance. Referred to the NSW Broadcasting Branch for a technical feasibility appraisal, a satisfactory solution was found.

With the help of Black Mountain Tower technical staff and DOC's blessing, the superannated but still functional old 2CN transmitter was rejuvenated and tuned to vibrate anew on 1620 kHz.

The use of two coils and a capacitor from the junk box, enabled a coupling unit, along with a standby mast, to be re-organised for the PHR service. With a nominal antenna input power of 500 Watts, a satisfactory coverage was reported and all of us, who are true Broadcasters, are proud and pleased to have coupled this worthwhile wavelength into the much disputed ether.

WOLFGANG MICKE

The Cryptic Broadcaster No 2

Across

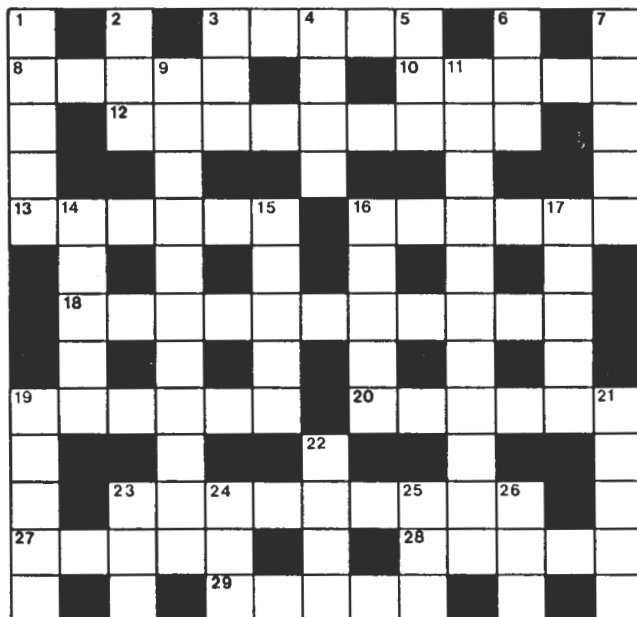
3. Place and elevate for a palindrome (5)
8. A black bird could paint one in a flash (5)
10. The first lady to the top end for a happening (5)
12. Curves contain a prefix and a weapon (9)
13. Let's be logical 'n' in clears one out (6)
16. Easy to give but hard to take (6)
18. Bad, set or car — you're certainly with it now (11)
19. Process relating to a plane at the junction (6)
20. Iron in the greatest degree for a transistor (6)
23. One who corrects problems (9)
27. Begin with cherry pie after a point (5)
28. You have to be on this to read the records (5)
29. Many files are now on the skids (5)

Down

1. A variety of times are held in store (5)
2. An empty space for a bright spark (3)
3. A human being without a son by, through or for each (3)
4. A kind of train with gain (4)
5. Allowable revelation limit near the gear (3) Abbr.
6. Nothing negative here (3)
7. Dust at Eden contains a good man consumed (5)
9. Shout out abacus to assist a telephonist (4, 7)
11. Let vets rave over the examiner of one-way device (5, 6)
14. Not excited about the bee language (5)
15. Radio direction and ranging up and down (5)
16. A-50 over a secondary is a warning (5)
17. A cowardly fellow on a special day provides a smooth turn (5)
19. Pal's shape is the secret (5)
21. The high tea asks for jobs (5)
22. Horses use small amounts too, for your information (4)
23. Direct availability is provided by a ruminant (3)
24. Store one hundred and five hundred about a golf supporter (3) Abbr.
25. Sit around for a quick check (3)
26. A direct boy takes the shortest path (3)

LEW GRUBB

The Cryptic Broadcaster No 2



AUSSAT BROADCASTING SERVICE

With the successful launching of Australia's own satellite — Aussat — a new dimension has been added to broadcasting technology.

The employment of a satellite to carry program from studio to transmitter is not new to the Broadcasting Directorate. More than 60 RATS (Remote Area Television Service) stations have derived programs from the Intelsat satellite system since 1980. They include such widely isolated places as Thursday Island, Birdsville, Coober Pedy, Walgett, and Broome. However, Aussat has been designed to include a direct broadcasting service of television and radio to people residing in remote and under-served areas which cannot be reached effectively by terrestrial means.

There are more than a quarter of a million people who previously were outside the normal coverage area of the National Broadcasting and Television Services or who received a technically inadequate signal, but who now are able to receive programs direct from the Aussat satellite using a dish antenna with a diameter typically 1.5 m. This service is known as HACBSS (Homestead and Community Broadcast Satellite Service).

The satellite provides four high power spot beams each creating a footprint of EIRP (Effective Isotropic Radiated Power) of 47 dBW as shown on the map. The spot beams are placed over the western, central, north eastern and south eastern regions of Australia. In the central footprint, two transponders are employed to provide separate Northern Territory and South Australian programs with South Australia being served by a low power (36 dBW) beam.

The RATS stations which will be diverted to Aussat before shut down of the Intelsat service feed — about 18 December — include 7 in New South Wales, 20 in Queensland, 10 in South Australia/Northern Territory and 25 in Western Australia.

Current target is to complete all national station cutovers from the ABC terrestrial network by June 1986.

The SBS will initially hire one transponder on the second Aussat satellite which is expected to be available during January 1986.

THE B-MAC SYSTEM

CARL DILLON

The introduction of satellite broadcasting will change the face of home entertainment forever. It will also bring a new broadcasting standard to television.

Australia will be the first country in the world to use the B-MAC (variant B-Multiplexed Analogue Components) standard for TV and radio broadcasting. The system was developed in Canada.

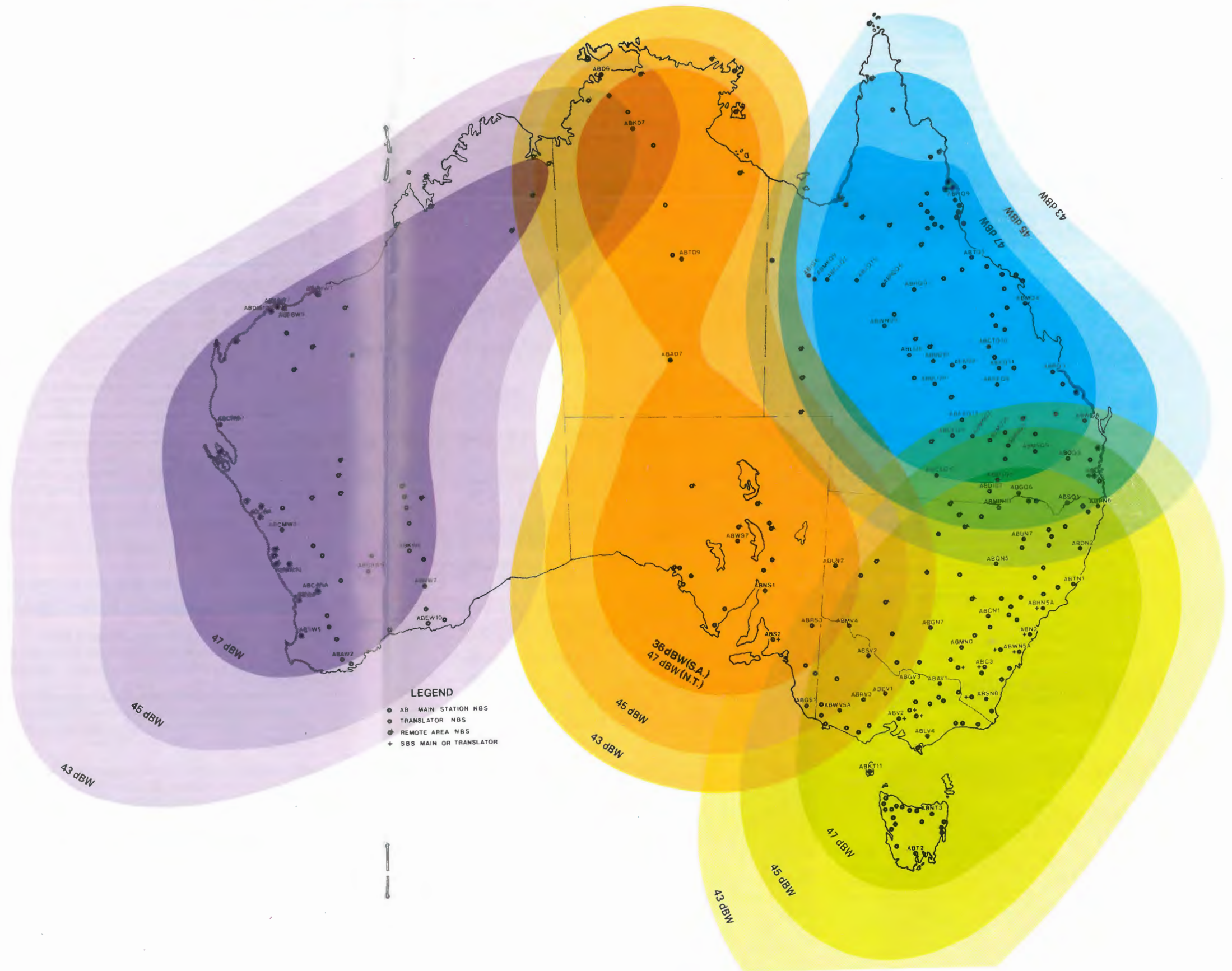
The biggest single consideration in designing satellite systems is the noise constraint. Because of the very great distance involved and the relatively small power of the satellite transponder, a receiver on the earth has to cope with a faint signal mixed with a lot of noise. The PAL system which has been used in Australia since the introduction of television is not designed for use in really noisy environments. It transmits colour on a subcarrier which is vulnerable to noise and demodulates it to low frequencies where the noise (snow) is easily seen on the screen. It also has a number of other problems including mixing up of chrominance and luminance signals.

A B-MAC signal contains video, six digital sound channels and data. Video (chrominance and luminance) consists of time compressed analogue signals, while the data consists of two level and four level signalling, baseband multiplexed. Instead of mixing the encoded colour (chrominance) information with the luminance signal, as in the PAL system, the signals are compressed and transmitted sequentially. Consequentially there are no cross colour effects with B-MAC.

The audio channels in B-MAC have been especially designed to be compatible with the very best hi-fi available. The system was designed with variable pre-emphasis and a delta modulation system. With variable pre-emphasis the signal is sampled before it is transmitted and the amount of pre-emphasis set accordingly. The result is a surprisingly high quality sound from what is effectively a low quality channel.

NORM FRANKE

Satellite Broadcasting



Staff News

CENTRAL OFFICE

Rod Thompson Engineer 3 has resigned from Telecom to seek his fortune in private enterprise. Last news of Rod was that he was off on a fact-finding mission to the USA, Canada and West Germany.

Joe McDonough Engineer 3 has transferred to Telecom Engineering Department and former Admin Officer Gerry McMahon has moved to the Security Branch of the Victorian State Administration. Gerry was replaced by John Dupe from Commercial Services. Other newcomers include Lindsay Clinch, Cheryl Turner and Ted Kealy. A warm welcome to you all.

Lunch time jogging seems to have caught on as a lunch time activity with many of the State Broadcasting staffs, and Central Office is no exception. Those seen jogging around nearby Albert Park Lake, when the weather permits, include John Webb, John Lawrence, Russell Edwards and Lindsay Clinch.

NEW SOUTH WALES

Remember in the last issue we farewelled Carol Reilly who was leaving for greener pastures, well, guess what — Carol didn't leave and has since been successful in her application for a Clerk 2/3 position in our Resources and Budgets group. However, to maintain the 'status quo' we have lost Sharyn Brew from the Resources and Budgets group to Parramatta DTB.

George Marshall who was OIC at 2NR on the North Coast of New South Wales for the last 24 years was successful in his application to the OIC position at 4QR/QG in Brisbane and has now taken up duty there.

New additions to the Branch are trainees, Peter Breeze, Peter Garrett, Neil Tavener and Robert Studdert. Unfortunately Robert was involved in a motor cycle accident.

Des Bell at 2NU near Tamworth has been suffering from an extended illness for some months now and wishes are extended to him for a speedy recovery.

After several years of hard study and writing assignments Murray Cooper, stationed at ABGN-7 Griffith was finally rewarded with a Technical Officer Certificate. Murray commenced training at Leeton in another discipline, but changed over to Broadcasting in the latter part of his TOIT training program. He adapted quickly, and presented two very good reports. Alex Hanlon Technical Aide Safety and Training, New South Wales, presented Murray with his Certificate on 28 May 1985.

Alex also presented Certificates to two ATT's who had completed their training. Roul Pelham at ABGN-7 and John van der Vliet at ABQN-5 Coonabarabran both received Deed of Apprentice and Craftsman Certificates.

QUEENSLAND

George Marshall has returned to Queensland as OIC Radio Centre, Bald Hills where he is responsible for the metropolitan service transmitters 4QG and 4QR and the short wave transmitters VLQ and VLM. George began his broadcasting career in Queensland and was OIC at 4QA Mackay before transferring to 2CR Cummoock and later to 2NR Lawrence in New South Wales.

Congratulations to two new fathers. Chris Russell is the proud father of son John, and Greg Duncan, the proud father of baby daughter Melissa.

At long last, after many inspections, fears and doubts, the Branch has moved and settled into its new home at 444 Queen Street. For the first time, all staff are located on the one floor, and they now enjoy first class accommodation with a magnificent view of the Brisbane River.

SOUTH AUSTRALIA AND NORTHERN TERRITORY

Denis Collins, Senior Technical Officer Electrical Mechanical, attended Stage 1 of a High Voltage Operator's course conducted by NTEC in Darwin from 29 April to 3 May inclusive.

The course provided an excellent introduction to the equipment, systems and operations of an Electricity Supply Authority and a sound understanding of the theory and practical operating principles and procedures to be applied in high voltage operations.

Denis will shortly leave the Branch to take up an ITU position as Technical Instructor in Colombo, Sri Lanka, for six months. Overseas assignments are not new to Denis. He was in Fiji on similar work prior to taking up his present position.

Welcome to Wayne Croft who has taken up duty in Adelaide. Wayne is Engineer Class 1 in Engineering and Construction Section and came to us after several years' experience in private industry.

Three new staff have commenced as Technical Officer Grade 1's at Cox Peninsula. They are Stephen Dearle, Michael Beall, and Vic Dzieciol, all previously with Department of Transport, at Wickham, Western Australia.

In Adelaide, Kay Middleton has taken up duty in the CA3, Machinist position. Kay previously worked in Port Pirie Manual Assistance.

VICTORIA

Over eighty years' dedication to international HF broadcasting was recognised recently when three long-serving staff members retired at Radio Australia Shepparton.

Leading the field was Lines Officer Jack Russell, who came to the station in 1950, only six years after transmissions commenced. Jack's knowledge of the vagaries of every transmission line at every frequency was legendary, as was his ability to show engineers where they were wrong. His colleagues recalled Jack's heroic efforts in management of the sheep flock, including the mouth-to-mouth resuscitation of an animal which drowned while being dipped. Jack inserted a tube in its mouth and blew. The sheep got up and ran away.

Also retiring were Technician Lindsay Bamford and Motor Driver Ted McDonald (formerly of the Lines staff). Unfortunately Ted died shortly after his retirement.

We welcome new Telecom recruits Dora Nicolson, Kevin Beanham, Mark Ryan, Mick Fitzgerald, Glen Clark and Kevin Ingram.

Chas McSween, Peter Munro, Richard Mellington, Louis Etienne and Rajiv Anand have joined us from other parts of Telecom.

State Broadcasting Manager John Lush left the Directorate during October in order to return to private enterprise. Best wishes John from all your colleagues.

WESTERN AUSTRALIA

Corporate Cups in running, touch football, softball and swimming have become hugely popular lunchtime activities among city workers in Perth. Conducted by the State Government Department of Youth, Sport and Recreation, the emphasis is on fun, improving fitness with friends and workmates, and maximum participation.

In line with growing corporate fitness awareness, several of our deskbound office staff participated in this year's running Cup. This involved a 2.7 km run along the foreshore cycle path every Wednesday for six weeks. The start time was flexible to accommodate busy people, and participants could run individually or with their team-mates. The starter would despatch a group of runners every five minutes between 12 noon and 1.30 p.m. Everyone was timed and the four fastest times for each team were recorded as the team's aggregate. The team with the lowest aggregate after 6 weeks was declared the winner. The feeling among those who participated was that they were all winners by improving their health and fitness.

The 'Breathless Broadcasters' comprised Don Purdy State Broadcasting Manager, Ian Gibbs Draftsman Grade 2, Doug Blackney Engineer 2, Ray Plowman Asst Personnel Officer, Jenny Young Typist Grade 2, Tracey Irvine Clerk Class 2/3 Works and General, and Trish Hearne CA3 Registry.

Snowed in at ABT2

Hobart's National television station ABT2, established in 1960, is situated near the pinnacle of Mt Wellington, at 1270 metres above sea level.

This elevation, combined with Hobart's high latitude of 43 degrees and its exposure to the Southern and Antarctic Oceans, results in the weather at the station being somewhat trying during the colder months.

Huge snowdrifts block the road and when moisture laden cold air arrives from the south west, masses of ice form on exposed surfaces, especially the television and radiocommunication towers. Early in the life of the station a mass of ice, estimated to weigh many tonnes, fell from the TV antenna,



damaging lower antenna and tower members and denting the main feeders at the base of the tower.

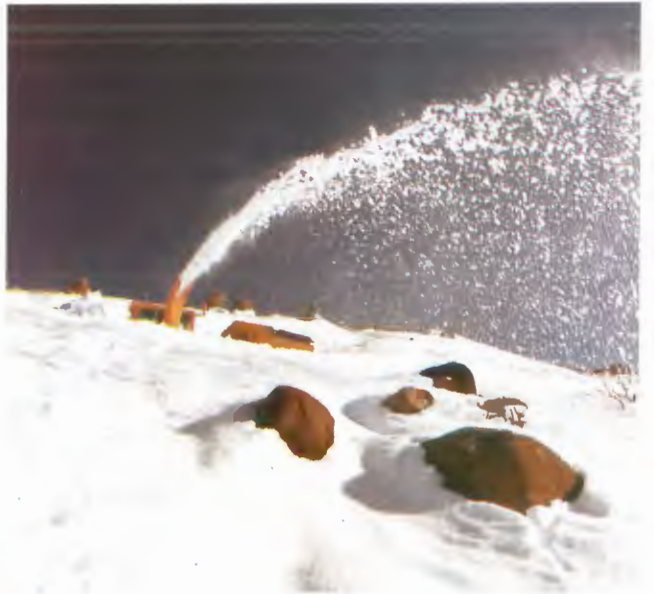
The feeders were subsequently protected by roofing the runway with baulks of timber about 150 mm square and an attempt was made to prevent the formation of ice on the antenna by electrically heating the reflecting screen. The heating consumed about 80 kW and the elements consisted of Pyrotanax cable looped in and out of the hollow screen elements. Although reasonably effective when fully operational, the heating was prone to failure due to fracturing of the cable sheath and the consequent ingress of moisture. The result was that the antenna continued to suffer periodic damage and



the station was often reduced to operating on a half antenna which itself had been damaged and electrically degraded.

This problem was eventually overcome by replacing the antenna and enclosing it in a cylindrical fibreglass radome 7.7 metres in diameter and 20 metres high. The total project, which included some tower strengthening, eventually took three summers to complete.

Staff, of course, had their problems too, and after it was realised that negotiating the mountain road at night was too hazardous, were placed on year round overnight rostering. Each permanent staff member has his own bed in one of several twin rooms. Shifts during the normal working week start at a city depot at about 1330 and conclude at the same point at about 1500 on the following day. A weekend shift starts at 1330 on Friday and concludes at 1500 on the following Mon-



day. Emergency rations including some frozen items, sufficient for seven days, are held at the station in case it becomes impossible for a relief shift to reach the station.

For many years staff often had to abandon their 4WD vehicle a kilometre or so short of the station and trudge through snow to relieve the operating shift, who then had to trudge back out to the vehicle. This chore has been eliminated in recent years since a superior snow plough was provided.

BRIAN HALL



Merry Christmas to all Broadcasting staff

Profiles

Don Purdy, State Broadcasting Manager, Western Australia, commenced work in the Postmaster General's Department in 1951 as a Clerk Class 1 in the Finance and Accounts Branch. In the same year he accepted an offer of a cadetship in Drafting and on qualifying as a Draftsman in 1957 was selected as a Trainee Engineer.

Following graduation as an Engineer in 1959 Don was attached to the Radio Section for the next 12½ years where he was involved in most aspects of broadcasting. His achievements included the construction of Phase 4 and 7 television, various MF HF and local studio installations, the introduction of colour television, the provision of broadcasting facilities for the British Empire Games held in Perth, and various radio communication installations.

In 1972 Don was selected as Manager in the rapidly expanding Telegraphs & Data Section and then later saw service in the Trunk Service and Spurline Sections. In 1977 following a visit to the UK and North Sea to study offshore communication systems and equipment, Don was selected as Project Manager for the design and construction of the communication facilities associated with the Dampier to Perth Gas Pipeline after Telecom had successfully negotiated a contract to complete this work for the State Energy Commission of Western Australia.

In his leisure time Don is a keen tennis player and plays an active role in the running of his local Club. Living close to Perth's magnificent beaches he can often be seen regularly jogging and swimming to keep fit.



Don Purdy



Kevin Buckland

Kevin Buckland, Manager Management Services, Western Australia, commenced as a Junior Postal Officer in the Postmaster General's Department in 1956. During the next few years he served his "apprenticeship" in this area before moving on to the Post Office counter and eventually being accepted for the 1961 Postal Clerk-in-Training School. After nearly 12 months in the school, Kevin was promoted as Postal Clerk (Relief) Bunbury, which is in the South West of Western Australia. After four years in the Bunbury district he gained further promotion as Senior Postal Clerk at Kellerberrin, a town in WA's wheatbelt area. In late 1967, after an overseas trip, Kevin took up duties in the Perth Metropolitan area.

It was 1972 when he moved into the clerical field as the Receiver of Public Moneys in Finance and Accounting Branch's Revenue Section. From here he moved to the Finance Section as the Budget Officer (Receipts) and during his 6 years in the Budgets area, relieved in many positions before moving to the Engineering Department. Initially, he spent two years in Regional Operations Branch as Programming Officer dealing in the main with the Department's annual Works Programme and FYEOP. In 1981 he was promoted to the position of Senior Budgets Officer Engineering Secretariat and it was from this position that he received promotion to his current position. Just prior to taking up as Manager, Management Services, Kevin spent a short period as Resources and Budgets Aide (Clerk Class 9) in the Operations Department, Head Office.

Since being in Broadcasting Kevin has been involved with the Broadcasting Accounts and Costing System Working Party.

Kevin is the State President and National Treasurer of the Institute of Affiliate Accountants and holds a Diploma in Accounting gained in 1975. Currently he is studying towards a Diploma in Computer Programming which should be completed by the end of next year.

Kevin's leisure time is spent on the tennis court, on the golf course or in the garden. He is married with two children and lives in the Perth suburb of Viveash.

Bob Howie, Broadcasting Operations Manager, WA, commenced with the PMG's Department as an Exempt Technician in 1947. Having an electrical trades and radio background he was placed in the Transmission Section where he gained experience in the Broadcasting, Radio Communications and Long Line Equipment disciplines.

Bob became a permanent Technician in 1950, a Senior Technician — Radio in 1955 and an acting Supervising Technician in 1959. His career has been divided between Broadcasting and Radio Communications activities covering installation commissioning, operation and maintenance of all types of equipment.

In 1970 with the opening of the East-West Radio System, Bob became the OIC of the Mt Yokine Radio Terminal and spent several years "taming" that system and developing an effective State operational and maintenance organisation.

Late in 1978 Bob became the PTO Radio Section with responsibilities ranging from Customer Radio Equipment to Broadcasting Stations with each network expanding rapidly.

With the creation of the State Broadcasting Branch he became the Broadcasting Operations Manager opting to contribute solely to Broadcasting.

In private life Bob is mainly a family person with golf, gardening and motor cars occupying most of his leisure time.



Les Chidgey



Bob Howie

Leslie A. Chidgey, Les to his friends, Broadcasting Engineering Manager WA, spent his early years in England and was educated in one of those 'olde English' schools with a pedigree dating from 1547. This led to an apprenticeship with GEC Telecommunications Ltd., resulting in professional qualifications and an opportunity to commission microwave systems as far afield as Peru in South America. The jungle, deserts and the mountains of Peru were a test of his resourcefulness and stamina. Have you ever driven 1000 km with just second gear working? Or been towed with a seized engine over a mountain range climbing from 1000 m to over 4000 m before being cast off with a broken tow rope to make one's own way down the other side of the mountain, a descent of some 25 km of hair-pin bends and precipitous valleys?

Les came to Australia with his Peruvian-born wife in 1968, to work as the Engineer Class 1 supervising the installation of the equipment for the Perth to Carnarvon coaxial cable route. As Engineer Class 2 he was the Radio Design Group in WA, planning and specifying radio link equipment.

The opportunity to serve as Radio Engineer with the Australian Telecommunications Commission in Indonesia renewed his contact with jungle and mountains, and the problems of access in such locations. Bold decisions were made there to improve the performance of the microwave system by relocating sites, and incidentally saving considerable sums for the project financiers.

On his return to Australia in 1975 Les resumed as Engineer Class 3 in Broadcasting Service, a position he held to the formation of the State Broadcasting Branch. In the reorganisation Les performed in the position of Senior Engineer External Plant and was subsequently promoted to Broadcasting Engineering Manager for Western Australia.

Les and his family, previously of four nationalities, are now all Australian, and proud of it. While leading a less adventurous life than in earlier years it is still a very busy one, being Secretary of an organisation of 150 local members and world-wide affiliations, and his involvement with local humanitarian and service groups such as Amnesty International, the Peace Movement, etc.

From the Back Room

VNG TIME SIGNAL SERVICE

Throughout all our experience, through every aspect of the world and universe we inhabit, runs the entity called time. The clock, deputy for the sun and stars, tells us it is time to get up, time to go to work, time to start up the transmitter, time to shut down and time to retire. Setting out on a journey we check time tables of plane, bus or train against our watches and putting out to sea we must correlate time and distance to find our way.

Of all the great abstractions of science, it is omnipresent time that comes most often to our lips. Time is a great healer, a great leveller, it stands still, slips away from us or flies past us. We can save time, or lose it, spend time or waste time, beat it or even kill it.

Accuracy in timekeeping has improved steadily since the first mechanical clocks were made in the 14th century. Early clocks used a mechanism which pivoted to and fro to move a single hand. Even the best made clocks varied several minutes a day until the pendulum clocks came into general use in the mid 17th century. Then for the first time clocks were accurate enough to record minutes as well as hours.

Over the next 300 years clockmakers developed better escapements and improved the pendulum by compensating for temperature. Accuracy continued to improve as pendulums were superseded by vibrating quartz crystals accurate to a few ten thousandths of a second per day. Today we have clocks regulated by vibrating caesium atoms giving extremely high accuracy in time keeping.

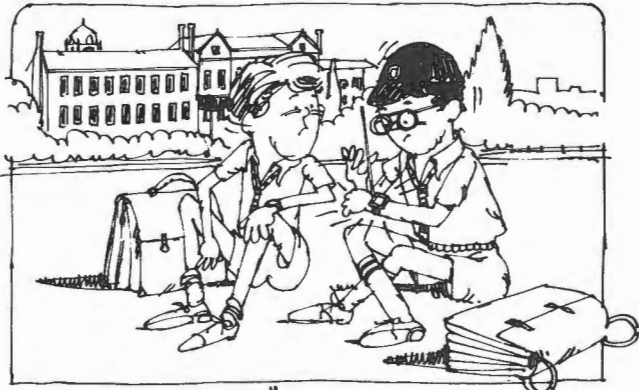
A broadcast time signal service was inaugurated by the Australian Post Office on 21 September 1964 using transmitters located at Radio Lyndhurst some 37 km south east of Melbourne. The transmissions are combined with a standard frequency service and have been designed to provide an Australian wide coverage for surveyors, navigators, exploration teams, scientists etc. for precision timing, position fixing, astro-navigation and reference frequency applications.

Two 10 kW transmitters modulated by the same time signals feed half wave dipole antennas for all transmissions. A third transmitter is available on standby. Operating frequencies and periods are, 4500 kHz (1945-0730 EST), 7500 kHz (0845-0830 EST) and 12000 kHz (0745-1930 EST).

The normal voice announcement is "This is VNG, Lyndhurst, Victoria, Australia on 4.5, 7.5 and 12 Megahertz. VNG is a standard frequency and time signal service of the Australian Telecommunications Commission. This is VNG, Lyndhurst, Victoria, Australia on 4.5, 7.5 or 12 Megahertz".

The announcement is approximately 30 seconds long finishing 10 seconds before each quarter hour. The speech is "notched" to allow the seconds markers to continue and has spectral components around 1 kHz reduced to avoid erroneous operation of tuned relay time signal receivers.

Carrier frequencies and time signals both originate from the same crystal frequency standard at Lyndhurst which is con-



Surveyor's Son: "This is my father's watch. You have to listen to VNG pips to tell the time."

trolled over landline by a caesium beam primary standard at the Telecom Australia Research Laboratories. Regular visits with a portable clock ensure that the VNG signals typically remain within 20 microseconds of Co-ordinated Universal Time.

Station OIC Max Fowler is responsible for maintaining the Lyndhurst facilities of this important service.

RAY WEEKS



Max Fowler OIC tuning Lyndhurst TX5.

Achievers

GIFF THE MOUNTAINEER

Giff Hatfield, Engineer Class 4, Services Plans and Strategies, Central Office, often has his head in the clouds. He has been a mountaineer for over 35 years. Lofty and beautiful peaks have awed and fascinated Cliff since an early age and he now spends a lot of time instructing Venturer and Rover Scouts in the finer points of the sport.

His achievements are impressive and include:

- Many first climbs and new routes on Victorian and Tasmanian mountains. Mt Arapiles and parts of the Grampians in Western Victoria are internationally regarded as providing some of the world's most challenging climbs.
- Climbed formidable peaks on the Eiger in Switzerland.
- Successfully scaled some of the toughest mountains in Wales.
- Climbed round Yosemite in California.
- Member and Quarter Master of the Victorian Scout Rock Climbing Co-ordinating Committee.

As well as being in charge of climbing and training of Scouts, Giff is an active qualified instructor in scuba diving, sailing and canoeing. On top of this, he still finds time to help his daughter run a dairy farm.



Giff Hatfield nearing the top.

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,

In an age when there is an upsurge of interest in tracing family history, preserving fine buildings, bridges and other civil works and the photographing and recording of noteworthy engineering artifacts, there seems to be little understanding in the broadcasting world of the need to preserve and record our special heritage.

Broadcasting in Australia may be only a little over 60 years old, but great changes have occurred in the equipment used. Who isn't fascinated by accounts and faded photographs of early transmitters with their great cages of glowing valves? But what have we got to show in basic hardware? In Brisbane, an early microphone, a single water-cooled 4220C transmitting valve, a filament transformer and a faded circuit are all that remain of 4QG, that wonderful transmitter on the old Taxation Building, 1926 to 1942.

Nothing remains of the 1931 4RK but some photographs and the cork from the champagne bottle used at its opening. And apart from a photo or two, nothing survives from old 4QN Clevedon or that fine water-cooled transmitter of 4QS, both products of the 1930's.

In Adelaide we are better off. Here is the finest collection of vintage radio equipment in this country, in the Telecom Museum, a tribute to the vision and enterprise of Jack Ross.

In Queensland we have the finest specimen that any radio museum curator could wish for — a complete STC A880A 10 kW water-cooled high frequency transmitter dating back to the early 40's. I believe it is essential that this transmitter should be preserved intact as it is almost certainly the only known surviving unit.

We've let most of our heritage from the dawn of radio be lost; don't let us be guilty of further indifference. There are some things that are worth saving. Let's save them now.

DOUG SANDERSON
SNR ENGR QUEENSLAND

Broadcasting Pioneers

MR. E. P. (TED) McGRATH

Ted McGrath commenced work in the PMG's Department Adelaide in May 1926 as a Temporary Junior Mechanic.

When the Government acquired the A Class station 5CL from Central Broadcasters Ltd to form the National Broadcasting Service in 1930, Ted was transferred to the station as shift operator, alternating on transmitter, studio and pick-up duties.

In 1931 he worked on the installation of 5CK Crystal Brook, the first Regional station in South Australia and when the station went on air in March 1932 Ted stayed there for a while before returning to 5CL.

He qualified as Senior Mechanic in 1935 and was put in charge of Long Line and Broadcasting installations including major alterations to the 5CL transmitter and the provision of new studio equipment.

Ted qualified as Engineer in 1937 and during the 1950's and 1960's played a key role in the expansion of broadcasting and television services throughout SA and NT including new stations at Port Lincoln, Penola, Mount Gambier, Berri, Alice Springs, Pimpala, The Bluff, Mt Burr, Mt Lofty and Radio Australia Darwin.

In 1966 he visited USA, Italy and Portugal in connection with the design of the Darwin Radio Australia station.

Ted retired from the Commonwealth Public Service on 31 January 1968 after 41½ years service, and settled down with his hobbies and the constant care of a large site with trees and gardens at his home at Bridgewater, near Adelaide.

In January 1969 he was honoured with an MBE for 'pioneering work in Broadcasting & Radiotelephone Communications in SA and NT'.

JACK ROSS



Ted McGrath



Alec McKenzie

MR. A. J. (ALEC) MCKENZIE

Alec McKenzie joined the Research Laboratories of the Engineering Branch of the PMG's Department in 1927 after graduating with Honours in Electrical Engineering from Melbourne University.

In 1932 he worked on the specification and testing of power equipment for the 3.5 kW transmitter designed for 6WF Perth.

Alec transferred to the Radio Section in 1944 and was associated with the design and installation of many facilities which had a great impact on the advancement of broadcast engineering in Australia. These included high frequency antenna systems at Lyndhurst, the development of a flat top loaded anti-fading radiator for MF transmissions for which Alec was subsequently granted a Patent, and later, an improvement on this design which gave optimum anti-fading properties at two frequencies. During the establishment of Radio Australia Shepparton, he was engaged on the design of the antennas, transmission lines and switching system.

From 1949 to 1968 Alec worked with the Australian Broadcasting Control Board and occupied the position of Director of Technical Services at time of his retirement in 1968. During this period he played a major role in the planning and establishment of the Australian television service.

He attended a number of important overseas conferences as delegate including ITU Conferences in Paris in 1949, Stockholm and Los Angeles and the British Broadcasting Conference in 1954.

After retirement from the ABCB, Alec worked with a firm of Consulting Acoustic Engineers but handed in his slide rule in 1977. Now 80 years of age, Alec is enjoying retirement at Mont Albert, Melbourne.

JACK ROSS

Broadcasting Milestones

6WF PERTH

Western Australia's first A class broadcasting station 6WF, was commissioned by The Westralian Farmers Ltd and officially opened by the Premier, Mr. Phillip Collier on 4 June 1924.

The transmitter and studios were installed in the company's head office four storey building at 569 Wellington Street, Perth. The antenna system was erected on top of the building, and comprised an inverted four wire cage 1.8 m diameter suspended between two tapered steel tubes 27 m high and spaced 49 m apart. The feeder was a 30 cm diameter cage. A counterpoise formed the earth system. It consisted of eight copper wires spaced 1.9 m apart running the full length of the building at a height of 2 m above the corrugated iron roof.



5 kW Magnifier Unit 1924. Mr W. E. Coxon Chief Engineer and Manager

The transmitter was constructed in the form of a number of separate caged panels. The drive panel housed the oscillator and modulator units and included the closed circuit inductor, reaction coil, switches and meters. The sub modulator tube was a type LS2 while the driver employed MOT 250 types. The main rectifier panel contained all necessary transformers, chokes and capacitors and used six MR6 tubes as rectifiers for the EHT supply. The power amplifier or "Magnifier" as it was called, employed MT6 type tubes and had a plate input rating of 5 kW. The radiated power was about 650 Watts.

A nearby machine room contain
which supplied high tension to the
ing generator for the microphone and
batteries, as well as air blowers for cooling
and power amplifier tubes.

N9
384.5405
BRO

The main studio was 7 m by 9 m in size and was completely surrounded by sheet iron to prevent outside electrical interference from affecting the microphone. Protection against outside noise was provided by a 75 mm air space plus a 75 mm space filled with sawdust between sheets of felt. The walls and ceiling were draped with pleated hessian and over this was hung heavy coloured material, also pleated. The microphone was a Western Electric double button type mounted on a stand. The amplifier was also made by Western Electric.

The station Manager and Chief Engineer was Mr W. E. Coxon.

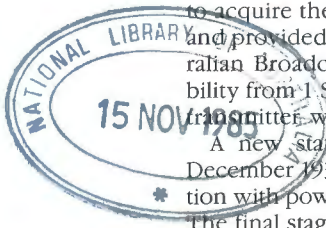
At the time the Government was considering the establishment of the National Broadcasting Service to replace the A Class stations, the owners of 6WF were in financial difficulties and they requested the Postmaster General's Department to acquire the service. The Department purchased the plant and provided service from 20 December 1928 until the Australian Broadcasting Company took over program responsibility from 1 September 1929. The operating frequency of the transmitter was changed from 140 kHz to 690 kHz.

A new station was commissioned at Hamersley on 14 December 1932. The transmitter employed low level modulation with power amplification being effected over three stages. The final stage used a water cooled 4220B tube with a capability of 3.6 kW at 100% modulation.

The antenna was a multiple tuned flat top wire type supported by two 55 m towers spaced 110 m apart. The station was the first to use an RF transmission line to connect transmitter to the antenna. The transmission line was a copper coaxial tube 50 mm in diameter with a 9.4 mm copper tube inner conductor supported by porcelain insulators. Measured radiated power from the antenna was 2.75 kW. A new anti-fading radiator was provided in 1953 with the erection of a 180 m lattice steel mast. The flat top then became a standby.

In 1960 a new building was constructed on the site and on 18 June 1961 a 50 kW transmitter commissioned. Now, well and truly the senior broadcaster after more than 61 years on air, 6WF shares the building and site with 6WN and short wave transmitters VLW and VLX.

KEVIN BUCKLAND



Bob Howie (L) Broadcasting Operations Mgr and Murray Little OIC check the present 6WF transmitter.