

Telecom Australia ~ A Brief Portrait



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A cable jointer works under difficult conditions to restore service during severe floods.



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The Beginning

On 1 July 1975, Telecom Australia took over all the national telecommunications services which had previously been the responsibility of the Postmaster-General's Department.

The Charter

As derived from the Telecommunications Act 1975, Telecom Australia is responsible for the provision, maintenance and operation of telecommunications services to best meet the social, industrial and commercial needs of Australian people.

It is required to make its services available throughout Australia so far as is reasonably practicable. Revenue must cover current expenses each year and provide not less than half of capital requirements. Services are to be kept up to date and operated efficiently and economically with charges as low as practicable.

This Publication

In this publication an attempt is made to give readers a brief portrait, in pictures and words, of Telecom's operations, facilities and services. It does not cover everything that Telecom is and does, but we hope it provides some useful insights.

Telecom has the vital role of linking a nation by providing telecommunications services which keep people in touch on personal, business or professional terms.

It also provides and maintains transmitter stations and the program relay links for the vast network of National (ABC) radio and TV broadcasting services. As well, relay links are provided for commercial radio and TV needs.

And Telecom has a vital international role. Its national network provides the critical facilities throughout Australia for the exchange of phone calls, telegraph messages, computer data, and radio and TV programs with the rest of the world. An international link between, say, Sydney and San Francisco, is of little use without our own national telecommunications services to feed into it, and distribute from it.

Telecom must employ a vast range of expert people in many fields — planners, chemists, engineers, clerks, linemen, technicians, phonogram operators, draftsmen, accountants, telegraphists, telephonists and many more. Altogether, it employs about 87,000 people. Beyond that, Telecom is responsible for thousands of Australians being employed in making and supplying the huge amount of goods and services that it must have for its every-day operations.

Operating as it must on such a large scale, Telecom has large assets. Value of its net fixed assets in 1978 was just over \$6,500 million. This included such items as a fleet of more than 21,000 motor vehicles, nearly 3,800 ditch diggers and tractors and other mechanical aids, exchange equipment, and some 6,900 buildings throughout Australia.

Overall it amounts to a vast operation — Australia's biggest.



Across the Nation

In 1959, the Postmaster-General's Department began installing a network of coaxial cable and microwave radio trunk systems to link with virtually every populated centre across the nation. They are called broadband systems because they operate on a broad radio bandwidth.

They now form an Australia-wide network of communication super-highways and, with their high quality, and large capacity, they can cater for the peak demands of Subscriber Trunk Dialling (STD), telegraphs, high-speed data transmissions, and Australia's radio



and TV program relay needs.*

In 1975 Telecom took over the expanding network and, by 1978, the coaxial cables and microwave bearers in the national grid stretched over 175,000 km and represented an investment of about \$350 million. These telecommunication super-highways, and Australia's investment in them, will continue to expand to meet the nation's ever-growing communication needs.

*A TV program relay requires the capacity of one broadband system "bearer" or the equivalent of about 1000 telephone circuits.

Above: A coaxial cable laying machine at work in Western Australia.

Left: The sun glints on the lens of the camera in this shot of a microwave radio repeater station in Victoria.

Installing ~ Maintaining

In the year to 30 June 1978, Telecom staff installed 432,700 new telephone services throughout Australia and also carried out 416,106 alterations and extensions to existing telephone services. In addition, 5,156 new Telex and 7,123 new Datal services were installed. All this involved nearly 3,500 visits daily to customers' premises.

Maintenance of the entire Telecom network costs about \$400m annually, and computers are now being applied to streamline and improve the standard of repair service. As well, special restoration centres are being introduced in capital cities to provide fast specialist attention for complex business telecommunications services.

A busy day's round of calls begins with a suburban visit.





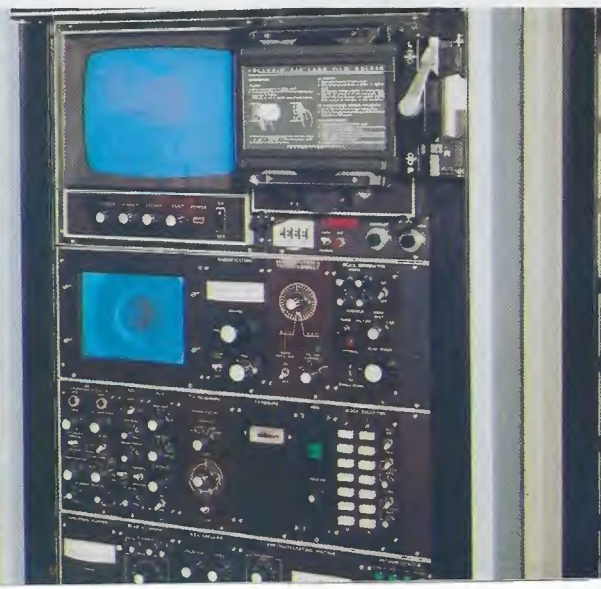
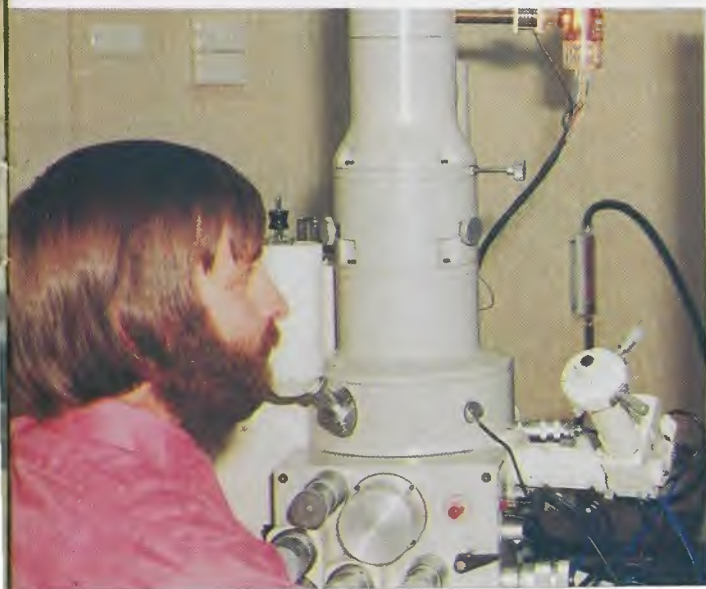
Designing a printed circuit board — an essential element in modern telecommunications.

Planning ~ Research

Planning in Telecom ranges from the short-term to the longer-term Corporate Plan, which extends to 1987. Its aims include the cutting of the real costs of telecommunications services, and improvements in efficiency and the quality of service to customers. Telecom has even looked at possible developments in technology and customer demand as far as the end of this century — in order to plan ahead.

Then there is Telecom's research and development activity. It explores and develops applications of new technology which can advance the Australian telecommunications network. Telecom's Research Laboratories play a key role in this. One of the most exciting of the developments the Laboratories have under investigation is the use of optical fibres. These hair-thin fibres of silica glass are able to carry huge numbers of telephone, data and television signals — as against the heavier cable at present in use.

A scanning electron microscope at Telecom's Research Laboratories at Clayton (Vic), used for investigating such things as optical fibre.







Above: This solar array in high, remote country at Glen Valley (Vic) is used to power a small automatic telephone exchange.

Powering the System

Telecommunications is not an energy intensive activity, but the expansion of Telecom's operations has resulted in a growth in electrical energy costs from \$5.5m in 1966 to \$17.6m in 1978. So, an integrated energy management program has been developed to reduce this annual cost growth. In the meantime, Telecom has moved into wind, sun and natural gas applications where conventional mains energy is not available.

Telecom uses wind power on the mighty 2,640 km East-West microwave trunk system crossing the Nullarbor. It is employed now in other appropriate areas. Solar power is used in many remote areas and two applications are believed to be world "firsts". One powers a small automatic telephone exchange high above the "snowline" in the mountains of Victoria; the other is for powering a 530 km microwave system in Central Australia. Another microwave trunk system along the 1,250 km natural gas pipeline from Moomba (SA) to Sydney, uses special converters to provide power direct from the gas in the pipeline.

Left: Repeater station on King Island—a key link in a new Mainland/Tasmania microwave trunk system to come into operation in 1979. The small towers are to carry propeller equipment for wind-driven power for this station.

*National TV transmitter station tower
on Mt Barrow (Tas.)—specially
sheathed against snow and ice in
winter.*

Towers and Masts

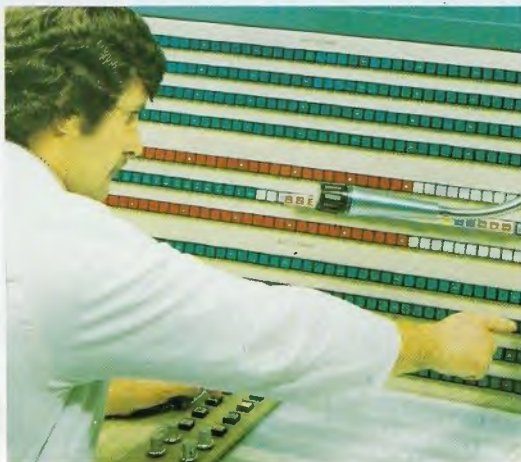
November 23rd, 1923, is generally recognised as the date when broadcasting began in Australia and the then Postmaster-General's Department played a major role in the subsequent development of technical facilities required for the National (ABC) broadcasting services. Telecom took over this responsibility in 1975. Today, visual evidence of this vast broadcasting network can be seen right across Australia in the form of 85 radio transmitter stations, 80 TV transmitter stations and another 80 TV translators*, which Telecom operates and maintains.

The network is one of the largest in the world and uses Telecom's program relay links for individual or nationwide radio and TV broadcasts, including

**A station which extends the service coverage of a main TV transmitter station.*



Left: National broadcasting service radio transmitter mast at Sydenham (Vic.).



Above: Part of Telecom's "nerve centre" in Sydney for national and international radio and television relays.

international programs into and out of Australia.

As well, Telecom provides the program relay links and transmitter stations for the ABC's Radio Australia broadcasts to overseas.

During 1978, Telecom was involved in up-grading its big Radio Australia station at Shepparton in Victoria.

At the end of 1978, Telecom was also preparing for its role in the establishment of 36 TV transmitting stations in the remote areas of Australia. These stations will serve small outback communities and will receive ABC programs relayed to them via the Intelsat international satellite.

Apart from this major role in the National Service, Telecom also operates some TV transmitter stations in country areas for private companies. Program relays are also provided by Telecom for commercial radio and TV needs.







Above: Technical Training Centre, Manning, Western Australia.

Buildings ~ Buildings

Left: The modern Main Trunk Exchange building in the Brisbane suburb of Woolloongabba.

At 30 June 1978, Telecom owned some 6,900 buildings of all shapes, sizes and kinds—and in every extreme of environment. Hundreds more buildings were rented.

In the 1978/79 financial year, Telecom scheduled about 200 major buildings to be in some stage of construction at a total cost of some \$50 million—in other words, an expenditure of around \$1 million a week.

In the interests of efficient service to a nation, Telecom sites and buildings are required in the right locations at the right time to satisfy the ever-expanding demand for established telecommunications services—as well as new services such as data transmission and radio paging.

Although many of its buildings are unique and demand special locations, Telecom strictly observes the Environment Protection Act of 1974, which requires that the impact on the environment of any development proposals be carefully worked out in the community interest.

Below: Terminal telephone exchange, Karingal (Vic).





Inside one of Telecom's specially designed information caravans.

Informing people

Along with current thinking that large public corporations should be responsive to the community, Telecom is stepping up its efforts to inform both its staff and its customers about its policies.

Telecom is continually widening the spectrum of its distribution of information to its staff about management plans and about new services and facilities. It is also concerned to publicise development in such staff areas as welfare, conditions of service, and so on.

On the public front, advertising and other types of publicity campaigns, large and small, are continuously being put forward to keep customers in touch.



Annual Reports — and other special publications — have been distributed over the years, with more appearing each year in an effort to inform people about Telecom plans and actions — or even its particular difficulties.

On these two pages are pictured two newer media for getting Telecom's message through to its customers. The specially developed caravan is one of a pair which have been on trial in various outdoor (and sometimes indoor) locations at sporting events, Shows and Exhibitions.

The Business Office is one of many which Telecom has established throughout Australia, not only for customers' business transactions but also to enable customers to learn about Telecom's operations, facilities and services.

A customer obtains information at a Telecom Business Office in a Melbourne suburb.

Workshops ~ Storing

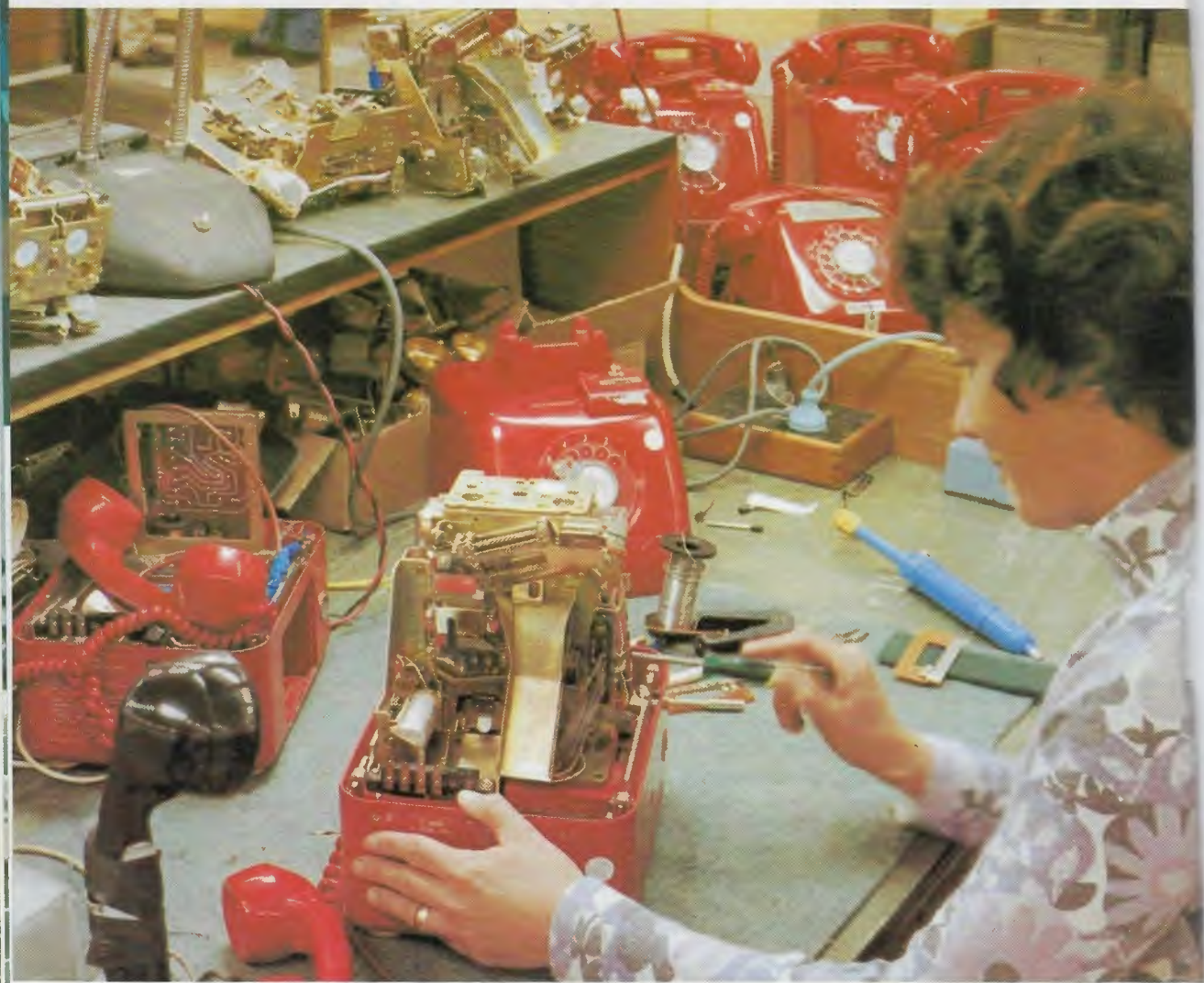
Why Telecom with its vast operations should have extensive workshops and stores operations is not hard to imagine. Comprehensive workshops exist in each State capital where thousands of Telecom staff work—including a wide variety of skilled tradesmen. Workshop activity extends over four main areas: reconditioning of such equipment as telephones, the construction of special items, service work and manufacturing.

But Telecom also supports local industries generally. In the year ended 30 June 1978, Telecom spent \$370 million with Australian industries on items ranging from pins to telephones and tents and giant bulldozers. And this does not cover spending on such things as petrol and oil, plant hired, printing, postage and other day-to-day items. Overall, more than 90% of Telecom's purchases were from Australian industries.

With annual purchasing of this magnitude, it hardly needs saying that Telecom must keep abreast of the latest and best in methods of storing and distributing materials for use in its operations all over Australia.

Right: Goods being stacked away in a Telecom warehousing operation.

Below: Reconditioning telephones in one of Telecom's workshops.









A Big Country

With a population of about 14 million scattered unevenly throughout a country nearly as big as the USA, Australia presents special problems for organisations such as Telecom. Vast distances must be spanned by communications links in all climates and in all terrains — from arid desert plains to snow-capped mountains.

Above: A Telecom engineer (right) discusses access problems with a charter helicopter pilot at a mountain site selected for a microwave repeater station in Queensland.

Left: Telecom's snow plough cuts a path up Mt Wellington (Hobart) for staff operating the radio and TV transmitters.

Below: Transporters loaded with drums of coaxial cable set off from Adelaide for the inland.

A key function in all this is transport — transport of every conceivable kind, from small vans to giant road transporters and aircraft and boats.

In fact, Telecom operates the largest motor transport fleet in Australia and has more than 21,000 vehicles. They totted up over 254 million km (or 11,754 km each) in 1978. And apart from the maintenance and petrol bills for that lot, Telecom nowadays spends about \$25 million each year on replacement vehicles.



At your Service

Right: A Telecom service adviser gives some hints on switchboard operations to a receptionist.

While it is true that 97.5% of Telecom's telephone network is now automatic, and most people make their trunk calls by STD, Telecom does not overlook the need for personal service.

Every customer has access to manual assistance operators who will help them with obtaining particular person calls or other calls where personal assistance may be required — with new or changed numbers, or with advice about overseas calls, and so on.

But a completely free customer advisory service is also available. Telecom advisers will go to customers' premises and assess telecommunications needs and make recommendations. They will even train switchboard operators. In 1978, they made 45,000 visits, some of which involved spending 3 or 4 days at customers' premises.

Below: Wa mouth Exchange, Adelaide. Operators provide assistance whenever required by callers.





Moving the Message

The telegram service began before the telephone — and before the rapid spread of the telephone, it was widely used by everyone. Today, it is a declining need. This is indicated by the fact that in 1950 just over 35 million telegrams were sent in Australia, whereas, in 1978, the total had fallen to 8,966,042 — and that was a drop of 14% on the previous year.

Apart from the telephone and STD, another telegraph service — Telex — has taken over in some measure from the declining public telegram service. It is quite similar in operation to the automatic telephone service, but the difference is that the messages are exchanged in type — rapidly and directly by teleprinter.

*Telex Manual Assistance Centre,
Sydney.*



In the year to 30 June 1978, the number of Telex customers rose by 5,156 or by 15.9%. That year, just 23 years from its introduction in Australia, 32,177,000 Telex calls were exchanged within Australia and another 5,885,261 calls were made to overseas countries. There were 22,724 customers and the service was being modernised in harmony with advances in the telephone service and the introduction of computerised exchange equipment.

New directions in the telegraph services include the centralisation of phonogram operations, preparation for the use of visual display units and the withdrawal of teleprinter machines from post offices where the volume of telegrams does not justify retaining them. Additionally, there is a growing development of the transfer of messages by facsimile.

A Telecom phonogram operator working with a trial Visual Display Unit.



Telecom Tomorrow

What of the future in telecommunications? Certainly, some things seen as long-term technological possibilities a few years ago are now with us, or just around the corner. For example, there is the Telefinder service, now in operation. Telecom has also introduced the inter-city conferencing service known as Confravision.

End of this century "possibles" include putting telecommunications to work to link computers and data banks to homes and offices. This would provide such services as computer-aided teaching programs in the home, with "talk-back" facilities; computer-assisted design for architects or engineers; or access to data bank information to help, say, lawyers in seeking legal precedents — or even to help in medical diagnosis. The equivalent of today's TV set would be the receiving medium in some of these situations; others would require a special terminal to provide printed information. Telecom has these longer-term technological possibilities under review and is also exploring their implications for society at large.

*Right: Telecommunications Tower,
Black Mountain, Canberra.*

*Below: Telecom experts are experi-
menting with on-line computer
information systems as an aid to
management decision making.*





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