

This document was compiled using information provided in the WA Engineering Information Bulletin published in-house by the Post Master General Department WA Engineering Division and the PMG's Lines Section Report No.26.

The PMG Department subsequently produced a 16mm film circa 1970 to record the project - this film was titled North West Link and a copy which had been discarded during a clear-out in the early 1990's was retrieved from the rubbish bin by Mr. Lindsay Morris, a Telecom Technical Officer. Lindsay took the trouble to ensure that this film was transcribed to DVD format so that copies could be distributed to interested parties. The only other known copy of the original 16mm film resides in the State Library of NSW.

Ross Herbert

September 2017.

PERTH – CARNARVON

The longest coaxial cable project yet undertaken in Australia – 612m (985km).

The first coaxial cable to be direct ploughed rather than excavated trench and fill.

The first to use 12MHz line equipment.

Jan - Feb 1968:

Cable laying commenced on 22/11/1967.

As at Feb 1968, 100 miles had been completed.

March - April 1968:

By April 1968 Coaxial Cable Division field staff numbered 102.

Jointing and testing party was at Marchagee No. 2 camp and laying party was at Mingenew No.1 camp while ripping party was also at Mingenew while the blasting party was at Northampton.

Cable laying had been completed to 3 miles short of Three Springs. Joining had reached as far as Coomberdale (115 miles) and 92 miles of acceptance testing had been completed.

Ripping party was north of Mingenew and the blasting party had been completed in the Dongara - Geraldton area and was now under way between Northampton and Ogilvie. Laying of conduits under the Chapman River was completed with a total of 3 main river crossings now complete. A saving of \$40,000 was achieved compared to the cost if this work was done by private contract.

July - August 1968:

Souvenir Badge.

A souvenir badge in the form of a tie clip and cuff links has been struck - the cost is \$1.00 for a tie clip and \$2.00 for a set of cuff links.

Problems due to heavy rain.

Due to heavy rain during June 1968 a stretch of 70 miles around the Northampton area had to be bypassed. However, work continued north of Geraldton to extend the cable to Overlander (Hamelin Pool) 125 miles (200km) south of Carnarvon.

Machinery problems.

There have been several minor fire alarms usually due to burst hydraulic hoses on tractors and corrective action by those present has so far prevented damage. However, recently a serious fire occurred with a Dodge low loader carrying a Hymac excavator. The driver, E. Longbone is to be commended in that he saved Departmental equipment of considerable value before considering his personal belongings and possible danger to himself.

Nov - Dec 1968:

Cable laying was completed on 13th December 1968.

The coaxial cable laying project is now nearing completion and the last drum of cable was laid and jointed on Friday, 13th December. Despite numerous hold ups due to wet weather, boggy ground, shortage of material etc., the laying of the cable will be completed two weeks ahead of schedule. After resumption from recreation leave in mid January 1969, the Coax Cable Section will be engaged in the installation of 45 miles of S.Q.C. spur cable. Reinstatement work along the cable route will also continue.

To celebrate the successful laying of the coaxial cable to Carnarvon, a party is to be held on the evening of 13th December. No doubt before the evening is over the cable will have been re-laid many times. Plans are well in hand to have a combined Christmas party in Perth for staff members and their wives.

Some notable statistics on the project.

Ripping : 51 miles in one week with 14 miles in one day.

Blasting: 3,600 yds in one week.

Installation: 34 miles in one week, with 21 miles in one day.

Joining : 28 miles or 60 joins in one week.

Testing : 41 miles in one week.

Jan - Feb 1969:

Visit by Mr. C. J. Griffiths:

Mr. C.J. Griffiths, First Assistant Director-General, Engineering Works, visited the Coaxial Cable team during the final stages of cable installation and following completion of the laying to Carnarvon has commended the team's effort in the following terms:-

“...the staff concerned are to be congratulated on the manner in which the work has been performed, to schedule and very efficiently – it sets an important challenge for future coaxial cable projects. Even with my short experience on the job itself, I was very much impressed by the drive, efficient planning and high morale of the staff, and I would be glad if you would convey to them my sincere congratulations on their achievement.”

March - April 1969:

Once the cable had been handed over to the Long Line & Country Installation Division work began on installing all of the necessary equipment which would make possible live TV broadcasts and high quality telephone communications. As a result of this demanding work effort it was reported that;

The Geraldton-Carnarvon coaxial cable has been in service from 13th April. It has provided a higher grade of service and allows S.T.D. facilities with Geraldton and manual operator assistance with Carnarvon and districts.

July - Aug 1969:

Long Line Equipment Installation Division

August, 1969, saw the completion of the largest and longest job undertaken by Long Line Equipment Installation - the equipping of the Perth - Geraldton - Carnarvon Coaxial Cable with a 4 MHz(V.960) system, and a 12MHz (V.1200) plus TV) system.

Live TV Broadcast of the Moon Landing:

During July, 1969, only a few days after the completion of the 12 MHz system from Perth to Carnarvon, a spectacular "first" was chalked up for W.A. - the first live telecast to the people of W.A. of an event outside the State, the telecast of man landing on the moon during the Apollo 11 mission.

Sept - Oct 1969:

Perth - Carnarvon coaxial cable provides additional circuits for Christmas 1969 traffic.

Early in 1969 it became apparent that the Perth-Adelaide broadband radio system, due for completion by November, 1969, would not be ready for interstate traffic until mid-1970. This meant serious traffic congestion at Christmas, 1969.

A study of the problem in the Bearer Utilisation Division brought to light the happy coincidence of these major projects due to be completed in 1969:

- The Perth-Carnarvon coaxial cable system.*
- The Intelsat III Pacific Ocean satellite.*
- The Overseas Telecommunications Commission's new earth station at Carnarvon.*

There was little time for developmental testing and since this project involved a world first in using a satellite link as part of a terrestrial communications network over such a long distance it required somewhat of a leap of faith that things would work as hoped for as nobody had yet gained experience in this area.

Satellite link creates world first for communications.

As the world's first regular satellite service within a national network, it will attract the intense interest of many overseas telephone administrations. The staff involved may well feel that they are making an important contribution to the art of telecommunications.

With such a long transmission path, speech takes nearly 300 milliseconds to travel from end to end. This makes it necessary to fit an echo suppressor to each circuit, and here arises the most likely source of poor performance, since the available suppressors were designed to suit a relatively short transmission delay. New suppressors of the latest pattern are on order and it is hoped that they can be fitted in time for cutover or shortly afterwards.

In order to complete the link via the Carnarvon earth station a new section of coaxial cable was required.

A four tube coaxial cable has been trenched from the main coaxial cable route to the Carnarvon O.T.C. earth station, a distance of about 300 yards, This cable will carry telephony circuits between Perth and the Eastern States, and possibly television relays.

CARNARVON - PORT HEDLAND: (distance 535m or 861km)

When the forward planning was done in early 1968 this stretch was scheduled to be installed as a microwave link. This fact was attested in the July - August 1968 WAEIB;

Other Systems on Draft Programme:-

(ii) Carnarvon - Port Hedland Microwave System.

However, this plan was changed at short notice during early 1969.

May - June 1969:

It has been decided to use coaxial cable to provide the broadband bearer from Carnarvon to Port Hedland.

Ed: I am convinced that the problems encountered on the East – West microwave system influenced the change of plans. This would add a further distance of 535m (861km) making the total distance for the coaxial cable link 1147m (1845km) – greater than the straight line distance from London (UK) to Helsinki (Finland). Due to the lateness of the change the acquisition of the additional coaxial cable required would rely upon “raiding” stores in other states, thus incurring the displeasure of the engineers and planners in those states.

Staff:

A large number of the staff from the Perth-Carnarvon project have stayed to tackle the long haul northwards.

Mr. A. Coopes, Engineer Class 1, has joined the Engineering staff of the Division, and has been engaged on preliminary route selection and planning.

Line Inspectors W. Martin, J. Prentice and H. Rayner are still on the job.

Plant Inspector R. Dancer has the services of a new Senior Motor Mechanic J. Clarke.

Responsibilities of staff will be as follows:-

Mr. I. Juracich (Group Engineer) will be responsible for cable installation, ripping and heavy plant.

Mr. D. Berry (Group Engineer) will be responsible for cable jointing and testing. He will also liaise with Long Line Equipment as it affects the project.

Mr. B. Wankey and **D. Wesley** now assisted by **Mr. K, Carmody** will again handle the clerical side of the project.

Mr. A. Coopes (Engineer) will be responsible for blasting, conduit works and river crossings. He will also liaise with Drafting on surveys and co-ordinate all field communications (both radio-telephone and order-wire).

Mr. R. Dancer (Plant Inspector) will control the mechanical group and be responsible for the maintenance of vehicles, trailers and mechanical aids.

Mr. W. Martin (Line Inspector) will control cable installation activities and co-ordinate procedures in No.1 Camp with Line Inspector H. Rayner.

Mr. J. Prentice (Line Inspector) will control cable jointing and testing (lines), including ripping and blasting up to 12.7.69.

Mr. H. Rayner (Line Inspector) will control all Depots and the supply of material and stores to the work face.

Mr. H. Crofts (Foreman 2) Estimates and Survey.

Mr. R. Herring (Foreman 2) Stores and Depots

Current progress:

Track Clearing

Programmed track clearing has been carried out, to aid the survey parties in their work and enable faster rates to be achieved.

Track Clearing and Ripping

Work on the Exmouth-Winning Pool spur was completed on the Month of June, after being plagued by machine break-downs and wet weather. These two alone accounted for some 40 machine days to be lost. Work is now proceeding on the Winning Pool-Carnarvon main route.

Blasting

Proceeding in the Exmouth-Rough Range area. Although many feet of rock have been drilled and tons of explosive used, no oil has been struck.

Conduits

All works completed in Exmouth township, road crossings to Carnarvon, and work now proceeding in Carnarvon.

Proposed Staff Build-up for Cable Laying.

Laying of the Exmouth-Winning Pool Spur is scheduled to commence on the 1st July. The staff build-up commenced on the 25th of June. Many of the Perth to Carnarvon staff have remained and their wealth of experience will greatly assist in the smooth operation of the laying, jointing and testing activities.

July - August 1969:

The installation and jointing of the SQC cables between Exmouth and Winning Pool was completed on 9th August, 1969, on schedule. Testing will be completed by 18th August, 1969. For 33 miles of this route, a minimum of three 2/40 cables were ploughed in simultaneously with a fourth subscribers cable in some areas. In spite of this plus, several new faces in the installation crew, an average 20 miles per week completion rate was maintained.

P.M.G. Charter Ship M.S. NITTYOU MARU

On the 5th July, 1969, the M.S. "Nittyou Maru" docked at Exmouth and discharged 1000 tons of coaxial and other cable for the Carnarvon to Pt.Hedland Project. The total value of the cable discharged was \$610,654. The ship departed two days later on 7th July, 1969.

Behind this bold statement lies a wealth of planning and organisational detail which culminated in this first large scale charter operation which landed cable at Exmouth at minimum cost. Two more shipments for this project are now underway. Full credit must be given to those staff who participated in unloading the ship at Exmouth and delivered the cable to the Learmonth Depot. They worked with the ship's crew, U.S. Navy personnel, and men from the Civil Commissioner's staff at Exmouth in a rewarding exercise in international co-operation. The detailed arrangements for unloading, design of slings and mechanical aid modifications, and transport arrangements were undertaken by Group Engineer Ivan Juracich. All the arrangements worked extremely well and will be applied in unloading the remaining shipments.

Nov - Dec 1969:

P.M.G. Charter Ship M.S."EIJU MARU"

The second chartered ship "EIJU MARU" arrived at Exmouth on Wednesday 24th September at dawn. It sailed on Thursday 25th September at 5.30pm. During this period 249 drums of coaxial cable and 165 drums of S.Q.C. and subs cables were unloaded and transported to storage at Learmonth Depot. This joint effort by men of the Coaxial Project, the Civil Commissioner's Office and the U.S. Navy surpassed even the performance of unloading the "NITTYOU MARU" during July. 1072 tons of cable worth about \$750,000 was unloaded, undamaged, at an average rate of 72 tons per hour. The merit of this effort can be judged from the fact that bulk wheat is loaded by conveyor at Fremantle at a rate of 75 tons per hour.

Coaxial Cable Progress Report:

Since the last report for the Engineering Bulletin, work has progressed considerably. The primary target of cable installation complete from Exmouth to Carnarvon was achieved by 4.10.69. Unfortunately, a large number of faulty repeater cable tails have been found, and as a result hand-over of the cable to Long Line Equipment Installation cannot be finalised until 20.11.69.

Cable laying has also been carried out from Winning Pool to Nanutarra Repeater Station but jointing and testing has been slowed down by the necessary repair work between Winning Pool and Carnarvon, A late requirement for installation of two SQC cables from Roebourne to Karratha has resulted in re-locating Ripping and Blasting/Conduit Parties at Roebourne, where work is progressing steadily,

Gascoyne River

A massive blade out of some 14,000 cubic yards of sand was required in order to cut a trench 8 ft. deep across the 1/4 mile width of the Gascoyne River. The cable was then ploughed a further 5 feet deep through the bottom of the trench. Before filling in two 4" polythene conduits were laid in the trench for future use. The whole job required the use of two bulldozers, a D9 and a D7, for some eight days continuous work.

Ashburton River

Three P.V.C. conduits were laid over the 700 ft. main bed of the Ashburton River. The bed consisted of huge submerged granite boulders, too big to be moved by a bulldozer. A trench was blown through the rocks and cleared by bulldozer and a Hymac excavator. Pipes were laid and surrounded by rocks, which were picked up and laced, one by one, by hand. The pipes and rocks were then encased in concrete, of which some 30 cubic yards was mixed using 2 small mixers, and then laid manually. The party contended with sickness, heat, dust, flies, rain and water seepage during the three weeks required for the job.

This was the hardest individual job undertaken during the whole project. Full credit goes to Supervisory staff and all members of 'F' party.

May – June 1970:

Cable delivery by Charter Ship "TALINGA"

After numerous delays caused through storms, breakdowns and strikes the third charter ship "TALINGA" docked at Point Samson on 8th May and unloading commenced on Saturday the 9th.

On this occasion the ship was unloaded by the local "wharfies" and whether it was through bad luck or their inexperience in handling such a cargo, some damage was sustained. Damage was also caused to the cable when some drums broke loose in a hold during the ships stormy passage.

Apart from cable worth over 1-1/2 million dollars this ship also carried most of the stores and material required to complete the remainder of the Carnarvon-Port Hedland project.

Prior to the arrival of the ship, the depot previously located at LEARMONTH transferred to leased premises at Point Samson.

Staff feeling the strain:

Ed: It seems that the stress caused by the long duration of service in the north-west was taking its toll on the field staff.

Staff.

Once again this Division has had to carry out a recruitment campaign for staff from within and outside of the Department to replace those members who did not wish to return north or had resigned.

The Division welcomes the new staff and hope that they will rapidly adapt themselves to the work and conditions and assist to carry the Project to finality.

Divisional Activities.

Twenty-ninth June will see the re-commencement of Coaxial Cable laying. The activities are being geared so that the target date for completion at Port Hedland will be met.

This date is 30th September, 1970.

In addition to the ripping and blasting in the Peedamulla area for the Coaxial Cable laying, other major works associated with the main project are being carried out. A party under the control of A. Graham have laid conduits in Onslow and are at present laying S.Q.C. Cable from Peedamulla to Onslow. Les Mitchell is the Party Leader of the party laying conduits in Port Hedland.

For a time during April and May, most of the work came to a standstill when heavy and lasting rains made work impossible. The ripping and blasting parties were "cut off" from the outside world as the roads were impassable and in some cases washed away. The party at Onslow did not welcome the nine inches of rain that fell in 1 week.

NANUTARRA – PORT HEDLAND: (distance 312m or 502km)

There was no further information bulletin updates regarding the Carnarvon - Port Hedland section of the coax project following the May – June 1970 issue. However, a separate publication viz, **Lines Section Report No.26**, provides details of the project between Nanutarra and Port Hedland. This report begins with this description of the country through which the cable was to be laid;

The country the cable traverses may be described as one of the most inhospitable parts of the continent, varying from undulating rock covered foothills to flat red soil or pindan plain supporting scrub and scattered Spinifex.

There is little permanent water despite the fact that the rivers create one of the few natural barriers to cable laying. For most of the year the river beds are dry, until the "wet", when they become great torrents of water and a potential hazard to poorly placed cable.

Lack of water, combined with high temperatures, dust and isolation creates a situation where working conditions influence the organisation and methods used. Despite this environment, a high rate of progress has been achieved. This may be attributed, not only to increased mechanisation, but also to improved working conditions, a greater emphasis on staff welfare, and a close supervision of health problems.

The report concludes;

The laying of the cable was completed at precisely 6.00pm on Friday, 16th October 1970, only 16 days after the estimated date..