

Water Corporation pipe probe, 1994



Description

This is a colour digital photograph of 1994 showing equipment used in refurbishing the cement lining of the pipeline that delivers water to Western Australia's eastern gold fields. The top half of a section of pipe has been cut away to give a view of the operator lying on his front on a trolley inside the pipe.

Educational value

- The gold fields water supply pipeline has been delivering fresh water about 560 km from a dam near Perth east to WA's arid gold fields, since 1903. The pipeline was a major engineering feat that attracted worldwide attention at the time and has since been declared a national engineering landmark. Constant maintenance is required to keep the pipeline delivering the maximum amount of water.
- In the 1890s prospectors rushed to the areas that became known as Coolgardie and Kalgoorlie following rich gold discoveries but there was almost no fresh water in the gold fields region. Some men died of thirst, while others died of diseases spread by lack of sanitation and clean water. The gold-mining industry also needed water. Attempts to obtain water from local underground sources and dams proved unsustainable. A pipeline from the better watered coastal area was the only viable solution to the problem.
- The pipeline was one of the first in the world to be lined with cement mortar to protect the piping from internal corrosion, a massive project undertaken by hand in the 1930s. By the 1990s the mortar was showing its age and the lining needed to be repaired without jeopardising the \$2.5 billion of economic activity that the water supply supports. The obvious solution was to replace the piping but the massive cost of doing so ruled it out.
- An innovative solution to the problem of repairing the pipeline's lining without unduly interrupting the flow of water was developed locally in WA after a



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worldwide review of available technologies found that there was none suitable. The equipment shown here was developed after a 5-year research and development program.

- Remotely controlled equipment and processes developed by the Water Corporation of Western Australia are used for the inspection, maintenance and refurbishment of large-diameter pipelines under pressure. The technology won the 1999 Institution of Engineers State Award for Engineering Excellence in the Maintenance Management category and now has worldwide patent protection.
- The equipment has been continuously improved since it was first developed in the early 1990s. The Challenger Pipeline Inspection System uses remote control inspection vehicles, video equipment and fibre-optic technologies to collect data on the condition of pipelines. Remotely controlled vehicles remove damaged cement mortar lining with high-pressure water blasting and apply new lining using a centrifugal process, but the lining is still finished off by hand.

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