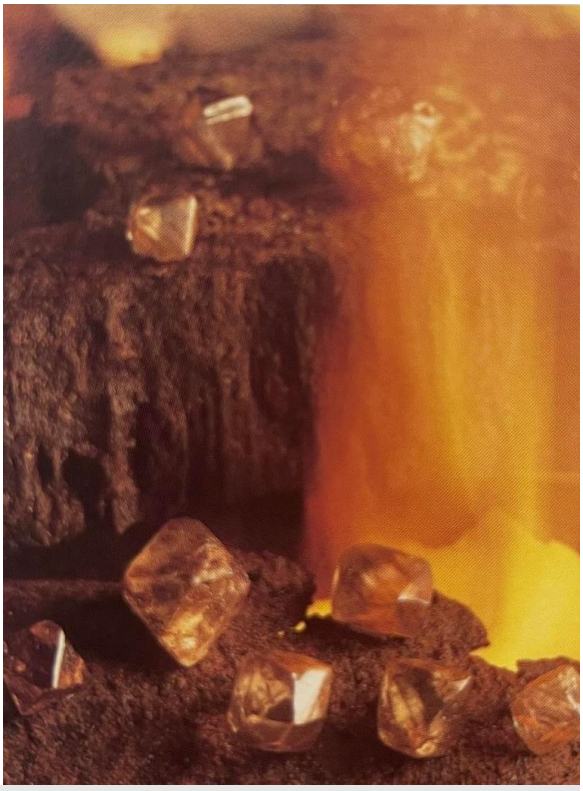
Steel Mains
SOLUTIONS FOR LIFE

Argyle Diamond Mine Upgrade - WA

'Champagne' Water for Argyle



The rare 'champagne' coloured diamonds

Argyle Diamond Mine Upgrade

Client	Argyle Diamond Mines Pty Ltd (Rio Tinto Ltd)
Project	Argyle Diamond Mine Upgrade
Pipeline	13.4km of 508mm OD SINTAJOINT MSCL Pipeline
Construction	Monadelphous Constructions Pty Limited
Construction Period	Completed July, 1990

Objectives:

The Argyle Diamond Mine in the Kimberley district of Western Australia may represent the world's largest deposit of 'champagne' coloured diamonds…but without its vital water supply, this major enterprise would not exist.

Situated in one of the most remote areas in Australia, Argyle has relied upon a 40 km water supply pipeline since its inception. However, a major upgrade of facilities called for a 13.4 km of 508mm OD SINTAJOINT mild steel cement lined water supply line to augment the existing system. SINTAJOINT pipelines feature a rubber ring joint fully protected by SINTAKOTE.

Challenge:

"The main objective of the upgrade was to meet future demands at minimum long-term cost," said Mr. Arthur Davey, Senior Mechanical Engineer with Argyle Diamond Mines Pty Ltd (Rio Tinto Ltd).

"The water supply system has to supply 910 m^3/hr at the moment ... and this will expand to some 1,500 m^3 /hr in the future."

Water is pumped from two floating barges on Lake Argyle through 9.3 km of 425mm OD 5mm wall thickness MSCL pipeline to a new primary pumping station, break pressure tank and pressure vessel.

Solution:

From the primary pumping station, water is pumped 17km through the existing 425mm OD MSCL main to a booster pump station with the last 8.3 km having been duplicated in 508mm OD SINTAJOINT MSCL pipeline. Depending on the mode of operation, water can then be transferred to holding tanks on " Telecom Hill'. In the holding tanks, the water is chlorinated prior to distribution.

Potable water is fed directly to the plant and accommodation village. The alternative operational mode allows transfer of water to a new holding reservoir. Submersible pumps can then supply plant operational flows through a new 5.1 km 508mm OD SINTAJOINT MSCL pipeline.

At the primary pumping station, a 30m^3 air vessel protects the main pipeline system from 'water hammer' effects. A one-way 210m^3 surge tank upstream of the booster pump station protects the rest of the pipeline. The whole system is controlled and operated from the main mine site operations facility, utilising telemetry control and PC simulation. The upgrade project, including telemetry control, was designed by Mr. Jim Gugich and managed by Mr. Dan Bam both of Minenco Pty Ltd.