BHP IRON ORE – RAILWAY RESEARCH PROGRAM

State of the art loading facility at Yandicoogina,, which is consistently producing average axle loads of 37 tonnes.

OVERVIEW

Excessive component wear after BHP Iron Ore commenced operations in 1969 formed the basis of a research program initiated with BHP Melbourne Research Laboratories in 1972. In 2000, the relationship continues with the BHP Institute of Railway Technology at Monash University.

BHP-IO annually transports 60 million tonnes of Iron Ore from six mine sites in the Pilbara, WA. Ore is carried by nine trains in constant circulation, each hauling approximately 25,000 tonnes per trip to Port Hedland. It operates the highest long-haul loads globally and is thus recognised as a bench-mark heavy haul railway system - achieved through commitment to research and a pro-active and supportive management prepared to push the boundaries of component performance.

To achieve these results, research centered on key areas described below, has continued.

HIGH AXLE LOADS

As a result of continuous improvement –

- Axle loads have increased from 30 tonnes to the current 37 tonnes.
- 40 tonne axle loads are now being assessed.
- Although higher loads increase component wear, operational savings have reduced total system costs.
- Between 1990 and 1998, railway transport costs were halved.

VEHICLE COMPONENTS

- Extensive testing and continuous monitoring has enabled many components to operate above manufacturers' specifications.
- Working relationships have been formed with many suppliers to develop improved component performance.
- Service life increases of 3x have been achieved with many major components – bogies, wheels, car bodies, reducing capital and operating costs.

Typical iron ore train carrying approximately 25,000 tonnes of material on a 27 hour turnaround cycle.

One of three rotary car dumpers used to offload ore at Port Hedland

TRACK COMPONENTS

- In 1972, the research program targeted increased rail life.
- In 2000, rail life is typically 5 times longer than in 1972.

This has been achieved through improved understanding of wheel-rail inter-action, improved maintenance practices and development of new materials. Significant effort has also been made on rail weld performance, track sub-structures and maintenance efficacy.