

# NEWSLETTER No 4/2005



Railway Technical Society of Australasia  
SA Chapter  
Engineering House, Bagot Street  
NORTH ADELAIDE SA 5006

APRIL 2005

## NEXT MEETING

The next meeting will be held on

**THURSDAY 5th MAY AT BAGOT ST,  
NORTH ADELAIDE  
(Institution of Engineers) - at 17:30.**

Topic:

### JOHN HOLLAND'S RG9 RAIL GRINDER

**Robb Van Toledo**  
Manager, Specialised Rail Services  
John Holland Pty Ltd

Robb's presentation will be on "Grinding" and will include such topics as:

- John Holland's capability, machinery and equipment including the latest RG9 Rail grinding machine
- plain line track grinding, street rail grinding and switch grinding
- corrective and preventative grinding
- one pass grinding
- some of the learnings/highlights from several projects

Robb will also talk about some of the other major items of track equipment that John Holland operates such as the Shoulder Ballast Cleaner, the Flash Butt Welding and track surfacing equipment.

## CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD)

IEAust members are reminded that attendance at RTSA technical meetings contribute towards CPD requirements. Each RTSA technical meeting generally has a value of 1 CPD point.

## LAST MEETING

At the last meeting, Malcolm Owens, General Manager Infrastructure, Strategy and Performance – ARTC, spoke about the ARTC Expansion into NSW.

In September 2004, ARTC took control of most of the NSW country tracks under a 60-year lease agreement with the NSW State Government. In taking over the tracks, ARTC had to establish a new track maintenance organisation in NSW together with the appropriate support systems. The effect of this expansion is that ARTC has transitioned into a totally different organisation.

The NSW country tracks have been divided into two categories. The first are those that form part of the defined interstate network and the Hunter Valley coal system. ARTC has a direct lease on these lines and is directly responsible for funding any maintenance and upgrade work. To recover the cost of these works, ARTC can charge a fee for the use of these tracks. The second category are those remaining tracks that remained owned by the NSW State Government but are maintained by ARTC under a separate agreement on a cost plus basis.

The funding of improvements on the leased lines is being provided by untied Australian Government grants of \$450M, tied Auslink grants and ARTC's own money. How the money is to be expended is the subject of extensive evaluation to ensure the maximum benefit is to be realized. The majority of the money will be spent enhancing rail's competitiveness on the Melbourne Sydney Brisbane corridor. Currently rail's market share in this corridor is approximately 10% to 12% between Sydney and Melbourne, in the high teens between Sydney and Brisbane and approximately 20% between Melbourne and Brisbane.

In order to determine where the money is to be spent, a strategic planning process has been implemented. This process includes:

- i) A maintenance plan for the next 18 months
- ii) A study of the north south route options
- iii) Determination of a north south investment strategy
- iv) A Hunter Valley capacity improvement strategy to increase coal throughput by 50% in 3 years

### Five-Year Maintenance Plan

Work on the maintenance plan is currently aimed at a maintenance productivity improvement strategy that is looking at investment in plant and equipment as well as maintenance processes and procedures.

### North South Route Study

A number of options and corridors are being evaluated to determine the best option of north south traffic for both the long and short term. Evaluation criteria include:

- i) Transit time
- ii) Reliability
- iii) Capacity
- iv) Yield
- v) Improvement requirements, both above and below rail.

To evaluate the various options, two independent modeling consultants have been engaged and their

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results compared so as to ensure some confidence in their accuracy.

The modeling has revealed that in the short to medium term the best route between Melbourne and Brisbane is the current route via the Main South, Sydney to Newcastle and the North Coast Line. With suitable investment, a reliable transit time between Brisbane and Melbourne of 27 hours is achievable. Investment in this route will also enhance Melbourne to Sydney and Brisbane to Sydney traffic.

In the longer term and with a substantial increase in Melbourne to Brisbane traffic, the inland route becomes more attractive.

## North South Investment Strategy

An investment of approximately \$1000M over the next 5 years is envisaged with \$872M being spent on infrastructure with most of the amount being spent on the North Coast Line. Potential work includes:

- i) Loop extensions to allow 1800m trains
- ii) Additional crossing loops – the best result for travel times is to have crossing loops approximately 30 minutes apart.
- iii) Deviations – 149 options identified with substantial possible deviations between Taree and Coffs Harbour
- iv) Track strengthening, mainly the installation of concrete sleepers on curves to allow increase in track superelevation from 120mm to 150mm, increased cant deficiencies from 80mm to 110mm and faster speeds. Over the Melbourne Brisbane route approximately 140 minutes may be saved.

All of the potential works are being evaluated on a cost benefit basis and ranked on a cost per minute savings basis. Adjacent potential works are also grouped for optimum outcome.

Train operation modeling incorporating the above improvements have established that a Brisbane to Melbourne transit time of 27 to 28 hours can be reliably achieved with an increased number of trains to meet projected demand.

## Hunter Valley Capacity Improvement

The current demand on the Hunter Valley rail system is 84 MTPA. In 2009 it is expected that the demand will be 138 MTPA. Rail is generally perceived as the constraint in the coal supply chain and is quite often criticized as such. In fact, the port capacity is the restraining factor. ARTC's aim is to maintain its rail capacity at a level

above that of the port. The proposed investment strategy is aimed at achieving both this and the forecast demand levels of 115 MTPA in 2006, 125 MTPA in 2007 and 138 MTPA in 2009.

An outline of the Hunter Valley enhancement strategy is:

- i) Consult stakeholders
- ii) Identify rail constraints
- iii) Identify potential solutions
- iv) Determine cost and time effectiveness for the proposed solutions
- v) Follow regulatory guidelines and seek endorsement

To increase capacity, possible improvements include:

- i) Increasing train length to approximately 90 wagons.
- ii) Reduce variability in train speeds
- iii) Increase train speeds
- iv) Reduce signal overlap lengths
- v) Eliminate junction conflicts such as at Sandgate where a \$42M flyover is proposed.
- vi) Improve signal locations based on travel time rather than distance.
- vii) Install additional duplicated track
- viii) Install new crossing loops on remaining single line track.
- ix) Improve train control systems.

A key requirement is to allow adequate access time for track maintenance. This is achieved by allocating approximately 20% of paths for track maintenance. Coal trains are allocated 50% of train paths and 30% for other trains. Bi-directional signaling is also being contemplated.

The provision of additional capacity by increasing axle load has also been considered, however larger wagons will require a larger loading gauge and this is expensive to implement. Higher axle loads may be introduced in the distant future.

## MESSAGE FROM THE CHAIR

Engineers Australia (EA) has pronounced 2005 as the Year of the Young Engineer. All areas of EA are finding it difficult to attract young people into joining and participating in the diverse range of activities being offered by EA and their related branches, colleges and societies. These young people are the future of industry and it is important for them to keep up to date and be trained in the latest developments that contribute toward their Continuing Professional Development (CPD). Involvement in EA is also beneficial for their career

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advancement as these meetings and associations provide excellent Networking opportunities.

EA has challenged all groups to have two Young Engineers join each of the committees. In this regard I am pleased to announce that Tom Hampton, a young engineer from John Holland Pty Ltd Rail Division, has offered to join the SA Chapter of the RTSA and has been unanimously accepted to be co-opted onto the committee. I am sure Tom will bring fresh ideas to the committee and provide some youthful enthusiasm that will benefit our local Chapter. However we still have plenty of room on our committee for additional people, especially Young Engineers, to assist us in preparing meetings and conferences that are of interest and benefit to us all.

On another note, the SA Chapter has been asked to review the High School maths curriculum and list the practical applications of each mathematical element so that a teaching resource can be developed to show students the value of studying maths in years 11 & 12 and possibly undertake a career in Engineering. Does anybody have time to participate in this worthwhile review? I would be pleased if you could contact me to discuss this further.

Our last meeting was well attended and Malcolm once again provided a very informative presentation that highlighted the positive future of the Rail Industry in Australia. I look forward to seeing you all at our next meeting.

*Robert Schweiger*

## **MY VIEW - Max Michell**

It was interesting taking the tube train from Heathrow to central London last year. Not only for the differences such as the scale model carriage interiors but also the similarities, the most outstanding of which was 'mind the gap'. Apart from the accent it was a dead ringer for the same message repetitively broadcast in the Sydney area. Except that it turned out that London Transport have had this message going far longer than the local version, which must therefore mean that we have, yet again, copied them.

Since the first railways were introduced to this country 150 years ago just about everything has been a 'copy' of some sort. Locomotives, carriages, wagons, safe working, signalling and track mimicked overseas practice for much of the time, although to be fair it was not always the one overseas source that was the inspiration. The Empire allegiance was undoubtedly the strongest influence and the legacy of that can still be seen widely across the rail network, ranging across

such things as XPT trains, semaphore signals, high level platforms and safe working practices. Other imported influences are more recent and are most obvious in locomotive and wagon design, train orders and communications. It is quite instructive to look at the various rail properties and note to what degree these historical influences are still embedded. In fact the significant differences between the late state railways (and to some extent their successors) can be defined in terms of their 'borrowed' inheritance mix.

Every so often the feeling that rail in this country is largely a derivative of somewhere else is shattered by what would seem to be a trivial event. Back in 1986 V/Line engaged two operators from Transmark (British Rail consulting arm) to look at centralisation of train control – very much what might be expected when 'overseas' was synonymous with better. One weekend a couple of us locals took one of the consultants on a train trip to Griffith in south western NSW, in part to give him a better depth of understanding of the property (and that adjoining) that they were advising on. Northbound from Melbourne was inevitably in the old Inter-Capital Daylight, a train that at that stage was slowly deteriorating toward its demise; not all that impressive to someone from one of the (then) benchmark passenger railways. We overshot to Harden to return to Junee on an XPT, the local derivative of the British HST; once again not all that impressive on tracks that drive Philip Laird to distraction. At Junee a single Budd car derivative did the branch run Junee to Griffith and this was different. In all 180 km of that run, including around 10 intermediate staff stations, not one station was actually manned for the train. Here at last was something that was new, novel, different. We colonials had introduced our friend to the 'unattended passenger railway'. It should be added that the return journey on the Budd car was equally unattended, and the return thence to Melbourne on the decidedly low brow Spirit of Progress added nothing additional to the experience.

There are a number of notable technical achievements that have come from this country. Double deck EMU trains come to mind. The adoption of the six-motor diesel-electric by EMD in America was largely driven by the doggedness of the late George Brown. I have a feeling that some of the techniques adopted by the Adrail Group on the Darwin line, particularly in the way of culverts and bridges, might become something of a landmark. But I suspect that we have not really given ourselves much credit for the way that we have run our railways. Most of our rail networks are thinly trafficked, middle grade lines that will never show up as 'worlds best practice' (a detestable term if ever there was one) but can be shown to be 'worlds most appropriate practice' for railways that are in similar circumstances

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as ours. Consider for instance the route between Adelaide and Perth. In all that distance of nearly 2700 km there is not one on the ground person required to run any train. And just to make things more interesting not one of the trains on this elongated unattended railway has any more than two crew-persons aboard to do the train running. Track maintenance does not require anyone to live in the 1700 km between Port Augusta and Kalgoorlie. Simple technology such as self restoring switches makes the majority of this unpeopled route reasonably efficient to work and therein lies the local advantage of our home grown rail operations skill. Marriage of simple things to make a reasonably efficient but simple system is not something you will find in the guide to 'worlds best practice'. There are quite a number of instances where local ideas and practices have been brought together to create an appropriate efficient response to the problem of dealing with a low traffic base and long distances. Given that many of the world's railways have neither the traffic nor the resources to operate a high grade high density railway, there must be transferable techniques and skills in this country that would be entirely appropriate to their situation.

Dissolution of the old railway systems has had the unfortunate side effect of throwing away much of the corporate knowledge as well as abandoning the nurturing of basic skills to retain and expand the business (witness the shortage of drivers for instance). In this new found world there would appear to be little if any place for things like the non core activity of commercialising the techniques and skills that are (were) embedded in their business. It is notable that the only Railway consultancy of note is part of QR, which of course is the corporate clone of the last of the state railways. In these circumstances it is likely that much of the awareness of the uniquely valuable parts of the Australian railway scene is held by individual railway consultants and retirees rather than the corporations – the 'you and me' group. So it is likely that among our members there a collective strength that comes from

skill and experience in the industry that could be of considerable value to a much larger (overseas) industry audience. The problem is how to harness these skills and experiences and turn them to good purpose, particularly since they are in effect 'perishable'. ARIC seems to be doing a consistent job in facilitating entry of various rail corporations to overseas markets, but no one to my knowledge is looking at harnessing the collective wealth held (maybe unconsciously) by a large number of past and present railway people. This may be one of the challenges for those who would like to contribute to redressing the balance of payments problem.

In the mean time it could be interesting if readers could contribute short items to the editor (Stephen Townsend) with thoughts about the things that Australian rail does that can be claimed as 'worlds most appropriate practice'.

## **STANDARDS AUSTRALIA COMMITTEE – ELECTRICAL OVERHEAD**

Standards Australia has issued an invitation to the RTSA to nominate a suitably qualified person to participate in Standards Australia Committee No. EL-010, Overhead Lines or some of its Sub-Committees, which cover such topics as:

- i) Conductors
- ii) Fittings for Insulators and Conductors
- iii) Insulators
- iv) Fittings for ABC
- v) Fittings for HV Covered Conductors
- vi) Powerline Markings

Any member who has the time and wishes to represent the RTSA on this committee or any of the sub-committees, please contact Rob Schweiger.

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## MEETINGS FOR 2005

<b>Future Speakers/Dates/Topics</b>				
<b>Date</b>	<b>Speaker</b>	<b>Organisation</b>	<b>Topic</b>	<b>Venue</b>
03/03/05 (joint PWI)	Max Shuard	Transport SA	Port River Expressway	Hosted by PWI. Riviera Motel and Function Centre
07/04/05	Malcolm Owens	ARTC	ARTC Expansion into NSW	Engineers Australia Chapman Hall
05/05/05	Robb van Toledo	John Holland	The new RG9 Rail Grinder	Engineers Australia Chapman Hall
No Meeting in June				
07/07/05	Dean Philips	TransAdelaide	Re-Tendering of TransAdelaide's Railcar Maintenance Contract	Engineers Australia Chapman Hall
04/08/05	Rob Schweiger	RTSA	Review of Heavy Haul Conference-Brazil	Engineers Australia Chapman Hall
01/09/05 (joint PWI)	Dean Lambert	Trans Adelaide	New Trans Adelaide Trams	Engineers Australia Chapman Hall (RTSA to host)
06/10/05	TBA	TBA	Upgrading of Glenelg Tram Infrastructure	Engineers Australia Chapman Hall
27/11/2005	Railway Quiz Night	PWI	Open to RTSA members	Riviera Motel and Function Centre
03/11/05	TBA	TBA	New CTC System for Trans Adelaide	Engineers Australia Chapman Hall
29/11/05	Annual General Meeting of RTSA - SA Chapter		Dinner meeting	

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## KEY RTSA CHAPTER COMMITTEE CONTACTS

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Articles or editorial comment for Newsletter are very welcome. We have over 100 members locally some of whom will have stories, events or developments of interest that could be reported in Newsletter.

Part of the function of RTSA is to keep members in touch with what is going on in the industry and with each other and to that end we are only too happy to publish items of interest.

Send copy to the Editor, Stephen Townsend at [st771048@bigpond.net.au](mailto:st771048@bigpond.net.au) or fax to 08 8390 3772

Electronic despatch of Newsletter is undertaken by Malcolm Menadue – contact Malcolm on [mmenadue@ozemail.com.au](mailto:mmenadue@ozemail.com.au) if you have any problems receiving Newsletter electronically or in hard copy. Note that electronic subscribers will get their Newsletters and flyers as soon as the editorial stuff is done, while the hard copy mail will of course be some days slower.

For all other matters relating to RTSA SA Chapter contact Robert Schweiger (Chairman) at e-mail [robert.schweiger@jhg.com.au](mailto:robert.schweiger@jhg.com.au) or

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## Disclaimer

This Newsletter is a publication of the South Australian Chapter of the RTSA. The opinions expressed within are not necessarily those of the Chapter, Society or Editor.