

NEWSLETTER No 5/2003



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

JUNE 2003

NEXT MEETING

**THURSDAY 3rd JULY AT BAGOT ST, NORTH
ADELAIDE - Starting at 17:30**

**RON STEWEIN WILL PRESENT ON EARLY
ENGINEERS OF THE SAR**

Ron is well known to most members of RTSA and to those who had a part in the SAR before it was folded into AN. Ron spent his early railway days moving rails in the South East, and retired some years ago from Trans Adelaide. He has occupied his 'civilian' life compiling a history of the SAR, and the inspiration for tonight's presentation came from that. Ron thought at one stage he might limit his presentation to the engineers of SAR, but on further consideration (and in deference to the hour or so available at any one meeting) he has focussed on just two engineers – Henry Coathupe Mais and William Thow. These two contemporary late 19th century engineers, one civil the other mechanical, had a significant influence on the SAR (and on other colonial railways that they worked for) but found themselves at considerable odds with each other over matters of policy and authority in South Australia.

Ron will give us an entertaining canter through the late 19th century of the SAR through the eyes of these two illustrious men and others who surrounded them. Find out how Thomas Playford came to be involved!! Sit through a Select Committee, Royal Commission and a Special Board of Enquiry

The meeting will be preceded by the usual nibbles and opportunity to meet with fellow members and guests

PREVIOUS MEETINGS

The **MAY** meeting was entertained by a presentation by Des Smith about his 'adventures' surveying a route between Alice Springs and Darwin during the period 1980 – 1997.

Completion of the standard gauge route between Tarcoola and Alice Springs in 1980 was a spur (with some prodding from the 'sidelines') for the Fraser government to commit to a \$10 million 3 year survey between Alice and Darwin in anticipation of construction of the missing part of the long promised north south railway. Des got the job. Apart from the requirement to serve Tennant Creek and Katherine Des more or less had a free hand in selecting the route. Fairly early in the project the time before construction might start was reduced from three years to two so the project, already involving over 1400 km of largely uncharted country, had to be pushed forward with some haste. Des basically adopted the principles of 'straightest, flattest, shortest' in finding a route. He had a head start with the top end section, having a good knowledge of the area and aerial surveys that were reasonably up to date (although rather coarse in the vertical). The rest was a great unknown. The initial task was to select a mapping corridor, using whatever was available to identify the most likely corridor for a rail route following the above principles, then to go out, pre GPS, and try to locate a route on the ground. Suffice to say the Des and his fellow adventurers managed to get the work largely done, with some inspired guesswork and a few unconventional measures (try a height of '2 ½ young engineers'). The route selected proved to be 60 km shorter than the Stuart Highway between Alice and Darwin. In all the rush to complete the survey and get construction under way there was a change of government in Canberra. Even after that work continued on setting out the new route (using steel centre pegs – a foresighted move given the subsequent time taken to come to fruition) but bit by bit the actual construction dream went backwards until it was off the political radar in Canberra (but not in NT or SA). A full stop on the project in 1984 left many loose ends – survey data not processed, plans half done, reports not written and estimates left hanging. All but 350 km of the centre line had been pegged, and after an up and down period of reports and feasibility studies through to 1993 the Keating government came good with \$3 million to allow completion of the survey work. The rest is now in the category of 'history in progress'.

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The **JUNE** joint meeting with PWI was a presentation by John Fullerton, General Manager Operation Services for Pacific National. John had a momentary period with Commonwealth Railways before being with AN, NR and now PN. He started by going through the advantages and weaknesses of the three most recent incarnations before getting to some aspects of the first year of PN.

John saw the strengths of AN as being commercial focus and direction, innovation, and management development and recruitment. The weaknesses were a restricted freight network, industrial environment, government ownership and an incremental approach to change.

For NR the strengths were a national vision, commercial board, investment in quality assets and technology, a Greenfield approach and a strong internal commitment. The weaknesses were government ownership (still!), lack of shareholder support, limited opportunities to exploit commercial opportunities and a deteriorating track infrastructure – 'just a rail operator'.

John's background did not embrace the FreightCorp part of PN so there was no analysis of that former organisation.

PN's strengths are its strong and successful owners, a private sector culture, quality assets and business base, shareholders ability to shift freight from road to rail, and opportunities for acquisitions, alliances and capital investment. The weaknesses are in the lack of a single management of track (PN strongly supports the ARTC proposal to manage main lines in NSW), quality of track and infrastructure, lack of infrastructure planning and capital works, regulatory reform and government interference from NSW (the FreightCorp legacy).

In the 12 years since just prior to NR's formation the inter-state freight business has gone from an estimated loss of \$321 million p.a. to a profit (EBIT) of approximately \$70 million in 2003. Loco productivity has improved nearly 75% from AN in 1994 to PN today (and AN was one of the better performers in 1994) while specific fuel

consumption (fuel per unit of work) has fallen almost 50% over a similar period. PN are not all that far from USA best practice fuel rates which given the relatively light axle loads and shorter trains is a commendable result.

PN's business is made up of inter-modal (4450 trains p.a. for \$375 million), coal (15700 for \$330 mill), grain (3600 for \$120 mill), steel (2050 for \$110 mill), ores (1750 for \$63 mill) and other (4500 for \$80 mill). Functionally PN is structured with three business divisions (coal, inter-modal, rural and bulk) with three support divisions (commercial, operation support, finance).

John outlined the progress of PN, predominantly from the perspective of the inter-state business that was inherited from the former NR, and concluded by listing the opportunities seen for PN

- integration savings,
- operating improvements and cost reduction,
- customer linkages,
- revenue growth,
- the regulatory environment and
- infrastructure improvements.

The 'enablers' for these are seen to be

- effective leadership,
- the right industrial instrument,
- 'can do' culture,
- analytical ability and
- political influence.

FUTURE MEETINGS

A number of interesting topics are in the pipeline, with the most immediate (subject to final confirmation) being

Thur 7th August: A presentation on the signal and control system of TransAdelaide.

Thur 4th September: a joint meeting with PWI (this time RTSA is host so the meeting will be at Bagot St) on a topic yet to be confirmed.

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Thursday 2nd October: a presentation on a pretty smart software system developed locally to resolve complex interactive problems in real time.

THE EDITORS PLATFORM

Many moons ago the then VicRail (or was it V/Line?) hired in a couple of operators from the mother country to study and report on operations control of that railway. They were a pleasant pair who spent some time outside their formal commission exploring bits of the east coast railways. I well remember one weekend taking one of them (Peter) up to Junee on the then loco hauled daylight, then in the late afternoon on the branch to Griffith and back. At that stage the branch train was in its last incarnation as a single Budd car prior to complete abandonment not all that long afterwards. Up until this time there had not been much that we could show Peter that either surprised or impressed him. But this rural branch line did. The single car loped along between little villages, stopping for the occasional passenger and more importantly to change the staff, with only a two person crew do the whole thing. In the whole 175 km journey there was not one intermediate station with anyone on duty. The then British experience dictated that there would always be people on stations in this sort of situation, so the Oz experience came as something of a surprise – a lesson in how to run a railway with relatively few staff. Which rather set me to thinking that there are quite a few things that our lightly constructed and thinly used trunk rail network has achieved over the years?

Some time ago I noted in this newsletter that the American trans-continentals were offering a guaranteed seven day transit coast to coast, when we do a similar distance in three or four days all the time. Recently, buried a report on the difficult time the Europeans are having with the access issue, there was a note that a freight service operated by Ikea from Sweden to Germany (yes, there is a fixed link there now) averaged 70 km/h overall – the fastest origin to destination freight in Europe. But hang on a minute – don't we manage

better than that between Adelaide and Perth, and very nearly that between Melbourne and Sydney over that much maligned route? So in terms of transit times and average freight train speeds we can hold our heads up compared to some of the overseas railways that we aspire to emulate.

John Fullerton, in his presentation to RTSA and PWI earlier this month, made the point that PN, with low axle loads and short trains (by American standards) have brought their specific fuel consumption to within a bulls roar of the much vaunted Americans. We have largely dispensed with marshalling yards and the practice of tramping trains from yard to yard in favour of point to point trains – one of the reasons we get the results that we do.

An example of the rate of change is found in Queensland. Even more moons ago than at the beginning of this piece, I can recall a QR with a maximum freight load of 650 tonnes (draw gear strength), which in turn dictated that there was no need for multiple unit capabilities on their early diesels. In a matter of 3 decades or so QR had moved on from being one of the least developed and most un-adventurous railways to one pushing the boundaries (along with South African Railways who started from a much higher base) of narrow gauge operation. Trains of 10,000 -12,000 tonnes with 26 tonne axle loading at 80 km/h on the coal lines, 20 tonne axle loading at 100 km/h on the main lines north and north west, 170 km/h tilt trains and so on. The QR property is hardly recognisable as being the same railway as in 1960. QR has also paid quite a bit of attention to the alignment of main lines and has had two major improvement programs on the lower north coast line in the last 15 years. In this respect they are unlike any other Australian railway in that they took a holistic view of their property rather than just looking at the various components individually.

In terms of infrastructure ARTC in particular (but not uniquely) have pushed the boundaries of track husbandry – making most of the track for the minimum expenditure of (very) scarce dollars. The Victorian standard gauge line between Melbourne

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and Albury, for years treated as a lightweight section when compared to that of its northern neighbour, is now in essentially better condition than the neighbours property.

The fact that we can hold our heads up in a number of respects is in no way intended to diminish the need for a reappraisal of the funding, policy and management framework that surrounds that rail industry. What it does is indicate that we are already capable of high levels of performance given half an opportunity, which is all the more reason to keep arguing for a sensible, global policy and funding framework in which we can continue to be able to score 'world class' results from our light weight low volume railway. And achieving that will be good for us and for the country as a whole.

SA TRANSPORT PLAN

The SA Draft Transport Plan is open for comment until the end of July. In a recent media release the Minister, Michael Wright, listed some of the more controversial proposals within the plan including investigating electrification of the rail system, with bus-ways and light rail, but also consideration of removal of the suburban rail system and using the former rail corridors for buses and trucks. In short there is a need for everyone with any views on the future of rail transport in our state to follow up on the Draft Plan and put in their submission. The editorial in our April RTSA Newsletter (repeated with minor changes in the June Railway Digest) picks up on some issues to do with industrial development and freight access in the Adelaide area. Other issues that spring to mind are gauge (which includes the as yet unresolved Mt Gambier saga), regional freight and passenger and the general planning environment in SA. There is little doubt though that the State is most interested in the metropolitan rail network and its future, since it is financially responsible for that railway.

It is suggested that there are probably two key issues that will drive the transport future from a state point of view – cost containment (for the

state) and enhancement of economic activity within the state.

Further information is available from www.dtup.sa.gov.au or by phoning 1800 020 999. In addition community forums are planned as follows:

City Mo 7th July
Noarlunga We 2nd July
Elizabeth Thu 17th July
Strathalbyn Wed 18th June
Mt Gambier Mon 23rd June
Loxton Mo 14th July
Clare Tue 1st July
Pt Augusta Mo 30th June
Coober Pedy Mo 21st July

The Port Lincoln forum has been and gone before this newsletter could be produced.

Please try and respond to the draft plan.

ALTERNATIVE MICROSOFT MESSAGES

An anonymous contributor, who we shall refer to as Former National Chairman, has forwarded the following delightful little piece. I am sure that anyone who has had to face up to some of the more abrupt or obscure Microsoft messages will have some empathy for this piece.

Japanese programmers have replaced the impersonal and unhelpful Microsoft error messages with Haiku poetry messages with its strict construction rules - each poem has only 17 syllables; 5 syllables in the first line, 7 in the second, 5 in the third.

Stop now for a while.
Consider subtle wisdom
That hits like a brick

The Web site you seek
Cannot be located, but
Countless more exist.

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Chaos reigns within.
Reflect, repent, and reboot.
Order shall return.

Program aborting:
Close all that you have worked on.
You ask far too much.

Windows NT crashed.
I am the Blue Screen of Death.
No one hears your screams.

Yesterday it worked.
Today it is not working.
Windows is like that.

Your file was so big.
It might be very useful.
But now it is gone.

Stay the patient course.
Of little worth is your ire.
The network is down.

A crash reduces
Your expensive computer
To a simple stone.

Three things are certain:
Death, taxes and lost data.
Guess which has occurred.

You step in the stream,
But the water has moved on.
This page is not here.

Out of memory.
We wish to hold the whole sky,
But we never will.

Having been erased,
The document you're seeking
Must now be retyped.

Serious error.
All shortcuts have disappeared.
Screen. Mind. Both are blank.

MENANGLE BRIDGE UPDATE

The Menangle Bridge farce is no doubt known by most of you even from 1500 km distance. In brief the bridge was closed at very short notice late in March under rather acrimonious circumstances, and not reopened until four weeks later - this on the main line between Australia's two largest cities. Pacific National and others suffered large losses in income as well as incurring additional costs and there is every likelihood that they will pursue compensation now that the line has reopened. The following has a few facts about the work done, and seems to imply that the 'imminent failure' reason for closure may have been something of an over reaction (we could call it the WMD syndrome?). The two text notes below are as the editor received them.

24 April

Earlier today, the Rail Safety Regulator's office gave RIC approval to reopen the Menangle Bridge. Over the past few weeks while the bridge was closed we carried out extensive analyses on it in conjunction with our expert consultants, and also used the opportunity to carry out the following replacement work:

- * 51 steel rivets inside the box girders
- * 35 sets of U-bolts
- * 36 metres of timber stringers under the track, which are designed as added support
- * 18 strengtheners (gussets), and
- * 4 stringer girders.

All the work carried out was very much the result of excellent team work across RIC and involved employees from Access Division Southern region, Engineering Division and our special Menangle task force. Thank you to all employees involved for their hard work and commitment to ensure the safety of the Menangle Bridge for passenger and freight operators. The bridge will reopen later today."

6 June:

Last week the final U-bolts at Menangle Bridge were replaced by a combination of two types of high strength bars.

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Replacement of the U-bolts was undertaken as a means of eliminating a difficult inspection process from within the 200m long box girders. All of the 192 U-bolts have now been replaced. A sample of the U-bolts was inspected by both the RIC Scientific Services section and by an external metallurgy company, and no evidence of fatigue or other cracks was found in the sample. Visual inspection of all of the other U-bolts did not identify any cracking. Other works included the replacement of 18 gussets connecting cross girders to the main box girders; installation of scaffolding under the bridge deck over the river; detailed inspection of the deck structure; replacement of 36m of timber stringers; replacement of 51 rivets within the box girders; and bolt tightening throughout the bridge."

CRC ACTIVITIES

As most members will be aware a number of Universities around the country have banded together to create a Centre for Railway Engineering. The Central Queensland University at Rockhampton, which was already heavily into rail research, is one of the universities. One of their projects involves researching energy, train dynamics and track monitoring. They have arranged with QR to put instrumentation on five locomotives and five wagons to record appropriate data. Loco 2825 (a 3000 hp GE diesel used between Brisbane – Cairns and Mt Isa) is primarily set up to monitor fuel as is 3512 (a 4000 hp electric loco used in coal haulage). A trio of 3000 hp diesels used in head end and remote formation in coal trains (4001, 4011 and 4004) have been instrumented for train dynamics recording on the Gladstone coal network. These locos are used with three 104 tonne coal wagons and all will be configured in a number of different train formations (3 locos and 86 wagons, 4 locos and 96 wagons etc) over the study period. These three wagons have solar panels for power and some smart technology to link time events on each precisely as well as shut down the on board computers during stops and wake them up again when they get back on the move.

Two other wagons, a container wagon running mainly on the North Coast route, and a coal wagon running on the Hay Point coal network are instrumented for track monitoring, including the effect that track has on train dynamics. These have natty little axle driven generators to provide the rather more substantial power load for this instrument bundle.

RESEARCH SEMINAR SERIES

The University of SA Transport Systems Centre runs a lunch time seminar series during the year, usually on Wednesdays. A wide range of topics are covered, some of which are relatively abstruse to practitioners out in the cold world outside. However there is something there for everyone and it is well worthwhile keeping in touch with the TSC – either at Kylie.Fairbank@unisa.edu.au or by ringing Kylie on 8302 1771. One seminar that may be of interest is listed for October 29th and is a presentation by Raluca Raicu on Rail Network Performance

DARWIN PROGRESS

The Darwin Railway continues to make good progress and is now getting to the point where various aspects are reaching their conclusion – all ballast has been quarried, all bridges are complete, and all clearing is done. The embankment and capping layer is within 18 km of being completed (presumably in the area immediately north of Alice). There are around 9 train loads of rail yet to be delivered from Whyalla, while around 10% of the concrete sleepers have yet to be produced. The track is within 190 km of both Darwin and Alice Springs, which at current productivity should see the track laying completed around early October.

GSR has announced that the first Ghan will leave Adelaide on Sunday 1st Feb next year with scheduled services starting from 8th Feb. The first freight train (the first train in fact) is due at Darwin on Saturday 17th January after a two day celebratory trip from Adelaide.

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Articles or editorial comment for Newsletter is always welcome.
Send copy to the Editor, Max Michell at samrom@bigpond.com or fax to 08 8390 3772

CONTINUING PROFESSIONAL DEVELOPMENT

Those of you who are members of I of E (i.e. are professional engineers) should be aware that attendance at RTSA meetings can be counted toward your CPD requirements. The most convenient way to record this will be in your professional diary or similar form. A short paper covering CPD in some detail is available from Malcolm Menadue or Max Michell.

NEWSLETTER DESPATCH

The majority of SA RTSA Chapter members receive their newsletter by e-mail. Every so often the e-mail will bounce (in effect the electronic equivalent of 'address unknown'). In these cases the member will automatically revert to hard copy mailing until a new e-mail address is advised. The main issue here is to let Malcolm Menadue know IN ADVANCE of any e-mail address change so that you don't fall on hard (copy) times. Please also advise if you would rather receive via e-mail instead of hardcopy post.

In all cases let Malcolm Menadue know at mmenadue@ozemail.com.au