

JUNE
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information

Newsletter of the Cape Western
Railway Society.
(Branch of the Railway Society of
Southern Africa)

Notice Board by Mavis Ridgard

News letter Editor : How often do we forget to say thank you. When Freddie Rieger took a break from editing our news letter, Denton Smith kindly stepped in and filled the post temporarily. Denton's job became quite hectic after a while and it was quite a strain on him to produce the newsletter. Fred then agreed to come back as our editor, so a big thank you to both of you for a job well done and a good job continuing. Fred is also looking for contributions to our newsletter. If you have been on holiday or know of something interesting that you can share with us, please e-mail it to him at fjr641@cybersmart.co.za.

Library : Daniel van der Westhuizen has retired as our librarian after many years of service. Thank you Daniel. We welcome Jasper Dilley as our new librarian. The library will be open from 18:45 for you to come and browse before the meetings.

Entertainment : the entertainment for July will be the arrival of the 6J at our Epping site. This was a day to remember.

Donations : We would like to thank Mr Neil van der Spuy for his donation to our society. Very much appreciated.

E-mail : Posting has become so expensive so if you have e-mail please inform us of your e-mail address, so that we can send your newsletter or any urgent information via e-mail. My e-mail address is : malrid@vodacom.co.za.

Atlantic Rail Time Table : Trips Cape Town to Simons' Town :

June 17	Full	July 15
August 19		September 09
September 23		

Dining Car Restoration On Site : Mr Conolley has been elected to oversee the restoration of our dining car and has accepted the job, but he will need all the help that he can get to complete the job. I myself have not been to the site for quite a while and was saddened by the deterioration of the coach. This is after all our club house, and we also entertain visitors there. I think Mr Conoleys first priority is the re-wiring of the electricity in the kitchen. There are window panes to be replaced, cupboard doors to be fixed, locks on doors to be replaced, scraping, varnishing and painting inside and outside and lots more. If you can donate just one hour of your time even if it is one Saturday a month, your help will be greatly appreciated.

Preservation Report May 2012 by Keith Robertson

OZ Wagon : Still needs some attention to the side panels - but the job put off until summer time.

PUG : Denton has assured me he will start work on PUG soon - then a boiler test. Coach 290 :

Repairs to this coach coming along nicely and should be finished on the weather side next week! 6J

641 : There is ongoing work on this loco, driver side windows to be fitted next. Caboose : This coach,

now used as a store room, has been moved to the back of the site next to Fruit-And-Veg. EC Rees :

New battery purchased for this diesel loco but still some work to be done on air line. THF Locos : The

NEXT BRANCH MEETING : TUESDAY 3 JULY 2012

Opinions expressed or information supplied, are given as accurately as possible and producers and subscribers of this newsletter do not hold themselves responsible for any misinformation or errors whatsoever.

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16DA left the site 3 weeks ago and has been used as a stationary boiler at Nampak wher she steamed perfectly - will be going back to Cape Town in about two weeks time. The other locos 15F no 3153 and 16D no 860 will also be moved about that time possibly with our class 24 no 3655 - a chance for our members with cameras. The Site : Once again the grass needs gutting - any volunteers???? Thanks to Dawie for building us a mobile platform which we can move around easily and makes it perfect for working on the tops and sides of our coaches!

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Malcolm's' This And That . : There is a peninsula that is both stark and beautiful, ending in craggy cliffs with a lighthouse precariously placed to warn shipping of danger. It is a windswept mountainous peninsula and man has contrived to build a railway line wedged in between mountain and sea. It must be one of the most splendid railway lines in the world. Romance comes to mind. From the surf of Muizenberg to the English village atmosphere of Simons' Town, it passes seaside resorts, straddles beaches and at times comes perilously close to the sea.

It has been there for a long time and was serviced by steam. Then in the 1920s passenger trains switched over to electric motive power. In the 1970s freight trains were replaced by diesel power. Some of the romance of the line died. Something tangible was lost.

But lo and behold; in the advanced electronic age of 2012, steam has once again returned to the Simons' Town line! The romance is back. And this is all due to one man, whose tenacity and persistence triumphed against all odds. WE SALUTE YOU IAN PRETORIUS AND THE CREW OF ATLANTIC RAIL.

Against all the gloomy predictions of the survival of steam in the Western Cape, it is looking good for the future. The 16DA no. 879 is being restored to be an alternate to the 24 class for the Simons' Town trip. It is the intention of the Trust to restore the 15A no. 1970 and the 6J no. 641. Bay Steamers are also working on their engines.

So the moral of the story is, never be adamant about what the future holds.

It can pleasantly surprise you!

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Transnet Freight Rail Studies Botswana – SA Coal Link : The feasibility study for a coal rail link between Botswana and South Africa was under way and would be completed by the end of the current financial year, State-owned Transnet Freight Rail (TFR) executive manager of planning, Deidre Strydom, said on 11 May 2012.

Addressing delegates at the Coaltrans South Africa conference, in Johannesburg, she said the link would form part of the heavy-haul expansion in Limpopo's Waterberg coalfields to bring coal from Botswana for export. The heavy-haul line would have a capacity of 80-million tons a year when completed.

"Currently there is no rail infrastructure that crosses from Lephalale into Botswana, the idea is to build the link near the Stockpoort border post to link to Mahalapye or further south to link to Mmamabula," Strydom said.

The line would run from the southern end of the Waterberg reserve to the northern side of the Botswana-run network to open the Mmamabula coalfields, and possibly the reserves located across the Zimbabwean border.

Strydom added that TFR had engaged with Botswana Rail to discuss the rail link and was currently actively marketing the project. The coalfields in Botswana were among many drivers for the expansion of rail capacity in the Waterberg.

Global expansion in the seaborne thermal coal market, diminishing coal reserves in the Witbank region and new power stations in the Waterberg contributed to the urgency of solving logistical challenges

in the area.

Strydom said TFR had a two-tiered approach to developing rail in the Waterberg, which included minor expansion options through enhancement of the existing route and infrastructure, as well as major expansion options that would result in the doubling of the current route, infrastructure upgrades and new heavy-haul routes. The new Waterberg rail lines would run over 560 km and would include a new single line between Thabazimbi and Ermelo.

TFR planned to add 23-million tons a year to the capacity of the line running from Lephalale to Ermelo by 2020.

A new single bidirectional line would also be constructed between Lephalale and Ermelo from 2026 onwards. It would have a capacity of 112-million tons a year.

Strydom said that about R200-billion of Transnet's R300-billion, seven-year rolling capital investment programme would be invested in rail, a good portion of which would be directed towards commodity export corridors. It would be spent on freight rail projects and included capital for the Waterberg rail expansion.

She added that, in addition to TFR's plan to increase its coal rail line throughput to 81-million tons a year by 2014, it was also planning further investments to ramp up coal supply to State-owned power utility Eskom to 32-million tons a year, excluding the Tutuka and Camden power stations.

From : Engineering News

Nine Bidders Vie For Transnet Electric-Locomotive Order : State-owned freight logistics group Transnet has confirmed the receipt of nine bids in response to a request for proposals (RFP) for the purchase of 95 electric locomotives for Transnet Freight Rail's (TFR's) general freight business. The electric locomotives are expected to be delivered to TFR by the end of March 2014.

Transnet refuses to be drawn on the identities of the bidding companies, which made their submission on April 17. It tells Engineering News Online it does not comment on ongoing tender processes. The group will also not be drawn on the anticipated cost of the programme. "Our procurement department is currently busy with the evaluation process. Once this is complete, the preferred bidder will be notified accordingly," the company says.

Transnet recently unveiled a R300-billion investment programme, known as the market demand strategy (MDS), under which it aims to procure 1 000 additional locomotives over the coming seven years. The MDS, which forms part of South Africa's bigger infrastructure drive, involves major investments into railways (R201-billion), harbours (R47-billion), port terminals (R33-billion), pipelines (R11-billion) and rail engineering works (R4-billion).

Future locomotive purchases will be pursued on a so-called 'fleet' basis, partly to ensure high levels of local content. They will also be conducted through "an open tender process and in line with our procurement policies". CE Brian Molefe recently reaffirmed the group's localisation aspirations as well as the central role likely to be played by Transnet Rail Engineering (TRE) in meeting that objective.

The group is currently achieving localisation levels of around 52%, an average that has been lifted materially by the 67% being achieved on a 'follow-on' agreement with General Electric for 43 diesel-electric locomotives. The Class 43-000 locomotives are being assembled by TRE at its workshops in Koedoespoort, north of Pretoria. TRE initially planned to produce one locomotive every four days. However, it is currently achieving rates of two a day.

Local content has been boosted through collaborative efforts between TRE and local industry, with private companies supplying many of the parts used to produce the locomotives. As part of the MDS, TRE will invest R4-billion over the coming seven years, with Molefe indicating that much of that capital will be directed towards research and development.

TRE CE Richard Vallihu has reported previously that the unit is working on an in-house locomotive design, which is being tailored to suit conditions prevailing in a number of African markets. TRE is also keen to participate in the assembly of rolling stock to be procured by the Passenger Rail Agency of South Africa (Prasa), which has released a RFP for a R123-billion, 20-year contract for 7 224 new commuter coaches for Metrorail.

Molefe says Transnet is in talks with the fellow State-owned company on an arrangement, whereby TRE partners with the winning bidder to produce the coaches locally. "So, we are not going to go with one party and loose and have egg on our face. Whoever wins, hopefully, will work with us and we will be able to determine the terms, because we will be able to maximise local content with the facilities we already have".

From : Engineering News

Biofuel Steam Locomotive Tomorrow's Cleaner Mass Transit? : Can an old, restored steam locomotive be the harbinger for a new era in cleaner train travel?

That's what a Minnesota based collaboration between the University of Minnesota's Institute on the Environment (IonE) and the nonprofit Sustainable Rail International (SRI) are betting on, unveiling plans via their new Coalition for Sustainable Rail (CSR) for a biofuel powered, carbon-neutral locomotive.

While it could be argued high speed rail (HSR) is a cleaner option for trains versus one making use of biofuels, a combination of prohibitive costs and infrastructure challenges make HSR domestically a not always favorable option. Also, in many parts of the developing world, HSR, for the same reasons, will also never be a reality. That leaves the need for more regular, cleaner burning locomotives to take to the tracks.



The CSR plan calls for making use of torrefied biomass (biocoal), a biofuel created through "an energy-efficient processing" of cellulosic biomass, as the fuel source. Biocoal is described by the groups behind this as effectively being carbon neutral – compared to regular coal anyhow – as well as containing no heavy metals and producing less ash, smoke and volatile off-gases.

CSR Project 130, as it is called, has the goal of creating not only the world's cleanest locomotive to prove the viability of solid biofuel and modern steam locomotive technology, but also the most powerful, especially when compared to the diesel electrics commonly in use today.

The vision for the technology being developed in this process is to help build a locomotive that can reach speeds of 130 miles per hour, breaking the world record for steam locomotive speed, which is currently 126 MPH. So exactly how would it outperform these more "modern" diesel electrics, while also setting a new world speed record?

CSR spells it out, noting that diesel-electric passenger locomotives develop maximum horsepower at low speed which, when combined with other factors, are hampered in their "ability to reach full potential at 110 or 125 mph."

By comparison, modern steam technology is said to develop and "maintain maximum horsepower

above 40 mph, enabling higher speed acceleration than alternatives available today." What's more, they say, is that this faster acceleration, making use of their steam engine technology, reportedly can be done "at or below the cost of the diesel-electrics" currently in use.

The locomotive being called upon to help prove all of this is old number 3463, acquired by the coalition from its former owner, Great Overland Station in Topeka, Kansas, this past November. Said to be the largest locomotive of its type left in the world and featuring the largest wheels of any North American engine, 3463 is being rebuilt and modernized, including converting it to burn biocoal. It will feature what CSR says are a "gas-producer combustion system, improved steam circuit, modernized boiler, low-maintenance running gear and steam-powered electric generator (to power the passenger train)."

It is a lot to place on the shoulders of an old lady from another era, especially when you consider this train was built by Baldwin Locomotive Works in 1937 for the Atchison, Topeka and Santa Fe Railroad. If it succeeds though, CSR folk feel, it could be a major breakthrough for modern train technology.

"This project presents a novel approach to U.S. locomotive development, looking to technologies of the past to inspire solutions for today's sustainability challenges," said SRI President Davidson Ward, in a statement. "I'm confident that the leading energy researchers we're working with at the University of Minnesota, along with our team of engineers, will be able to bring this technology to the forefront of America's energy and transportation conversations."

Plans, say CSR, are to transport the locomotive to Minneapolis within the next 12 months. Once moved, they will complete the detailed engineering needed to modernize and reconfigure the locomotive.

From the TG Daily website : <http://www.tgdaily.com/sustainability-features/63647-biofuel-steam-locomotive-tomorrow-s-cleaner-mass-transit>

Work On R5.2bn Majuba Rail Line To Begin In November – Eskom : State-owned power utility Eskom has initiated a process to prequalify bidders for the civil construction of the R5.2-billion Majuba railway line project, which will be funded partly from finance secured from the World Bank in 2010.

Envisaged is the construction of a 68 km heavy-haul line from Ermelo, in Mpumalanga, to the Majuba power station, in KwaZulu-Natal. The coal will be sourced from various mines in Mpumalanga and will shift the transportation mode from road to rail. Initially, the line will handle 14-million tons of coal yearly, but will have a nameplate design capacity of 21-million tons.

Eskom tells Engineering News Online that it anticipates site establishment starting in October and that construction of the line should begin in November and continue for a 24-month period. The new line will be operated by Transnet Freight Rail (TFR), which is undertaking a separate process to acquire rolling stock for the operation of the new line.

The operation agreement between Eskom and TFR has not yet been concluded, but it is envisaged that the line will carry its first fully laden 100-wagon train on December 15, 2015. Transnet CE Brian Molefe has said that TFR views raising domestic coal volumes as a "low-hanging fruit" and that the two State companies are in discussions on the matter.

Transnet's recently released R300-billion, seven-year market demand strategy anticipates that the tonnages of coal it handles for Eskom will rise by 305%, from 7.3-million tons in 2011/12 to 29.6-million tons in 2018/19.

The prequalification of contractors is in line the World Bank's procurement procedures, which stipulate screening of potential bidders for projects involving loans from the International Bank for Reconstruction and Development (IBRD).

In 2010, the global development finance institution approved a \$3.75-billion for Eskom, of which \$440-million in IBRD support was set aside for the Majuba rail project and other energy efficiency programmes.

Part of the rationale for the loan was to lower Eskom's carbon intensity by shifting coal transport from road to rail.

Eskom reports that about R3.9-billion of IBRD funding has been allocated to the Majuba rail project.

The contract for the civil works will be awarded to a single contractor, but separate electrical, mechanical and signalling and controls contracts will also be issued. Application for prequalification will close at 10:00 on June 13 and invitations to bid will be made during August.

From : Engineering News

PRASA Rolling Stock Tender : Prospective bidders from Europe and Asia were prominent among over 60 original equipment manufacturers (OEMs) who took away tender documents for the R120bn rolling stock fleet renewal programme by the Passenger Rail Agency of SA (Prasa) which has welcomed the response. According to Prasa CEO Lucky Montana, quoted by Business Day, "That is at least 70% of the manufacturers that participated in our earlier market engagements, which means that companies are showing real interest and paying attention to our programme."

In evaluating bids that come in, Prasa intends to apply a 15% weighting to local content development and 85% to price competitiveness. This has been criticised by France's Alstom, which is quoted by the paper saying: "It's more expensive to build here than to import (the coaches), so it would be better if they had given a higher weighting to the economic development component, We think we shouldn't be penalised twice because of the local content requirements and then still have to compete on price."

From : Engineering News

Friends Of The Choo-Tjoe : The Friends recently held their AGM, when they reported that interest in the Choo-Tjoe seems as keen as ever. However, there has been very little progress in getting the line re-opened. Meetings that should have taken place didn't, and it's almost impossible to get answers to their questions.

Not long ago the George Herald ran a poll on whether the train should be retained or the route turned into a cycleway. The result was pretty conclusive with 93 % in favour of the railway. The Friends wish to thank all those who took part in this exercise, and are very grateful for the level of support for the railway.

The Friends also sent out petition forms and asked everyone to collect as many signatures as possible. These signatures are to be used to convince the authorities of public support for the re-opening of the railway.

Their membership costs only R50 pa. For those wishing to join, contact Diana Lester on 0846624506 for a form.

Headaches For Raitour Operators : In their April 2012 Newsletter, JB Tours referred to many service improvements promised by Shosholozza Meyl, to take effect from 1 April 2012 – but none of these materialised. Also, they were only informed in the first week of May that certain trains are to be cancelled from 1 June. The running times and days of the Johannesburg to Cape Town "tourist class" train are affected as well. This service will now only run twice a week. JB Tours had to re-schedule many of their 2012 tours and all booked passengers had to be informed accordingly. The operator writes: "JB Train Tours are still committed to rail tourism and we'll continue our battles with the authorities to maintain their trains in good order, to keep them clean and hygienic, to render proper service and to make every trip an enjoyable journey." The success of the JB Tours enterprise is clearly demonstrated in the bookings. For instance, train-based tours to the rugby tests between the Springboks and England in Durban and Port Elizabeth respectively during June 2012 are fully booked. The annual train tour with runners and supporters from Gauteng to Durban to attend the Comrades Marathon on 3 June 2012 is also fully booked.

Maglevs: The Floating Future Of Trains? : by John Stewart

About the author : Jon is the presenter of Science in Action on the BBC World Service. He trained as a

mechanical engineer (with automotive and aeronautic design) before becoming a journalist. He has worked at the BBC for over a decade and has reported from areas as diverse as war zones and technology shows.

They have been promised for decades, but is it now finally the time for magnetic levitation (maglev) trains to hit the mainstream?

Materials that could allow levitating trains and ultra powerful computers to become commonplace are coming of age.

As a vision of the future it is a little underwhelming. A battered shipping container sits on top of a black platform that straddles a 130m

(400ft) raised track. As I climb into the metal box, I note there are no seats and very little to hold on to. I am still excited though, as I am about to ride the only magnetic levitation, or Maglev, train in the United States, owned and operated by General Atomic.

A red light flashes, there is a jolt and then a sense that we are floating...because we are. The platform beneath the cargo container I am in is being buoyed up and moved along by powerful electromagnets, allowing the train to move with low friction and no moving parts. As we move off, there is hardly any sound. A gentle whine is the only indication of the current flowing through the track below, and the main noise we can hear is trucks on the nearby freeway. As the shipping container gathers speed, the wind blows through the open doors and the ride is smooth and effortless. Just 20 seconds later we are at a standstill, but it is enough to help me understand why proponents believe Maglev systems are the future of trains and high-speed, long-distance travel.

Maglevs are not a new idea. Patents for high speed transportation systems were granted as early as 1907, but it was not until 1984 that the first commercial maglev system was opened at Birmingham international airport in the UK. The 600m (2,000ft) track ferried passengers at 40 km/h (25 mph) for 11 years before it was closed because of maintenance problems. Since then, higher speed prototypes have also been shown off, with a train in Japan (JR-Maglev) setting a world speed record of 581km/h (361mph) in 2003. But high start-up costs and the dominance of cheap and reliable trains, planes and cars means there are just two commercial systems operating today, one in China and one in Japan.

But that could soon change. As roads become more and more gridlocked, and air travel become more and more plagued by delays, security and environmental concerns, governments are looking to technologies like Maglev as part of the transport mix.

Levitation trick. All Maglevs operate on a similar – and simple – principle. If you have ever played with bar magnets you will probably remember that opposites attract, but if you flip one of the magnets around, then “like” poles repel. That is what keep the mass of a train – or shipping container - floating several millimeters in the air, cutting down on friction and allowing it to travel much quicker than traditional engines. That same magnetic force can also be used to move it forwards.

“All of the propulsion forces come from electromagnetics, as well as the levitation and guidance forces. The trains are entirely magnetically levitated, driven, and guided” says Dr Sam Gurol, director of transportation programs at General Atomics in the US.

But, whilst all systems are based on the same principle, there are lots of different approaches to getting the train to float and move.

Electromagnetic Suspension (EMS) is the most common form of maglev and is the type used in the Chinese system that zips passengers at more than 400km/h (250mph) between Shanghai and Pudong airport. In most cases, C-shaped arms underneath the train wrap around a guideway. Electromagnets mounted on these arms lift it above a steel track when they are energised. This type of train has the



advantage that they can levitate when stationary. Controls monitor and correct the levitation height to between 10 and 15mm, as tiny differences can have a huge effect on the magnetic force.

A second approach is Electrodynamic Suspension (EDS). The difference here is that both the rail and the train are magnetised. The magnets on the train can be either electromagnets, or strong permanent magnets. The track has an array of electromagnets, and when the train is moving at speed the train and track repel each other. This system is self-correcting. The train always levitates at the optimum gap, without the need for expensive or complicated feedback systems. But the downside of EDS is that the train still needs wheels of some sort. At low speeds not enough repulsive force is generated for the train to levitate.

The system I saw at General Atomics is based on a third way, known as Inductrak, which does away with electromagnets in favour of permanent magnets arranged in a special pattern known as a Halbach array, originally designed for particle accelerators. These concentrate the magnetic field on one side, while canceling it on the opposite side. Like an EDS system, these still needs support when stationary, but levitate at much slower speeds, making them a more practical alternative for systems with multiple stops. Inductrak also has the distinct advantage that in a power failure, the cars slow down on their own, and the levitation gradually lowers as the train slows. It is also thought that over time, this approach may be more cost effective than electromagnetic systems, something that will not be known until commercial system begin to operate.

Electric surf : General Atomics has spent five years refining the power and control systems, and completing a full test programme overseen by the US Department of Transport.

“That test programme was very successful. We completed everything we can do on a test track of this type” says Dr Gurol, who now needs further funding. “The technology is ready to go to the next step. That is a demonstration system carrying either real passengers or cargo.”

But levitating is only half the equation. The trains must also move forward. The most common propulsion for Maglev trains is a linear motor. Coils of wire, mounted in the track, have a current flowing through them in sequence. They operate in a similar way to conventional rotational electric motors, except instead of being wrapped in a cylinder, they are stretched out horizontally.

The Maglev train at General Atomics, however, uses a linear synchronous motor. “It operates similar to a wave coming towards the shore” says Dr Gurol. “That wave is not water, but electromagnetic. The surfer rides the wave.”

But in the case of the maglev, the surfer is the train, riding the electromagnetic wave.

This kind of system has several advantages over existing train technology, says Dr Gurol. “They’re better in bad weather conditions because they’re not driven by friction, and electrical contact doesn’t become an issue.”

“If you look at a typical train... they use electric motors. They need a third rail for picking up power from a guide way. They transfer that power to rotating electric motors on the vehicle, which provide the propulsive forces. That involves gearboxes, all kinds of power equipment on board, and so forth.”

As maglev trains don’t need many of these moving parts, they are subject to less wear and tear and therefore cost less to maintain, their proponents argue. But not everyone agrees, pointing out that there are too few installations to know the true cost.

Those arguments could soon be settled, however, with new systems coming online in Beijing, China and Seoul, Korea, in the coming months. And others systems are planned in Puerto Rico, Venezuela, Europe and Australia, for everything from low-speed urban transporters to high-speed transcontinental routes that could challenge plane travel. Some have even speculated that a Trans-Atlantic tunnel could use the technology. If and when that happens, I would recommend something more comfortable than a shipping container to ferry the passengers.

Information provide by Ray Hattingh [ray@saarp.co.za]

This Months Chuckle : Light travels faster than sound. This why some people appear bright until you hear them speak.
