



Project GMAM Garratt Bissel Truck overhaul :

The Depot Day started off quietly for some, while others had an 'entertaining' morning off the premises. We had a major electrical fault and the damaged cable had to be cut out and the ends spliced. To make thing even more entertaining, Shaun Ackerman got his bakkie stuck. It's a high chassis puddle-skipper, but as the Martain-mountains terrain around our depot is muddy and very uneven, even a Hummer might bog down.

Upon arrival at the Depot, Lee caught some dumpers in the act of dropping their rubbish alongside our road. The vehicle in use a white Isuzu KB Bakkie registration CVG.. Lee couldn't get the numbers but blocked the road and started dialing for some support from the shed. But three of the fellows casually approached the car while the phone was ringing, two with pick axes (dunno why) and one with a fine tined garden fork. Lee bailed. Amazing how fast a 323 Mazda can run in reverse on a freshly muddied dirt track!

Without the team leaders guys present, and the tool store still locked, the waiting Reefsteamers kept themselves busy in other ways. Tony 'Soapy' King set up a neat little flexible drive on a power drill and started wire brushing the dull patina'd injectors on the Sandstone Estates GMAM Garratt (Pic P03), while Lee fired up the workshop wire-wheel and got busy cleaning removed pieces of Bissel Truck hardware. (Pic P01 and P02) Andre and Piet kept themselves busy cutting a desk organizer in half to suit the length of our trestle tables.



P01 A choice assortment of dirty axle bolts, sleeves, springs and nuts wait to be cleaned, lubricated, primered and then painted..



P02 Some cleaned and painted Garratt Bissel hardware from last week with rusty threads from being left in the rain. Those strange looking twisted brackets in front are for the Bissel oil cups.



P03 Tony King gets to play with some flexible shafted power-toys. He's busy cleaning the dirt from the GMAM Garratt's injectors.

Some progress had been made during the week. The liberal, repeated application on diesel fuel on the seized bolster slides of the original Bissel Truck eventually freed those slides. I wonder how that would do as a constipation cure? During the week, the removed Bissel Truck was dismantled and the removable hardware cleaned and primered. (Pic P05) The fixed hardware, such as the guide plates, axle slides and the swing link bearings still need to be removed and the rivet holes sorted. For now, the Bissel frame is hanging forlornly from the gantry hoist.

Although not Bissel related, additional progress was made in the removal of the Sandstone Estates GMAM Garratt's stoker motor, which was slinged and ready to be dismantled and checked for worn bearings and parts. (Pic 06) Piet Steenkamp did the removal.



P04 Hi-Tech breadboards. Four sheets of HiLube Vesconite as obtained by Shaun during the week. These are to be used for the sliding surfaces on either sides of the bolster plates.



P05 A spread of cleaned and primered removable Bissel Truck parts.



P06 The removed Sandstone GMAM Garret Stoker Motor awaits some attention on a work pedestal. Notice that the crankcase has already been opened in this pic.

Shaun Ackerman managed to get his greasy mitts on some vesconite sheets during the week. It's the HiLube Vesconite variety of 200mm wide and 16mm thick. (The original stock length is 2000mm) It has taken me a while to get used to the appearance of Vesconite tube stock looking like thick walled conduit. And now here's Vesconite sheeting, looking like rough cut, very hard, bread boards ... or perhaps a stack of cheese platters. (Pic P04) It's seriously good stuff though and is currently in use by Transnet Rail Freight on their locomotives. you can spot a refit bogie yards away by looking for the gleaming white in amongst the axle slides and the traction gear. This Vesconite is to be used for the Bissel Bolster Plate slides, both fore and aft. It's hard wearing, tolerant of dirt ingress and self lubricating, all of which are very desirable qualities in the mucky, and frequently infrequently (pun intended) lubricated under pinning of any locomotive. (Diesels and toasters too, for that matter.)

It was hoped to mount the Vesconite today but it needs countersunk bolt to fasten it to the Bissel frame which is a Sunday Project. A further modification will be the drilling and tapping of the Bissel frame for an array of grease nipples. Although the bearings and slides will survive without greasing a bit of regular tribology makes things work even smoother.



P07 A goggle eyed alien, who bares more than a passing resemblance to Shaun Ackerman, tackles the splitting of hardened steel bearing races with an angle grinder.



P08 An inboard outer bearing race that has been grooved just prior to some delicate hammer and chisel work to split it.



P09 Rest in pieces. A scatter of dead bearing parts. a split race, two bearing cages, a spacer ring and a generous sprinkling of bearing rollers.

Bissel work today was the stripping of both the donor axle and the ordinal removed axle. The donor axle had both the axle boxes removed last week so the bearings were exposed. These had been cleaned last week with a spray gun loaded with oil and then lightly greased with soft white grease. But upon cleaning and further investigation, the bearing rollers were found to be pitted. Drat! So it was off with the races. It was quite a challenge as the parts were hardened all the way through, not just case hardened as in some varieties of rolling stock bearings. Shaun cut grooves in the bearing races (Pic P08) and then used a club hammer and chisel to split the parts. (Pic P09) His angle grinder disk was much diminished in size by the end of the day, and several trips had to be made to the bench grinders to re-sharpen the chisel! (Pic P10)



P10 One of many trips to the grinder to put a new cutting edge on the chisel used to split those very hard bearing races.



P11 An axle box surprise. An older self adjusting bearing is revealed as Kerry and Jaun removed the axle box on the original axle.



P12 The stripped and primed donor Bissel's frame waits patiently while it's components are stripped and overhauled.

Project Stoker Motor Overhaul :

Piet 'Buffels' Steenkamp removed the Garratt's Stoker Motor during the week and had it set up for dismantling by Saturday morning. Michael Thiel, as an ex Spoornet fitter, was ideally suited to the job and started stripping the crankcase and its components. With the exception of the valve gear eccentrics and rods, the crankcase strongly resembles that of a mutant, low speed 2 cylinder petrol engine.



S01 The Stoker Motor Crankcase being stripped. It's a two cylinder engine. The two con rods remaining in the center are for the valve gear eccentrics. You can just see the big end of the left hand rod lying prior to removal.



S02 Stoker Connecting rod being dismantled on the work bench. Here a badly worn big end cap nut is being examined. Those brass shims at the top left fit between the big end cap and the connecting rod.



S03 A worn and scored Big End Bearing.

The big end bearings were found to be scored although the lubrication passages were reasonably clean. The crankshaft journals were found to be spalled as well. The gudgeon pins are loose and the crankshaft bearings (rollers) were found to be worn.

The dismantling went without problems. Michael had to file down a rounded and bent big end cap nut. You can see a brazed scar in the crankcase in Pic S01 something nasty obviously happened in the past. And the person who repaired the crankcase must have re-used the nut. Michael got that filed-head nut off but then ended up with the unenviable task of getting all the metal filings out of the oily surfaces.



S04 Side view of the Stoker prior to crankshaft removal. Behind the inspection cover, you can see the LHS valve eccentric rod and the valve spindle's cross head.



S05 The two-throw Journal Crankshaft with one of the valve eccentrics visible. Notice that the cranks are 90 degrees apart to avoid the situation of having both pistons at dead center and thus a motor that won't start. (A steam locomotive's crank pins are set up the same way.)



S06 It's great to see a Reefsteamer's enjoying his or her work. Michael Thiel enjoyed his day of Stoker Motor disassembly and wear analysis.

Project Log Book and File Storage :

We're always short of storage space, particularly for the documents, forms and the locomotive log books. Even the Cute Chairman has reamed us out on one occasion for putting parts and tools on her desk. Andre van Dyk and Piet Steenkamp cut down an old desk organizer to fit across the width of a trestle. The old unit had to be carefully marked up on three sides as it was cut with a standard jigsaw, and needed a multiple pass on the cut. Andre also fabricated endplates from Masonite board to close up the ends. Now Buffels Piet can keep his myriad books out of competition for tea cup and biscuit box space.





F01 Andrew van Dyk ponders how to cut this not-lightweight desk organizer in half, maintaining a straight cut with a standard domestic jig saw.



F02 The surgical cutting in progress. Andre operates the saw while Piet Steenkamp holds the work piece down.



F03 Half an organizer cut to fit the width of a trestle table. Those horizontal brown covered books are the repair log books for our operatable locomotives

Project New Clubhouse :

Reefsteamers is in the contradictory situation of having outgrown their clubhouse. It's contradictory because it is GREAT to have a growing team, but a nuisance to have to arrange for larger meeting premises. We'd like to keep the existing facilities as it has a decent kitchen and a cloak room, and is big enough for a Saturday afternoon tea break. But we'd like a cleaner, larger and, quite frankly, more elegant room for formal meetings and also to facilitate the business related functions especially when the Steam in Action initiative raises boiler pressure.

The long-plinthed articulated coach had long been pondered as a possibility for a club house, and a more permanent solution being an old ablution block right up by the Shongololo tracks. The block would be great to use as it is amply sized and the building is structurally sound with a decent roof. But interior walls and shower stall partitions would have to be demolished and much messy construction related work needs to be done. .



H01 Some good motivation for some roof sealing work, a thunderstorm builds up steam on a Sunday Afternoon. The LHS coach is the open-space coach while the RHS coach still has its original sleeper compartments.



H02 View of the coaches from the Top Shed and under the Reefsteamers Sign. That's the loco reception track to the right. The main Depot Workshop is the brick building off to the left. So, it's a convenient central location.



H03 Gutted coach interior after some cleaning. This used to be a sleeper coach. That blue seat at the end is one of the bunks against an intact compartment wall.

So it was decided to finally make a start on cleaning up those coaches and getting them ready for interior work. The clean up operation was conducted last week. One half of the articulated coach set still has its sleeper compartments while the leading half has been gutted, although partition slots, roof trusses, and a basin still remain. (Pic H03) This week's work involved the repair and sealing of the leaking roof. (I didn't get photos of this work) The next step is to get a bitumen layer on the roof. All this work should help prevent further degradation of the coach interiors by water ingress.

Project Coaches :

Fred Sewell disappeared as he usually does and would have been found, if anyone cared to look for him, working on his own amongst the coaches. He actually prefers working this way and is often to be found wearing an i-Pod headset and totally tuned out. Fred continued his Bar Car Door upgrade project. All the four replacement doors are now mounted and screwed permanently closed. Their lock cavities have been covered and bozo-proof No-Entry and No Exit signs have been stuck up in the windows. (Pic C01) One of the doors needs to have a damaged interior panel replaced and they all need painting to match the interior colour scheme. But the sealed doors all function as they should do. (That is, by not functioning, if you know what I mean.)

Here ratty, ratty, ratty! Little saucers with delicious pink granules have been laid out in the coaches as a little treat for any resident rail rats that may be on board the coaches especially the furry little demon that has been nibbling our Bar Car's cushion. If we find any dead rats on board, disposal shouldn't be a problem as our locomotives have built in incinerators.

The Power Car's Generator also received some work. The expansion tank was removed and some weak points were soldered up. For a machine that has a long duty cycle, without the frequent expansion and contraction that the equivalent water cooled system of a car engine undergoes, it is surprisingly susceptible to expansion cracks and metal fatigue issues. And because the generator runs unattended, water loss is generally not noted in time. Furthermore, we no longer trust the automatic shutoffs.



C01 - Completed sealed coach door with plating over the lock and latch cavities. You can see the grey coloured bolt plates a few inches above the floor. Now it just needs painting. Notice the rat treat in the vestibule.



C02 - The generator radiator expansion tank receives some soldering on the flank panels. The tank is poorly designed as the flank panels flex when the water-cooled system is pressurized, contributing to metal fatigue and eventual leaks.



C03 - Relocated Generator Diesel Tank fuel intake. You can see the raised intake just above the lowest of the shut off valves. That red container under the tank marks where the original tap point was.

The generator failed twice on our recent trip to the [Potchefstroom Aardklop culture festival](#). Both times was due to the fruit milkshake effect. That is, when one has slurped through to the bottom of the glass, a piece of fruit jams in the straw. In this case, the fruit is the crud and sludge resident in the bottom of the diesel fuel tank and the straw is the diesel supply line. It's probably the little dinosaur bones still to be found that that primordial ooze. The fuel intake was from the bottom of the tank hence the frequent blocking of filters, as well as the primary fuel line and its taps with dirt. The fuel intake has been relocated to the side of the tank, allowing a few inches at the bottom of the tank to act as a sludge reservoir. (Pic C03) Let's hope we can keep the coach lights running more consistently!

Photos from around the Shed :





M01 A general view of the Bissel and Axle Servicing area at the East End of our workshop shed. That 12R loco in the background is No.1947 Fosie and is one of the locomotives for which we seek sponsorship to restore via Steam in Action.



M02 The dreaded capital 'S' spells an engine's end as condemned for Scrapping. Here is an 'R' for 'Retain' or 'Reserve' on the wheels of a Class 15F loco otherwise marked up for cutting.



M03 A Class 15F Locomotive in the dead-line shows a clean set of cylinder castings behind a sprung and fallen cylinder cover plate. The total lack of the usually messy looking insulative lagging shows the complexity of the cylinder and valve chamber castings works of art.



M04 Class 12AR No.1535 Susan now sports expansion links and die blocks with eerie looking shining white custom-made Vesconite bearings.



M05 Cliffie (Left) took a brand new Reefsteamer (Greg) around on his first day, and introduced him to the delights of coach brake and running gear inspection.



M06 Kenny and Tony look sweet as they sit side-by-side, each with a power drill and a wire brush, and tackling the cleaning of the brass and copper components.



M07 Tony King gets to grip with the myriad pipes and fittings of the Garrett's pressurized lubrication system. He's remarkably patient with Brasso and a rag.



M08 Andrew King (front) got a bit teed off towards the end of the day. It was one of those days where he is constantly getting interrupted and asked for advice and he got none of his own work done. Here, he feels better getting a puller ready to pull a bearing back plate off an axle.



M09 The Reefsteamers Depot can be a mucky place to wear civilian clothing. Andre van Dyk was the only one brave enough to wear a Springbok Cap in support of the coming World Cup Game that evening.

- Lee Gates

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