

7). A LOOK AROUND THE 15M SHOP:



P085 - Nothing looks quite as defeated as a half-stripped steam locomotive. Many good locomotives ended up getting scrapped after they were enthusiastically stripped and then the extent and expense of restoration work was realised ... and the projects abandoned. These scrofulous looking ladies are safe and waiting their turn for restoration.



P086 - Some otherwise intact locomotives are sleeping in the 15M Workshop due to the expense of the repairs needed. This is our Class 15CA No.2056, which needs a full set of new boiler flues at approaching R450 000.



P087 - A variety of steam machines at rest, as they are waiting for other projects upon which they are dependent. The GMAM Garratt in the foreground and the Class 25NC at the rear are 100% intact but are waiting for the wheel lathe's completion to enable wheel profile correction.



P088 - Coaches sometimes make their way into the workshop as well. Hiding behind the Garratt is a silver Class coach that was undergoing an interior refurbishment for an international Steam Tour that ran in Nov. 2013. The pressure was on and volunteers were working evenings.



P089 - The 15M workshop's inspection pits come in useful for the servicing of the draft gear and buffer plates of the coaches, all of which need lubrication and checking at regular intervals.



P090 - You might find some of our support vehicles in for repairs in the 15M shop too, such as the coal handling wagon (Pictured), a caboose, or perhaps one of the water tankers.



P091 - One of the long term guests of the 15M shop is this magnificent 100% intact privately owned 60 Ton Steam Crane which was rescued from scrapping at Danskraal. This is one of two steam cranes stored in the 15M shop.



P092 - We have an intact Booth Rodley Steam Crane waiting for a replacement boiler to be fitted. No.96 'Shosholoza' was last used in 2008 to clear some scrap and move wagons from the boiler washout area– the uncertified boiler was then charging on compressed air.



P093 - This is the Cowan Sheldon steam crane's vertical boiler which is in the process of having the leaking rivets of the foundation ring replaced before it can be pressurized with water to test for leaks.



P094 - We have a small fleet of water tankers are our disposal, all of which need servicing. One of them has been especially lined as a drinking water tanker and one of them has a fitted fire-fighting pump. These tanks are required to extend the range of our thirsty steam locomotives on a railway that no longer has water supplies.



P095 - Tenders also need to be repaired. These two examples are waiting for their locomotives to be repaired first though! The tender in the foreground is for Class 15F No.2914 and it has a stack of removed fire grates sitting in the coal space. The tender is waiting for plate work and conversion of the axles to roller bearings.



P096 - Occasionally the jacks and blocks come out – this is the rebuilt type EW tender of Dave Shepherd's Class 15F No.3052, which was treated to new decking, rebuilt bogies, rebuilt brakes and a rebuilt mechanical stoker, as well as new bracing within the coal bunker.

8). WORKING ON STEAM ENGINES:



P097 - An example of scruffy and labour-intensive stripping work. Here, the boiler cladding sheets and the underlying thermal insulative lagging are being removed from the boiler shell of Class 15F No.2914 and what a messy, itchy job that turned out to be!



P098 - We often have to work within the dark ferrous sarcophagus of a locomotive's firebox too. This old-fashioned narrow firebox is having the tube plate ground clean and old copper ferrules being removed prior to installing new boiler tubes.



P099 - Some of the work has to be done with the locomotive hot! Here, the safety valves are being calibrated on a newly commissioned boiler. A locomotive's safety valves have to have their settings certified by a Boiler Inspector and then sealed to prevent tampering.



P100 - Because of their size, SAR steam locomotives allow for double-deck work on multiple levels. This locomotive is simultaneously getting etching primer paint applied, old paint removed and baked-on heat resistant graphite paint being removed from the smokebox.



P101 - Teamwork – today it takes four fellows to slide replacement superheaters element into the 12AR's boiler flues, as there was nothing available for them to brace themselves against. The two steam-heads in the foreground are standing on the works flat wagon.



P102 - Although the Top Shed is usually used for locos in steam, the live steam boiler tests are usually performed in the 15M shed area. This is the 12AR undergoing boiler testing in March 2013 – she was still building up pressure at this point prior to setting the safety valves.



P103 - A weak point in the 15M shed operation is the lack of storage space as it was never intended to have several long term projects in storage at once and with big components all within necessary reach of the gantry crane. The 15M yard can get a bit cluttered sometimes.



P104 - Not all the work is heavy duty. This fellow is gently cleaning gasket residue off the blower pipe flange and is taking care not to damage the mating surfaces.



P105 - Although we do have a dedicated coach repair track, it tends to be used for lighter-duty interior fittings, electrical and cosmetics work. Mechanical coach work, such as the repair of the vacuum brake cylinders shown here, are performed in the 15M shop for access to tools and equipment.



P106 - Reefsteamers is a pioneer in using Vesconite bushes in steam locomotive rodding, even when the railways said it would not work. Vesconite is a synthetic self-lubricating material that is tolerant of dry running. It has been so successful that it is now the Reefsteamers standard to replace all valve gear bushes with Vesconite when the original bronze bushes become worn.



P107 - Making a plan. A genuine ex-Millsite Fitter is using a handheld angle grinder to dress the chamfers on a new steam downpipe being spun in the big Dean Smith lathe.



P108 - You never know what interesting equipment you might find lurking within the eight bays of the shops!



P109 - Locomotive work requires team work, even when the role players cannot actually see each other. They are lining up a tacked-together steam pipe for final measurements before welding – a job made challenging as the pipe bends in two planes.



P110 - It helps to not have a fear of heights when in the 15M shops! Perched up on high, Jeandre is going around the 12AR's exposed steam dome with a pneumatic socket driver after the dome's copper sealing ring was found to be weeping during a hydrostatic boiler test.



P111 - Here is the traversing crane in use to take the front plate off the 15CA locomotive to start the process of investigating a failed flue. Although the hoist is operated by a pneumatic motor, it is traversed by manual chain drive.



P112 - Work sometimes has to be performed between the frames and the wheels, which is usually a greasy job for the stout of heart and slim of build. Every bay on the 15M workshop has a work pit.



P113 - The depot gang can be seen overhauling the surprisingly complicated front bogie of a locomotive.

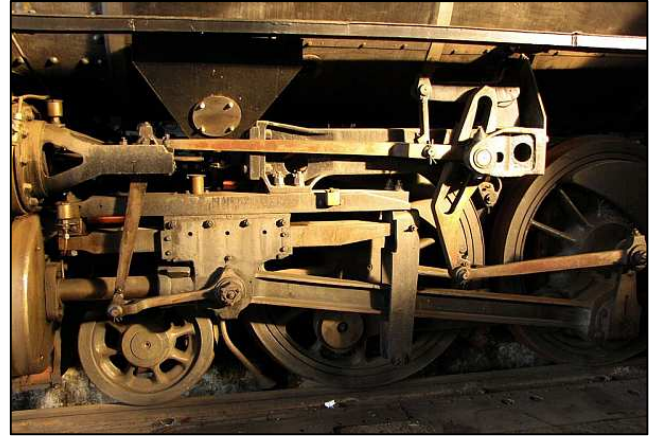


P114 - Locomotive parts are heavy! This team is busy pressing in bronze bushings into a replacement coupling rod, using the hydraulic press. It is taking two fellows to guide the rod even though it is suspended from a hoist.

9). STEAM LOGISTICS:



P115 - Challenge – Lubrication. Steam locomotive require quite a variety of expensive greases and oils to operate. This is a view of the oil racks with MH Oil (Red), Steam Oil (Green) and the shorter paraffin cans. The steam cylinder oil is actually tallow-based and has to be pre-ordered.



P116 - Challenge – Lubrication. This is where a lot of those greases and oils end up – the exposed bearings and crossheads slides of a steam locomotive’s valve gear are a ‘total loss’ system. Pictured here is the Walshaerts valve gear of the staged Class 15CA locomotive.



P117 - Challenge – Wheel Lathe. We are in the process of restoring this mighty machine which is able to clamp multiple ton locomotive axles and re-machine the wheel profiles. Not only would we be able to machine our own equipment, but can also take on paying work from other railway and industry-related bodies to earn revenue.



P118 - Challenge – Wheel Lathe. Both of these large locomotives, a Class 25NC and a GMA/M Garratt, are in operable condition. But they are not allowed on the main line due to wheel profile/flange wear. Between them, they have 44 wheels – with 12 driving axle sets that need to be removed to machine the wheels.



P119 - Challenge – Wheel Lathe. New gear blanks are seen in the process of being machined for the restoration of our wheel lathe, and by a genuine ex-railways machinist too! They were sent away for the cutting of the actual gear teeth. As of Feb 2014, the new gears have all been cut.



P120 - Challenge - Looking like a giant clockwork toy, the components of the wheel lathe’s tertiary gearbox are in place in their inverted housing. The gears had been newly made and the bearings relined, so the whole lot was test-assembled to check for free running. It would need to be stripped again to send the gears for case hardening.



P121 - One of the heart breakers of South African Steam preservation is the mandatory three year boiler ticket, without which a locomotive cannot be fired up. Here you can see a test injection gauge connected to a class 15F's boiler. The cold boiler is pumped up with water and pressurized to 125% working pressure to check for leaks.



P122 - Before a locomotive is steam tested, the various fusible plugs in the firebox all need to be removed, stripped, cleaned and then their heads re-cast into a hemispherical mould with the correct grade of molten lead. This has to be done by a certified person and the individual plugs need to be date stamped and recorded in the locomotive's log book.



P123 - There is masonry work on a steam locomotive too! This is a brand new fire arch within the firebox of the Class 12AR locomotive. The arch is built from specially angled refractory bricks and cemented together with a special heat resistant mortar. Baked by the locomotive's fire, the bricks and mortar eventually fuse into one solid mass.



P124 - There is no such thing as popping down to your local Midas franchise to buy spare parts for your locomotive! Parts have to be scrounged, repaired, modified or re-made to fit. This is a trolley load of spare cast iron brake shoes intended for a Class 24 locomotive – some of which would be modified to fit the GMA/M Garratt.



P125 - Unlike diesel which can be pumped with ease, coal has to be mechanically handled – one of the subtle reasons why steam traction is no longer used. Two members are 'trimming' unused coal forward in the Class 25NC's tender, so it can be reached from the cab to light up the fire.



P126 - Not all locomotive work is brutal or dirty. The various relatively delicate pressure gauges, and the vacuum gauges for the brake system, have to be recalibrated and certified at regular intervals. Seen at sunrise on a tour is a classic duplex vacuum brake gauge.

10). THE VOLUNTEERS OF REEFSTEAMERS:



P127 - Reefsteamers is by heart and charter a volunteer-operated organization, driven by several dozen people who give up of their time, talents and often their own money to keep the locomotives running in the old depot. Pictured is just a small part of the team that prepared this locomotive.



P128 - Reefsteamers is a fully independent self-supporting volunteer-operated organization and is NOT a part of the railways. We also do not receive any subsidies from government, heritage bodies or industry, and we are not granted any real concessions as a heritage group.



P129 - As we operate on a working railway, Reefsteamers trains and their personnel have to operate strictly according to the procedures and safety rules. (And rightly so!) Our volunteers have to be competent to work on quadruple main lines, amongst frequent PRASA commuter trains, as well as working on long single-track main and branch lines operated with bulk goods trains by Transnet Freight Rail.



P130 - Reefsteamers' adopted core principle is that of 'Technical Excellence.' In the early days of preservation, short cuts were sometimes taken, especially as workshop support was being withdrawn. Reefsteamers does the job properly and we are able to perform fabrication, rebuilds and repairs to as new, or even better-than-new condition. (Not being shy to use modern materials and techniques.)



P131 - BEWARE OF THE STEAM TRAINS!
They might just steal your heart away!



P132 - There is a special camaraderie amongst those who have taken steam preservation to heart. There are about a 1 ½ dozen people at Reefsteamers for whom this 'hobby' is more like a second (unpaid) job. They spend much of their own time during both the week and/or the weekends doing what is necessary to keep Reefsteamers going.

11). REEFSTEAMERS AT WORK:



P133 - It takes teamwork to keep these often cantankerous machines going. Two of our Reefsteamers are incidentally moving in perfect synchronization as they strive to break up a HUGE chunk of clinker blocking the 25NC's ash pan.



P134 - Reefsteamers Members work behind the locomotive too – looking after and guiding passengers, tending the bar and selling snacks. A typical train has two to three times as many coach crew members as they do locomotive crews.



P135 - Things don't always go right! This 12AR locomotive had just undergone a steam test but the blower was not working, and thus the fire couldn't be drawn-up bright. We are treated to an unusual view of a smokebox door being opened on a live boiler while the fault is being looked for. (It was simply a flange that hadn't been bolted properly.)



P136 - It can be hard work working on these beasts and they can even wear out the fit athletic youngsters, like this fellow. He has just plain had enough after battling with a vacuum brake ejector that had been changed out after a day's struggle and the replacement had another fault which they could not diagnose at that time.



P137 - Locomotive work can often be dirty and dusty...



P138 - ... very dusty...



P139 - Although steam locomotives are seen as romantic nowadays, in reality they are filthy things to operate and filthy things upon which to work. In truth, not all Railways Personnel were unhappy when steam finally passed and they could work on the cleaner and less labour-intensive diesels and electrics.



P140 - Reefsteamers Members come in all shapes and sizes. But be warned that the smaller members often end up being assigned to work in the tightest of locations. Here, the compactly built Jeandre squeezes in between the frames on a Class 15F – his compact buns are actually resting on one of the axle springs.



P141 - You get them in really close quarters – the gent on the left is at serious risk of incidental methane injection.



P142 - And you also get them way up on top as well! Andreas (Left) and Dawie are busy inspecting and lapping in one of the boiler's clack valves which has been leaking. They are actually resting their big feet on the regulator rods.



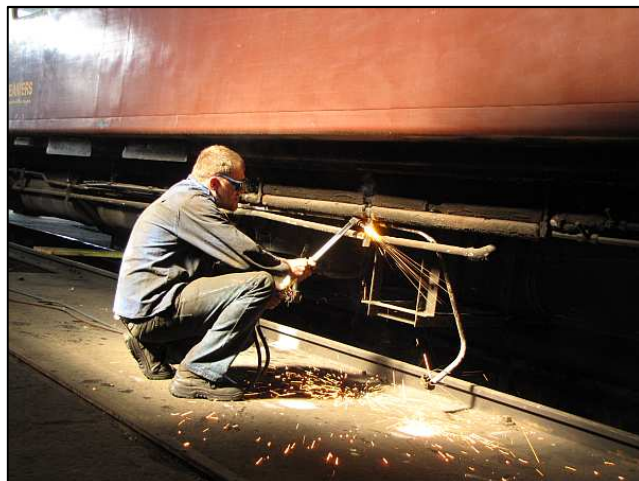
P143 - You get them underneath! Here, a locomotive's brake pull rods are being tightened up to eliminate excess clearance between the brake shoes and the wheels. This is a frequent task in preparing and road-worthying a locomotive for a day's run.



P144 - ...And you get them inside. Two fellows chat in the narrow firebox of the 12AR. Philipp Maurer, on the right, had literally just flown in from Switzerland and gotten off the aeroplane two hours earlier. Only a true steam freak would understand...



P145 - Getting them out again can be a challenge. Reefsteamers Fireman Dawie Viljoen is seen squeezing his way out of the awkwardly inset firing portal of 15F 3056 during her restoration – and he has a healthy waistline.



P146 - In a patch of 15M workshop sunlight, obsolete equipment is being cut away from a coach's undercarriage to reduce weight, but also to make space for future water tanks and sewerage tanks for four coach upgrades.



P147 - A certain grumpy Yorkshireman (Center) looks pleased for a change as the diesel shunter's engine is running as a bench-test on the second try. (The starter motor failed the first time round.) He is happily explaining the need to tighten up the valve clearances to the STEAM boys who aren't familiar with internal combustion engines.



P148 - We usually have gentle work available for the old lads who are getting a bit creaky at their hinges. Oom Attie, currently South Africa's oldest certified steam driver at age 74, is seen quietly painting the green indicator rod for the powered-reversing gear and is staying out of mischief!



P149 - Even the junior tasks such as fire-lighting actually involve skill, judgement and lore. It is not wrong then to feel a sense of privilege, ownership and justifiable pride in the ability to be able to competently commission, tend to, repair and operate these great machines.



P150 - Contrary to popular belief, the driver is not in charge of the train; the Train Manager is. (Roughly analogous to the old-time conductor.) These individuals have the welfare of sometimes over 400 people in their hands. This is where our hobby becomes a very serious and public business.

12). THE REEFSTEAMERS FAMILY:



P151 - Some of the younger members of Reefsteamers pose in a loco that they have been bringing into steam. We do allow people under the age of 18 to participate but under parental supervision. One of Reefsteamers' goals is to establish a Junior Steam Club, perhaps associated with the scouts and other youth organizations.



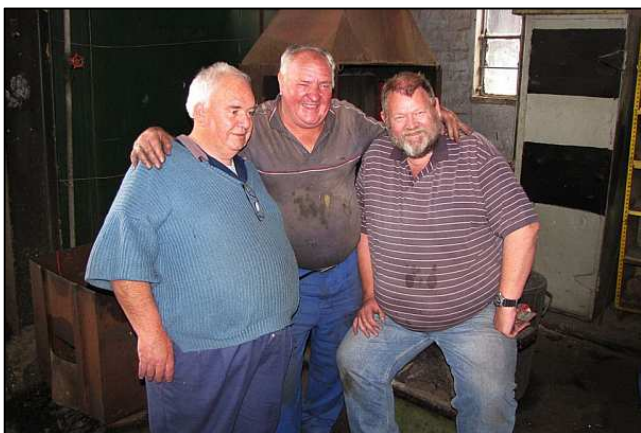
P152 - The younger people are allowed to do the less critical work on the locomotives too, obviously under supervision. The youngsters to the left and right of Jeandre are using grinding paste to lap in the brass sealing olives for water gauge cocks. Jeandre (center) is a full time staff member and is a 21st Century Apprentice Steam Fitter.



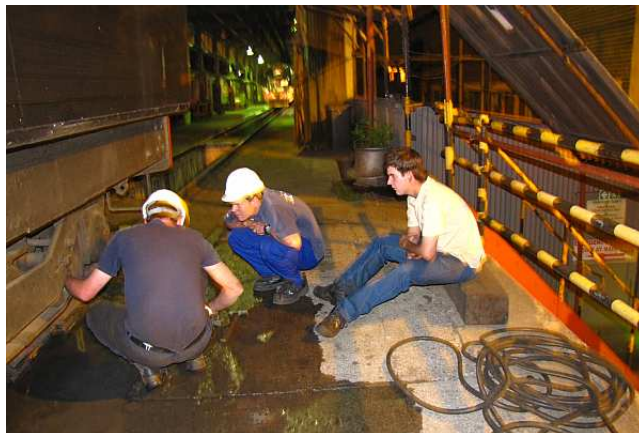
P153 - We keep the older boys busy too! James is fast approaching 70 and his days of clambering around locomotives are long over. We keep James busy in the machine shop as our senior machinist. In this winsome pose, you can see a glimpse of the naughty young rascal that he once was.



P154 - A railway family within our family. Andreas (L) and Michael (R) stand on either side of their father. Clifford, after 'lifting' a coach to check the undercarriage and brakes. Cliffie is our resident Carriage and Wagon expert. Andreas is a signal & comms technician, while Michael drives electric locomotives for TFR. And they all love steam!



P155 - James, Attie and 'Big Robbie', some of the older and not so older lads that are a part of our steam family.



P156 - Families have cousins and so do Reefsteamers. Many of our active members have formed friendships with people from the other steam operators, especially with some of the younger people from as far afield as Durban, Cape Town, Pietermaritzburg, Inchanga and other places.



P157 - The older they get, the more tea they consume! Here, Lauren 'Smidge' Ackerman does yet another tea run for the thirsty Saturday volunteers. The consumption of over 150 teabags in one day is not at all unusual.



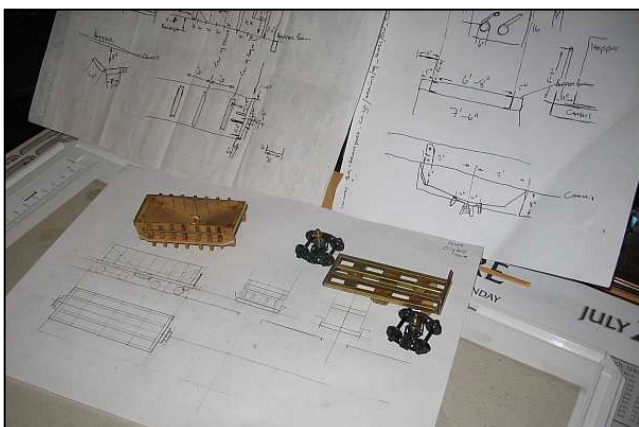
P158 - Tea ... the other lubricant. Many a greasy tea cup has disappeared into the workshop and has never been seen again. Being left on rods, walkways and buffer beams is not conducive to the health of crockery!



P159 - Not quite what the locomotive's designer had in mind! We often use cleaned, oiled shovels to cook food on the locomotive's coal fire – usually meats or boerewors. Coenie is seen coal baking freshly hand-made garlic scones – the locomotive smelt of garlic for hours after that!



P160 - Most of the fellows cook on a plain coal shovel which has been thoroughly cleaned – but there is always a danger that the food might just slide off the open end. This coal shovel has been converted into a frying pan and it is being used to cook peppered pork steaks and pineapple rings on a loco minding shift.



P161 - It is hardly surprising that many of our members like model trains as well as the real thing. Here, a HO scale model (1:87 scale) is being scratch-built from balsa wood and brass. It replicates one of five wood-bodied gold reef ore wagons stored on site on behalf of Sandstone Estates.



P162 - Several of the Reefsteamers Members run miniature live steam locomotives as well when they can get away from the depot. It provides a unique perspective (and some humour) to have regular experience of the real thing and then to run a working live-steam model.