

1). INTRODUCTION :



Today's work was mainly bits n' pieces, hence the title of this 'ere report. We had a poor-ish turnout in the workshop with only three and then two more people pitching up for work. We had a train running that day, so of course, that doesn't help with the staffing issues in the workshop. And I don't count, as I had set up my laptop in the club house, and in between making tea and taking photo-rambles, I was busy working on indexing my ever-growing photo archive – especially a collection of Richard Niven's piccies of Class 25NC No.3488 'Enchantress' for a new article upon which I'm starting to work.

Regardless of the low bulk of the muscle mass present amongst all the steel, quite a few small tasks were achieved. And after all, it isn't just about the big exciting glamorous jobs, but the small stuff that needs to be repaired or improved on a weekly basis. This is especially true when you are dealing with machines 50 to 80 years old and are actually operating well beyond their original designed lifespan.

All four safety valves were removed from the recently steam-tested Class 15F No.3046 'No name yet' the previous week and they were dismantled and carefully serviced. They were opening properly during the steam test, and with the correct 'popping' action. But they weren't closing properly afterwards. It turns out to be an assembly problem. A shim was missing between the body and the seat spacers, so they were blowing past their seats and not the actual valve elements. All four gaskets had to be remade. Three safety valves were re-installed with a fourth one fitted from stocks. In a final gesture of spite, one of the rusty mounting studs broke off from the mounting pad – so that valve needs to be removed for the second time and the stud drilled out. Aidan McCarthy wasn't TOO annoyed and attributes his muscular strength to the arduous palming and pushing of a rodent in his day-to-day job. Actually, the 'stuffed stud' was rusty n' a bit corroded to begin with.

Mike Murphy carried on with a project upon which he had worked the previous week – stripping the Class 12R's Hadfield Type Power Reverser (What's left of it anyway) into its separate components for clean up and possible rebuild. He had already managed to strip and remove the hydraulic locking cylinder. However, the actuating piston within the power cylinder just wouldn't budge – which meant we also now had an awkward-to-handle cylinder casting with a long shaft sticking out defiantly from one end. Mike, and a later arrival, James Thomson, rigged up a simple bar puller and managed to get the piston out. In the end, it literally just 'porped orf' and turned out to be a taper fit on the shaft. In fact, the piston and its rings are barely rusted and it was the rust deposits within the cylinder bore that were causing the seizure.



BP01 – Business-like in Black.

This delicate, little 108 ton lady, Class 15F No.3046 is about to blush pink instead of black as Colin Hall prepares to work on the underpinnings. The front end now is painted completely black with etch-type primer. The smokebox and the attachments still need to receive several more coats. However, no gloss paint will be applied over the primer coats – so the front end will always have a matte finish.

Note that the exposed smokebox saddle and valve chest castings have also received the black-brush treatment.

The buffer beam is actually red, not orange. I just had the wrong lighting correction mode on the camera at the time.



BP02 – Smoke Deflectors.

These are the original smoke deflectors that came with the 15F locomotive attached – and the locomotive was removed from the deflectors so they could be easily stored. They are having years of paint and painted rust (in equal quantities) ground off and will also be getting a bit of 'panel beating' to knock out the dents. (Or try to, anyway...)

15F No.3046 was once resplendent in green. However, the bright Taiwanese Christmas Tree green seen here is the primer that was sprayed on to protect those deflectors in long-term storage. You can see the locomotive's original colour (albeit a bit faded.) in the vertical center panel on the deflector to the right. (Next to the black I-beam column.)



BP03 – Front view in black.

The painted front end is really 'looking the business' now and it is remarkable, how the midnight-in-a-Persian-coal-mine black actually looks slate grey in the angled light.

The smokebox door ring and the hinges have been painted in silver enamel. These are traditionally done in white gloss paint. However, we have found that the silver paint lasts longer, is more heat resistant and looks cleaner for longer. (Bonus!) It has been used with great success on our Class 12AR – until somebody wiped it down with valve oil in an attempt to gloss it up a bit. (And the steam soluble oil has since gone brown with the dry, baking heat.)

The buffer steps that look painted white in the photo are actually trimmed with split unpainted brass tubing on their front edges. It is the reflection of the pale sky that you see.

The toe iron still needs to be fitted to the beef scraper.



BP04 – Front view in red.

Here's what she looked like several weeks ago, during the steam test on the 9th April. The paint has come up quite well as the smokebox was stripped of all the old paint first. That's 'Lappies' bent and working on the reverser there.

The two modified hand rails on either side of the smokebox have since been removed. (Not visible in the previous picture) The standard cheek steps haven't been fitted yet.

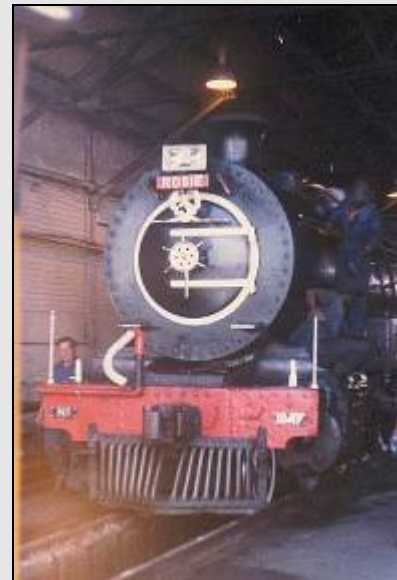
The exposed smokebox saddle will soon be hidden behind the angled wind deflector plate. This is not an optional feature, for the plate is what channels the slip-stream air up and behind the smoke deflectors. The smoke deflectors direct the pressure wave rearwards and upwards and it is the upwards 'spillover' that lifts the smoke clear of the laminar slipstream around the boiler. At very slow speeds, the smoke deflectors are sometimes more obstructive of vision than the smoke itself.



BP05 – Two ends of restoration.

On the right, Class 15F No.3046, undergoing final assembly and rectification work before striding proudly out on the high irons once more. On the left, the Class 12R No.1947 'Rosie' has been stripped down and is undergoing assessment for feasibility for a rebuild – the thinness of some of the firebox plate work being the major worry.

The different pitched but similar diameter boilers are obvious here. The 15F has raised running boards for those 5ft diameter wheels while the 12R, primarily a freight lugger, only has to cover demurely sized 4ft 3in wheels.



BP06 – Rosie in the old days.

Better days. Here's our Class 12R No.1947 Rosie when she was definitely a lot less rusty and a lot steamier! Judging by the labourers climbing off on the right side, she may have just been given a wipe down in this picture.

The ornamental smokebox wheel and the brass emblem are still in existence – currently in the care of a private individual.



BP07 – Split pin checks.

As he methodologically works his way around the machine, checking the dozens of split pins for security of fitting, Colin Hall gets to lie down a bit on the job. And he's lying down in absolute luxury too! No water puddles, no steam, no hot water or oil dripping down from above and no coal or gritty cinders lying on the ground ... just clean, cool, fairly smooth concrete.

How luxurious! What a pleasure!

Actually, being put on the 'split pin patrol' is an excellent way for a relative newcomer to come face-to-bush with the myriad linkages and rods that festoon the undercarriage.



BP08 – Brake Adjustment.

In the gritty darkness beneath the beast, an increasingly dirtier Colin gets to grips with the paired brake adjusters of a 15F. Although they both pull on the same spar rod, they can be adjusted to apply a slight tilt to the rod should the brake shoes wear at different rates. This works but to a limit. The shoe that is displaced outward ends up with an unworn outer edge that cups and overlaps the wheel rim.

The 'U'-shaped struts are safety bars that are designed to catch a rod should the end pin fall out and the rod falls towards the track. The current job of tapping, adjusting and fitting split pins is, of course, designed to prevent just that.



BP09 – Bogie bearing.

No. 3046 is equipped with a more modern solution to bogie bearing design. These are double taper roller bearings. Older types retain the packing system where oil is picked up on the journal from textile bags of oil soaked cotton waste.

These are obviously more reliable and have the major advantage of picking up lubricant when the axle journal and the grease are still cold. A disadvantage of the system is that more dismantling is required to check the actual journal if something goes wrong or inspection is required.

Over the years, the 15F's and other locomotives often ended up with a mixture of SKF and Timken bearings, depending what spares were used from available stocks when they were repaired. The roller bearings themselves are not necessarily specific locomotive components.



BP10 – Rolls of boiler lagging.

Back then, 15F No.3046 was treated to some new rock-wool type boiler lagging as about 10% of the material had rotted under storage. The boiler lagging is perhaps one of the most vulnerable parts of a stored steam locomotive as rain water gets in through the banding and especially through the washout plug pockets. This is why stored locomotives quickly look like total rust buckets even though they may still be mechanically sound – and this has sometimes lead to premature scrapping.

In the United States, where they have an established tradition of plinthed display of locomotives, the rusting boiler jacket problem, coupled with the risk of rust exposed asbestosis from old style insulation has led to many a formally safe display locomotive being scrapped. A few lucky survivors have their boiler lagging and the plate work stripped and end up standing on display like shorn sheep.

(Picture is a photo scan provided by Aidan McCarthy)



BP11 – Down to the bones.

Class 15F No.3046 was stripped down to the frames for her initial restoration. On a steam locomotive, the robust cylindrical boiler shell and the firebox are not actually intended to be structural supporting members. It is the underlying frames that deal with the stresses imposed by the train load, the track work and the forces imposed by the reciprocating steam engine that drives the locomotive.

15F No.3046 had the motion rebuilt before we fully adopted the policy of using Vesconite™ bearings. She will thus be the odd one out in our operating locomotive fleet and in spite of being a bigger locomotive, will be less tolerant of bearing problems. However, some of the smaller bushes were replaced with Vesconite™ during the restoration work.

(Picture is a photo scan provided by Aidan McCarthy)



BP12 – Mechanno-green wheel set.

A new definition of 'legless.'

Here are the removed driving wheels, looking quite attractive in the green primer that was applied when their old paint was stripped. The paint was stripped not just for an aesthetically smooth paint job, but also to check for incipient cracks forming in the wheel spokes.

The wheels were removed to inspect and service the otherwise inaccessible axle bearing journals and the axle bearings themselves.

(Picture is a photo scan provided by Aidan McCarthy)



BP13 – Work Crews.

When you see what the engine looked like you can see that the Class 15F No.3046 has come a long way!

The shorter fellow standing in the middle is none other than our very own Andrew King, who had a lot more hair back then with the upholstery just beginning to wear off from his then-undented dome.

Although most of the boiler lagging was still in serviceable condition, the entire boiler shell was exposed by removing the sheet steel cladding. The boiler was then de-scaled, and then primed. It is invisible work and is unlikely to be appreciated – but there won't be boiler shell corrosion on this locomotive for a long time yet!

(Picture is a photo scan provided by Aidan McCarthy)



BP14 – Boiler Corrosion.

Here is what they were trying to prevent. This is the first course (or ring) of the boiler of the Class 12R No.1947 'Rosie.' The chalk marks represent the detected thickness of the externally corroded boiler shell and the readings vary from 19.8mm to 17.5mm. So, at the worst points, over 2mm thickness of the rolled steel plate has been lost.

This boiler would still be safe and serviceable if this was the only problem area, but other areas, especially around the firebox, still need to be checked. (Holding thumbs!)

Actually, local pitting can be worse than thinning as pitting reduces the effective thickness of the metal and also introduces extra stresses due to the irregularity of the structure. Our 36 ton Booth-built Steam Crane has 'lost' a boiler due to pitting, even though the average width of the boiler plate work is actually quite serviceable.

2). PROJECT : CLASS 15F NO.3046 – SAFETY VALVE SERVICE :



SV01 – Seven Safety valves.

Seven Ross Pop type safety valves wait for their version of Snow White to come along. There are enough safeties here for one complete 15F, the two smaller valves for a 25NC and one door stop. These are standard 3 ¼ inch valve bodies.

The low profile design can be easily seen. The section below the bolt flanges is actually 'submerged' within the boiler, which makes for a lower profile appliance within the loading gauge. The original Ross Pop valves were surface mounted. If tall old fashioned valves were bolted to a high pitch SAR engine they would stand the risk of being knocked off (now wouldn't that be fun?) or causing flashovers from a low lying span of the overhead traction wires. (Not too improbable – our 12AR once caused a flashover from the traction wire to an ornamental brass finial bolted on top of the steam dome.),



SV02 – The sealing lip.



SV03– Boiler's eye view.

I'm using a welding rod to point at the raised ring of machined brass that forms the actual steam seal and it divides the primary and secondary valve faces from each other. The steam pressure initially acts on the round end of the shaft, the 45 degree taper and the flat part of the valve element inside the ring. In the boiler's 'eye view', (right) you can actually see the parts of the valve element that are exposed to the steam. (The picture shows an assembled safety valve, clamped upside down in the vice for gasket fitment.)

This valve has a two inch nominal working diameter.

When the valve element lifts slightly, the steam acts on the cupped area outside of that ring, which increases the lifting force because of the greater area and the valve snaps fully open to discharge steam in a positive action. (A primitive spring-loaded safety valve would tend to chatter and puff steam. It might also allow the boiler to over pressurize before it opens far enough to discharge enough steam to match the heat being transferred into the water.)

That ring of holes are bleed holes to the atmosphere. If there is a slight leak at the valve ring or its seat, the leaking steam would eventually pressurize the outer ring of the valve element and cause a premature 'pop off', wasting steam and the energy used to create it. Via those holes, steam from a slight leak can escape through those holes without causing a false premature 'tripping' of the safety valve's pop mechanism. This is the source of the gentle 'steam feather' of a leaky safety valve. This is also the source of the 'steam feather' when a properly functioning safety valve is just, just about ready to lift.



SV04 - Valve seat and element.

On the left is the removable valve seat. It is the right way up as it would be when mounted on a locomotive. The valve element is upside down.

We Reefsteamers sometimes stand back with a sense of wonder that these monstrous machines can actually move at all. This is one of the reasons why we wonder – the myriad brass-to-brass seals. There are no rubber washers to take up imperfections in the valve seats. These valves need careful grinding, not only between the element and the seat, but the lower faces of the seat need to be 'lapped' to the body. Thus, valve parts from different, supposedly identical valves aren't really interchangeable as they are lapped to and match each other.



SV05 - Sealed valve.

This valve had been set previously and isn't one of the four safety valves fitted to Class 15F No.3046. The wire locked brass pin and the cast lead seal is obvious.

Long disused valves, even with a boiler inspector's seal, may no longer function properly due to corrosion in storage, or perhaps even from being dropped or roughly handled in storage.

We are going to re-use the one of the spare sealed valves that we have – but they will be reopened and re-calibrated when 15F No.3046's safety valves are re-tested.



SV06 - Safety Valve Spring.

Ah yes, the only part of me that most of my readers ever see – my left hand. OK children, say 'Hello, Mr. Hand!'

I'm holding one of the safety valve springs. There doesn't appear to be much movement available between those square section coils – but steam at 1200-1400kPa discharges at quite a rate. The idea is to 'take the edge off' the rising steam pressure, not to empty the boiler!

If the spring was a more conventional round coil spring of the same grade steel, it would need to be of larger diameter, which makes for a more bulky valve.



SV07 - Rapping out a gasket.

Tap Dance! With gentle, controlled taps from both the flat end and the balled end of a ball-peen hammer, the gasket is tapped out using the casting's edges as an anvil. Andrew King is an old hand at this.

This is Superflex™ Gasket sheet and is good stuff – but like all gasket sheeting, it can only be used once. (We often just call all gasket sheeting 'Klingerite™' after our usual brand.) Because of the single usage policy, all the brand new delicately hand-crafted gaskets that were fitted with those safety valves for the steam test were discarded.

You might get away with it – but even a small leak would eventually notch the brass or the edge of the mounting pad on the boiler and necessitate even more repairs over time.



SV08 – Reaming out a misfit.

No, Colin isn't the misfit – the clamped safety valve is.

One of the safety valves was drawn from spare stock. Although they all start life with perfectly spaced holes, and the locomotives started life with perfectly spaced studs, things go out of alignment over the decades.

The biggest obstacle to mix-n-match safety valve installation is the fact that when mounting studs break off over the years, the holes have to be drilled and re-tapped, which usually means that a bigger stud has to be fitted. Then the corresponding hole in the safety valve needs to be reamed out, or the valve rotated to fit the six holes better to the studs. Thus, you end up wrestling with fitting of valves that have varied size holes over a ring of studs often with varying sizes as well. (The same often applies to other boiler fittings too.)

Here, Colin uses a $\frac{3}{4}$ inch reamer to get those holes up to standard on the replacement valve.



SV09 – Stud power!

Picture taken the following week - Dr. Smudge (S.T.A.) is busy replacing the one stud that broke off on the right rear safety valve. Actually, out of 24 studs (6 x 4), to only have broken one stud is pretty good going on these old clankers.

The double spanners are being used to turn two hex nuts up against each other so the top nut of the locked-together pair can be used to turn the stud in. Luckily the original stud itself was weak and not so much the threads. So the threads got away with cleaning and cutting – and thus the same sized stud could be used for replacement.

The manhole cover ('dome') was another story – the boiler inspector condemned all of the rusty studs and all 24 of them had to be drilled out and replaced. But that's a story for the next report.

3). PROJECT : PRESSURE GAUGE SERVICE :



PG01 – The Brasso treatment.

It isn't always about bashing things with 16 pound hammers and levering with crow bars ('gwalas') and cut-off lengths of boiler tube. There is sometimes delicate work to be done on our heavy duty coffee pots. Andrew Kruger works on perhaps the most delicate mechanical components that exist on our pachydermous beasts. (2nd most delicate being the dynamo governor.) He is stripping and cleaning a backhead pressure gauge. These are spare gauges being commissioned to replace a faulty stoker engine steam pressure gauge, as well as one of the two stoker jet pressure gauges on the Class 15F No.3046.

The initials and the fact that their first names are related has meant that this Andrew has received some email intended for Andrew King – so that's gonna be a booby trap. THIS Andrew joined Reefsteamers in February when I was on sabbatical, so this was the first time I met him.



PG02 – Behind the dial.

This gauge was stripped to allow for clamping, as there are still no holes in the mounting flange. It clearly reveals the inner workings of a Bowden tube type pressure gauge. The pressure sensing element is the circular tube itself, which tends to straighten out when put under pressure. The multi-holed links visible on the right hand side provide coarse adjustment for the mechanism by the manufacturer when setting different mechanisms into different cases.

Andrew Kruger was tasked with cleaning the gauges and ensuring that they're dry and free from corrosion. Luckily they are fairly water resistant when assembled and the glass seals are intact, especially as all the openings (except one bezel screw) point downwards. The biggest risk is when the pressure gauges are sprayed by a careless fireman with the cab's spray pipe.



PG03 – Bi-Dials.

The pressure gauges that are so characteristic of a steam locomotive's backhead are not necessarily antique parts – because the old fashioned-looking brass flange-backed gauges are still manufactured in certain sizes. On some of the other locomotives, we have SAR&H era gauges with brand new components retro-fitted into the original cases and refitted with old dials.

One of the identifying characteristic of a genuine old pressure gauge is that the railway gauges are marked as such and they have a double scale on the dial – being kPa on the outside and pounds per sq. inch on the inner scale. The brake vacuum gauges have pounds on the outer scale, but 'inches' on the inner scale. Modern gauges are all made metric.

The upper gauge is marked 'SAT – SAV', standing for 'South African Transport – Suid Afrikaanse Voertuie'. The lower modern dial face was made by Longdale Engineering and cheaply stamped from mild steel, hence the rust starting up.

4). PROJECT – CLASS 12R NO.1947 - POWER REVERSER DISMANTLING :



RV01 – Reverser Assembly

A picture taken while I was loco-minding the 12AR No.1535 'Susan' back on 22 March 2010 and the stripping of 'Rusty Rosie' had just commenced. Here is the reverser assembly as removed from the Class 12R locomotive.

You are actually looking at the boiler side as the actuator (power) cylinder is on the left and the lock cylinder is on the right. The curious arrangement on the common shaft is known as a 'scotch yoke.' It normally contains a square die block that moves up and down within the slot as the moving shaft drives the way-shaft input crank, of which the end rotates downward and thus displaces vertically.

Notice that all three of the stuffing box covers are still present and with their original bolts too.



RV02 – Rusty Lock Cylinder

Here's what the dismantled hydraulic locking cylinder looked like with a generous helping of dried rust deposits inside. It is actually a ferro-fossilized rain water puddle. Unfortunately the two oil transfer holes are on top and without the cataract valve in place, they are very open to the ingress of rain water. Our Mr. Murphy scored five out of six with those rusty studs but they actually aren't in as bad a condition as we expected.

This end of the cylinder normally faces the cab.

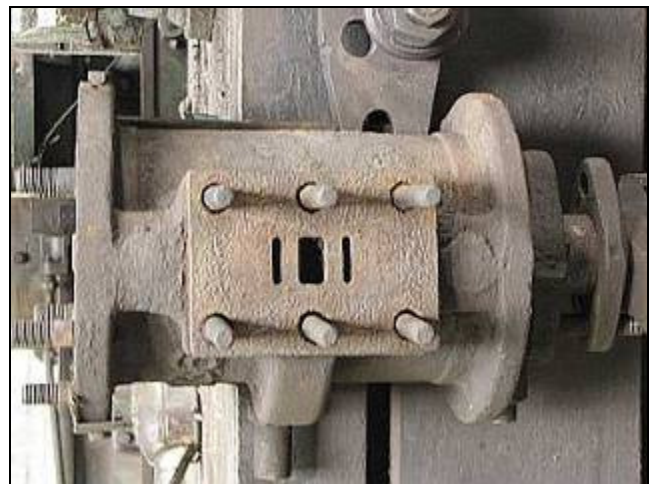
In the background is Rosie's double sealed beam headlamp enclosure. She already has one on the tender, and we will replace the headlamp with a Pyle National barrel headlamp, so that 'lamp box' will probably go into the spares stock.



RV03 – Dual porting

Here's the mounting pad for the cataract valve. Somebody had broken off a stud in the past – top right. (Wasn't us ... promise!)

As this is for the cataract valve, there are only two ports to allow oil to flow from one end to the other when the valve gear is adjusted. When those ports are closed off from each other, the trapped oil within either side hydraulically prevents the piston from being able to move. As it's on a shaft common with the power cylinder's piston, the reverser is held locked into whatever position the driver has set it in.



RV04 – Triple porting

In contrast, here is the triple ported valve pad for the power cylinder. This works just like the ports on a steam engine. The large center hole is the exhaust and the two slots are the steam inlets.

This is the machined plate on which the D-valve slides but it is too corroded for easy recovery. Luckily, the SAR&H used the same valve gear on their reversers, even though the cylinders were often of different lengths. We have matching valve plates in the stores and this one will be kept as a pattern.



RV05 - Drilled Piston.

Here is the actuator piston with two freshly drilled and tapped holes ready for the puller bar that was currently under fabrication. The unit was partially seized in the center position but Mr. Murphy got it loose – but was unable to get the piston out and couldn't get the shaft to disengage.

These are blind holes, not going all the way through the piston. If the grooves can be re-machined – the piston will be returned to service, threaded holes and all, and they won't affect the operation of the finished assembly.



RV06 - Setting up the drill.

Although Mike Murphy (Right) has machinist skills, James Thomson (Center) is more familiar with our machines at Reefsteamers as well as where the tool stashes are. He is setting up the Asquith-manufactured radial drill to drill the pilot holes in the puller's bridge bar.

Mike IS wearing a hard hat – but it's his own grey unit.

On the left stands Colin Hall and you can see that he's sneaking a quick vertebrae crack n' stretch after all the time he's spent under the Class 15F. You can see the layout of the work pit better here too.



RV07 - Drill scene from above.

Here's a rafter-rat's view from Class 15F No.3046's tender and it shows the layout of the drilling station quite well indeed.

Notice that the work piece power cylinder is clamped to the SIDE of the drill's table. The seized shaft protrudes into the recess cast within the floor especially made for such protruding parts. Not so daft were those old civil engineers!

James has been measuring up the puller's bridge bar and is now drilling the first of two pilot holes for the clamp bolts that will screw into those threaded holes within the piston.



RV08 - Smokin'!

The puller's bridge bar is under fabrication. It's not too unusual to have to make up jigs and tools to assist in loco work. This would be a simple center-shaft puller.

The smoke effect is actually coming from the cutting oil – they aren't over-driving the drill bit here.



RV09 – Ready to be yanked.

The puller is in place. Notice that although the bridge bar was cut so that its corners would fit inside the cylinder bore; it wasn't screwed down flush to the face of the piston.



RV10 – Getting the twist on.

Lightly built Mike Murphy has some muscle tremours while the powerfully built and muscular Aidan McCarthy gets the twist onto the puller's center bolt. Andrew King has just gotten into the shot on the right.

It was actually an anticlimax after all the preparation – the piston literally just popped off the common shaft with a muted crack. I had visions of two or more fellows hanging on a long bar with an equal quantity of lever-fodder trying to apply torque on the shaft – through the scotch yoke.

Our cantankerous old bean-boilers do co-operate ... sometimes...



RV11 – Out she comes.

With the piston driven loose from the shaft's taper, it could be tapped out from behind to drive it through the slightly corroded cylinder bore. It didn't take too much knocking to get it out in the end and the piston itself isn't particularly corroded. The rings would be replaced as a matter of course.

We could have tried to lever the piston out using the shaft to scuff and force it through the rust – but that would have entailed a high risk in terms of bending that shaft. Because of the scotch yoke forging in the center, such a shaft would not at all be easy to re-fabricate.



RV12 – Shafted.

The common shaft doesn't look too bad although the section that runs through the glanding needs a skim and polish. The threads are in good shape but a little worn (You can see how they taper inwards at the bottom edge.)

With careful skimming of that taper, the piston can be remounted onto the shaft with ease.

5). ROAMIN' AROUND THE DEPOT :



X01 - Andrew does fire lighting...

Of a braai (BBQ) fire, not of a locomotive. Normally we get a cooked lunch, but because it was known that we would have only a few stomachs on the premises today, Andre van Dyk left a do-it-yourself braai kit instead. Some assembly required... Andrew King is crumbling the paraffin soaked blocks used as fire starters.

Andrew was a touch annoyed – as this was one of those jobs that everyone thought someone else would do. Some looked at me meaningfully but I've never lit a braai fire in my life and would be guaranteed to get it wrong. Let the South Africans do it... part of their heritage.



X02- Finished product.

Lunchtime! This was actually at about 3pm and everyone was feeling distinctly peckish. For the benefit of overseas readers – the meaty coils in the foreground are a traditional coarse-grained savoury sausage called 'boerewors.' Literally, a 'Farmer's Sausage.' Properly made 'wors' is delicious but the cheaper varieties can be dodgy with meats of dubious origin mixed with cereals and soya.

We don't go on ceremony here at Reefsteamers – maximum two pots per meal or an open fire. Formal dining is when one bothers to wash the grease n' grit off the hands and actually use a plate! ☺



X03 - Road works.

Our approach road is a rutted, potholed and muddy embarrassment. It is often used a local dump and we are always fighting to remove rubbish left on the verges.

This is the final corner before a short upgrade to the ripped up track bed that used to allow locomotives to pass from the Depot to the eastern Witwatersrand goods line.

Numerous cars had bogged down here. Andre van Dyk and Victor Zwane are just about to start offloading rocks and rubble for traction. I'm just about to get my own bakkie (Pick-up) stuck trying to swing out to the right and managed to get both my rear wheels on soft mud – where the diff lock is patently useless. Oops! We got out using two humans doing synchronized jumping as traction weights.



X04 - Painting a deflector plate.

Oom (Uncle) Attie, in between endless cups of tea n' chat, is usually the fellow who cleans, polishes and paints the stable of locomotives during the week. He enjoys the work as he can do it at his own pace but takes much pride in the finished result.

Here he paints a locomotive at a much smaller scale. This is an unusual wall ornament – reminding me irresistibly of a cuckoo clock. However it has no active parts except the illuminated headlamp and a hand-spun nose wheel propeller.

The locomotive depicted is a genericized model but it is loosely based on a 15F.



X05 - Lappies' Domain.

Peter 'Lappies' Labuscagne has claimed this workshop as his own. It is otherwise disused. It was used as a covered junkyard but was cleaned up in 2009 when Shaun Ackerman was temporarily acting as Depot Manager. However, the cleaned workshop had been disused until 'Lappies' staked his claim.

Behind me are the grease store and the presses for the grease pads. Behind the end wall in the picture is the air compressor room. The windows look out into the 15M workshop yard. The one big down point here is that the roof has a bad leak with a lifted panel, you can see the rather wet evidence on the floor!



X06 - Spot the missing piece.

One of the first parts to go on any locomotive when light fingered people are around are the overflow pipes for the injectors. Here's the long-ago pilfered right hand injector on the hand-bomber Class 15F No.2914 'Spikkels'.



X07 - Watching the yellow.

The two track canopied storage shed, which used to be the covered area of the boiler washout plant, is our secured area. There is a guard hut just out of the frame. There are three locomotives stored on the inner of the two tracks - the Class 25NC No.3488 'Enchantress', the Ex-Rhodesian Class DE2 Diesel No.127 (Both from Sandstone Estates) and our own Class 15F No.2914 'Spikkels'.

I don't know what this fellow is thinking, staring at the faded banana custard yellow flanks of the DE2.

Both of the Sandstone locomotives are essentially complete but are waiting for a specific business need to arise before funding can be justified for restoration. The 15F locomotive needs firebox and smokebox repairs - and we cannot justify that at the moment.



X08 - Lawn Ornaments.

Makes a change from garden gnomes, does it not?

The contraption on the left is a mechanical illuminated points signal for shunting. It was rescued from Ficksburg, Station from where had been dumped in a grassy verge.

Just behind the points tumbler is a quad-red lensed work lamp. It isn't, technically speaking, a railway tail lamp but was primarily used by road works and occasionally, the railways right of way crews.



X09 – Sunny day in the coach yard.

Where once the steam locomotives roamed, the coaches now rule. The old running shed in the background is an eight-track through shed – two tracks of which are reserved for our tenant, the Shongololo Express. One of their two coach sets, the 'Southern Cross' is at home ... for a change. The two scattered Shongololo coaches on the inner tracks are undergoing cosmetic repairs. The two Reefsteamers coaches to the left are also under repair. The further coach is having door locks repaired while the near coach is one of the two Sandstone day-sitters, and is nearing completion of an interior refurbishment.



X10 – How to use a soldering iron.

Andrew King and Peter Labuscagne demonstrate how NOT to use an ELECTRIC soldering iron! The electric soldering iron had actually failed, so they fired up the acetylene set – which turned out to be low on oxygen.

The soldering iron was required to repair a number of PCB relay terminals of the portable drill press, which was found to have failed after being set up to re-drill the misaligned holes within the smokebox front plate for Class 15F No.3046.

But there is always a way to do something in some other manner at Reefsteamers! ☺



X11 – Playing with fire.

It is well known that Engineering Manager Andrew King's favourite tool is the 16 pound mallet, and for such a little fella, he has quite a lethal and accurate swing ... but fire comes a close second. Actually, a fondness for playing with fire seems to be common to most males but is especially predominant amongst steam freaks. I wonder if they are instinctively compensating for something...

The failed portable drill press can be seen in the foreground. The gents were successful in re-soldering the pulled switch relay contacts and managed to get the drill running once more.



X12 – Rosie's Handbag.

The morning light, beaming in through relatively new and still-clear translucent panels in the roof of the 15M workshop, picks out the interior of the coal bunker of the tender for the Class 12R No.1947 'Rosie.'

Even at this distance, you can see the damage and corrosion to the coal bunker's gussets. The rust holes through the rear scuttle plate can also be seen. But so long as there is still more steel than rust, this tender can be restored!

This tender takes 12 tons of coal and 6000 gallons of water.



X13 – Ivory, gold and green.

We haven't really gotten to the cold dry Highveld winter yet. In fact, we just had a week of unseasonable and miserable rain – so the various garden areas of the depot are still green and thriving, although the plants are starting to shed their blooms and thus looking a bit droopy and scruffy.

This is the Southern Cross train set operated by Shongololo Express. Although their generator van (left) is of a more modern type, the individual coaches within the clerestoried coach set were built between 1952 and 1958 by Metro Cammell.



X14 – Midas Coach.

The setting sun clears a moody cloud bank in the last hour of the day, and high-lights a single sleeper coach of the Shongololo Express 'Dune Express' train set.

That metal work in the foreground is a spare plate-framed bogie.

The sloping track in the middle view is the loading track for the old running sheds, bringing the load bed of a gondola of flat car level with the walkways. This track is now disused.



X15 – Hidden Engineering.

Here is the dry pipe arrangement of an SAR Class 15F locomotive – considerably more complicated than that of most steam locomotives. The pipes are laid out in an H type arrangement with a tap-off from the center bar of the 'H' forward towards the regulator. (You can just see the bottom point of the flange in the center.) The steam actually enters through the slightly flared tops of the angled pipes.

Although a full sized manhole is present on top of the boiler, complete with a shallow dome shaped fairing, technically speaking – this is a dome-less boiler.

You need to be of small stature, and rather trim to be able to wriggle your way forward under all that pipe work! More than one person has gotten stuck inside a 15F boiler and have needed assistance in getting out again.



X16 – Schorkelsh.

Class 12R No.1947 'Rosie' also presently has a domeless boiler, but through stripping rather than design!

You can clearly see the old fashioned arrangement for picking up steam from a classic, tall dome. The traction steam for the front end is picked up via the large pipe and the steam that is supplied to all the accessories via the turret manifold, is picked up via the small pipe.



X17 - Cheese Grater Smokebox.

This complicated smokebox arrangement is so usual on SAR Cape Gauge locomotives that it is often forgotten that this is not the usual configuration for other steamers around the world. In England, this is known as a self-cleaning smokebox.

The self cleaning mechanism works via centrifugal force. The combustion gasses, after passing heat to the water, exit the boiler tubes under the table plate. Because the area is baffled with removable plates (Visible behind the petticoat) the gas flow speeds up. When the gasses come forward in the restricted space under the table they do a 180 degree turn at a high speed before slowing down and passing backwards through the spark arrestor grids. That high speed turn throws out the char and coal particles and dumps them in a pile into the front corner.

This is why a poorly serviced SAR locomotive burns the paint off the smokebox in the lower quadrant.



X18 - Clean in green.

Here is the refurbished interior of the Sandstone Estate's day-sitter coach No.25206. The coach has been treated to a new vinyl floor and a full interior strip down and paint job, as well as repairs of sundry fittings. The paintwork, with the unusual lemon yellow stripes, matches the new colour scheme of our dining car.

The electrical work remains to be converted to 220V mains power and the toilet fixtures still need to be plumbed in.

This is an extra coach and when it enters service, one of the existing coaches will be removed and serviced. Our entire day-trip coach fleet was serviced last year in terms of brakes and lubrication. But their interiors are becoming increasingly in need of repairs - especially the floors. And the floor work cannot really be done (properly) in stages while keeping the coach in service.



X19 - Defeated Oval.

Class 15F No.2914 'Spikkels' is one of several of our basically intact locomotives that are waiting for repair - and is the only intact 'hand bomber' Class 15F locomotive remaining in South Africa.

She is the lowest priority on the repair list however, as we already have a steam-able 15F (No.3046) and Dave Shepherd's 15F (No.3052), which just needs tubes to run again. In terms of our business model, the slightly smaller and more economical Class 15CA (No.2056) is ahead in the queue, as well as the Class 12R restoration project.



X20 - Vantage point.

Class 15F No.2914 'Spikkels' is parked under the canopy in the old boiler washout area, in sight of the main line.

Artistically, this isn't a great shot with the 'glint' all on the cab side instead of the boiler. However, you can clearly see the prominent overhang on either side of the 3ft 6in wide axles. South Africa steam fans are so used to it they don't even notice it any more - but it blows away fans from other countries - especially the English who have stock running on 4ft 8in standard gauge but their loading gauge is actually smaller than that of our Cape Gauge equipment.



X21 - Spikkels' name plate.

This Class 15F was named 'Spikkels' after the wife of Coen Pretorius, in appreciation for all the work he has done on behalf of Reefsteamers. He is our Safety Representative and one of the relatively few Reefsteamers members who actually work for the railways at the present date.

If the boiler was filled up and a fire put in, Spikkels would actually be able to move under her own power. She has very poor drafting under load though, because of a failed blast pipe collar. (It was poured with builder's cement instead of fire clay.) However, with an expired boiler certificate and known thin points in the firebox plate-work, she isn't safe to use until repaired.



X22 - Backlit Gauges.

Here are the driver's side gauges of 'Spikkels', backlit by the westering sun shining through the right hand spectacle glass. From left to right we have a duplex vacuum gauge (Train Pipe \ Vacuum Chamber) then the steam chest pressure gauge and then the speedometer.

The first batches of 15Fs were built with steam brakes for the locomotives - the locomotive vacuum braking is actually an early modification by the SAR&H.



This Depot Report was compiled by Lee D. Gates on behalf of Reefsteamers
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