The Class 25 family are the largest non-articulated 3ft 6in Cape Gauge locomotives in the world. Their massive boilers and 70 Sq/ft fireboxes are bourne by an unusual 4-8-4 (Northern) wheel arrangement. Easily capable of 120kph, they were specially built for high-speed heavy running across the expansive, arid flat lands of the Great Karoo. (Touws Rivier - Beaufort West - De Aar)

These modern locomotives are 'totally boss', kitted out with cast frames and integral cylinders, mechanical stokers, independent tender brakes, auto-injectors, combustion chambers, roller bearings on axles n' motion, and full mechanical lubrication. They were known as the 'Cadillacs' of the SAR.

There were 2 varieties. 90 of the spectacular Class 25 Condensers were built from 1953 and 50 were built as conventional 25NCs from the start. The Class 25s were designed with special condensing tenders with forced-air radiators to cool their exhaust steam - condensing it back into water for re-use. The Type CZ tenders had 8 huge radiators, 5 turbine-driven fans and were about 17 meters long! Recycling their water up to 8 times, these huge desert-dwelling machines did 800km on a single tender-load of water and after some initial design improvements, they proved to be great performers.

When the Touws River-Beaufort West line was electrified, the 25s were displaced to running between de Aar and Kimberly, and to Bloemfontien. They displaced a brace of 22 of the 'original' 25NC's eastwards to replace some 15F's running on the Bethlehem line. Some 25s worked ore trains from Sishen far afield in the thirsty Kalahari.

With the water-saving requirement negated on the new Kimberly/Bloemfontien routes, the efficient but high-maintenance condensing gear was no longer needed. Gradually, 87 of the 90 Class 25s were converted to simpler conventional 25NCs. However, they are not suitable for frequently stopping trains or for shunting duties due to large 60 inch dia. driving wheels and light axle mass. Unlike many other large locos, such as the famous 15F, 25NCs were generally not demoted to shunting duties or trip works – and when their 2nd homes were taken over, they were retired – often still in running condition.

Our 25NC No.3472 'Elize' was originally built as a condenser in 1954 by North British Locomotive Works. (Designed in Germany by Henschel and Sohn) Like the others, she was converted at the Salt River works. Towards steam's end, No.3472 was teamed with 3 other converted 25(NC) for long-distance trains, including the Trans Karoo. (Pictured below) This ensured her survival. Unusually for a converted Class 25, she now runs with a conventional 6-axle tender from an original 25NC. She weighs 226.6 tons in working order and is 27m long. The max. axle load is 19 tons on the 2nd driver axle.

Luckily, 25NC No.3472 was never allowed to go derelict. Although functional, she failed a boiler inspection due to a cracked reinforcing plate on the safety valve saddle. After some years of safe storage, the safety valve saddle was replaced with a new one, with much specialized welding and fabrication work, and the safety valve seats modified. The locomotive was put back into service in 2006 and her first long distance trip, paired with 15F No.3016 'Gerda', was for the Bethal Potato festival.

She has since proven to be a reliable performer. During Reefsteamers service, the chimney stack was found to be slightly misaligned. Correcting this minor-looking fault made a noticeable improvement on the locomotive, not the least the ability to blow smoke rings!

This impressive machine is not often used on our day trips because of the high water and coal consumption, as well as the risk of excessive wear on the wheels on turning triangles designed for shorter locomotives and diesels with bogies. However, she is a favourite for our long distance runs - once or twice a year. The roller bearing-equipped axles and motion, and the mechanical lubricator, really reduce the servicing requirements on the main line. Perhaps one day we will have a business case for long distance runs and this beautiful machine can race across the endless plains like she used to do.

Reefsteamers Association NPC (Non-Profit Company) is incorporated under New Companies Act 71 of 2008. Company Registration = 1995/002590/08

CLASS 25NC NO.3472 'ELIZE' (EX-CLASS 25)

Class:	Class 25 – numbers 3451 to 3540 90 were built in 1953 - 1954.
Designer:	L.C. Grubb, CME, in cooperation with Henschel and Son for condensing apparatus.
Builder(s):	Henschel & Sohn (Prototype 3451) North British Locomotive Company
Configuration:	4-8-4 'Northern.' All axles with roller bearings.
Track Gauge:	3 ft 6 in (1,067 mm) Cape Gauge.
Driver Wheel Diameter:	5 ft. (1,520 mm) (Wheel sizes never changed.)
Total Locomotive + Tender Length:	107 ft 6 in. (32.768 m) as 25. 91 ft 6.57 in (27.9 m) as 25NC.
Height:	13 ft. (3.962 m)
Frames:	Cast steel with integral cylinders.
Loco Weight:	123 tons working order as 25. 119.3 tons working order as 25NC.
Max. Axle Load:	19.6 tons on 3rd Driver. (25) 19 tons on 2nd Driver. (25NC)
Total weight on driver wheels:	78.1 tons as 25. 75.4 tons as 25NC.
Tractive Effort:	45,360 lbf. (201.8 kN) at 75% boiler pressure (both 25 & 25NC)
Cylinders:	Two.
Cylinder Size:	24 in. (610 mm) bore. 28 in. (711 mm) stroke.

Tender Type:	CZ (Condensing tender) as 25. EW1 (Long Range) as 25NC.
Tender Weight:	120.8 tons in working order. (25) 107.2 tons in working order. (25NC)
Fuel Type:	Coal – via Archimedean Screw-type Mechanical Stoker.
Tender Coal:	19.3 tons as 25. 18.3 tons as 25NC.
Tender Water:	24,800 liters as 25. 48 000 liters as 25NC.
Boiler Dimensions:	6 ft 4.125 in. (1.934 m) int dia. 19 ft. (5.791 m) int length. 9 ft 1.625 in (2.784 m) pitch.
Boiler Pressure:	225 psi. (1,550 kPa) (Same boiler – smokebox was changed)
Fire Grate Area	70 sq. ft. (6.503 m^2)
Heating Surface of Tubes:	136 tubes 2.5 in. (63.5 mm) ext dia 36 tubes 5.5 in. (140 mm) ext dia 3,168 sq. ft. (294.317 m^2)
Heating Surface of Flues:	37 sq. ft. (3.437 m^2)
Heating Surface of Firebox:	294 sq. ft. (27.313 m^2)
Total Heating Surface:	3,390 sq. ft. (314.941 m^2)
Superheater Area:	630 sq. ft. (58.529 m^2)
Valve Gear:	Walschaerts. (With powered Reverser)
Locomotive Brake:	Vacuum, with independent.

Our Class 25NC No.3472 used to look like this! Note the condensing tender with 8 radiator panels, and the unusual 'banjo' shaped smokebox. This is No.3511 'Frieda', watering at Hartswater in 1981. Only 3 of the 25s were not converted, and one of those 3 was scrapped. The locomotive pictured survives, unserviceable, in Kimberly. (Pic – Malcolm Best)

No.3472, then named 'Lilly', hauling the Trans Karoo through Oberholzer. No.3472 was one of four 25NC's kept in running order for this type of service. Notice the SATS-era coaches. She still has the unusual copper-pipe cow catcher to this day, but it is now painted black. (Pic source : Unknown)

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