



Die NZASM-lokomotief die 'Roos', 46 ton, in 1893 gebou in Duitsland, voor die 'Grand Tram' wat hy op 6 September 1986 van die sentraalstasie in Johannesburg via Germiston na Rosherville en terug gebring het

Foto: C. de Jong



Naamplaat 'Paul Kruger' wat op die NZASM-lokomotief die 'Roos' aangebring is toe die 'Roos' tydelik die naam 'Paul Kruger' gekry het ter geleentheid van sy gedenkrit tussen Waterval-Boven en Waterval-Onder in 1970 om die opening van die Oosterlyn 75 jaar gelede te herdenk.

Foto: C. de Jong

continued in existence until 1908, and 'Roos' was taken into the books of the CSAR for the first time in that year.

The CSAR operated from 1902 to 1910 and placed a number of new locomotives in service during this period, and 'Roos' is likely to have continued working on the Pretoria - Delagoa Bay line. After the railway line between Waterval Onder and Waterval Boven had been reconstructed and the rack railway demolished in 1908, 'Roos' was probably brought to the Witwatersrand and used to haul suburban passenger trains.

### 5.3 Sold to Simmer Deep Mine - 1911 to 1919

With the establishment of the Union of South Africa in 1910, the CSAR, together with the Natal Government Railways (NGR) and the CGR were combined into the SAR, but for practical reasons, the CSAR continued to operate until 1914. 'Roos' was not included in the 44 locomotives which came on to the books of the SAR, as the CSAR had sold her to the Simmer Deep Mine in 1911. Simmer Deep and the adjacent Jupiter Gold Mine shared the services of 'Roos', where she worked on the lines to these two mines between Jupiter and Driehoek until 1919.

### 5.4 Bought by the Victoria Falls and Transvaal Power Company (VFP) - 1919 to 1963

'Roos' was bought by the VFP in 1919 and thoroughly overhauled at the Rosherville workshops of the company. Another ZASM locomotive No. 197 named 'Kracht' (i) and 'Roos' were allocated to the Brakpan Power Station in 1920 to replace the Kitson locomotive 'Kitty' (ii) and a Huslet locomotive that had been transferred to the Rosherville Power Station. 'Kracht' and 'Roos' hauled coal trains from Modrea Station over a distance of 4 km to the Brakpan Power Station (iii).

Escom took over the VFP in 1948 and 'Roos' was again transferred to the books of the new owner.

When a portion of the Clydesdale Colliery collapsed in 1960 and 435 mineworkers lost their lives, it became necessary to bring coal in by rail and 'Roos' was on temporary transfer to the Taaibos Power Station where she hauled trains from Coalbrook Station to Taaibos and Highveld Power Stations until the coal mine was re-opened in 1961.

- ( i ) This locomotive is mounted at the Waterval Boven running shed.
- ( ii ) 'Kitty' is the well-known locomotive at Rosherville which completed a century of service in 1979 and was declared a National Monument on 29th April, 1983.
- (iii) See under glossary/bibliography for further information about Brakpan Power Station.

Brakpan Power Station closed down in 1963 and 'Roos' returned to the Rosherville Power Station.

#### 5.5 To Geduld Mine and South African Pulp and Paper Industries (SAPPI) - 1964 to 1971

When Escom withdrew the older power stations from service, a number of locomotives were put up for sale. 'Roos' was sold to Geduld Mine, - a goldmine, in 1964, where she was used for hauling ore trains from the various shafts to the central reduction works. The main activities of the mine centred on cleaning-up operations at this stage and when it finally closed down in 1967, 'Roos' was sold to SAPPI, the largest paper manufacturer in South Africa.

Seventy-two years after she had been placed in service on the Pretoria - Delagoa Bay railway line, 'Roos' again steamed across a portion of her old working territory to the Ngodwana pulp factory of SAPPI, that was to be her new home. Ngodwana is situated close to Waterval Onder and adjacent to the Pretoria - Delagoa Bay railway line.

August 17, 1970 witnessed a very special event on the railway line which had been of such importance to president Kruger and the Transvalers in their long struggle for independence. The 75th anniversary of the Delagoa Bay railway line took place that day and 'Roos' was used to haul a special train from Waterval Onder to Waterval Boven. She was temporarily renamed 'President Kruger' for this commemorative trip. Mr. Ben Schoeman, who was Minister of Railways and Harbours at the time and who had initially joined the SAR as a fireman, acted as driver over the last part of the journey up to Waterval Boven.

#### 5.6 Acquired by the SAR

The SAR acquired 'Roos' for the first time in 1971. Although kept on the books of the CSAR, the locomotive had belonged technically to the SAR for one year before she started on her long journey from one owner to another. Six months after the commemorative trip on the Delagoa Bay line, the SAR presented SAPPI with a class 10C no. 772 (i) locomotive and received 'Roos' in exchange.

The veteran locomotive has now ended her wandering and is kept at the Germiston locomotive depot in trust for the SAR museum. 'Roos' is the only ZASM locomotive still under steam, and is used from time to time for special journeys or scenes in television and movie films.

- (i) This locomotive was donated to the SAR by SAPPI in December 1980 and is retained for the SAR Museum.

## 5.7 Technical details of the locomotive 'Roos'

### 5.7.1 Manufacturer

Name	Emil Kessler
Works number	2598
year	1893

### 5.7.2 Boiler

Boiler diameter	1169 mm
Boiler centre line above rail level	1765 mm
Blast pipe type	Vortex according to the design of Adams (i)
Fire grate type	Bar
Fire grate area	1,4 m <sup>2</sup>
Drop grate operation	Wheel crank with screw winding
Heating surface area:	
Fire tubes - 144 of 45 mm diameter	78,5 m <sup>2</sup>
Firebox	8,5 m <sup>2</sup>
Total	87,0 m <sup>2</sup>
Tube plates - distance between	4300 mm
Safety valve type	According to the design of Ramsbottom (ii)
Regular type	Double slide
Working pressure	1125 kPa

### 5.7.3 Engine

Cylinder bore	430 mm
Piston stroke	630 mm
Valve gear	Walschaert (iii)
Valve	Balanced slide valve according to the design of Richardson with a cross point according to the design of Trick
Driving wheel diameter	1310 mm
Bogie wheel diameter	810 mm
Wheelbase	5994 mm
Crosshead type	Alligator
Frame type	Outside plate

- ( i ) See under glossary/bibliography for further information about Adams.  
( ii ) See under glossary/bibliography for further information about Ramsbottom.  
( iii ) See under glossary/bibliography for further information about Walschaert.

#### 5.7.4 Capacity

Water tank	6750 l.
Coal bunker	4t

#### 5.7.5 General

Mass (in working order)	46t
Length between couplers	9590 mm
Wheel arrangement	0-6-4
Tractive effort (at 75% of operating pressure)	73 kN
Lubrication	Oil

### ABBREVIATIONS USED

CGR	Cape Government Railway Established in 1872 by the Cape Government. Became part of the SAR in 1910.
CSAR	Central South African Railways Established in 1902 to take over from the IMR. Became part of the SAR in 1910.
ESCOM	Electricity Supply Commission Established in 1923 as a public utility corporation. Name changed to Escom in 1985.
IMR	Imperial Military Railways Took control of railways in the Transvaal and Orange Free State in 1900 for the duration of the Anglo-Boer War until 1902.
NGR	Natal Government Railways Established in 1875 by the Natal Government. Became part of the SAR in 1910.
NZASM	Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij A public company established in 1887 to build and operate railways in the Transvaal under concession of the Government of the Zuid-Afrikaansche Republiek. Placed under control of the IMR in 1900 and the CSAR in 1902, but remained in existence until 1908.
OVGS	Oranje-Vrystaat Goewerment Spoorweë Established in 1895 to take over railways in the Orange Free State previously operated by the CGR. Subsequently controlled by the

IMR from 1900 to 1902 and taken over by CSAR in 1902.

- SAR South African Railways  
Established in 1910 when the Union of South Africa was formed. The CSAR, the CGR and the NGR merged into a single railway system. The three systems functioned separately until the final merger in 1914.
- VFP Victoria Falls and Transvaal Power Company  
Established in Rhodesia in 1906 as the Victoria Falls Power Company to supply power to the Witwatersrand mines from the Victoria Falls. The idea was abandoned in 1909 and the Victoria Falls and Transvaal Power Company was created (with the Rand Mines Power Supply Co. as a subsidiary) to exploit coal discovered in the Transvaal. The VFP built and operated four power stations in the Transvaal, and together with Escom, built and operated three large power stations. The assets of the VFP were taken over by Escom in 1948.
- ZAR Zuid-Afrikaansche Republiek  
The ZAR was established in the area beyond (or north) of the Vaal River in 1852, hence the popular name of Transvaal.

## GLOSSARY/BIBLIOGRAPHY

### 1. ADAMS VORTEX TYPE BLAST PIPE

Adams (1797 to 1872) was a successful locomotive engineer and manufacturer, inventor of the steam rail car and designer of a successful type of rail fishplate. He is best remembered for his radial axle box, first used in 1863. He designed the vortex type blast pipe, which has an annular passage whereby the exhaust gasses are drawn through the centre part of the blast pipe itself.

### 2. BRAKPAN POWER STATION

Brakpan Power Station generated the very first electricity for the then fledgling Witwatersrand when the Rand Central Electric Works erected a 749 kW power station in 1895. This power station was opened by president Kruger in 1896. The VFP assumed control of the station in 1909 and enlarged it considerably. The original power station was converted to a compressor house. Brakpan Power Station was closed in 1963, and it is most unfortunate that the historic original portion was subsequently demolished.

### 3. CAPE GAUGE

The first two railway lines built in South Africa, the Point-Durban and the Cape Town-Wellington lines, were standard European gauge, i.e. the width between the rails were 1435 mm (4' 8½"). When it became necessary to extend the line from Wellington into the interior of the then Cape Colony, the Colonial Government had found that the cost of a standard-gauge line would be prohibitive in view of the mountainous area that had to be traversed. R.T. Hall, who had built a 760 mm (2' 6")-gauge line from O'Kiep to Port Nolloth for the Cape Copper Company in 1869, claimed that the 760 mm gauge line was undoubtedly the equal of the 1435 mm line. The Cape Colonial Government was influenced by this statement and decided justifiably as it proved, to adopt a gauge of 1067 mm (3' 6"), a compromise between the 1435 mm and 760 mm gauges. The 1067 mm gauge became known as the Cape gauge, and was gradually adopted as the standard for the whole of Southern Africa, as well as a large part of Africa.

### 4. 'LA MOYE'

This locomotive, which was bought by the VFP from the old Jersey Island Railway in 1928, is the only remaining locomotive from the numerous railways which served the Jersey Island.

### 5. METROPOLITAN & SUBURBAN RAILWAY CO

In 1887 the Green and Sea Point Co built a railway line from Cape Town to Sea Point - a distance of just over 3 miles. The company went insolvent before the line came into operation.

The Cape Town and Suburban Railway Co then bought the line, but this company also went bankrupt before the line could be put in operation.

The Metropolitan & Suburban Railway Co then obtained the track, extended the line and opened it to traffic in 1892.

Amongst its motive power were two interesting outside-framed locomotives named 'Sea Point' and 'Green Point'. These locomotives were eventually sold to the Mashonaland Railway where they were renamed 'Inyan-ga' and 'Paulington', the latter being after H. Pauling, the famous railway constructor and operator in Africa.

The assets of the company were taken over by the CGR in 1905. The line was operated until 1929 when it was finally closed down.

### 6. PRETORIA-PIETERSBURG RAILWAY

In 1895 the Transvaal Government granted a concession for the construction and operation of a railway line from Pretoria to Pietersburg.

The Concessionary sold his rights to the Pretoria-Pietersburg Railway Co who started construction of this line in 1897 and completed it in May 1899. With the outbreak of the Anglo-Boer War in October 1899 the Transvaal Government took possession of the railway and had it operated by the NZASM. With the collapse of the formal Government of the ZAR the railway was taken over by the IMR.

#### 7. RAMSBOTTOM SAFETY VALVE

John Ramsbottom (1814 to 1897) was a locomotive engineer and locomotive superintendent of the Manchester and Birmingham Railway for a time. In 1856 he designed a safety valve widely used until the advent of the pop-type safety valve. He also invented the displacement lubricator.

#### 8. REEF

The Witwatersrand is also known as the Reef.

#### 9. RIGGENBACH RACK RAILWAY

Nikolaus Rigggenbach (1817 to 1899), a locomotive engineer of the Swiss Central Railway, became interested in the development of the rack railway system. He patented his ladder type rack system, subsequently used extensively in Europe, in 1863.

#### 10. WALSCHAERT VALVE GEAR

The Belgian, Egide Walschaert, designed a valve gear in 1844 which bore a considerable resemblance to the one designed by the German, Professor Heusinger von Waldegg, in 1846. Neither of these valve gears were in general use when 'Roos' was placed in service, the Stephenson valve gear (better known as the Stephenson Link) being by far the most common gear then used. The first recorded locomotive in South Africa which was fitted with Walschaert valve gear was a solitary CGR double 'Fairley' engine built in 1875 of 0-6-0 + 0-6-0 wheel formation. The Walschaert valve gear only came into general use after the SAR was established.

The earlier Walschaert valve gear, with which 'Roos' is equipped, has a straight expansion link whilst its lifting arm is curved. In later Walschaert gear the expansion link is curved to the radius of the valve spindle connecting rod, the lifting arm of the connecting rod being straight in this case.



## 11. WITWATERSRAND

George Walker stumbled onto the main gold reef on the farm Langlaagte in 1886. The greatest gold rush of all times descended on the Ridge of the white waters (known by its Dutch description, namely "die Rand van die wit waters"). Johannesburg, laid out on this ridge, became the centre of the gold mining industry. The area from Randfontein, through Krugersdorp, Roodepoort, Johannesburg, Germiston, Boksburg, Benoni and Brakpan to Springs eventually became known as the Witwatersrand Goldfields.

## 12. ZASM LOCOMOTIVES

The name Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij did not fall easily on the tongue. Consequently, it became known as the ZASM and its locomotives were always referred to as ZASM locomotives.

## 13. ZASM LOCOMOTIVE NO. 1

Locomotive No. 1 in the 24-tonner class has been declared a national monument and is mounted in the concourse of the old Johannesburg Station which now forms part of the SAR Museum. This locomotive was placed in service on July 18, 1889 on the Rand Tram line and remained in service until December 1903. She was the first locomotive to see service in the Transvaal. As there were no rail links to the Transvaal at the time, the locomotive parts were transported by oxwagon from the nearest rail head, probably Ladysmith, to Elandsfontein (later Germiston) and assembled.

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History of 'Roos': This story is dedicated to D.H.W. 'Dave' Parsons. Dave entered the service of the VFP as an apprentice fitter in 1934. During 1939 and 1940 he worked, respectively, for a private firm and for the SAR at the Germiston locomotive depot. In

1941 he returned to the VFP as locomotive fitter where he worked until his retirement in 1976. It was his great love for steam locomotives which prompted him to record the history of 'Roos' so meticulously. Not only did he maintain her with affection and precision, but he also went to great lengths to obtain and record her many wanderings. Dave is one of the greatest experts on steam locomotives in South Africa and he is always willing to share his store of knowledge with laymen like myself. All the technical details of 'Roos' were supplied by him. Dave has through the years instilled many others with his effervescent enthusiasm for steam. He possesses an excellent steam locomotive photo collection, mostly photographed with a Brownie box camera.

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