

# SASMEE Locomotive Efficiency Trials, 27/6/2009

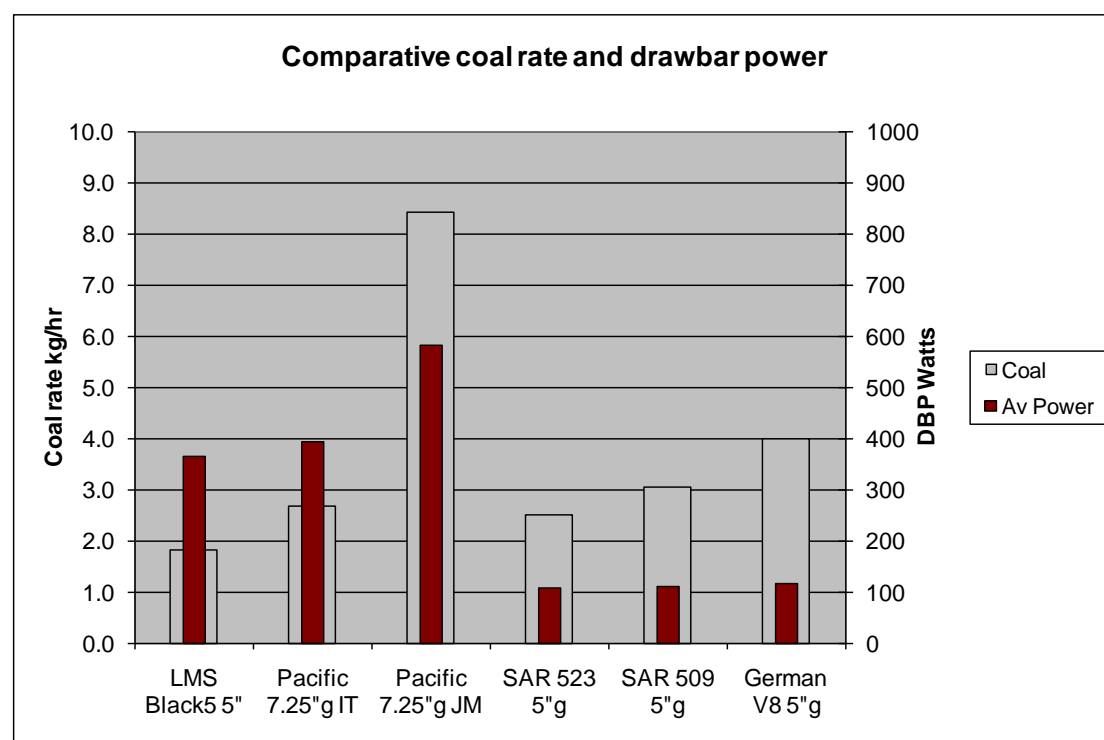
## Detailed results

Allan Wallace [www.avocetconsulting.com.au/modeleng](http://www.avocetconsulting.com.au/modeleng)

### Summary

Owner/Driver	Loco.	Wheels	Time Min	Distance metres	Av Speed kph	Coal rate kg/hr	Av DB Power Watts	Coal used grams	Efficien cy
Allan Wallace	LMS Black5 5"	4-6-0	24.9	3921	9.4	1.8	364	745	2.43%
Ian Thomas	Pacific 7.25" g IT	4-6-2	32.2	2624	4.9	2.7	393	1429	1.77%
John Monte	Pacific 7.25" g JM	4-6-2	19	3280	10.4	8.4	583	2662	0.83%
John Lyas	SAR 523 5" g	4-8-4	30	4924	9.8	2.5	108	1250	0.52%
John Mere	SAR 509 5" g	4-8-4	30	4268	8.5	3.0	111	1516	0.50%
Graeme Driscoll	German V8 5" g	2-2-2-2-2-2	30.4	4667	9.2	4.0	116	2012	0.35%

Note that Ian Thomas' run was stopped several times (derailments, boiler feed) so the averaged speed and power results over 32.2 minutes do not represent running conditions. See the detailed results below, which show that excluding the time stopped raises the average speed and power to about 10 kph and 1000 W while running. The efficiency result is unchanged.



27/06/2009 13:18:36

Filename: 090627GraemeDTrial V8

Description: 090627GraemeDriscoll Trial German V8

Trip summary values...

Trip Time 30.4 min

Trip Distance 4667 m

Average Speed 9.2 kph

Average Power 116 W

Trip Energy 212 kJ

Coal Used 2021 grams

Calorific Value 30 kJ/kg

Coal Energy 60630 kJ

DB Efficiency 0.35 %

Peak values...

Min, Max Force 0 97 N

Min, Max Speed 0.0 16.8 kph

Min, Max Power 0 356 W

Calibration values...

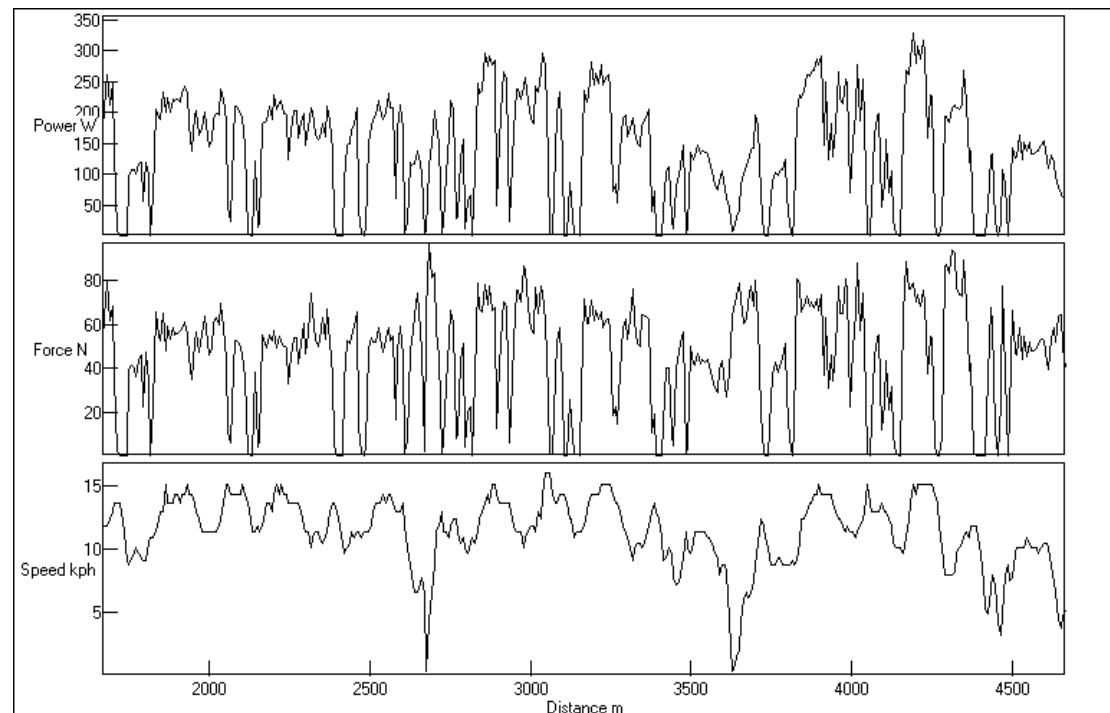
External Load Cell

Force offset, gain 143 0.5719

Speed offset, gain 500 0.00629

Volts offset, gain 0 0.0134

Wheel Diameter 0.0750 m



It was found at the end of the run that the grate was almost 50% blocked by clinker. This explains the need for two brief stops to raise steam.

27/06/2009 15:40:25

Filename: 090627IanThomasTrial

Description: 090627IanThomas 7.25" g Pacific

Trip summary values...

Trip Time 32.2 min

Trip Distance 2624 m

Average Speed 4.9 kph

Average Power 393 W

Trip Energy 758 kJ

Coal Used 1429 grams

Calorific Value 30 kJ/kg

Coal Energy 42870 kJ

DB Efficiency 1.77 %

Peak values...

Min, Max Force 0 524 N

Min, Max Speed 0.0 15.9 kph

Min, Max Power 0 1317 W

Calibration values...

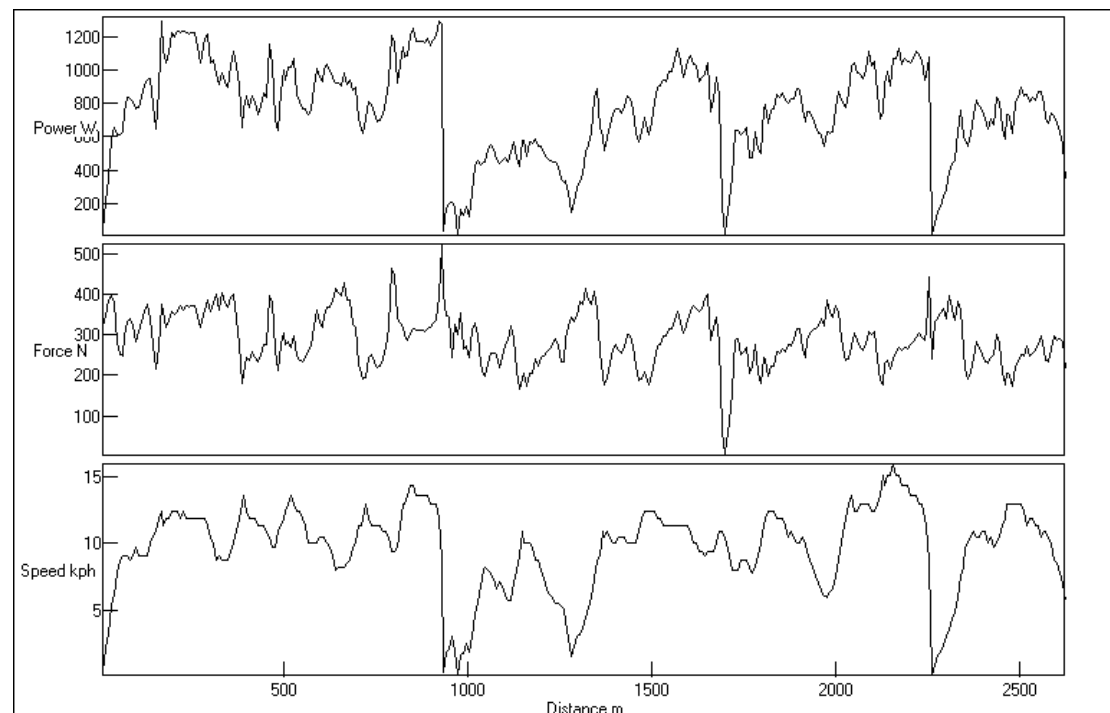
External Load Cell

Force offset, gain 146 0.5719

Speed offset, gain 500 0.00608

Volts offset, gain 0 0.0134

Wheel Diameter 0.0750 m



Used train braking. Several stops for derailments and boiler feed. Mean speed and power when running are higher than the average figures over the elapsed time, which includes time stopped. If the stopped time were deducted from the trip time the average speed and power would have been approximately 10 kph and 1000 Watts.

27/06/2009 16:10:25

Filename: 090627JohnMonteTrial

Description: 090627JohnMonte 7.25"g Pacific

Trip summary values...

Trip Time 19.0 min

Trip Distance 3280 m

Average Speed 10.3 kph

Average Power 583 W

Trip Energy 666 kJ

Coal Used 2662 grams

Calorific Value 30 kJ/kg

Coal Energy 79860 kJ

DB Efficiency 0.83 %

Peak values...

Min, Max Force 0 320 N

Min, Max Speed 0.0 15.9 kph

Min, Max Power 0 1081 W

Calibration values...

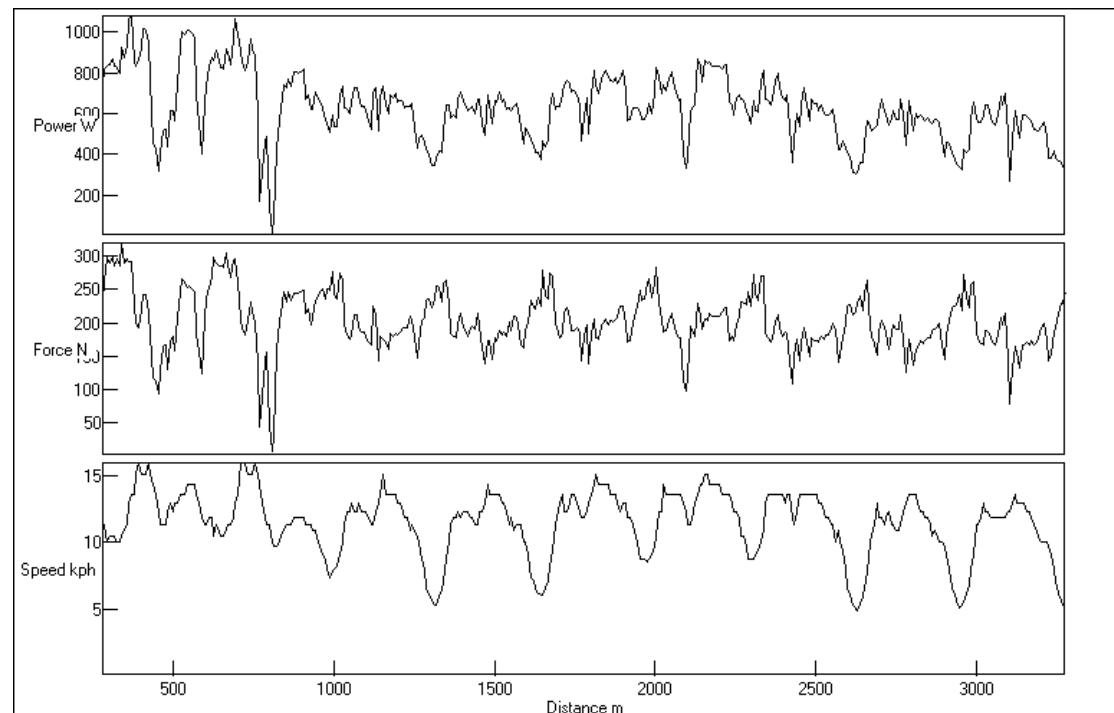
External Load Cell

Force offset, gain 146 0.5719

Speed offset, gain 500 0.00618

Volts offset, gain 0 0.0134

Wheel Diameter 0.0750 m



John Monte drove the same engine as Ian Thomas but at a lower power output (lighter train, no additional braking). It appears that a timekeeping mistake resulted in this trip finishing early.

Filename: 090627AllanWTrial

Description: 090627AllanWallace 5"g BlackFive 4-6-0

Trip summary values...

Trip Time 24.9 min

Trip Distance 3921 m

Average Speed 9.5 kph

Average Power 364 W

Trip Energy 544 kJ

Coal Used 745 grams

Calorific Value 30 kJ/kg

Coal Energy 22350 kJ

DB Efficiency 2.43 %

Peak values...

Min, Max Force 0 288 N

Min, Max Speed 0.0 14.7 kph

Min, Max Power 0 639 W

Calibration values...

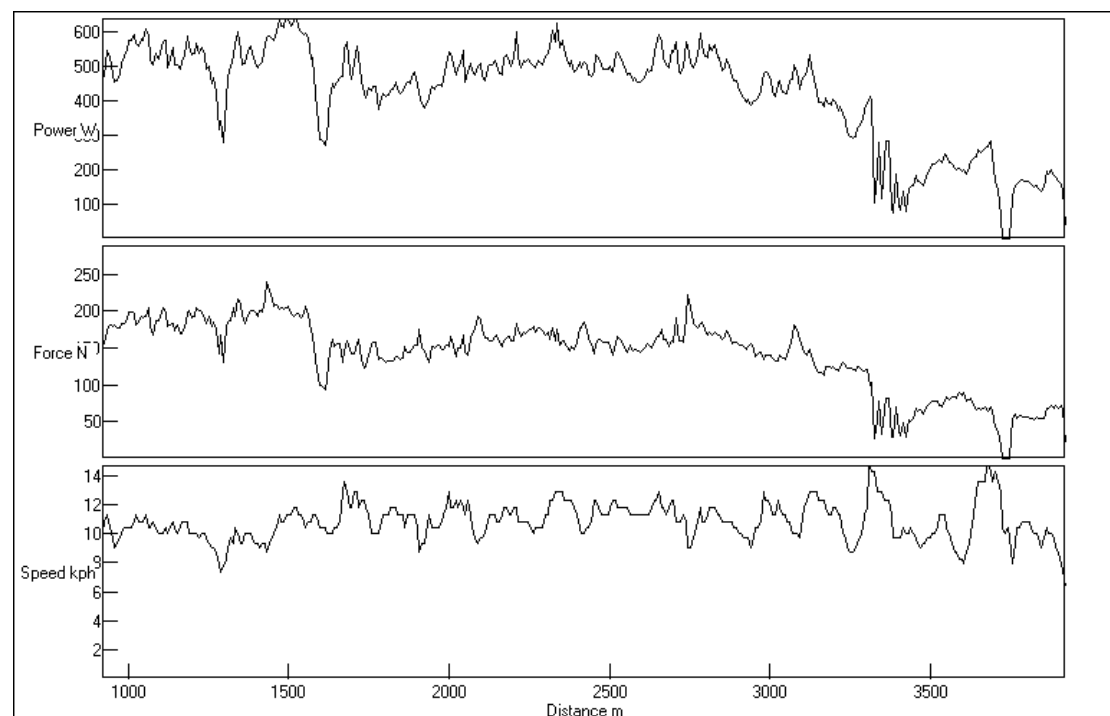
External Load Cell

Force offset, gain 168 0.5719

Speed offset, gain 500 0.00619

Volts offset, gain 0 0.0134

Wheel Diameter 0.0750 m



Used train braking – brakes faded towards end of trial and the run was stopped before 30 minutes.

27/06/2009 14:28:42

Filename: 090627JohnMereTrial

Description: 090627JohnMere 5"g 509

Trip summary values...

Trip Time 33.7 min

Trip Distance 4268 m

Average Speed 7.6 kph

Average Power 111 W

Trip Energy 225 kJ

Coal Used 1516 grams

Calorific Value 30 kJ/kg

Coal Energy 45480 kJ

DB Efficiency 0.50 %

Peak values...

Min, Max Force 0 137 N

Min, Max Speed 0.0 13.3 kph

Min, Max Power 0 351 W

Calibration values...

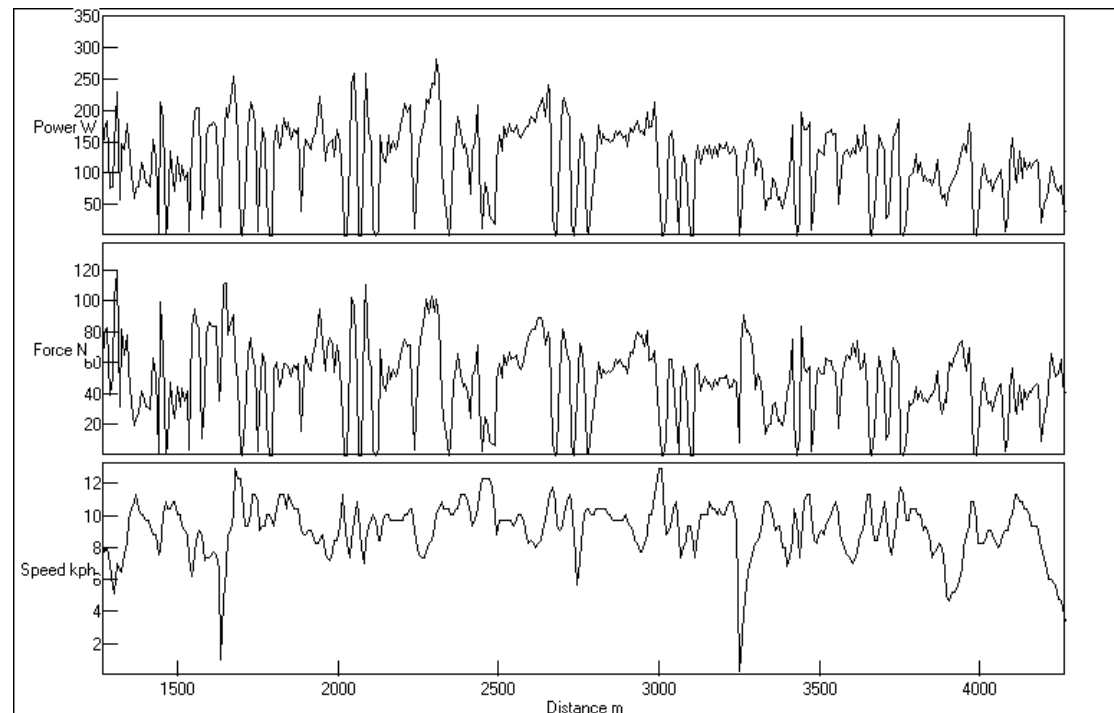
External Load Cell

Force offset, gain 146 0.5719

Speed offset, gain 500 0.00608

Volts offset, gain 0 0.0134

Wheel Diameter 0.0750 m



27/06/2009 17:42:01

Filename: 090627JohnLyasTrial

Description: 090627JohnLyas 5"g 523

Trip summary values...

Trip Time 30.0 min

Trip Distance 4924 m

Average Speed 9.9 kph

Average Power 108 W

Trip Energy 193 kJ

Coal Used 1250 grams

Calorific Value 30 kJ/kg

Coal Energy 37500 kJ

DB Efficiency 0.52 %

Peak values...

Min, Max Force 0 80 N

Min, Max Speed 0.0 15.9 kph

Min, Max Power 0 296 W

Calibration values...

External Load Cell

Force offset, gain 168 0.5719

Speed offset, gain 500 0.00626

Volts offset, gain 0 0.0134

Wheel Diameter 0.0750 m

