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CODE 2
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NEBRASKA TRACTOR TEST LABORATORY
DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING
INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
UNIVERSITY OF NEBRASKA - EAST CAMPUS
LINCOLN, NEBRASKA 68583-0832, USA

REPORT ON TEST IN ACCORDANCE WITH OECD STANDARD CODE 2 FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS



CATERPILLAR CHALLENGER 75E
Rubber Track Laying - 30 km/h Version

MANUFACTURED BY:	**Caterpillar Agricultural Products, Inc.** **12101 Barber Greene Road** **De Kalb, IL 60115 USA**
NEBRASKA TEST NO.	**1749**
TEST DATES:	**May 5 - June 2, 1998**

This test report provides the results of the tests conducted in accordance with the OECD Standard Test Code for the Official Testing of Agricultural Tractor Performance - C(87)53 Final, Code 2.

This report has been approved by the OECD Coordinating Centre in Paris on 2 October 1998 for the Caterpillar Challenger 75E, Rubber Track Laying - 30 km/h version, 10-speed transmission with OECD Number 2/1786.

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- Tractor manufacturer's name and address:	Caterpillar Agricultural Products Inc. 12101 Barber Greene Rd. De Kalb, IL 60115 USA
- Location of tractor assembly:	Same
- Submitted for test by:	The manufacturer
- Selected for test by:	The manufacturer in agreement with the test station.
- Place of running-in:	Caterpillar Proving Grounds, Peoria, Illinois USA
- Duration of running-in:	89 hr
- Location of test:	Nebraska Tractor Test Laboratory University of Nebraska Lincoln, Nebraska 68583-0832 USA

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

- Make/Model/Type:	Caterpillar Challenger 75E Unit construction, Rubber Track Laying - 30 km/h
- Number of driving wheels:	Two rubber tracks
- Serial No:	6HS201
- 1st Serial No:	This model is the first of the 6HS series

1.2 Engine

- Make/Model/Type:	Caterpillar 3176C Diesel, direct injection, turbocharged and air to air aftercooled
- Serial No:	7ZR00546

1.2.1 *Cylinders*

- Number/disposition:	6, in-line, vertical
- Bore/stroke:	125 mm x 140 mm
- Capacity:	10308 cm^3
- Compression ratio:	16.0 to 1
- Arrangement of valves:	Overhead
- Cylinder liners (wet or dry):	Wet, replaceable

1.2.2 *Supercharging*

- Make/Model/Type:	Schwitzer/1364835/radial flow/exhaust gas driven
- Pressure:	138 kPa +/- 20.8 kPa

1.2.3 *Fuel system*

- Fuel feed system:	Engine driven transfer pump
- Make/Model/Type of fuel filter(s):	Caterpillar/133-5673-primary filter - paper element 1R0762-secondary filter - paper element
- Capacity of fuel tank:	1060 l
- Make/Model/Type of injection pump:	Caterpillar electronically controlled unit injector system
- Serial No:	None - pump is integral part of engine
- Manufacturer's production setting of injection pump	
- Flow rate:	53.7 +/- 2.69 kg/hr
- Fuel weight:	0.846 g/cm^3
- Timing:	Variable, electronically controlled
- Make/Model/Type of injectors:	Caterpillar part # 116-5426
- Injection pressure:	135 Mpa

1.2.4 *Governor*

- Make/Model/Type:	Caterpillar/ADEM II Engine Management
- Governed range of engine speed:	880 to 2300 rev/min
- Rated engine speed:	2100 rev/min

1.2.5 *Air cleaner*

- Pre-cleaner	
. Make/Model/Type:	Donaldson/Cat # 4S8473/Dust ejector
. Location of air intake:	Above right front fender
- Main cleaner	
. Make/Model/Type:	Donaldson/ERB120361 Cat # 6I0273 and 6I0274/Dry paper dual element
. Location of air intake:	Above right front fender
- Maintenance indicator:	Restriction gauge air intake near air cleaner

1.2.6 *Lubrication system*

- Type of feed pump:	Gear pump
- Type of filer(s):	Spin-on, Caterpillar 1R0716
- Number of filters:	One

1.2.7 *Cooling system*

- Type of coolant:	Liquid
- Type of pump:	Centrifugal, gear driven
- Specification of fan or blower	
. Number of fan blades:	8
. Fan diameter:	914 mm
- Coolant capacity:	57 l
- Type of temperature control:	Thermostat
- Super pressure system:	48 kPa

1.2.8 *Starting system*

- Make/Model/Type:	Delco/42MT/solenoid-engaged
- Starter motor power rating:	5.6 kW
- Cold starting aid:	Ether spray in intake manifold
- Safety device:	Transmission neutral switch

1.2.9 *Electrical system*

- Voltage:	12 V
- Generator	
. Make/Model/type:	Delco Remy/Cat # 1259597
. Power:	145 amps at 2100 engine revs/min
- Battery of accumulators	
. Number:	2
. Rating :	950 Cold Cranking Amps

1.2.10 *Exhaust system*

- Make/Model/Type:	Donaldson/305 mm diameter (Cat # 1365108)
- Location:	Muffler and exhaust pipe vertical on right front fender

1.3 Transmission

1.3.1 *Clutch (travel and power take-off/travel alone)*

- Make/Model/Type:	Caterpillar, wet disc, integral with transmission, oil cooled
- Number of plates:	6
- Diameter of plates:	190 mm
- Method of operation:	Hydraulic, pedal actuated

1.3.2 *Gear box*

- Make/Model/Type:	Caterpillar, direct drive, full powershift transmission
- Description:	Four rotating countershaft clutches and four stationary planetary clutches

	Forward	Reverse
Number of gears	10	2
Number of ranges/groups	All gears accessible with use of single hand lever.	All gears accessible with use of single hand lever.
Total of arrangements	1	1

- Available options: None

1.3.3 *Rear axle and final drives*

- Make/Model/Type: Caterpillar/outboard single reduction pinion and bull gear
- Differential lock
  - Type: N/A
  - Method of engagement:
  - Method of disengagement:

1.3.4 *Front axle and final drives*

- Make/Model/Type: N/A
- Differential lock N/A
  - Type:
  - Method of engagement:
  - Method of disengagement:

1.3.5 *Total ratios and traveling speeds*

Gear No.	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of 2100 min^{-1} (rev/min) km/h
1		93.66	4.5
2		65.34	6.4
3		53.05	7.9
4		46.39	9
5		40.45	10.4
6		37.01	11.3
7		32.37	13
8		28.22	14.9
9		20.81	20.2
10		14.52	28.9
1R		128.23	3.3
2R		55.37	7.6
(*) Calculated with a rear track dynamic radius of 526 mm.			

1.4 Power take-off

1.4.1 *Main power take-off*

- Type: Independent
- Method of engagement: Multiple wet clutch hydraulically actuated by lever, independent of main drive clutch
- Number of shafts: One
- Method of changing power take-off shaft ends and speeds: None

1.4.1.1 Power take-off proportional to engine speed

Power take-off at 1000 min^{-1} (rev/min)

- Location:	
- Diameter of power take-off shaft end:	45 mm
- Number of splines:	20, in conformity with ISO 500:1991
- Height above ground:	746 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	382 mm
- PTO speed at rated engine speed (.... rev/min):	1024 rev/min
- Engine speed at standard power take-off speed:	2050 rev/min
- Ratio of rotation speeds (engine speed/p.t.o. speed):	2.05 to 1
- Power restriction:	Dependent on gear selection
- Maximum torque transmissible:	1898Nm
- Direction of rotation (viewed from behind tractor):	Clockwise

1.4.1.2 Power take-off proportional to ground speed — N/A

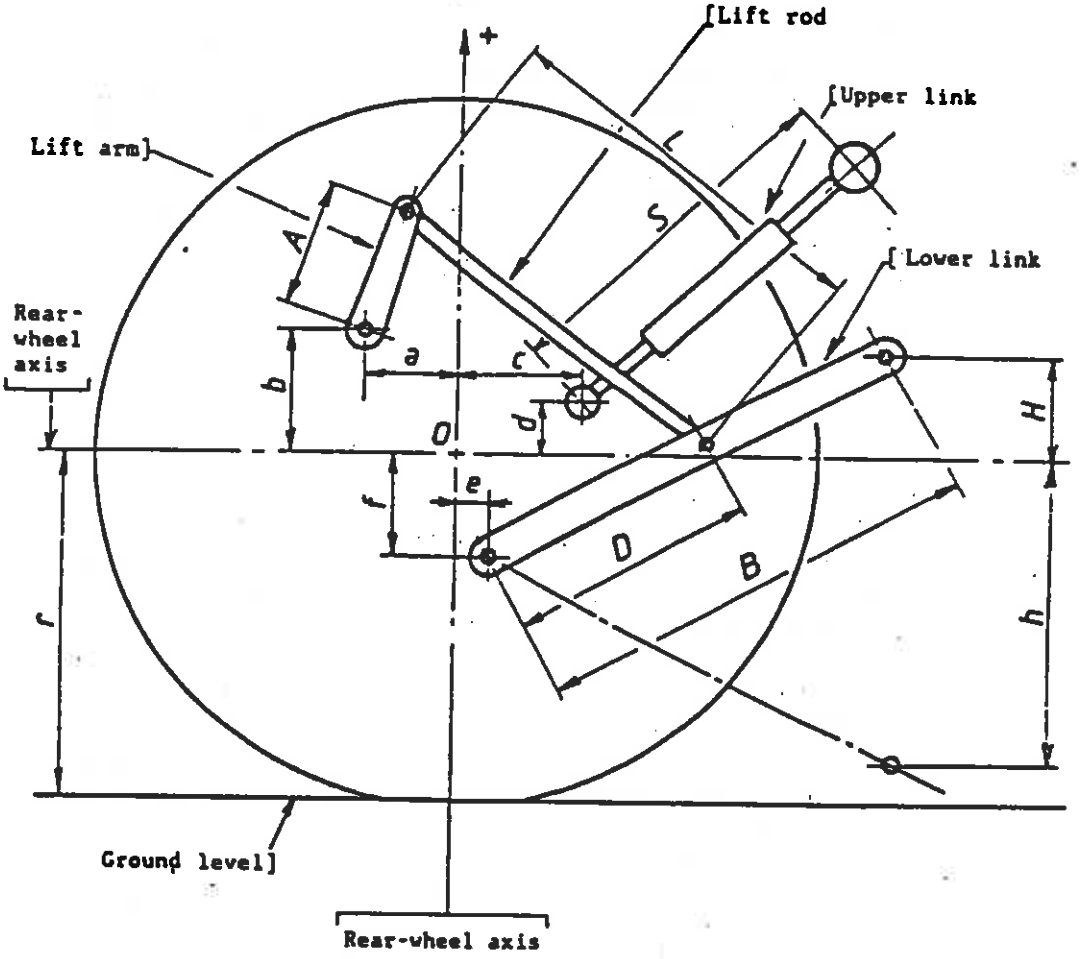
1.4.2 *Optional power take-off* — N/A

1.5 Hydraulic power lift

- Make/Model/Type:	Caterpillar
- Type of hydraulic system:	Closed center; load sensing
- Type and number of cylinders:	Two external, both single acting
- Type of linkage lock for transport:	Electrohydraulic position control
-Compensator Pressure Setting:	19.981 +/- 0.35 MPa(margin pressure = 2.8 +/- 0.10 MPa)
- Opening pressure of cylinder line relief valve (if fitted):	20.7 +/- 0.3 MPa
- Lift pump type:	Vickers/PVH63/Axial piston, pressure and flow compensated
- Transmission between pump and engine:	Gear drive from transmission
- Type and number of filters:	1 spin-on cartridge and screen in return line
- Site of oil reservoir:	Behind cab, left side
- Type, number and location of tapping points:	4 pairs of ISO-5675 standard couplings at rear of tractor
- Maximum volume of oil available to external cylinders:	40 l

1.6 THREE POINT LINKAGE

- Category 3, in conformity with ISO 730/1-1990



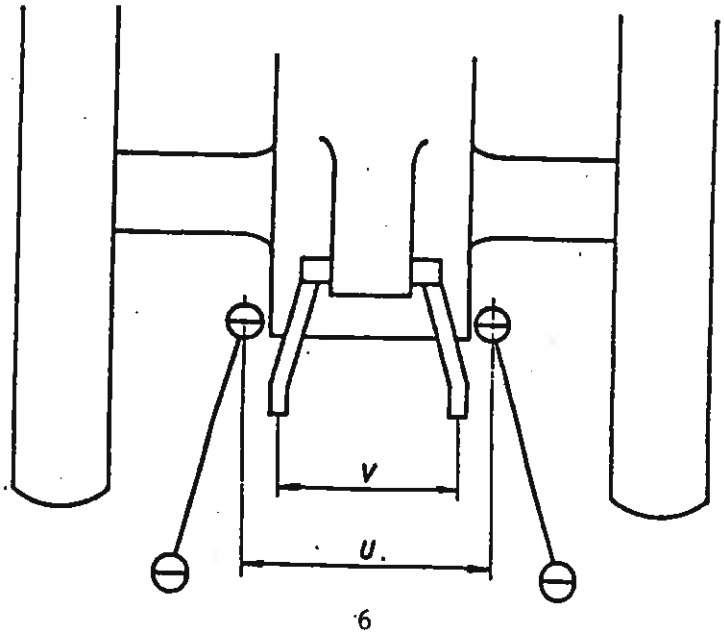


Table 1.6.1
Dimensions of linkage Geometry
when connected to the standard frame

		Dimension or range	Settings used in test
		mm	mm
Length of lift arms:	(A)	545	545
Length of lower links:	(B)	765	765
Distance of lift arm pivot point from rear-wheel axis:			
- horizontally	(a)	225	225
- vertically	(b)	415	415
Horizontal distance between the 2 lower link points:	(u)	860	860
Horizontal distance between the 2 lift arm end points:	(v)	1040	1040
Length of upper link:	(S)	640 to 740	673
Distance of upper link pivot point from rear wheel axis:			
- horizontally	(c)	370	370
- vertically	(d)	422	422
Distance of lower link pivot point from rear wheel axis:			
- horizontally	(e)	265	265
- vertically	(f)	98	98
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	535	535
Length of lift rods:	(L)	560 to 665	651
Height of lower hitch points relative to the rear-whel axis:			
- in low position	(h)	230 to 375	370
- in high position	(H)	470 to 340	346
Height above ground of lower hitch points when locked in transport position (*)		950 to 1070	952
(*) Assuming r = 606 mm.			

1.7 Swinging drawbar

- Type:	Oscillating
- Height above ground	
. Maximum:	440 mm
. Minimum:	
- Type of adjustment:	None
- Distance of hitch point from rear-wheel axis, horizontally:	882 mm
- Distance of hitch point from power take-off shaft end	
. Vertically:	306.5 mm
. Horizontally	500 mm
- Lateral adjustment (centre of clevis)	
. Right hand	431 mm
. Left hand	431 mm
- Distance of pivot point from rear-wheel axis, horizontally:	730.5 mm
- Diameter of drawbar pin hole:	50 mm
- Maximum vertical permissible load:	22.2 kN

1.8 Trailer hitch N/A

1.9 Holed drawbar N/A

1.10 Steering

- Make/Model/Type:	Caterpillar/Differential Steer
- Method of operation:	
. Pump(s):	Sauer-Sundstrand piston pump and Rexroth motor, pilot activated valves, controlled by steering wheel
. Ram(s):	N/A
- Working pressure:	41.5 mPa

1.11 Brakes

1.11.1 *Service brake*

- Make/Model/Type: Caterpillar, multiple wet disc, oil cooled, hydraulically boosted, located in steering differential
- Method of operation: Manual pedal operated
- Trailer braking take-off (hydraulic or air brake): None

1.11.2 *Parking brake*

- Type: Caliper, dry disc
- Method of operation: Manual/mechanical, lever operated

1.12 Wheels

- Number N/A
  . Front:
  . Rear:
- Wheelbase: N/A

- Track width adjustment:

	Minimum	Maximum	Adjustment
	mm	mm	method
Rear	2286	2286	None

1.13 Protective structure

- Make/Model/Type: Caterpillar/136-5500/Cab
- Manufacturer's name and address: Caterpillar Inc.
  100 N.E. Adams
  Peoria, IL 61629 USA

- Protective device
  . Cab/frame/ rollguard/ other: Cab
  . Tiltable/not tiltable: Not tiltable

- OECD approval
  . Approval Number: None. (Certified to ISO 3449: 1992, ISO 3471: 1986)
  . Date of Approval: N/A
  . Nos. of minor modification certificates, if any: N/A

1.14 Seat

1.14.1 *Driver's seat*

- Make/Model/Type:	Sears/(Cat # 136-5411)/low profile
- Seat and steering wheel reversible:	No
- Type of suspension:	Air suspension
- Type of damping:	Air spring and adjustable oil shocks - 3 positions
- Range of adjustment	
. Longitudinally:	177.8 mm
. Vertically:	76 mm (in addition to 80 mm suspension)
- Safety Belt:	Yes

1.14.2 *Optional driver's seat(s)*

- Make/Model/Type:	None

1.14.3 *Passenger seat*

- Location:	To the left of driver's seat
- Capacity (number):	1

1.15 Lighting

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headlights	1842	102 x 305	318
Rear Work Lights Front Work Lights	3385 1457	114 x 114 114 x 114	381, 597, 845 1041, 1314
Rear Reflectors Rear Lights	1784 1784	184 x 38 184 x 38	965 965
Stop Lights	1715	44 x 89	927

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Unballasted	6005	3048	3048	3400	3668

2.2 Ground clearance (unballasted tractor): 378.3 mm

- Clearance-limiting part: Drawbar anchor point

2.3 Tractor mass

Mass (with cab)

	Unballasted	
	Without driver	With driver
	kg	kg
Front	N/A	N/A
Rear	N/A	N/A
Total	15789	15864

2.4 Track specifications

Track materials	Rubber covered steel cables
Track width and base	762 mm, 2721mm
Dynamic radius (rolling radius)	525.8 mm
Track support system	Four bogie axles with pneumatic suspension
Treadbars: **Total per track** Number per meter Bar length at top Bar width at top Bar height	 72 8.2 360 mm 40 mm 63 mm
Track length	8529 mm
Track ground contact length	2721 mm

2.5 Tyres and track width specifications

	Front	Rear
Tyres:	N/A	N/A
- dimensions		
- ply rating		
- type		
- maximum load (tyre manufacturer's)		
- maximum load (tractor manufacturer's)		
- inflation pressure (tyre manufacturer's)		
- dynamic radius index		
Chosen track width		

2.6 Fuel

- Type: Grade 2-D, in conformity with national standard.

- Density at 15°C: 0.846 g/cm^3

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity	Oil change	Filter change
	L	H	H
Engine	26	250	250
Gear box	57	1000	500
Front axle	N/A	N/A	N/A
Rear axle	N/A	N/A	N/A
Final drive (front)	N/A	N/A	N/A
Final drive (rear)	216	1000	None
Hydraulic system	68	1000	500
Steering, common with final drive (rear)			

2.7.2 *Specifications (SAE, API, CCMC, ACEA, Mil.L, ISO)*

	Recommended	Used during test
Engine oil . Type: . Viscosity: . Classification:	 Caterpillar fluids SAE 15W40 API-CF-4	 Same
Transmission oils . Type: . Viscosity: . Classification:	 Caterpillar fluids SAE 10W TO-4	 Same
Hydraulic fluid . Type: . Viscosity: . Classification:	 Caterpillar fluids SAE 10W HYDO	 Same
Steering oil . Type: . Viscosity: . Classification:	 Caterpillar fluids SAE 10W HYDO	 Same

2.7.3 *Grease*

- Number of lubrication points: 3

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

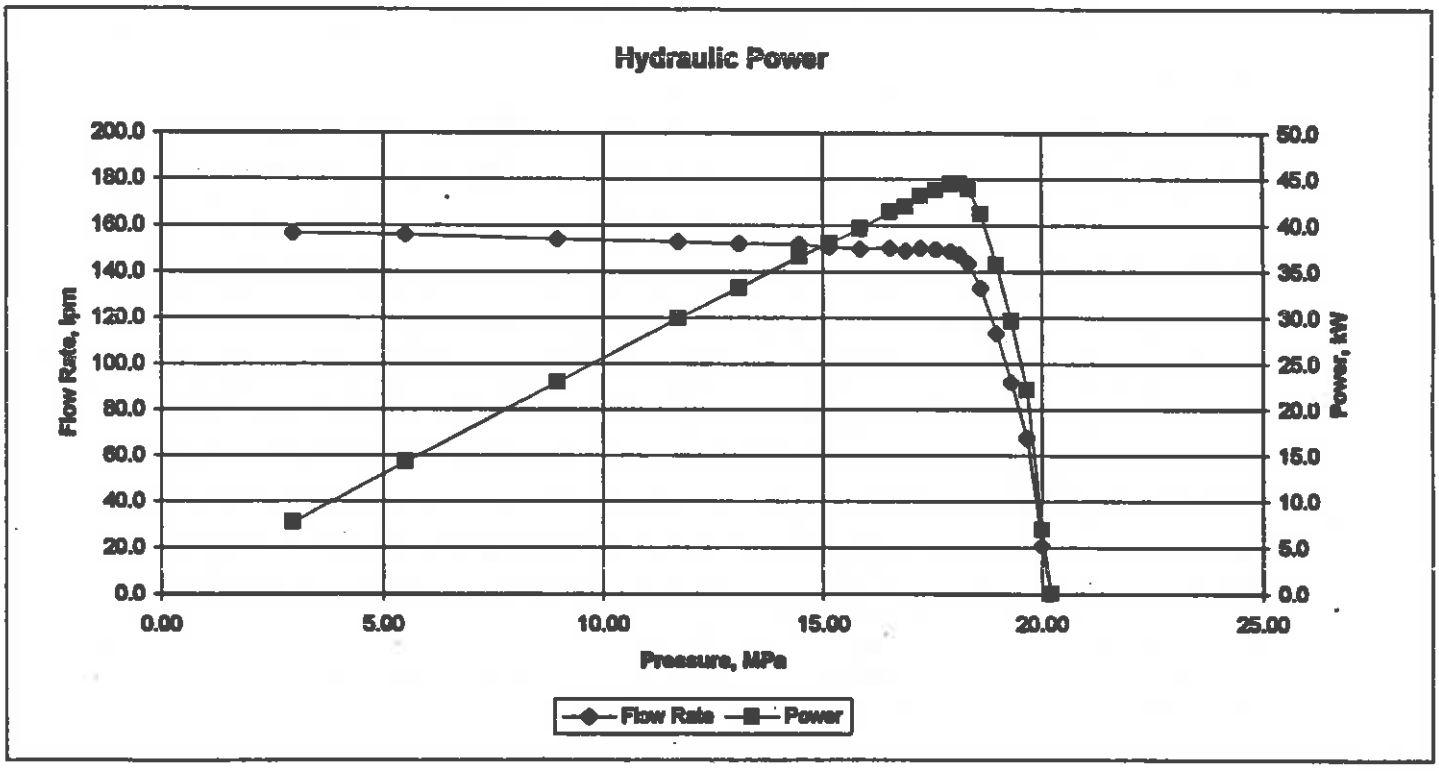
- Date and location of tests: 06-May-98 Nebraska Tractor Test Laboratory, Lincoln, NE, USA
- Type of dynamometer bench: Eaton

Power	Speed		Fuel consumption			Specific energy
			Hourly		Specific	
kW	Engine	PTO	kg/h	l/h	g/kWh	kW-h/l
3.1 MAXIMUM POWER - TWO HOUR TEST						
246.89	1900	925	56.56	66.8	229	3.69
3.1.2 POWER AT RATED ENGINE SPEED						
224.22	2100	1023	53.12	62.8	237	3.57
3.1.3 STANDARD POWER TAKE-OFF SPEED						
230.87	2054	1000	54.34	64.2	236	3.60
3.1.4 PART LOADS						
3.1.4.1 the torque corresponding to maxiimum power at rated engine speed						
224.22	2100	1023	53.12	62.8	237	3.57
3.1.4.2 85% of torque obtained in 3.1.4.1						
195.56	2157	1050	47.63	56.3	244	3.48
3.1.4.3 75% of torque defined in 3.1.4.2						
151.70	2228	1085	40.28	47.6	266	3.19
3.1.4.4 50% of torque defined in 3.1.4.2						
104.57	2302	1121	31.98	37.8	306	2.77
3.1.4.5 25% of torque defined in 3.1.4.2						
51.73	2302	1121	21.91	25.9	424	2.00
1.4.6 unloaded						
0.80	2302	1121	12.66	15.0	15914	0.05
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED						
3.1.5.1 the torque corresponding to maximum power						
230.87	2054	1000	54.34	64.2	236	3.60
3.1.5.2 85% of torque obtained in 3.1.5.1						
202.14	2106	1025	48.58	57.4	241	3.52
3.1.5.3 75% of torque defined in 3.1.5.2						
153.38	2139	1041	39.33	46.5	257	3.30
3.1.5.4 50% of torque defined in 3.1.5.2						
104.04	2182	1062	30.62	36.2	294	2.88
3.1.5.5 25% of torque defined in 3.1.5.2						
52.86	2218	1080	21.23	25.1	402	2.11
3.1.5.6 unloaded						
0.78	2253	1097	12.38	14.6	15913	0.05

- No load maximum engine speed: 2302 rev/min
- Torque (equivalent crankshaft) at rated speed:
  - At rated engine speed 1020 Nm
  - At 2-hour test 1241 Nm
- Maximum torque (equivalent crankshaft): 1430 Nm
  (engine speed: 1300 rev/min)

Mean atmospheric conditions:		
Dry bulb	25	°C
Pressure	96.8	kPa
Relative Humidity	48	%
Maximum temperatures:		
Coolant	95	°C
Engine oil	111	°C
Fuel	53	°C
Engine air intake	39	°C

Date of Test: 15-May-98	Caterpillar Challenger 75E	
Location of Test-City-State:	Tractor Test Lab, Lincoln, NE, USA	
Tapping point used for test:	Remote hydraulic outlets	
I. Sustained pressure with pump stalled:		
20.20 MPa		
2930 psig		
II. Pump delivery rate at minumum pressure and rated engine speed:		
156.7 l/min		
41.4 gpm		
III. Flow rate, pressure, power:		
90% of relief valve setting		
147.3 l/min	18.13 MPa	44.5 kW
38.9 *gpm*	*2630 psig*	*59.7 hp*
Maximum hydraulic power:		
147.3 l/min	18.13 MPa	44.5 kW
38.9 gpm	*2630 psig*	*59.7 hp*
IV. Hydraulic fluid temperature at flow meter:		
68.1 °C		
155 °F		
This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.		



2.2 POWER LIFT TEST.

Date of test: 26 February 1998

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	246/9.7	175/6.9
Vertical movement:			
without load:	[mm/in]	716/28.2	942/37.1
with load:	[mm/in]	692/27.2	904/35.6
Maximum corrected force through full range:	[kN/lb]	81.3/18268	52.7/11851
Corresponding pressure:	[MPa/psi]	18.0/2605	
Moment about rear axle:	[kN.m/lb.ft]	83.8/61808	86.5/63796
Maximum mast tilt angle:	[deg]	--	13.5

Lifting height relative to horizontal position of lower links.

	[mm]	-333	-262	-201	-100	-1
	[in]	-13.1	-10.3	-7.9	-4.0	0
Corrected lift forces						
Hitch point.	[kN]	--	134.2	126.2	115.6	109.4
	[lb]	--	30163	28374	25983	24597
at frame	[kN]	110.8	103.5	--	94.9	89.9
	[lb]	24910	23262	--	21334	20209

Lifting height relative to horizontal position of lower links.

	[mm]	99	200	300	400	429	572
	[in]	3.9	7.9	11.8	15.7	16.9	22.5
Corrected lift forces							
Hitch point	[kN]	104.8	99.2	94.3	87.2	81.3	--
	[lb]	23552	22307	21202	19594	18268	--
at frame	[kN]	82.7	75.3	--	67.0	--	52.7
	[lb]	18601	16934	--	15065	--	11851

3.3 DRAWBAR POWER TEST (Unballasted Tractor, 1900 rev/min)

OECD Drawbar Data (SI)

Date of test 12-May-98				Fuel density	0.846 kg/l									
Type of trac Concrete				Test number	1749									
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, °C					Rel hum-idity	Baro. Pres
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
I. Maximum Power (unballasted, track at 1900 rev/min)						Tire pressure: Track		kPa, rear	Track	kPa, front		Drawbar height:	470 mm	
1	159.75	148.12	3.88	2137	14%	0.310	2.73	52	87	106	14	13	89%	96.82
2	206.86	131.88	5.65	1993	7%	0.275	3.08	53	87	108	17	16	85%	96.78
3	213.14	112.65	6.81	1900	4%	0.264	3.21	55	89	109	24	20	71%	96.95
4	216.43	98.26	7.93	1900	3%	0.260	3.25	55	89	109	24	21	75%	96.99
5	220.32	86.51	9.17	1903	2%	0.256	3.30	53	89	109	18	16	81%	96.92
6	219.02	78.47	10.05	1903	2%	0.258	3.28	53	89	109	18	16	81%	96.92
7	218.05	68.14	11.52	1904	1%	0.259	3.26	53	89	109	17	16	85%	96.85
8	216.77	59.13	13.20	1898	1%	0.260	3.25	53	89	109	18	16	80%	96.88
II. Part loads (unballasted,track)														
II.1 in selected gear at maximum power at rated engine speed.														
5	193.97	68.79	10.15	2097	1%	0.272	3.11	53	88	109	23	21	78%	97.09
II.1.1 75% of pull at maximum power at rated engine speed														
5	152.41	51.68	10.62	2186	1%	0.293	2.88	55	87	107	27	22	62%	96.75
II.1.2 50% of pull at maximum power at rated engine speed														
5	105.73	34.47	11.04	2266	1%	0.342	2.48	55	86	106	27	22	65%	96.75
II.1.3 higher gear at reduced engine speed, same pull and travel speed as II.1.1														
6	152.48	51.52	10.65	2007	1%	0.282	3.00	55	87	107	27	22	62%	96.75
II.1.4 higher gear at reduced engine speed, same pull and travel speed as II.1.2														
6	105.76	34.51	11.03	2072	1%	0.328	2.58	54	87	106	27	22	65%	96.75
II.1.5 higher gear at reduced engine speed, same pull and travel speed as II.1.3														
7	152.50	51.75	10.61	1748	1%	0.267	3.17	55	88	107	27	22	65%	96.75
II.1.6 higher gear at reduced engine speed, same pull and travel speed as II.1.4														
7	105.63	34.47	11.03	1811	1%	0.298	2.84	53	87	105	27	22	65%	96.75
II.2 in selected gear nearest to 7.5 km/h at rated engine speed.														
3	196.40	92.20	7.67	2095	2%	0.270	3.14	54	88	109	24	21	71%	96.95
II.2.1 75% of pull at maximum power at rated engine speed														
3	155.55	69.43	8.06	2187	2%	0.286	2.96	54	87	107	25	21	68%	96.92
II.2.2 50% of pull at maximum power at rated engine speed														
3	108.07	46.29	8.41	2268	1%	0.336	2.52	55	86	106	26	21	61%	96.78
II.2.3 higher gear at reduced engine speed, same pull and travel speed as II.2.1														
4	155.12	69.42	8.04	1908	1%	0.266	3.18	53	87	106	26	21	61%	96.85
II.2.4 higher gear at reduced engine speed, same pull and travel speed as II.2.2														
4	108.10	46.36	8.38	1976	1%	0.302	2.80	54	87	105	27	21	62%	96.75
II.2.5 higher gear at reduced engine speed, same pull and travel speed as II.2.3														
5	155.42	69.19	8.09	1672	1%	0.259	3.27	55	88	107	26	21	61%	96.82
II.2.6 higher gear at reduced engine speed, same pull and travel speed as II.2.4														
5	107.93	46.40	8.37	1723	1%	0.283	2.99	53	87	105	27	21	62%	96.75

3.3.1 DRAWBAR POWER TEST (Unballasted tractor, 1900 rev/min)

OECD Drawbar Data (US)

Date of test 12-May-98				Fuel density	7.063 lb/gal									
Type of trac Concrete				Test number	1749									
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, °F					Rel hum-	Baro. Pres
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet	idity	in Hg
I. Maximum Power (unballasted, track at1900 rev/min)						Tire pressure: Track		psig, rear	Track	psig, front		Drawbar height:	18.5 in	
1	214.23	33299	2.41	2137	14%	0.510	13.86	125	188	224	57	55	89%	28.59
2	277.41	29648	3.51	1993	7%	0.451	15.65	128	189	226	63	60	85%	28.58
3	285.82	25325	4.23	1900	4%	0.434	16.28	131	192	228	75	68	71%	28.63
4	290.24	22089	4.93	1900	3%	0.428	16.52	131	192	228	75	69	75%	28.64
5	295.45	19448	5.70	1903	2%	0.421	16.76	128	192	229	65	61	81%	28.62
6	293.71	17641	6.24	1903	2%	0.424	16.65	128	193	229	65	61	81%	28.62
7	292.41	15320	7.16	1904	1%	0.427	16.56	127	192	229	63	60	85%	28.60
8	290.69	13292	8.20	1898	1%	0.428	16.52	127	192	228	64	60	80%	28.61
II. Part loads (unballasted,track)														
II.1 in selected gear at maximum power at rated engine speed.														
5	260.12	15466	6.31	2097	1%	0.447	15.81	128	191	229	74	69	78%	28.67
II.1.1 75% of pull at maximum power at rated engine speed														
5	204.39	11619	6.60	2186	1%	0.482	14.64	131	189	225	81	71	62%	28.57
II.1.2 50% of pull at maximum power at rated engine speed														
5	141.79	7750	6.86	2266	1%	0.562	12.57	131	188	224	81	72	65%	28.57
II.1.3higher gear at reduced engine speed, same pull and travel speed as II.1.1														
6	204.47	11582	6.62	2007	1%	0.463	15.25	131	189	225	81	71	62%	28.57
II.1.4 higher gear at reduced engine speed, same pull and travel speed as II.1.2														
6	141.82	7759	6.85	2072	1%	0.538	13.12	129	188	222	81	72	65%	28.57
II.1.5 higher gear at reduced engine speed, same pull and travel speed as II.1.3														
7	204.51	11634	6.59	1748	1%	0.439	16.08	132	190	225	81	72	65%	28.57
II.1.6 higher gear at reduced engine speed, same pull and travel speed as II.1.4														
7	141.66	7750	6.85	1811	1%	0.491	14.40	127	189	222	81	72	65%	28.57
II.2 in selected gear nearest to 4.6 mph at rated engine speed.														
3	263.38	20728	4.77	2095	2%	0.443	15.94	130	191	228	76	69	71%	28.63
II.2.1 75% of pull at maximum power at rated engine speed														
3	208.60	15610	5.01	2187	2%	0.471	15.01	129	188	225	77	69	68%	28.62
II.2.2 50% of pull at maximum power at rated engine speed														
3	144.93	10406	5.22	2268	1%	0.552	12.80	131	187	223	79	69	61%	28.58
II.2.3 higher gear at reduced engine speed, same pull and travel speed as II.2.1														
4	208.02	15606	5.00	1908	1%	0.438	16.14	128	189	223	79	69	61%	28.60
II.2.4 higher gear at reduced engine speed, same pull and travel speed as II.2.2														
4	144.97	10423	5.20	1976	1%	0.497	14.22	129	188	221	80	70	62%	28.57
II.2.5 higher gear at reduced engine speed, same pull and travel speed as II.2.3														
5	208.42	15555	5.02	1672	1%	0.425	16.61	131	190	224	79	69	61%	28.59
II.2.6 higher gear at reduced engine speed, same pull and travel speed as II.2.4														

4.1 DRAWBAR POWER TEST (Unballasted tractor, 2100 rev/min)

OECD Drawbar Data (SI)

Date of test 12-May-98				Fuel density	0.846 kg/l									
Type of trac Concrete				Test number	1749									
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, °C					Rel hum-idity	Baro. Pres
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
I. Maximum Power (unballasted, Track, at 2100 rev/min)						Tire pressure: Track		kPa, rear	Track	kPa, front		Drawbar height:	470 mm	
1	159.64	148.80	3.86	2137	15%	0.311	2.72	51	87	106	14	13	89%	96.82
2	195.74	114.70	6.14	2097	4%	0.272	3.11	52	87	107	16	15	95%	96.78
3	196.40	92.20	7.67	2095	2%	0.270	3.14	54	88	109	24	21	71%	96.95
4	195.88	79.97	8.82	2096	2%	0.270	3.13	54	88	109	24	21	75%	97.02
5	193.97	68.79	10.15	2097	1%	0.272	3.11	53	88	109	23	21	78%	97.09
6	194.26	62.88	11.12	2099	1%	0.273	3.10	53	88	109	18	16	80%	96.92
7	192.54	54.36	12.75	2101	1%	0.276	3.07	53	88	109	17	16	85%	96.85
8	190.92	47.05	14.61	2096	1%	0.280	3.02	53	88	108	18	16	80%	96.88

OECD Drawbar Data (US)

Date of test 12-May-98				Fuel density	7.063 lb/gal									
Type of trac Concrete				Test number	1749									
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, °F					Rel hum-idity	Baro. Pres
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		in Hg
I. Maximum Power (unballasted, Track, at 2100 rev/min)						Tire pressure: Track		psig, rear	Track	psig, front		Drawbar height:	18.5 in	
1	214.09	33452	2.40	2137	15%	0.511	13.81	124	188	223	57	55	89%	28.59
2	262.49	25785	3.82	2097	4%	0.448	15.78	126	189	225	60	59	95%	28.58
3	263.38	20728	4.77	2095	2%	0.443	15.94	130	191	228	76	69	71%	28.63
4	262.68	17979	5.48	2096	2%	0.444	15.91	129	191	229	75	69	75%	28.65
5	260.12	15466	6.31	2097	1%	0.447	15.81	128	191	229	74	69	78%	28.67
6	260.51	14135	6.91	2099	1%	0.448	15.76	127	190	229	64	60	80%	28.62
7	258.20	12221	7.92	2101	1%	0.454	15.57	127	190	228	63	60	85%	28.60
8	256.03	10578	9.08	2096	1%	0.460	15.34	127	190	227	64	60	80%	28.61

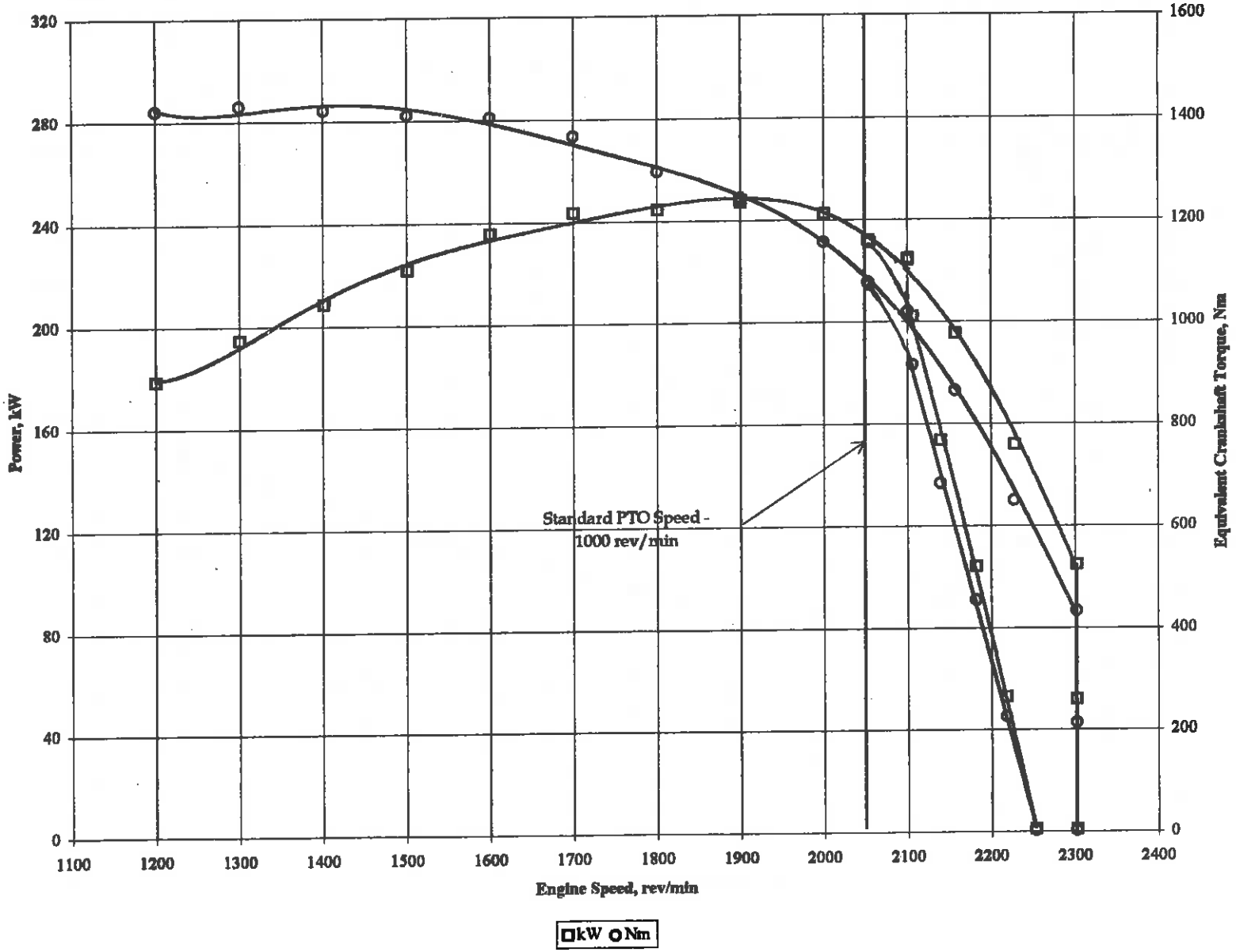
Tabulated Drawbar Performance as per Code 2, Paragraph 3.3.3

	Unballasted
Maximum drawbar pull	148.80 kN
Slip	14 %
Corresponding to 7%	131.88 kN

5. REPAIRS

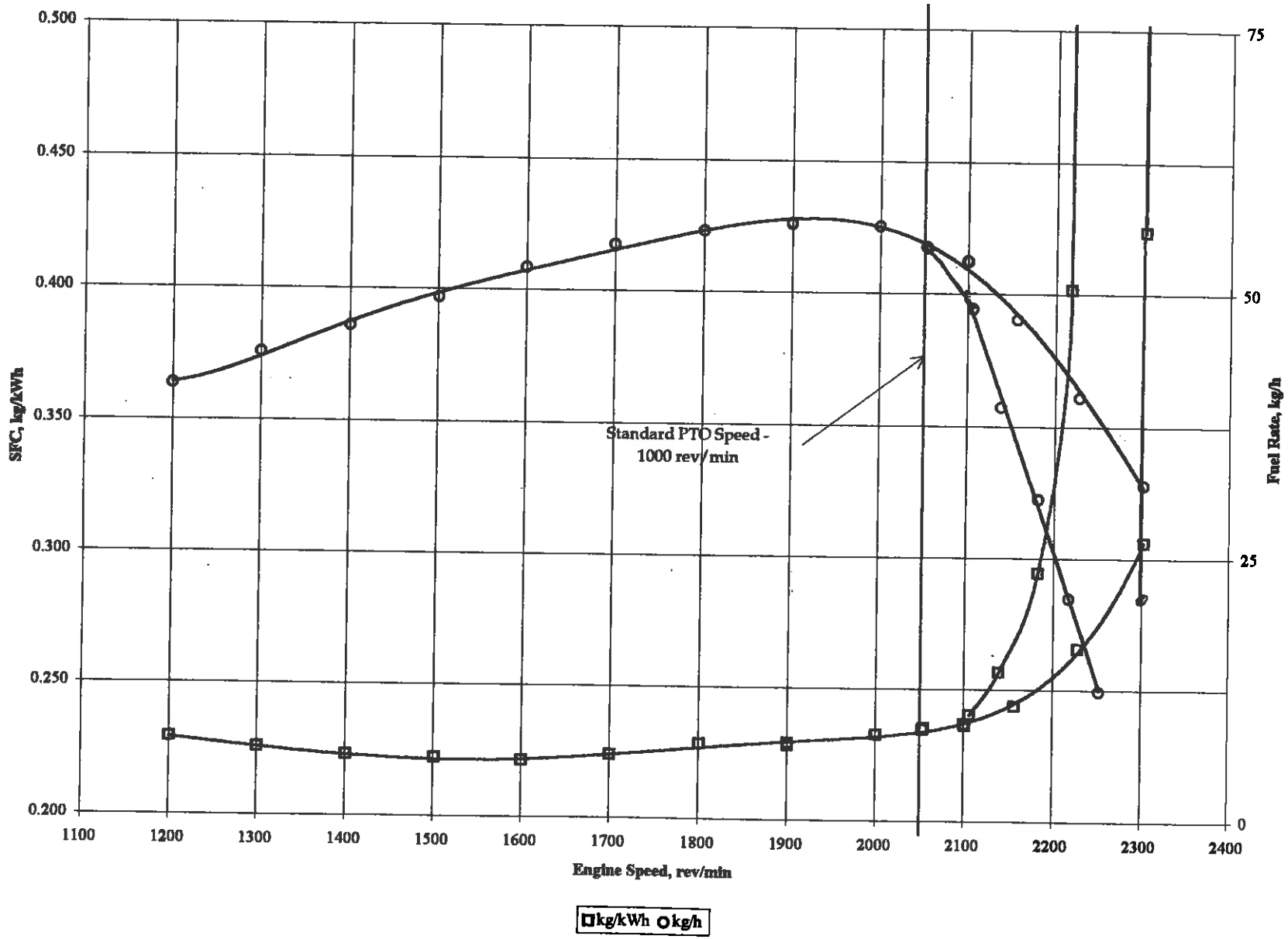
6. REMARKS

Power and Equivalent Crankshaft Torque



Caterpillar Challenger 75E

Specific Fuel Consumption and Fuel Rate



Power and Specific Fuel Consumption

