OECD APPROVAL No 1626/1
1626/2
1626/3
1626/4
Code 2
Date of Original Approval: August 26, 1996
OECD EXTENSION APPROVAL No 2/1626/1
Date of Extension: May 26, 1998

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 CODE 2 FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS



CASE IH MAGNUM 7220 - MFWD (4WD)
CASE IH 8920 - MFWD (4WD)
CASE IH 7220 PRO - MFWD (4WD)
STEYR 9200 - MFWD (4WD)
30 km/h Version - 18 Speed Transmission

MANUFACTURED BY: Case Corporation, 700 State Street, Racine, Wisconsin 53404 USA
NEBRASKA TEST NO. 1709
TEST DATES: April 30 through May 10, 1996

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 (CEMAGREF) on August 26, 1996 for the **Case IH Magnum 7220 MFWD, 30 km/h, 18-speed transmission with OECD No. 1626.**

The differences between the tested tractor and those listed below include the following:

Trade Name
Type Denomination
Front Grill Screen
Hydraulic Pump

CASE IH 8920 - MFWD (4WD) - 30 km/h version with 18 speed transmission
CASE IH 7220 PRO - MFWD (4WD) - 30 km/h version with 18 speed transmission
STEYR 9200 - MFWD (4WD) - 30 km/h version with 18 speed transmission
with number: **2/1626/1**

The hydraulic pump performance tests were performed and the results presented in this report. The included results are considered valid as an extension to the above mentioned models.

No reproduction of this report or any part of it can be made without prior approval by the Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska, USA.

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GENERAL SPECIFICATIONS

Manufacturers name/address	Case Corporation, 700 State Street Racine, Wisconsin 53404, USA
Location of tractor assembly	Case Corporation, 24th and Mead Streets, Racine, Wisconsin 53404, USA
Submitted for test by	The manufacturer
Selected for test by	The manufacturer in agreement with the test station.
Place of running in	J.I. Case Racine Tractor Engineering, Racine, Wisconsin, USA
Duration of running in	92 hours
Location of Test	Nebraska Tractor Test Lab, Lincoln, Nebraska USA

SPECIFICATIONS OF TRACTOR

Make/Model/Type	Case IH Magnum/7220-4/4WD; Unit construction
Number of driving wheels	2 or 4
Serial number	*JJA0065031*
1st Serial number	*JJA0065000*

ENGINE

Make	Consolidated Diesel Co
Model	6T-830
Type	Diesel, direct injection, turbocharged
Serial Number	*4529135*

Cylinders

Number/disposition	6, in-line, vertical
Bore x stroke	114.0 mm x 135.0 mm
Capacity	8268 cm^3
Compression Ratio	16.5:1
Arrangement of valves	Overhead
Cylinder liners	Wet, replaceable

Turbo-charging

Make/Model/Type	Holset/HX40W/exhaust gas driven with wastegate control
Pressure	128-146 kPa at rated speed and load

Fuel System

Feed system	Engine driven transfer pump
Make/Type/Model of filters	Fleetguard/FF5038, FF5052/Spin-on cartridges
Number of filters	Two
Fuel tank capacity	359 l.

Make/Model/Type Injection Pump	Robert Bosch/MW/in line
Pump Serial number	56906 00942
Production setting of pump	
Flow Rate (Rated Engine Speed and full load)	32.3+/-1.6 kg/h
Fuel density	0.841 kg/l
Make/Model/Type of injectors	Robert Bosch/J928228/17 mm
Injection timing	16^0 +\-2^0 BTDC; Lock timed at TDC +/- 2^0
Injection pressure	26.0-27.0 MPa
Fuel cooler	Air-to-liquid; ahead of main radiator

Governor

Make/Model/Type	Robert Bosch/RSV/Variable speed/Mechanical
Governed engine speed range	From 925 to 2457 rev/min
Rated engine speed	2200 rev/min
High-idle speed range	2450 +/- 80 rpm

Air Cleaner

Pre-cleaner	(Integral with air cleaner)
Make/Model/Type	Nelson/711015A/Aspirated
Air intake location	Under hood; ahead of radiator
Main Cleaner	
Make/Model/Type	Nelson/711015A/Dry, dual element pleated paper
Location of main cleaner	Under hood
Maintenance indicator	Service indicator on digital instrument cluster

Lubrication System

Type of feed pump	Full pressure, positive displacement.
Type of filters	Full flow/spin-on/dual filter
Number	One
Oil cooler	Water to oil heat exchanger

Cooling System

Type of coolant	Liquid
Type of pump	Centrifugal, belt driven
Fan specification	Viscous drive fan
Number of fan blades	6
Fan diameter	600 mm
Coolant system capacity	24.6 l.
Type of temperature control	Two thermostats
Super pressure	103 kPa

Starting System

Make/Model/Type	Nippondenso/FII4.0/Solenoid engaged
Power Rating	4.0 kW
Cold starting aid	Ether spray in intake manifold
Safety device	Electrical lockout on gearshift

Electrical System	
Voltage	12 Volt
Alternator	
Make/Model/Type	Bosch/N1/Alternator; belt drive
Power rating	110 /14.2 V at 2200 engine rpm
Batteries	
Number & connection	2-12 V batteries in parallel
Rating	180 amp-hours per battery at 20 hour rating 950 Cold crank amps per battery 185 min. reserve cap/battery (SAEJ537)
Exhaust System	
Make/Model/Type	Nelson (muffler)/23839A/Vertical
Location	External muffler integral with vertical exhaust stack; right front corner of cab

TRANSMISSION TO WHEELS

Clutch (Travel)	
Make/Model/Type	Case International/multi-plate/ oil cooled
Number of plates	9 friction plates
Plate diameter	228.5 mm
Method of operation	Hydraulic, pedal actuated.
Gear Box	
Make/Type	Case International/18 speed/full powershift; mechanical
Arrangement	Countershaft type with one 2-speed and two 3-speed constant mesh powershift modules
Number of gears	18 forward, 4 reverse controlled by single lever
Available options	Creeper gear with 6 forward and 2 reverse speeds
Oil cooler	Air/oil in front of radiator
Rear Axle and Final Drives	
Make/model/Type	Case International; Crown wheel & pinion; differential and planetary reduction
Differential Lock	
Type	Hydraulic
Method of engagement	Electrical; switch on console
Method of disengagement	Electrical; switch on console or activating brake pedals.

Front Axle and Final Drives

Make/Model/Type-MFWD	Dana/070BP180-1/Crown wheel & pinion, differential & planetary reduction
Differential lock	
Type	Limited slip
Method of engagement	Self locking
Method of disengagement	Self unlocking

Total Transmission Ratios and Travel Speeds
(Standard 18 Speed Transmission)

Gear Number	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed at rated engine speed of 2200 rev/min [km/h]
Forward		
1st	244.659	2.90
2nd	213.292	3.32
3rd	184.966	3.83
4th	161.252	4.40
5th	140.579	5.04
6th	122.556	5.79
7th	105.064	6.75
8th	91.594	7.74
9th	79.430	8.93
10th	69.246	10.23
11th	60.369	11.75
12th	52.629	13.46
13th	46.004	15.41
14th	40.106	17.68
15th	34.780	20.39
16th	30.321	23.39
17th	26.434	26.83
18th	23.045	30.77
Reverse		
R1	169.968	4.17
R2	148.178	4.79
R3	72.989	9.72
R4	63.632	11.15

Calculated with a tire dynamic radius index of 855 mm ISO 4251/1-1992
Number of revolutions of front wheels for one revolution of rear wheels 1.3304

Total Transmission Ratios and Traveling Speeds

(18 speed transmission plus optional 6 forward/2 reverse Creeper gears)
Not fitted on tested tractor.

Gear Number	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed at rated engine speed of 2200 rev/min [km/h]
Forward		
1st Creeper	840.621	0.84
2nd Creeper	635.522	1.12
3rd Creeper	483.015	1.47
4th Creeper	360.988	1.96
5th Creeper	272.911	2.60
6th Standard	244.659	2.90
7th Standard	213.292	3.32
8th Creeper	207.420	3.42
9th Standard	184.966	3.83
10th "	161.252	4.40
11th "	140.579	5.04
12th "	122.556	5.79
13th "	105.064	6.75
14th "	91.549	7.74
15th "	79.430	8.93
16th "	69.246	10.23
17th "	60.369	11.75
18th "	52.629	13.46
19th "	46.004	15.41
20th "	40.106	17.68
21th "	34.780	20.39
22th "	30.321	23.39
23th "	26.434	26.83
24th "	23.045	30.77
Reverse		
R1 Creeper	583.994	1.21
R2 Creeper	250.784	2.82
R3 Standard	169.968	4.17
R4 "	148.178	4.79
R5 "	72.989	9.72
R6 "	63.632	11.15

Calculated with a tire dynamic radius index of 855 mm (ISO 4251/1-1992)
Number of revolutions of front wheels for one revolution of rear wheels 1.3304

POWER - TAKE-OFF

Main Power-Take-Off

Type	Independent
Method of engagement	Hydraulically actuated multi-plate wet clutch operated by hand lever, independent of main drive clutch
Number of shafts	Two
Method of changing shafts	Separate shafts at fixed ratios

Power-Take-Off Proportional to Engine Speed - 540 rev/min.

Location	Rear of tractor, vertical center plane.
Diameter of shaft	35 mm (ISO 500/1991)
Number of splines	6;(ISO 500/1991)
Height above ground	642 mm
Distance from median plane of tractor	0 mm
Distance behind rear axle	796 mm
PTO Speed at rated engine speed	547 rev/min
Engine speed at Std. PTO speed	2171 rev/min
Ratio of Engine rpm to PTO rpm	4.020:1
Power Restriction	63 kW
Direction of rotation (viewed facing driving end)	Clockwise

Power-Take-Off Proportional to Engine Speed -1000 rev/min.

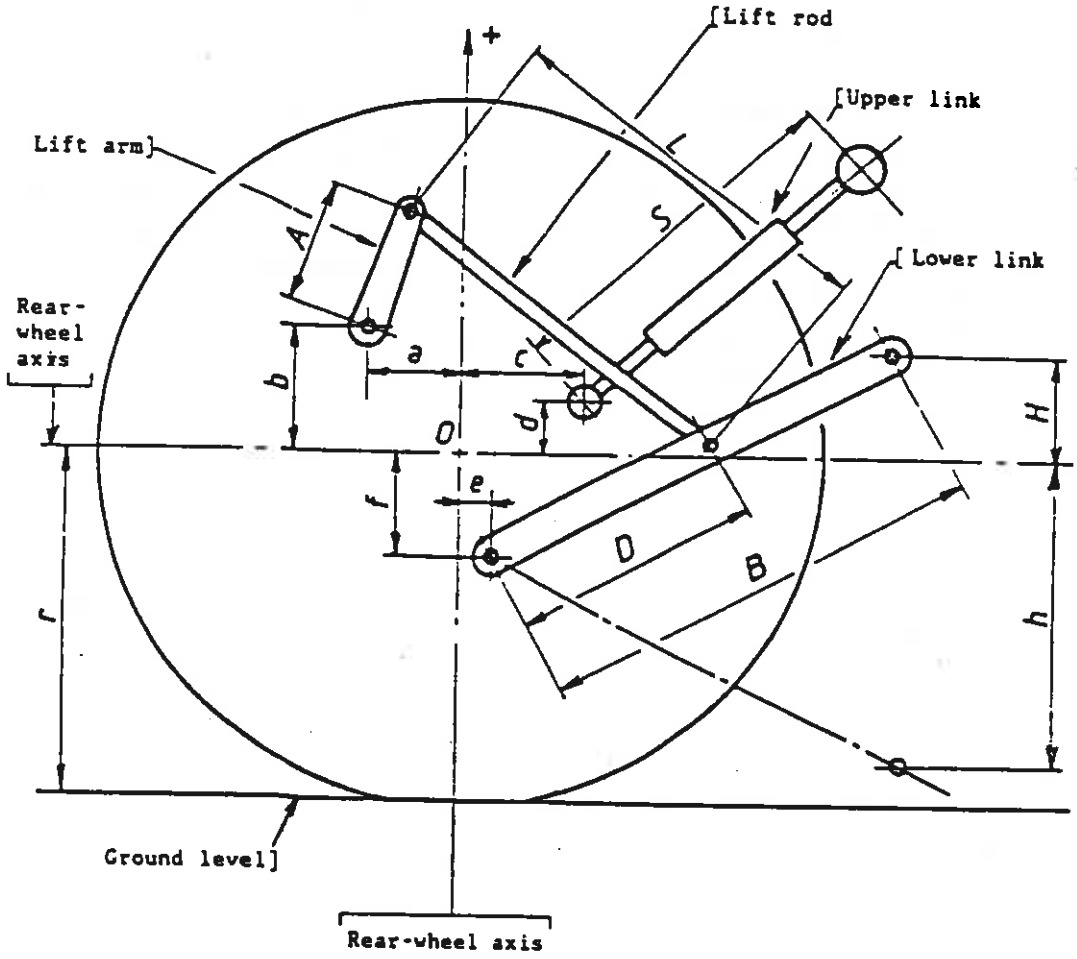
Location	Rear of tractor, vertical center plane.
Diameter of shaft	35 mm (ISO 500/1991)
Number of splines	21; (ISO 500/1991)
Height above ground	765 mm
Distance from median plane of tractor	0 mm
Distance behind rear axle	745 mm
PTO Speed at rated engine speed	1003 rev/min
Engine speed at Std. PTO speed	2193 rev/min
Power Restriction	None
Ratio of Engine rpm to PTO rpm	2.193:1
Direction of rotation (viewed facing driving end)	Clockwise

POWER LIFT

Make/Type	Case International/3-point
Type of hydraulic system	Closed center, load sensing
Number/Type of cylinders	One internal, one external; single acting
Type of linkage lock for transport	Hydraulic, with locking notch on hand lever on console
Relief valve setting (High pressure standby)	18.27±0.35 MPa
Opening pressure of cylinder safety valve	19.65-20.34 MPa
Lift pump type	Axial piston, pressure and flow compensated
Power transmission to pump	Direct drive from transmission
Type/Number of filters	Two spin-on cartridges; Cleanable suction screen inside reservoir
Location of oil reservoir	Transmission housing
Number/Type/Location of tapping points	3 pairs of ISO standard couplings at rear of tractor
Max. oil volume available for external cylinders	8.5 l.

THREE POINT LINKAGE.

- Category 3 in conformity with ISO 730/1-1990
- Category adaptor None



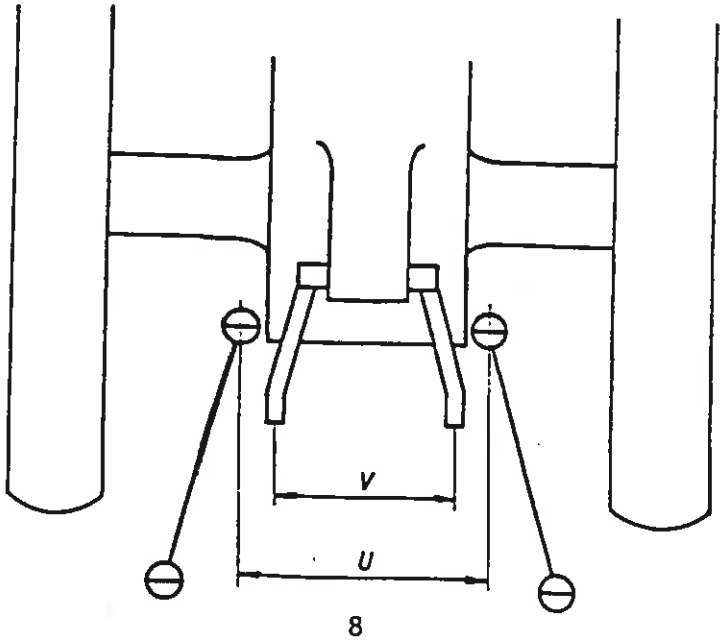


TABLE 1.1 - *LINKAGE GEOMETRY DIMENSIONS

			Dimension or range [mm]	Settings used on test [mm]
Lift category			III	same
Rear Tire - Radius Index	(r)		855	same
Front Tire - Radius Index	(r')		665	645
Length of lift arms	(A)		381	same
Length of lower links	(B)		861	same
Distance of lift				
arm pivot from: horizontal	(a)		364	same
rear wheel axis: vertical	(b)		422	same
Horizontal distance between the				
2 lower link points	(u)		604	same
Horizontal distance between the				
2 lift arm end points	(v)		737	same
Length of upper link	(S)	from	600	657
		to	831	
Distance of upper				
link pivot from horizontal	(c)		627	same
rear wheel axis: vertical	(d)		169	169
		and	250	
Distance of lower				
link pivot from: horizontal	(e)		445	same
rear wheel axis: vertical	(f)		332	same
Distance of lower link pivot				
points to lift rod pivot points				
on lower links	(D)		579	same
Length of lift rods	(L)	from	660	794
		to	866	
Height of lower hitch points				
relative to rear wheel axis				
In low position	(h)	from	378	629
		to	699	
In high position	(H)	from	3	59
		to	269	
Height above ground of lower				
hitch points when locked in				
transport position.		from	858	914
		to	1124	

*Assuming (r) with a dynamic tire index of 855 mm; ISO 4251/1-1992

SWINGING DRAWBAR

Type	Swinging
Height above ground	477 mm
Adjustments	Laterally adjustable with 3 fore-aft positions
Distance of hitch point from rear wheel axis, horizontal	
Position 1	1152 mm
Position 2	1254 mm
Position 3	1356 mm
Distance of hitch point from PTO shaft end	
1000 rpm PTO	
Vertically	253 mm
Horizontally	
Position 1	406 mm
Position 2	508 mm
Position 3	610 mm
540 rpm PTO	
Vertically	131 mm
Horizontally	
Position 1	356 mm
Position 2	458 mm
Position 3	559 mm
Lateral adjustment (center of clevis) Right hand & Left hand	
Position 1	210 mm
Position 2	228 mm
Position 3	246 mm
Distance of pivot point from rear wheel axle; horizontally	50 mm forward
Diameter of drawbar pin hole	42 mm
Maximum vertical permissible load (static)	
Positions 1 & 2	14.2 kN
Position 3	12.0 kN

STEERING

Make/Model/Type	Eaton/266-4070-002/ hydrostatic steering control unit.
Method of operation	
Pump(s)	Cessna main axial piston pump thru steering priority valve
Ram(s)	2 double-acting cylinders
Working pressure	16.203-16.892 MPa

BRAKES

Service Brake

Make/Model/Type	Case International/Oil immersed disc type
Method of operation	Hydraulic, operated by two pedals, separate or coupled.
Trailer brake	None

Parking Brake

Type	Transmission lock
Method of operation	Mechanical; Gear selector lever

WHEELS

Number	
Front	Two; Driving and Steering
Rear	Two or Four; Driving
Wheel base	3006 mm

TRACK WIDTH ADJUSTMENT

	Minimum [mm]	Maximum [mm]	Adjustment method
Front	1527	2408	Reversing wheel rims and offset lug rims
Rear - Inner	1626	3175	Adjustable clamping edges on bar axle
- Outer	2845	3327	and offset lug rims

PROTECTIVE STRUCTURE

Make/Model/Type	Case International/CX-96/Cab
Manufacturer's name/address	Case Corporation 700 State Street, Racine, Wisconsin 53404, USA
Protective device	Cab, 4-post with charpy v-notch certified material
Tiltable	No
OECD approval numbers	CSS 096/57 - Sears SA 11035/Air suspension seat CSS 096/65 - Sears SA 12105/Air suspension seat
Date of approval	16 March 1994

Modification certificate:

Certificate for minor modification numbered:

CSS 096/1 to 8/MOD 1/USA dated 13th June 1990.

Established by and under the responsibility of the National Authority:

University of Nebraska
Nebraska Tractor Test Laboratory
Lincoln, Nebraska 68583-0832 United States of America

Certificate for minor modification numbered:

CSS 096/1 to 8/MOD 2/USA dated 18th October 1990.

Established by and under the responsibility of the National Authority:

University of Nebraska
Nebraska Tractor Test Laboratory
Lincoln, Nebraska 68583-0832 United States of America

DRIVER'S SEAT

Make/Model/Type	Sears/SA12105/Air suspension or Sears/SA11035/ Air Suspension
Type of suspension	Air ride; fore-aft isolator; adjustable for weight; SA11035 has also a lateral isolator
Type of damping	Air damping
Range of adjustment	
Longitudinal	152.4 mm
Vertical	76.0 mm
Seat Belt	No

LIGHTING

	Height above ground of center [mm]	Size [mm x mm]	Distance from outside edge of lights to median plane of tractor [mm]
Headlights	1631	260.5x130.8	390
Rearlights	2054	100.0x 45.2	654
Reflectors-rear	2054	50.0x 45.2	554 and 704

TEST CONDITIONS

Overall dimensions (unballasted) (single tires)

Length	Width		Height at top of	
	minimum	maximum	protective structure	exhaust stack
[mm]	[mm]	[mm]	[mm]	[mm]
5049	2845	3128	3017	2979

Overall dimensions (ballasted) (dual tires)

Length	Width		Height at top of	
	minimum	maximum	protective structure	exhaust stack
[mm]	[mm]	[mm]	[mm]	[mm]
5291	3463	3935	3017	2979

Ground clearance (unballasted)	439 mm
Clearance-limiting part	Drawbar anchor point

TRACTOR MASS (with Cab, full fuel tank)

		Without driver [kg]	With driver [kg]
Unballasted	**Front**	2451	2471
	Rear	5450	5505
	Total	7901	7976
Ballasted	**Front**	2830	2850
	Rear	6501	6556
	Total	9331	9406

BALLAST

		Number of weights/duals	Total Mass [kg]	Water [kg]
Front	**-weight**	4	181	-----
	-bracket	1	80	-----
Rear	**-weight**	4	439	-----
	-duals	1	730	-----

TIRE AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Make	Goodyear	Goodyear
Dimensions	14.9R30	20.8R38
Ply rating	3 star-134A8	2 star-153A8
Type	Radial	Radial
Max. load (tire manufacturer)	2270 kg/tire	3905 kg/tire
Max. load(tractor manufacturer)	2165 kg/tire	3910 kg/tire
Inflation pressure(tire mfr)	210 kPa	160 kPa
Dynamic Radius Index	665 mm	855 mm
Chosen track width - inner	1875 mm	1760 mm
- outer		3325 mm

Oils and Lubrication

Capacity and change interval:

	Capacity l.	Oil change hours	Filter change hours
Engine (without filter)	19	250	250
Gear Box	191	1000	1000
Front axle	11.4	1000	------
Rear axle	Common with Gear box		
Hydraulic system	Common with Gear box		
Final drive-front (each side)	0.9	1000	------
Final drive-rear	Common with Gear box		

Lubricant Specifications

	Recommended	Used during test
Engine oil		
Type	Case IH N0. 1 SAE 15W-40	same
Viscosity	14.9 cSt at 100^{0}C	
Classification	API SG/CD/CE	
Transmission oil		
Type	Case IH Hy-tran Plus	same
Viscosity	6.3 cSt at 100^{0}C	
Classification	NA	
Hydraulic fluid		
Type	Case IH Hytran Plus	same
Viscosity	6.3 cSt at 100^{0}C	
Classification	NA	
Front differential and final drive		
Type	Case IH 135H EP Gear Lube; SAE 85W-140	same
Viscosity	27 cSt at 100^{0}C	
Classification	API GL-5 or MIL-L-2105D	
Grease		
Type	Case IH Hi-Temp EP	same
Number of lube points	26	

FUEL

Type	Premier; Grade 2-D,in conformity with the national standard
Density (PTO test)	0.841 kg/l at 15^{0}C
(Drawbar test)	Same as PTO test
Cetane number	50.6
Viscosity	2.51 cSt at 38^{0}C

COMPULSORY TESTS

1. MAIN POWER TAKE OFF

Date: 30-Apr-96 Location: UNL Tractor Test Lab, Lincoln, NE, USA

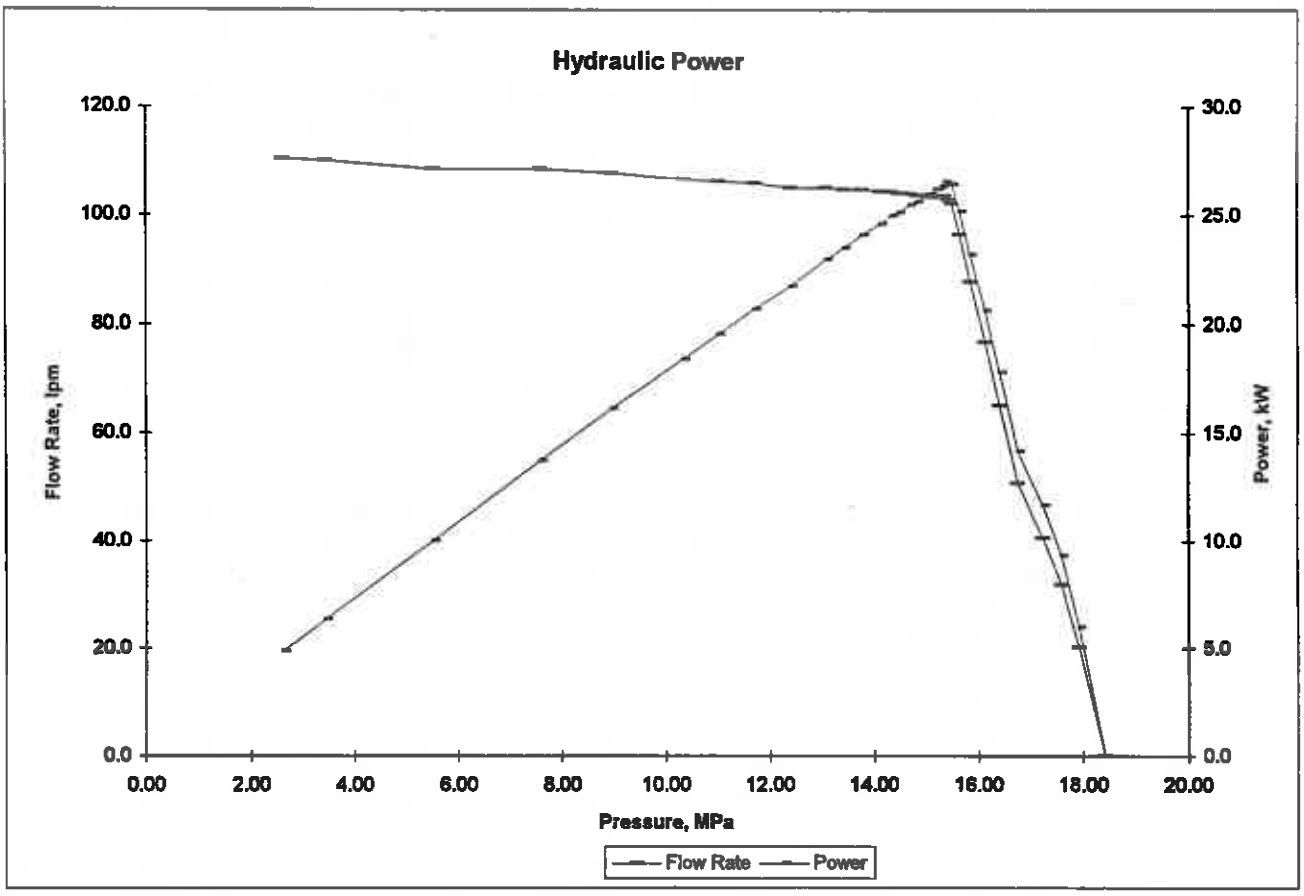
Type of dynamometer: Eddy current, Eaton

Fuel Density 0.841 kg/l

Power kW *hp*	Engine rev/min	PTO rev/min	l/h *gal/h*	kg/h *lb/hr*	kg/kW_eh *lb/hp-h*	kW_eh/l *hp-h/gal*
1.1 Maximum Power - 2 Hours						
125.69	1950	889	36.54	30.74	0.245	3.44
168.56			*9.65*	*67.77*	*0.402*	*17.46*
1.2 Power at Rated Engine Speed - 1 hour						
117.00	2200	1003	37.05	31.17	0.266	3.16
156.90			*9.79*	*68.71*	*0.438*	*16.03*
1.3 Power at Standard Power Take Off Speed - 1 hour						
117.00	2200	1003	37.05	31.17	0.266	3.16
156.90			*9.79*	*68.71*	*0.438*	*16.03*
1.4 Part Loads						
1.4.1 Torque at maximum power at rated engine speed						
117.00	2200	1003	37.05	31.17	0.266	3.16
156.90			*9.79*	*68.71*	*0.438*	*16.03*
1.4.2 85% of torque obtained in 1.4.1						
101.61	2252	1026	33.48	28.17	0.277	3.03
136.26			*8.84*	*62.10*	*0.456*	*15.41*
1.4.3 75% of torque defined in 1.4.2						
77.67	2287	1042	28.31	23.81	0.307	2.74
104.16			*7.48*	*52.50*	*0.504*	*13.93*
1.4.4 50% of torque defined in 1.4.2						
52.77	2331	1062	22.48	18.91	0.358	2.35
70.77			*5.94*	*41.70*	*0.589*	*11.92*
1.4.5 25% of torque defined in 1.4.2						
26.93	2379	1084	17.15	14.42	0.536	1.57
36.12			*4.53*	*31.80*	*0.880*	*7.97*
1.4.6 unloaded						
0.79	2429	1107	11.97	10.07	12.814	0.07
1.05			*3.16*	*22.20*	*21.065*	*0.33*
1.5 Part Loads at Standard Power Take Off Speed						
1.5.1 Torque at maximum power						
117.00	2200	1003	37.05	31.17	0.266	3.16
156.90			*9.79*	*68.71*	*0.438*	*16.03*
1.5.2 85% of torque obtained in 1.5.1						
101.61	2252	1026	33.48	28.17	0.277	3.03
136.26			*8.84*	*62.10*	*0.456*	*15.41*
1.5.3 75% of torque defined in 1.5.2						
77.67	2287	1042	28.31	23.81	0.307	2.74
104.16			*7.48*	*52.50*	*0.504*	*13.93*
1.5.4 50% of torque defined in 1.5.2						
52.77	2331	1062	22.48	18.91	0.358	2.35
70.77			*5.94*	*41.70*	*0.589*	*11.92*
1.5.5 25% of torque defined in 1.5.2						
26.93	2379	1084	17.15	14.42	0.536	1.57
36.12			*4.53*	*31.80*	*0.880*	*7.97*
1.5.6 unloaded						
0.79	2429	1107	11.97	10.07	12.814	0.07
1.05			*3.16*	*22.20*	*21.065*	*0.33*

No load maximum engine speed:	2429	rev/min		
Equivalent torque at rated speed:	508	N.m	*375*	lb-ft
Equivalent torque at maximum power:	616	N.m	*454*	lb-ft
(engine speed:	1950	rev/min)		
Maximum equivalent crankshaft torque:	700	N.m	*516*	lb-ft
(engine speed:	1399	rev/min)		
Mean Dry bulb:	24	deg C	*75*	deg F
Wet bulb:	15	deg C	*58*	deg F
Relative Humidity	37	%		
Pressure:	97.1	kPa	*28.68*	in Hg
Maximum Coolant:	86	deg C	*187*	deg F
Engine Oil:	110	deg C	*230*	deg F
Fuel:	56	deg C	*133*	deg F
Air Intake:	27	deg C	*81*	deg F
Transmission/hydraulic oil:	53	deg C	*127*	deg F
Intake manifold pressure at rated speed:	127	kPa	*18.4*	psig
Intake manifold pressure at maximum power:	128	kPa	*18.6*	psig

Date of Test:	8-May-96		
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:			
18.41 MPa			
2670 psig			
II. Pump delivery rate at minumum pressure and rated engine speed:			
110.5 l/min			
29.2 gpm			
III. Flow rate, pressure, power:			
90% of relief valve setting			
50.7 l/min	16.75 MPa	14.2 kW	
13.4 gpm	*2430 psig*	*19.0 hp*	
Maximum hydraulic power:			
103.7 l/min	15.38 MPa	26.6 kW	
27.4 gpm	*2230 psig*	*35.6 hp*	
IV. Hydraulic fluid temperature at flow meter:			
63.3 °C			
146 °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. Cat III,
Upper link in bottom hole on tractor
Date of test: 21 July 1988 - Data taken from OECD test 1541 on the Case International 7220 which has the mechanically identical lifting system.

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	236/9.3	213/8.4
Vertical movement:			
without load:	[mm/in]	708/27.9	810/31.9
with load:	[mm/in]	645/25.4	739/29.1
Maximum corrected force through full range:	[kN/lb]	39.8/8942	38.4/8636
Corresponding pressure:	[kPa/psi]	16900/2458	
Moment about rear axle:	[kN.m/lb.ft]	51.9/38299	73.6/54260
Maximum mast tilt angle:	[deg]	--	6.9

Lifting height relative to horizontal position of lower links.

[mm]	-284	-262	-201	-99	0
[in]	-11.2	-10.3	-7.9	-3.9	0
Corrected lift forces					
Hitch [kN]	--	39.8	42.5	46.9	49.6
point. [lb]	--	8942	9554	10539	11156
at [kN]	38.4	--	40.8	43.7	44.8
frame [lb]	8636	--	9176	9824	10067

Lifting height relative to horizontal position of lower links.

[mm]	104	201	300	384	455
[in]	4.1	7.9	11.8	15.1	17.9
Corrected lift forces					
Hitch [kN]	51.9	53.6	53.8	56.7	--
point [lb]	11669	12051	12092	12753	--
at [kN]	44.7	44.1	--	41.6	40.0
frame [lb]	10044	9909	--	9360	8982

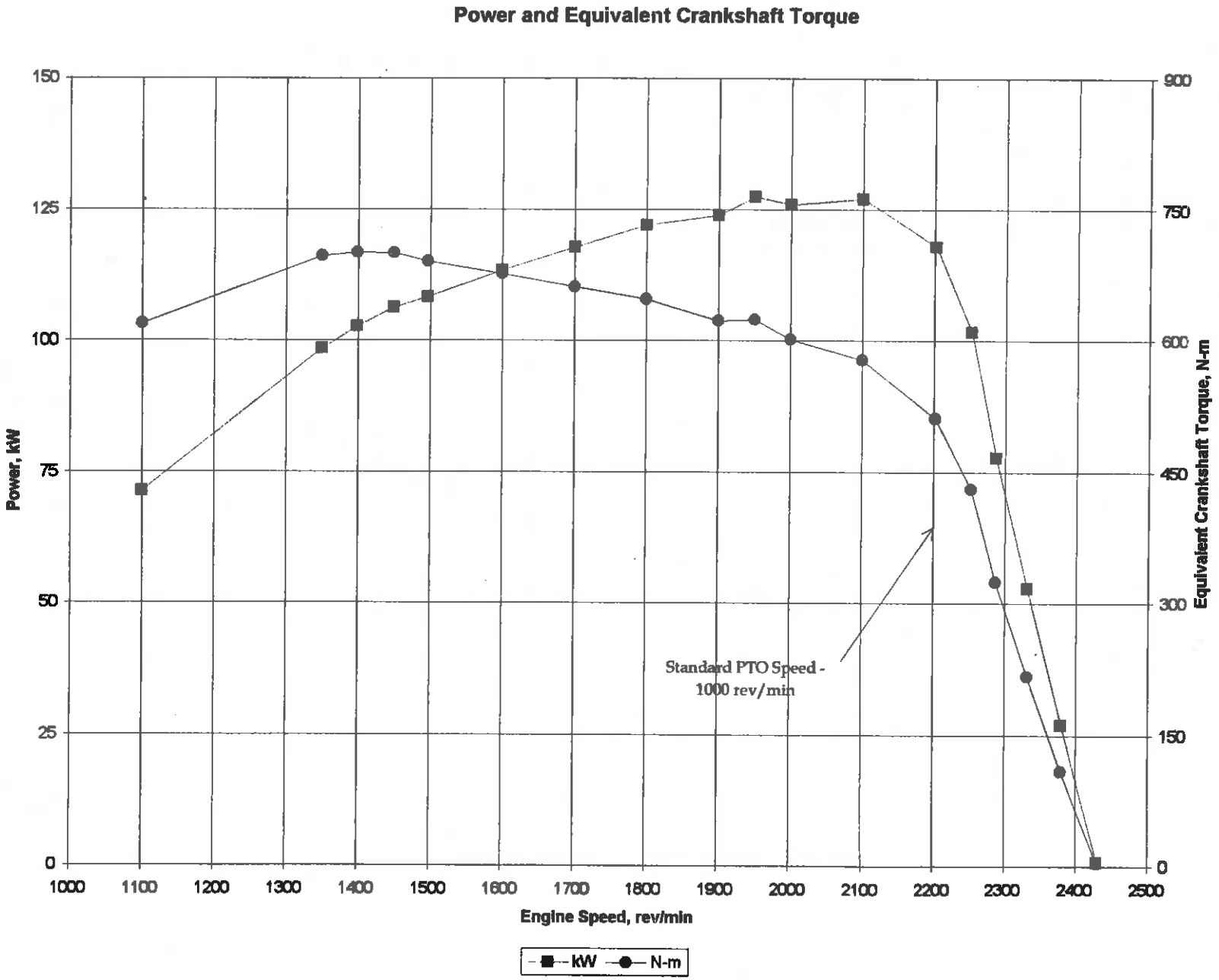
OECD Drawbar Data (SI)

Date of tests:		02-May-96		Fuel density:		0.841 kg/l								
Type of track:		Concrete		Test number:		1709								
Gear	**Power**	**Pull**	**Speed**	**Engine speed**	**Slip**	**SFC**	**SFE**	**Temperature, deg 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, 4wd at 1950 rev/min)						Tire pressure:		124 kPa, rear		97 kPa, front		Drawbar height:	432 mm	
3	70.65	73.50	3.46	2263	15%	0.374	2.25	55	85	110	19	13	48%	97.43
4	81.82	74.87	3.93	2238	14%	0.357	2.36	55	86	110	18	13	54%	97.43
5	91.70	71.62	4.61	2188	11%	0.336	2.50	58	86	111	20	14	56%	97.39
6	99.27	67.84	5.27	2115	8%	0.318	2.64	55	86	112	21	14	53%	97.36
7	105.18	64.50	5.87	1991	6%	0.294	2.86	55	86	113	21	14	50%	97.32
8	106.44	57.33	6.68	1949	5%	0.288	2.92	54	87	113	23	15	47%	97.02
9	106.66	49.18	7.81	1950	4%	0.288	2.93	54	87	113	22	15	46%	97.32
10	106.86	42.63	9.02	1953	3%	0.288	2.92	53	87	112	24	16	46%	97.22
11	104.60	36.18	10.41	1950	3%	0.295	2.86	53	87	113	24	16	46%	96.99
12	103.92	31.23	11.98	1948	2%	0.297	2.83	53	88	113	24	16	46%	96.95
13	103.69	27.02	13.81	1957	2%	0.297	2.83	53	88	113	23	16	45%	96.85
II. Part loads (unballasted, 4wd)														
II.1 in selected gear at maximum power at rated speed														
10	97.06	34.11	10.24	2197	3%	0.320	2.63	53	87	113	24	16	46%	97.09
II.1.1 75% of pull at maximum power at rated speed														
10	75.32	25.51	10.63	2264	2%	0.349	2.41	52	86	111	23	16	45%	96.95
II.1.2 50% of pull at maximum power at rated speed														
10	51.52	17.02	10.90	2307	1%	0.412	2.04	51	86	111	23	16	45%	96.95
II.1.3 higher gear at reduced engine speed, same pull and travel speed as II.1.1														
12	75.46	25.49	10.66	1726	2%	0.294	2.86	50	85	109	23	16	45%	96.95
II.1.4 higher gear at reduced engine speed, same pull and travel speed as II.1.2														
12	51.62	17.00	10.93	1759	1%	0.340	2.47	49	84	107	23	16	45%	96.95
II.2 in selected gear nearest to 7.5 km/h at rated speed														
8	99.02	46.67	7.64	2195	4%	0.312	2.69	53	87	113	22	15	50%	97.26
II.2.1 75% of pull at maximum power at rated speed														
8	77.53	34.96	7.98	2266	3%	0.336	2.51	51	86	110	23	15	44%	96.85
II.2.2 50% of pull at maximum power at rated speed														
8	53.13	23.30	8.21	2310	2%	0.398	2.11	51	86	110	23	15	44%	96.85
II.2.3 higher gear at reduced engine speed, same pull and travel speed as II.2.1														
10	78.15	34.94	8.05	1728	3%	0.284	2.97	50	85	109	23	15	44%	96.85
II.2.4 higher gear at reduced engine speed, same pull and travel speed as II.2.2														
10	53.24	23.32	8.22	1748	2%	0.315	2.67	49	84	106	23	15	44%	96.85

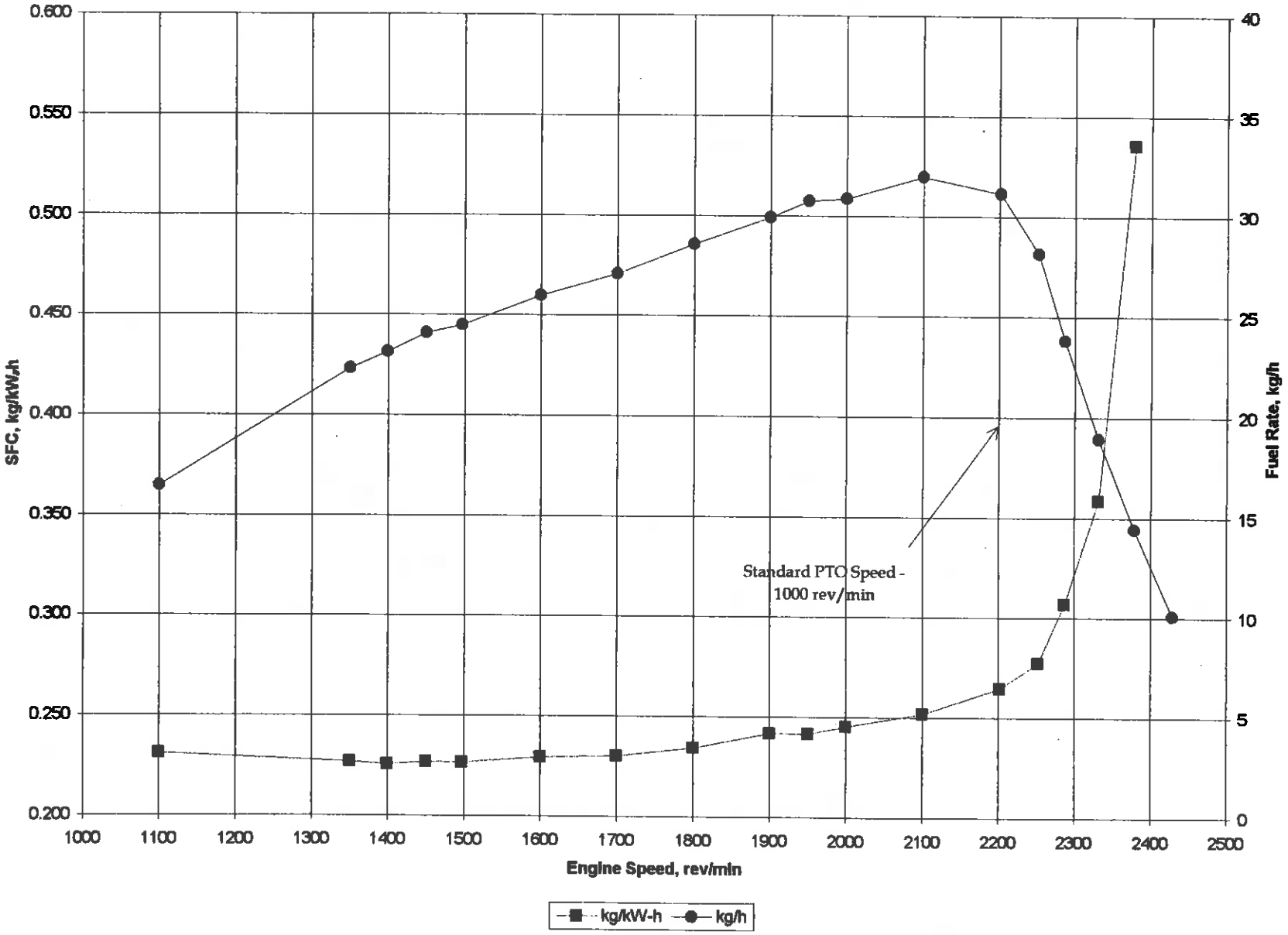
OECD Drawbar Data (US)

Date of tests:	02-May-96	Fuel density:	7.021 lb/gal
Type of track:	Concrete	Test number:	1709

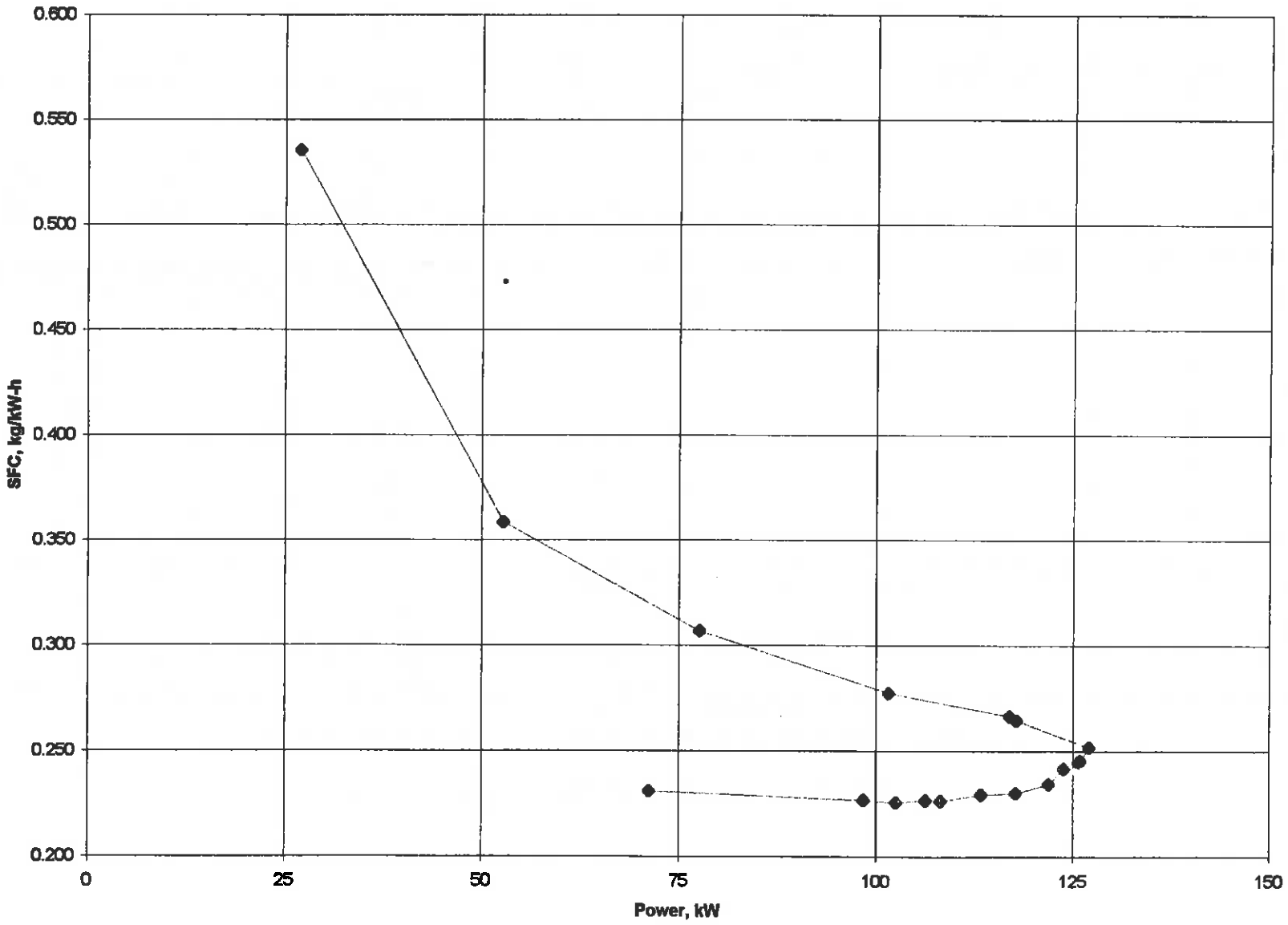
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg F					Rel hum-idity	Baro. Pres in Hg
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		
I. Maximum Power (unballasted, 4wd at 1950 rev/min)						Tire pressure:		18 psig, rear		14 psig, front		Drawbar height:	17.0 in	
3	94.75	16524	2.15	2263	15%	0.615	11.42	132	186	230	67	55	48%	28.77
4	109.72	16832	2.44	2238	14%	0.587	11.96	132	187	231	65	55	54%	28.77
5	122.97	16101	2.86	2188	11%	0.552	12.72	136	187	233	68	58	56%	28.76
6	133.12	15252	3.27	2115	8%	0.523	13.42	131	188	234	69	58	53%	28.75
7	141.05	14501	3.65	1991	6%	0.483	14.52	132	188	235	70	58	50%	28.74
8	142.74	12889	4.15	1949	5%	0.473	14.84	129	189	235	74	59	47%	28.65
9	143.04	11057	4.85	1950	4%	0.473	14.85	129	188	235	72	59	46%	28.74
10	143.30	9583	5.61	1953	3%	0.473	14.84	127	189	234	75	61	46%	28.71
11	140.27	8134	6.47	1950	3%	0.484	14.49	127	189	235	75	61	46%	28.64
12	139.36	7020	7.44	1948	2%	0.488	14.39	128	190	235	75	61	46%	28.63
13	139.05	6075	8.58	1957	2%	0.489	14.36	127	190	236	74	60	45%	28.60
II. Part loads (unballasted, 4wd)														
II.1 in selected gear at maximum power at rated speed														
10	130.17	7669	6.37	2197	3%	0.527	13.33	128	189	235	75	61	46%	28.67
II.1.1 75% of pull at maximum power at rated speed														
10	101.00	5735	6.60	2264	2%	0.573	12.25	126	188	233	74	60	45%	28.63
II.1.2 50% of pull at maximum power at rated speed														
10	69.09	3826	6.77	2307	1%	0.678	10.36	124	186	231	74	60	45%	28.63
II.1.3higher gear at reduced engine speed, same pull and travel speed as II.1.1														
12	101.19	5732	6.62	1726	2%	0.484	14.52	123	186	228	74	60	45%	28.63
II.1.4 higher gear at reduced engine speed, same pull and travel speed as II.1.2														
12	69.23	3821	6.79	1759	1%	0.560	12.55	121	184	224	74	60	45%	28.63
II.2 in selected gear nearest to 4.6 mph at rated speed														
8	132.79	10493	4.75	2195	4%	0.513	13.68	127	188	235	71	59	50%	28.72
II.2.1 75% of pull at maximum power at rated speed														
8	103.96	7859	4.96	2266	3%	0.552	12.73	124	188	231	73	59	44%	28.60
II.2.2 50% of pull at maximum power at rated speed														
8	71.25	5238	5.10	2310	2%	0.654	10.74	123	187	230	73	59	44%	28.60
II.2.3 higher gear at reduced engine speed, same pull and travel speed as II.2.1														
10	104.80	7855	5.00	1728	3%	0.466	15.06	122	185	228	73	59	44%	28.60
II.2.4 higher gear at reduced engine speed, same pull and travel speed as II.2.2														
10	71.39	5243	5.11	1748	2%	0.517	13.57	120	184	224	73	59	44%	28.60


Power and Equivalent Crankshaft Torque
Power, kW
Equivalent Crankshaft Torque, N-m
Engine Speed, rev/min
150
125
100
75
50
25
0
900
750
600
450
300
150
0
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
Standard PTO Speed - 1000 rev/min
kW
N-m

Specific Fuel Consumption and Fuel Rate



Power and Specific Fuel Consumption



OPTIONAL TEST - Ballasted Tractor - Front Drive Engaged

Test conducted under the responsibility of the Nebraska Tractor Testing Laboratory.

OECD Drawbar Data (SI)

Date of tests:	01-May-96	Fuel density:	0.841 kg/l
Type of track:	Concrete	Test number:	1709

Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg 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 (ballasted, 4wd at 1950 rev/min)						Tire pressure:		124 kPa, rear		97 kPa, front		Drawbar height:		457 mm
* 3	91.91	91.58	3.61	2223	9%	0.328	2.57	53	86	112	11	7	64%	97.66
4	100.85	87.88	4.13	2160	7%	0.309	2.72	52	86	112	12	8	60%	97.70
5	104.73	85.85	4.39	1991	6%	0.294	2.86	53	86	112	12	8	56%	97.70
6	106.29	76.22	5.02	1951	4%	0.287	2.93	53	86	112	13	8	51%	97.70
7	109.73	66.84	5.91	1952	4%	0.279	3.02	53	87	112	13	8	47%	97.70
8	108.96	57.56	6.82	1949	3%	0.280	3.00	52	86	112	14	8	44%	97.70
9	108.40	49.32	7.91	1952	3%	0.281	2.99	52	86	112	14	8	40%	97.70
10	107.30	42.50	9.09	1948	2%	0.285	2.95	51	86	112	14	8	45%	97.70
11	105.32	36.10	10.50	1954	2%	0.291	2.89	52	86	112	15	9	45%	97.70
12	103.60	30.94	12.06	1950	2%	0.296	2.84	52	87	112	16	9	42%	97.70
13	102.57	26.75	13.80	1947	1%	0.300	2.80	52	87	111	16	9	42%	97.70

* Note: Slip limited to avoid excessive tractor bounce

OECD Drawbar Data (US)

Date of tests:	01-May-96	Fuel density:	7.021 lb/gal
Type of track:	Concrete	Test number:	1709

Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg 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 (ballasted, 4wd at 1950 rev/min)						Tire pressure:		18 psig, rear		14 psig, front		Drawbar height:		18.0 in
* 3	123.25	20588	2.24	2223	9%	0.539	13.04	127	187	233	51	45	64%	28.84
4	135.24	19757	2.57	2160	7%	0.508	13.82	126	186	233	53	46	60%	28.85
5	140.45	19300	2.73	1991	6%	0.483	14.53	128	187	234	54	46	56%	28.85
6	142.54	17135	3.12	1951	4%	0.473	14.86	128	187	233	55	46	51%	28.85
7	147.15	15027	3.67	1952	4%	0.459	15.31	127	188	234	56	46	47%	28.85
8	146.12	12940	4.23	1949	3%	0.461	15.24	126	188	233	57	46	44%	28.85
9	145.37	11087	4.92	1952	3%	0.463	15.18	125	188	233	58	46	40%	28.85
10	143.89	9554	5.65	1948	2%	0.468	14.99	125	187	234	58	47	45%	28.85
11	141.23	8115	6.53	1954	2%	0.478	14.68	125	187	234	59	48	45%	28.85
12	138.94	6955	7.49	1950	2%	0.487	14.42	125	188	234	60	48	42%	28.85
13	137.55	6015	8.58	1947	1%	0.494	14.22	125	188	[illegible]	60	48	42%	28.85

* Note: Slip limited to avoid excessive tractor bounce

THREE POINT LINKAGE (Upper link in top hole on tractor)

- Category adaptor - none

TABLE 1.2 - *LINKAGE GEOMETRY DIMENSIONS

		Dimension or range [mm]	Settings used on test [mm]
Lift category		III	III
Rear Tire - Radius Index	(r)	855	same
Front Tire - Radius Index	(r')	665	645
Length of lift arms	(A)	381	same
Length of lower links	(B)	861	same
Distance of lift			
arm pivot from: horizontal	(a)	364	same
rear wheel axis: vertical	(b)	422	same
Horizontal distance between the			
2 lower link points	(u)	604	same
Horizontal distance between the			
2 lift arm end points	(v)	737	same
Length of upper link	(S)	600	657
	to	831	
Distance of upper			
link pivot from horizontal	(c)	627	same
rear wheel axis: vertical	(d)	169	250
	and	250	
Distance of lower			
link pivot from: horizontal	(e)	445	same
rear wheel axis: vertical	(f)	332	same
Distance of lower link pivot			
points to lift rod pivot pts			
on lower links.	(D)	579	same
Length of lift rods	(L)	660	794
	to	866	
Height of lower hitch points			
relative to rear wheel axis			
In low position	(h)	378	629
	to	699	
In high position	(H)	3	59
	to	269	
Height above ground of lower			
hitch points when locked in			
transport position.	from	858	914
	to	1174	

*Assuming (r) with a dynamic tire index of 855 mm; ISO 4251/1-1992

2.2 POWER LIFT TEST. Cat III,
Upper link in top hole on tractor - for dimensions see p.23
Date of test: 21 July 1988 - Data taken from OECD test 1541 on the Case International 7220 which has a mechanically identical lifting system.

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	261/9.3	254/10.0
Vertical movement: without load:	[mm/in]	708/27.9	696/27.4
with load:	[mm/in]	645/25.4	638/25.1
Maximum corrected force through full range:	[kN/lb]	39.8/8942	47.2/10611
Corresponding pressure:	[kPa/psi]	16900/2458	
Moment about rear axle:	[kN.m/lb.ft]	51.9/38299	90.4/66672
Maximum mast tilt angle:	[deg]	--	2.1

Lifting height relative to horizontal position of lower links.

[mm]	-262	-244	-201	-99	0
[in]	-10.3	-9.6	-7.9	-3.9	0
Corrected lift forces					
Hitch [kN]	39.8	--	42.5	46.9	49.6
point. [lb]	8942	--	9554	10539	11156
at [kN]	--	47.2	48.2	49.9	51.0
frame [lb]	--	10611	10841	11228	11466

Lifting height relative to horizontal position of lower links.

[mm]	104	201	300	384	394
[in]	4.1	7.9	11.8	15.1	15.5
Corrected lift forces					
Hitch [kN]	51.9	53.6	53.8	55.7	--
point [lb]	11669	12051	12092	12753	--
at [kN]	50.9	50.5	48.5	47.3	47.4
frame [lb]	11439	11354	10899	10634	10647

MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test	6 May, 1996
Location of test	Nebraska Power Lab, Lincoln, NE, USA
Sound level meter	Bruel and Kjar 2209
Type of track	Concrete oval
Gear number	18th
Speed prior to acceleration	25.5 km/h
Noise level	85.0 dB(A)

Date of Test:	01-Oct-97	
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:

18.13 MPa
2630 psig

II. Pump delivery rate at minumum pressure and rated engine speed:

112.4 l/min
29.7 gpm

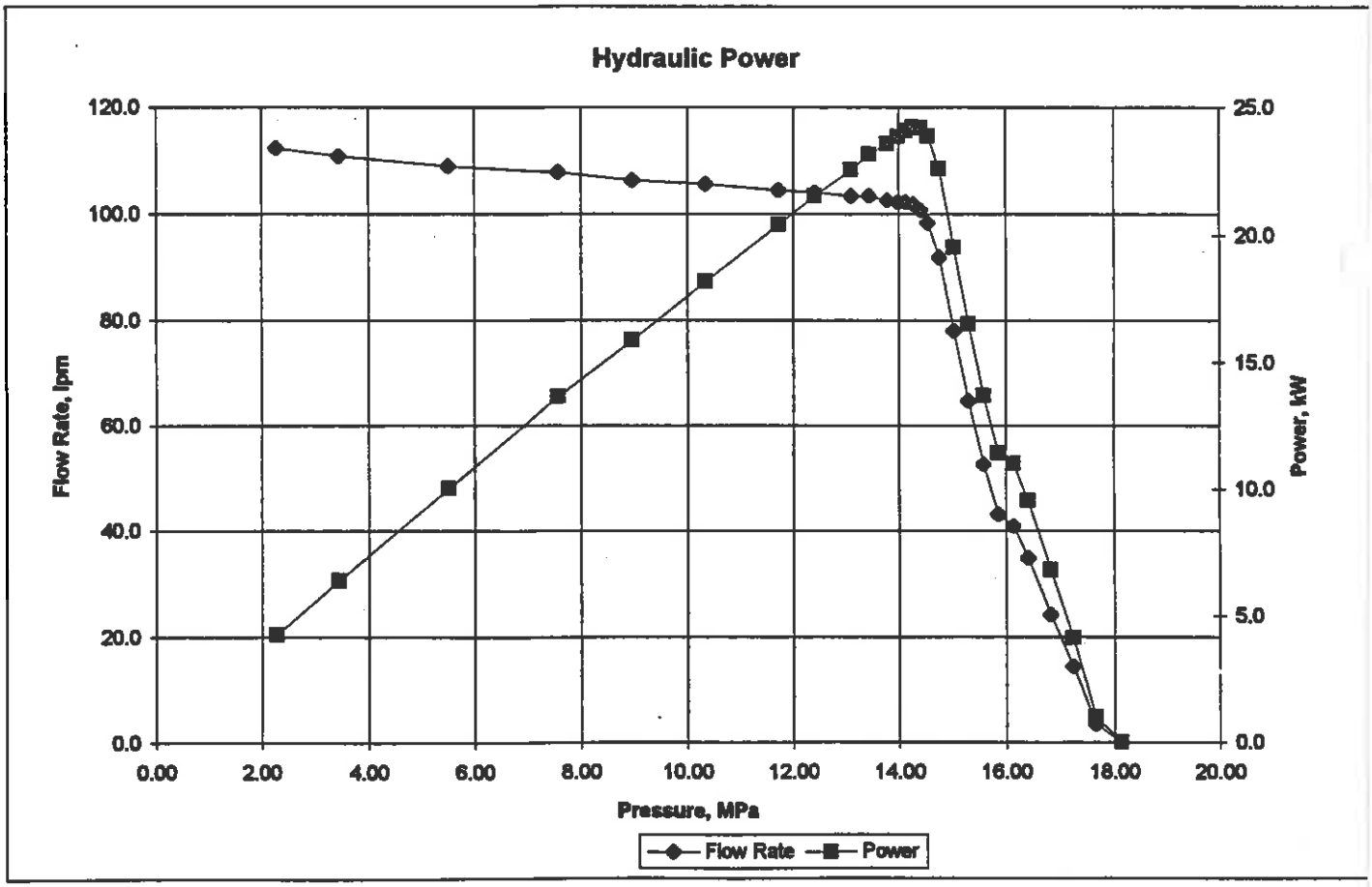
III. Flow rate, pressure, power:

90% of relief valve setting		
34.8 l/min	16.41 MPa	9.5 kW
9.2 gpm	*2380 psig*	*12.8 hp*
Maximum hydraulic power:		
101.8 l/min	14.27 MPa	24.2 kW
26.9 gpm	*2070 psig*	*32.5 hp*

IV. Hydraulic fluid temperature at flow meter:

67.7 °C
154 °F

This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.



Repairs: None

Remarks: The gears which were used for the reduced drawbar load tests were selected because the gears immediately above the full drawbar loads did not provide significant fuel consumption savings as required in sections 2.2.3.3.4 and 2.2.3.3.5