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Test 1530: Case 4994 Powershift Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1530—CASE 4994 POWERSHIFT DIESEL ALSO CASE INTERNATIONAL 4994 POWERSHIFT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

| Power Hp (kW) | Crank shaft speed rpm | Fuel Consumption | | | Temperature °F (°C) | | | Barometer inch Hg (kPa) |
|--|--|--------------------|-----------------------|-----------------------|---------------------|--------------------|--------------------|-------------------------------|
| | | gal/hr (l/h) | lb/hp.hr (kg/kW.h) | Hp.hr/gal (kW/h/l) | Cooling medium | Air wet bulb | Air dry bulb | |
| MAXIMUM POWER AND FUEL CONSUMPTION | | | | | | | | |
| Rated Engine Speed—Two Hours (PTO Speed—991 rpm) | | | | | | | | |
| 344.04 (256.55) | 2100 | 20.206 (76.490) | 0.410 (0.249) | 17.03 (3.354) | 175 (79.2) | 67 (19.4) | 75 (24.0) | 28.87 (97.48) |
| * | VARYING POWER AND FUEL CONSUMPTION—Two Hours | | | | | | | |
| 308.69 (230.19) | 2217 | 18.908 (71.573) | 0.427 (0.260) | 16.33 (3.216) | 174 (78.6) | 66 (18.9) | 75 (23.6) | |
| 0.00 (0.00) | 2341 | 5.222 (19.766) | | | 170 (76.4) | 66 (18.9) | 74 (23.1) | |
| 159.04 (118.60) | 2285 | 12.245 (46.353) | 0.537 (0.327) | 12.99 (2.559) | 172 (77.5) | 66 (18.9) | 75 (23.9) | |
| 346.62 (258.47) | 2100 | 20.215 (76.522) | 0.407 (0.247) | 17.15 (3.378) | 174 (78.9) | 66 (18.9) | 75 (23.6) | |
| 80.72 (60.19) | 2319 | 9.983 (37.789) | 0.863 (0.525) | 8.09 (1.593) | 171 (77.2) | 67 (19.4) | 77 (25.0) | |
| 235.26 (175.43) | 2254 | 15.295 (57.896) | 0.453 (0.276) | 15.38 (3.030) | 173 (78.3) | 66 (18.9) | 74 (23.3) | |
| Av 188.39 Av (140.48) | 2253 | 13.644 (51.650) | 0.505 (0.307) | 13.81 (2.720) | 172 (77.8) | 66 (19.0) | 75 (23.8) | 28.87 (97.50) |

DRAWBAR PERFORMANCE

| Power Hp (kW) | Drawbar pull lbs (kN) | Speed mph (km/h) | Crank- shaft speed rpm | Slip % | Fuel Consumption | | | Temp. °F (°C) | | | Barom. inch Hg (kPa) |
|--|--------------------------------|------------------------|---------------------------------|-----------|--------------------|-----------------------|-----------------------|---------------------|--------------------|--------------------|----------------------------|
| | | | | | gal/hr (l/h) | lb/hp.hr (kg/kW.h) | Hp.hr/gal (kW.h/l) | Cool- ing med | Air wet bulb | Air dry bulb | |
| Maximum Available Power—Two Hours 6th Gear | | | | | | | | | | | |
| 294.24 (219.42) | 18142 (80.70) | 6.08 (9.79) | 2100 | 3.86 | 20.057 (75.925) | 0.475 (0.289) | 14.67 (2.890) | 181 (82.5) | 65 (18.3) | 78 (25.6) | 29.00 (97.91) |
| 75% of Pull at Maximum Power—Ten Hours 6th Gear | | | | | | | | | | | |
| 244.29 (182.17) | 14037 (62.44) | 6.53 (10.50) | 2228 | 2.77 | 17.617 (66.688) | 0.503 (0.306) | 13.87 (2.732) | 180 (82.3) | 70 (21.3) | 84 (29.1) | 28.91 (97.62) |
| 50% of Pull at Maximum Power—Two Hours 6th Gear | | | | | | | | | | | |
| 168.04 (125.31) | 9359 (41.63) | 6.73 (10.84) | 2276 | 1.76 | 13.799 (52.236) | 0.573 (0.348) | 12.18 (2.399) | 179 (81.7) | 68 (19.7) | 81 (27.2) | 29.01 (97.96) |
| 50% of Pull at Reduced Engine Speed—Two Hours 9th Gear | | | | | | | | | | | |
| 168.04 (125.31) | 9359 (41.63) | 6.73 (10.84) | 1363 | 1.76 | 10.896 (41.246) | 0.452 (0.275) | 15.42 (3.038) | 179 (81.7) | 67 (19.2) | 83 (28.3) | 29.01 (97.96) |

MAXIMUM POWER IN SELECTED GEARS

| | | | | | | | | | | | |
|--------------------|-------------------|-----------------|------|-------|----------|--|--|---------------|--------------|--------------|------------------|
| 257.77 (192.22) | 34519 (153.55) | 2.80 (4.51) | 2211 | 14.83 | 2nd Gear | | | 177 (80.6) | 66 (18.9) | 72 (22.2) | 28.73 (97.02) |
| 279.38 (208.33) | 31388 (139.62) | 3.34 (5.37) | 2099 | 9.75 | 3rd Gear | | | 179 (81.7) | 70 (21.1) | 78 (25.6) | 28.75 (97.08) |
| 299.60 (223.41) | 26920 (119.75) | 4.17 (6.72) | 2097 | 6.19 | 4th Gear | | | 180 (82.2) | 65 (18.3) | 71 (21.7) | 28.93 (97.69) |
| 301.66 (224.95) | 22225 (98.86) | 5.09 (8.19) | 2101 | 4.81 | 5th Gear | | | 181 (82.5) | 65 (18.3) | 72 (22.2) | 28.93 (97.69) |
| 303.78 (226.53) | 18716 (83.25) | 6.09 (9.80) | 2100 | 3.71 | 6th Gear | | | 181 (82.5) | 66 (18.9) | 74 (23.3) | 28.94 (97.73) |
| 306.43 (228.51) | 15968 (71.03) | 7.20 (11.58) | 2101 | 3.23 | 7th Gear | | | 180 (82.2) | 66 (18.9) | 73 (22.8) | 28.94 (97.73) |
| 300.95 (224.42) | 12987 (57.77) | 8.69 (13.99) | 2100 | 2.50 | 8th Gear | | | 180 (82.2) | 66 (18.9) | 74 (23.3) | 28.94 (97.73) |

LUGGING ABILITY IN 6th GEAR

| | | | | | | | |
|----------------------|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Crankshaft Speed rpm | | 2100 | 1890 | 1678 | 1466 | 1262 | 1052 |
| Pull—lbs (kN) | | 18716 (83.25) | 20057 (89.22) | 21607 (96.12) | 22155 (98.55) | 21644 (96.28) | 20379 (90.65) |
| Increase in Pull % | | 0 | 7 | 15 | 18 | 16 | 9 |
| Power—Hp (kW) | | 303.78 (226.53) | 291.78 (217.58) | 277.89 (207.22) | 248.27 (185.14) | 209.28 (156.06) | 164.40 (122.60) |
| Speed—Mph (km/h) | | 6.09 (9.80) | 5.46 (8.78) | 4.82 (7.76) | 4.20 (6.76) | 3.63 (5.84) | 3.03 (4.87) |
| Slip % | | 3.71 | 4.18 | 4.49 | 4.81 | 4.49 | 4.49 |

Department of Agricultural Engineering

Dates of Test: June 9-27, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8377 **Fuel weight** 6.975 lbs/gal (0.836 kg/l) **Oil SAE 30 API service classification** SF, CD **To motor** 6.351 gal (24.043 l) **Drained from motor** 5.117 gal (19.369 l) **Transmission lubricant** API service class CD engine oil certified to T0-2 **Hydraulic fluid** Case TCH fluid **Final drive lubricant** Case FDL fluid **Total time engine was operated** 39.5 hours.

ENGINE: Make SAAB-Scania Diesel **Type** eight cylinder vee with turbocharger **Serial No.** 5521227 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.00" × 5.51" (127 mm × 140 mm) **Compression ratio** 15.5 to 1 **Displacement** 866 cu in (14191 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements with aspirator **Oil filter** full flow centrifugal, separate cartridge for turbocharger oil **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for transmission oil **Fuel filter** four paper cartridges and prestrainer **Muffler** underhood **Exhaust vertical** **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** four wheel drive with duals **Serial No.** *8865228* **Tread width** rear 96.1" (2441 mm) to 155.5" (3950 mm) front 96.1" (2441 mm) to 155.5" (3950 mm) **Wheel base** 124.8" (3170 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 72.5" (1842 mm) Vertical distance above roadway 44.0" (1118 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Advertised speeds mph (km/h)** first 2.5 (4.0) second 3.0 (4.8) third 3.5 (5.7) fourth 4.2 (6.8) fifth 5.1 (8.2) sixth 6.1 (9.9) seventh 7.1 (11.4) eighth 8.1 (13.0) ninth 10.1 (16.2) tenth 12.1 (19.5) eleventh 14.5 (23.4) twelfth 17.2 (27.7) reverse 3.1 (5.0), 8.9 (14.4) **Clutch** multiple wet disc hydraulically power actuated and operated by foot pedal **Brakes** dual caliper disc hydraulically operated by foot pedal and mechanically by hand lever **Steering** hydrostatic for front wheels, electro hydraulic for rear wheels, front and rear wheels may be steered independently or together **Turning radius** (on concrete surface with front wheel steering) right 353.3 (8.97 m) left 353.3 (8.97 m) (on concrete surface with four wheel steering) right 221.8" (5.63 m) left 221.8" (5.63 m) **Turning space diameter** (on concrete surface with front wheel steering) right 751.5" (19.09 m) left 751.5" (19.09 m) (on concrete surface with four wheel steering) right 492.8" (12.52 m) left 492.8" (12.52 m) **Power take-off** 991 rpm at 2100 engine rpm.

TRACTOR SOUND LEVEL WITH CAB

| | dB(A) |
|---|-------|
| Maximum Available Power—Two Hours | 76.5 |
| 75% of Pull at Maximum Power—Ten Hours | 75.5 |
| 50% of Pull at Maximum Power—Two Hours | 74.5 |
| 50% of Pull at Reduced Engine Speed—Two Hours | 73.5 |
| Bystander in 12th gear | 90.0 |

TIRES, BALLAST AND WEIGHT

| | | With Ballast | Without Ballast |
|------------------------------------|-----------------------------|--|--|
| Rear Tires | —No., size, ply & psi (kPa) | Inner Two 24.5-32; 10; 16 (110) Outer Two 24.5-32; 10; 12 (85) | Inner Two 24.5-32; 10; 16 (110) Outer Two 24.5-32; 10; 12 (85) |
| Ballast | —Liquid (each inner) | 1662 lb (753 kg) | None |
| | —Effect of front wts (each) | ~345 lb (~156 kg) | None |
| Front Tires | —No., size, ply & psi (kPa) | Inner Two 24.5-32; 10; 18 (125) Outer Two 24.5-32; 10; 14 (95) | Inner Two 24.5-32; 10; 18 (125) Outer Two 24.5-32; 10; 14 (95) |
| Ballast | —Liquid (each inner) | 1745 lb (791 kg) | None |
| | —Effect of front wts (each) | 795 lb (361 kg) | None |
| Height of Drawbar | | 22.5 in (570 mm) | 22.5 in (570 mm) |
| Static Weight with Operator | —Rear | 15060 lb (6831 kg) | 13115 lb (5949 kg) |
| | —Front | 24870 lb (11281 kg) | 18200 lb (8255 kg) |
| | —Total | 39930 lb (18112 kg) | 31315 lb (14204 kg) |

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 144°F (62.2°C). Seven gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1530, July 20, 1984.

Report reissued. Supplemental sales permit for Case International 4994 Powershift Diesel June 18, 1985.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
L. L. BASHFORD
T. L. THOMPSON

Board of Tractor Test Engineers



Case 4994 Powershift Diesel