UMTRI-88-25

Parameter Measurements of a John Deere Motor Home/Chassis

Conducted
for

Mr. G. D. Clark
John Deere Tractor Works
Waterloo, Iowa

C. B. Winkler

Engineering Research Division
University of Michigan
Transportation Research Institute

July, 1988

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16. Abstract

A program of parameter measurements was conducted on a John Deere/Georgie Boy, Cruise Air III, 35 foot motor home. Inertial properties including weight, center of gravity position, and principal moments of inertia were determined. Numerous properties of the front and rear suspensions were also measured.

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Motor home, inertial properties, suspensions, steering system.	

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TABLE OF CONTENTS

Introduction

This report presents the results of the vehicle parameter measurement program conducted for John Deere by UMTRI. In that program, UMTRI measured the inertial properties of a Georgie Boy, Cruise Air III motor home mounted on a John Deere Chassis, and measured the suspension properties of a similar John Deere chassis. The motor home and additional chassis were both supplied by John Deere. Detailed definition and results of the measurement program follow.

Inertial Properties

UMTRI determined, through a process of experimental *measurement, estimation*, and *calculation*, the inertial properties of the Cruise Air III motor home generally relevant to vehicle simulation. In particular we determined:

- Weight of the sprung mass
- C.G. position of the sprung mass
- Principle moments of inertia of the sprung mass in roll, pitch, and yaw
- Weights of the front and rear unsprung masses (composed of tires, wheels, drums and brakes, axle and springs)
- C.G. position of the front and rear unsprung masses
- Principal moments of inertia of the front and rear unsprung masses in yaw and in roll
- Weights of the front and rear rolling masses (composed of tires, wheels, and drums)
- Polar moment of inertia of the front and rear rolling masses about the spin axis

To determine these properties, UMTRI measured the weight, center of gravity position, and the principal moments of inertia in pitch, roll, and yaw of the full, motor home vehicle. We also measured the weights and yaw moments of inertia of the unsprung masses and the weights and spin moments of inertia of the rolling masses. As is our general practice, we have assumed that the center of gravity positions of the unsprung and rolling masses lie at the intersection of the three nominal planes of symmetry. Further, we have assumed that the roll inertia of an individual unsprung mass is equal to the measured yaw inertia of that mass, and that the pitch inertia of an unsprung mass is equal to the sum of the spin inertias of its associated rolling masses. Having determined the necessary properties of the total vehicle and of the unsprung masses, we have calculated the weight, center of gravity position, and the principal moments of inertia in pitch, roll, and yaw of the sprung mass of the vehicle.

The results of this procedure appear in the attached Figure 1. The most noteworthy quality of these data is the fact that the moments of inertia of the vehicle in pitch and yaw are relatively large in relation to the wheelbase and track of the vehicle. The majority of motor vehicles exhibit moments of inertia in yaw (and pitch) of a magnitude such that the radius of gyration in yaw (and pitch) is nearly equal to 0.5 of the wheelbase. Radius of gyration in the range of perhaps 0.46 to 0.54 times wheelbase would cover the large majority of vehicles from cars to heavy trucks. The radius of gyration in yaw for this vehicle is about 62% of the wheelbase. This large yaw moment of inertia relative to wheelbase would be expected to contribute to a high yaw response time, or sluggish feel in handling.

Suspension Measurements

UMTRI has used its Heavy Vehicle Suspension Measurement Facility* to measure performance properties relevant to vehicle dynamics simulation for both the front and rear suspensions of the test vehicle chassis. The measurements which were made are outlined in Table 1.

In all tests using the UMTRI Heavy Vehicle Suspension Measurement Facility, the frame of the vehicle is held fixed and the suspension is exercised by moving the facility "table" vertically or in roll, or by applying tire shear forces or moments using the "wheel pads." In all front suspension tests, the steering wheel is held fixed with the road wheels nominally in the on-center position.

Force and moment measurements are made with load cell systems located in each of the wheel pads. Thus, in general and *except where noted, forces and moments reported in the data are absolute values measured at the tire/road interface.* Resulting motions of the suspension and wheels are measured with several potentiometric devices. *Generally, these motion measurements are relative (not absolute) and are referenced to the fixed frame of the vehicle.* Figures 2 and 3 indicate the nature of the measurement system used in this program.

The following paragraphs outline the test procedure for the four physical test types mentioned in Table 1.

- *Vertical motion.* The suspension is exercised by vertical motion of the table. Table motion is controlled by a force and moment feedback servo-system so that roll moment applied to the suspension is held constant at zero while vertical load on the suspension is varied over the range of interest.

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* Winkler, C.B. and Hagan, M. "A Test Facility for the Measurement of Heavy Vehicle Suspension Parameters." SAE Paper No. 800906, August 1980.

	Weight, lbs	Moment of Inertia, in-lb-sec ^{2} Ixx	Iyy	Izz
Total Vehicle	14,340	70,990	614,200	599,700
Sprung Mass	[12,321]	[61,900]	[553,900]	[540,300]
Unsprung Masses				
Front	817	{1809}	{80.4}	1809
Rear	1202	{2410}	{156.2}	2410
Rotating Masses				
Front (1 side)	178		40.2	
Rear (1 side)	274		75.6	

TEST CONDITIONS

- Fully equipped (as delivered)
- All storage areas empty
- Fuel tank full
- Water and holding tanks empty
- 1/2 full propane tank removed and replaced with 185 lb weight

[ ] Calculated
{ } Estimated

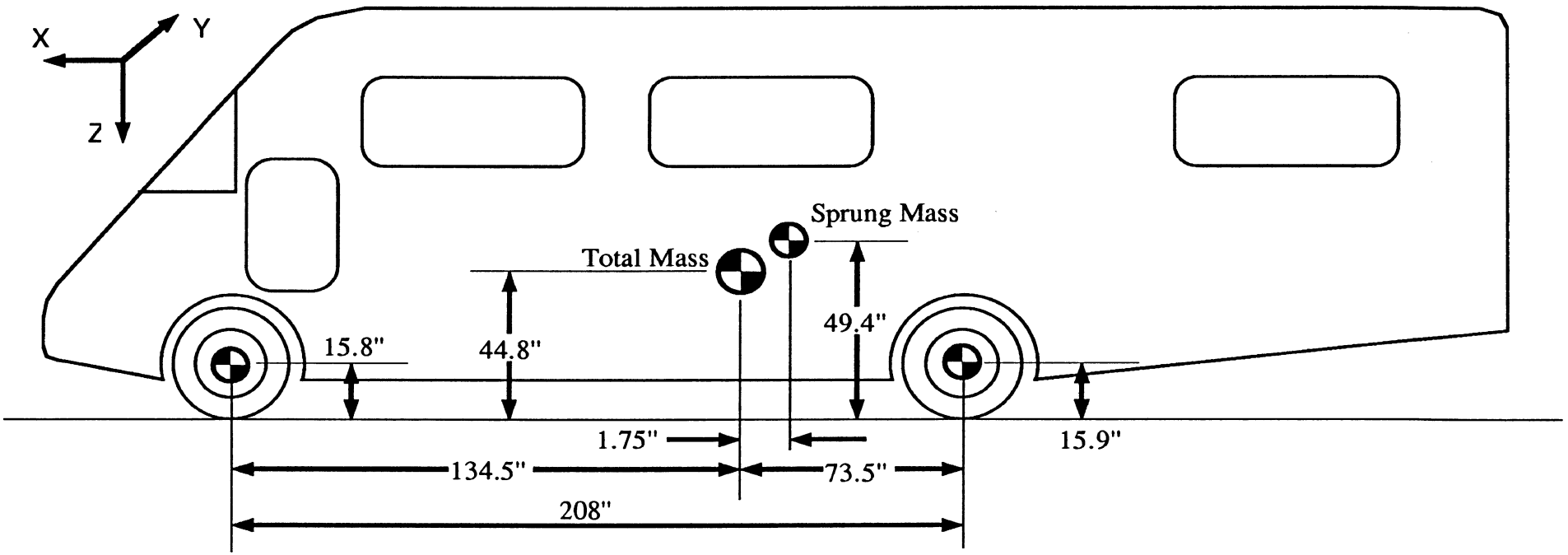


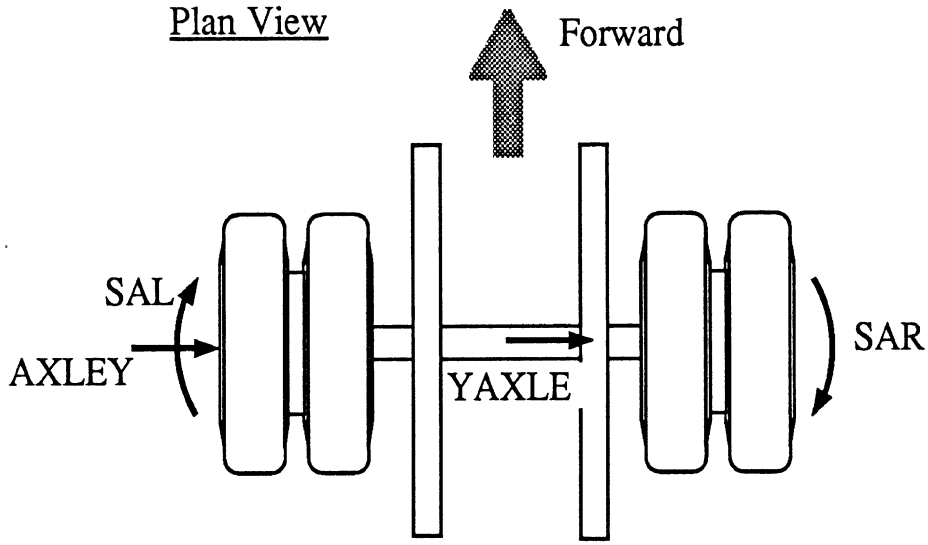
Figure 1. Inertial properties of the John Deere/Georgie Boy Cruise Air III motor home

Table 1. Suspension property measures.

Suspension property	*Functional relationships Presented Graphically*	*Reduced Parameter*	*Four Physical Types of Suspension Tests*			
			Vertical Motion	*Roll Motion*	*Aligning Moment*	*Lateral Force*
1. Spring rate	$F_Z = f(Z)$	boundary tables, β's	x			
2. Jounce steer	$\delta = f(Z)$	$\partial\delta/\partial Z$[1]	x			
3. Spindle path	$X = f(Z)$	tabular presentation	x			
4. Roll rate	$M_{xRC} = f(\phi)$	total and auxiliary stiffnesses		x		
5. Roll steer	$\delta = f(\phi)$	$\partial\delta/\partial\phi$		x		
6. Roll center height	$y_a = f(\phi)$	roll center height		x		
7. Aligning moment steer	$\delta = f(M_z)$	$\partial\delta/\partial M_z$, K_T[1], K_S[1]			x	
8. Lateral force steer of axle[2]	$\delta = f(F_y)$	$\partial\delta/\partial F_y$				x
9. Lateral stiffness	$y_a = f(F_y)$	$\partial y/\partial F_y$				x

Nomenclature	*Definition*
K_S	effective stiffness of the steering gear/column
K_T	effective stiffness of the tie rod
F_y	is side force per wheel, applied equally at all wheels
F_z	is vertical load
M_z	is tire aligning moment, applied equally at all wheels
M_{xRC}	is the suspension roll moment *about the roll center*
X	is longitudinal displacement of the wheel spindle relative to the chassis
y_a	is the lateral motion of the axle relative to the chassis at an arbitrarily defined vertical position
Z	is vertical displacement of the wheel spindle relative to the chassis
δ	is the steer angle of the road wheel
φ	is the roll angle of the axle relative to the chassis

1 For front suspension only.
2 For rear suspension only.



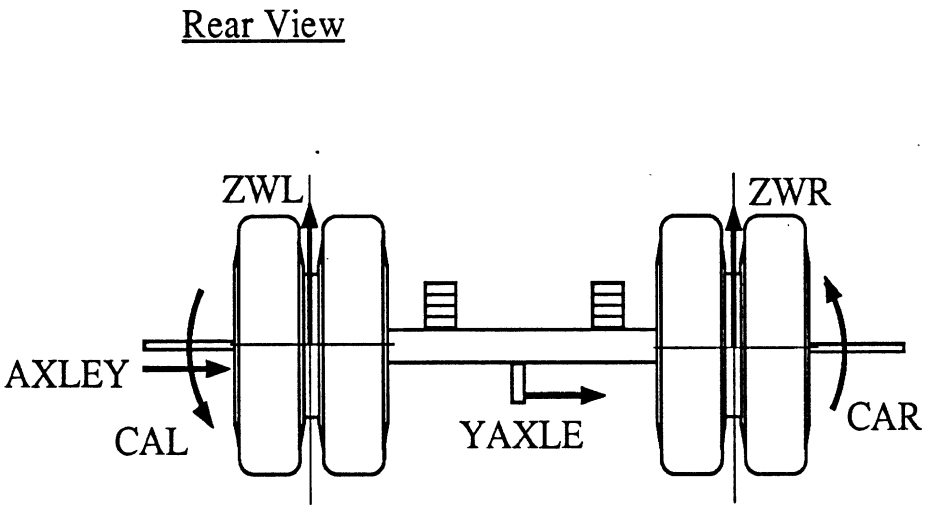


Figure 2. Displacement measurements

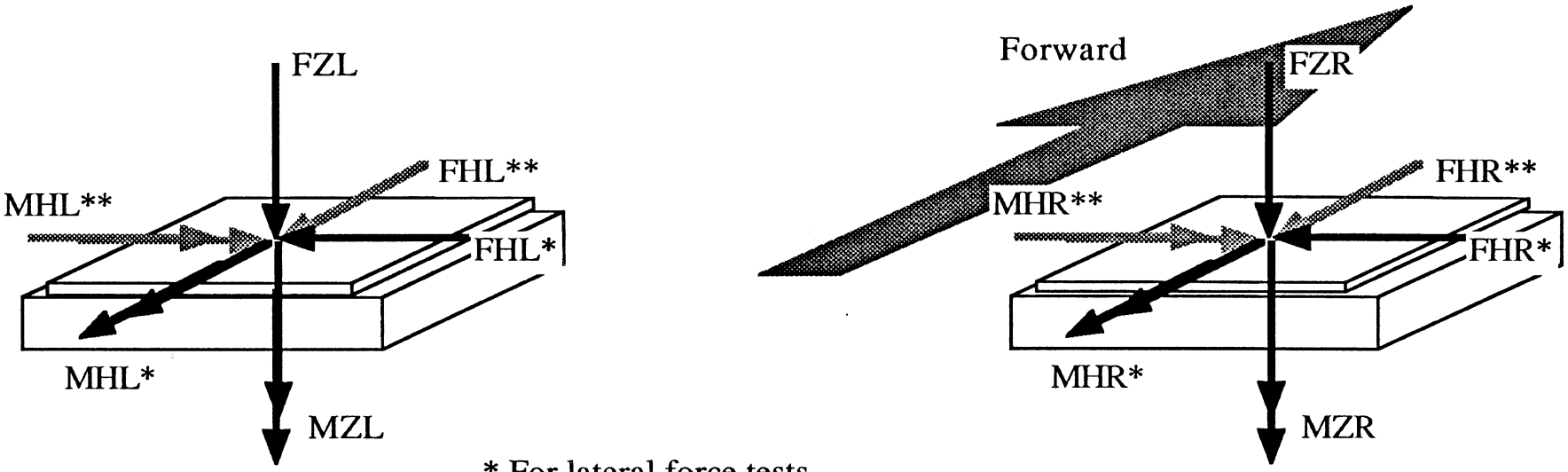


Figure 3. Load cell measurements made in the left and right side wheel pads.

Force and moment control servo-systems are also used to maintain zero levels of tire shear force and moment.

- *Roll motion.* The suspension is exercised by roll motion of the table. Table motion is controlled by a force and moment feedback servo-system so that the total vertical load applied to the suspension is held constant at the desired value while total roll moment on the suspension is varied over the range of interest. Force and moment control servo-systems are also used to maintain zero levels of tire shear force and moment. This force and moment control mode allows the motion of the suspension to be determined by the suspension geometry, rather than by facility geometry. Tests are conducted at three conditions of vertical load.

- *Aligning moment.* The suspension is exercised by the application of aligning moments at each tire (or tire pair in the case of dual tires). Prior to the test, the suspension is loaded vertically to the desired level (with zero roll moment). During the test, the table is controlled by feedback of the vertical position of the right and left axle spindles so that the *vertical and roll position of the axle is held fixed.* (As a result, vertical and roll motions, and especially their influence on steer, are not allowed to influence the test, but vertical load on the individual tires may change slightly during the test.) The force and moment control servo-systems of the wheel pads are used to vary the aligning moment at each tire while longitudinal and lateral forces are held fixed at zero. Aligning moment loading is equal at each wheel throughout the test.

- *Lateral force.* The suspension is exercised by the application of lateral tire shear force. Prior to the test, the suspension is loaded vertically to the desired level (with zero roll moment). During the test, the table is controlled by feedback of the vertical position of the right and left axle spindles so that the *vertical and roll position of the axle is held fixed.* (As a result, vertical and roll motions, and especially their influence on steer, are not allowed to influence the test, but vertical load on individual tires will change some during the test. Total vertical load may also change slightly.) The force and moment control servo-systems of the wheel pads are used to vary the lateral force at each tire while longitudinal force and aligning moment are held fixed at zero. Lateral force loading is equal at each wheel throughout the test.

The results from the suspension measurement program are appended to this report and appear in two forms, viz., graphical and reduced data. Table 1 indicates the type of data plots and reduced numerics associated with each measurement. The data are grouped

by suspensions. Each group begins with several pages of tabulated, reduced data, followed by a large number of data plots.

Graphical data.

The graphical data are produced by an automated computer process which includes automatic scaling of the graphs. When the variation of one of the plotted parameters is small, the scale of the graph is automatically "blown up" so that the presentation fills the page. Because of this, some of the graphs appear very "noisy." This generally means that the measured motion is very small.

Several graphs are produced from data collected from each test run. The graphs for each run are preceded by a cover sheet which identifies the data file, test condition, suspension, and vehicle and gives certain pertinent facility and suspension data. Above each graph is title information including the vehicle and data file identification and a descriptive title for the graph. The graph itself is an "X-Y" plot and the X and Y variables are carefully defined below each graph. There may be a "Note" at the bottom of the page describing some pertinent test condition. (A box to the right and one below the graph contain specific numerical values for several variables. These are the values "at the cursor" which, in these graphs, is at the first data point. These cursor values are important for data-reducing procedures, but are of no interest in the printed graphs.)

Reduced data.

Much of the reduced data are simple linear coefficients expressing the rate of change (partial derivative) of one measure (e.g., average steer angle) as a function of another (e.g., axle roll angle). Typically, these are determined in the "on-center" condition (e.g., at roll equals zero) and/or at several specified vertical load conditions. The definitions of these simple parameters are clear from the information in Table 1. Other reduced parameters whose definitions are not so clear are discussed below.

Spring properties. These properties are derived from *vertical motion* test data. Spring rate data are used to produce (1) tables describing the compression and extension boundaries of the data as well the "average" rate and (2) compression and extension "β's" (exponential coefficients for the UMTRI spring model). These parameters are defined in Figure 4. Note also that tables are given in "corrected" and "uncorrected" forms. "Uncorrected" means that the vertical forces are the average normal forces *at the tire/road interface*. In the "corrected" tables, the unsprung weight has been used to convert these to average vertical force *at the suspension.*

Roll center height . In these measurements, roll center is defined as the *instant center of axle roll motion with respect to the fixed frame of the vehicle.* The roll center is assumed to be *on the centerline* of the vehicle and its height is relative to the simulated ground plane. Roll center height is determined from the slope of roll motion data (lateral vs roll motion of

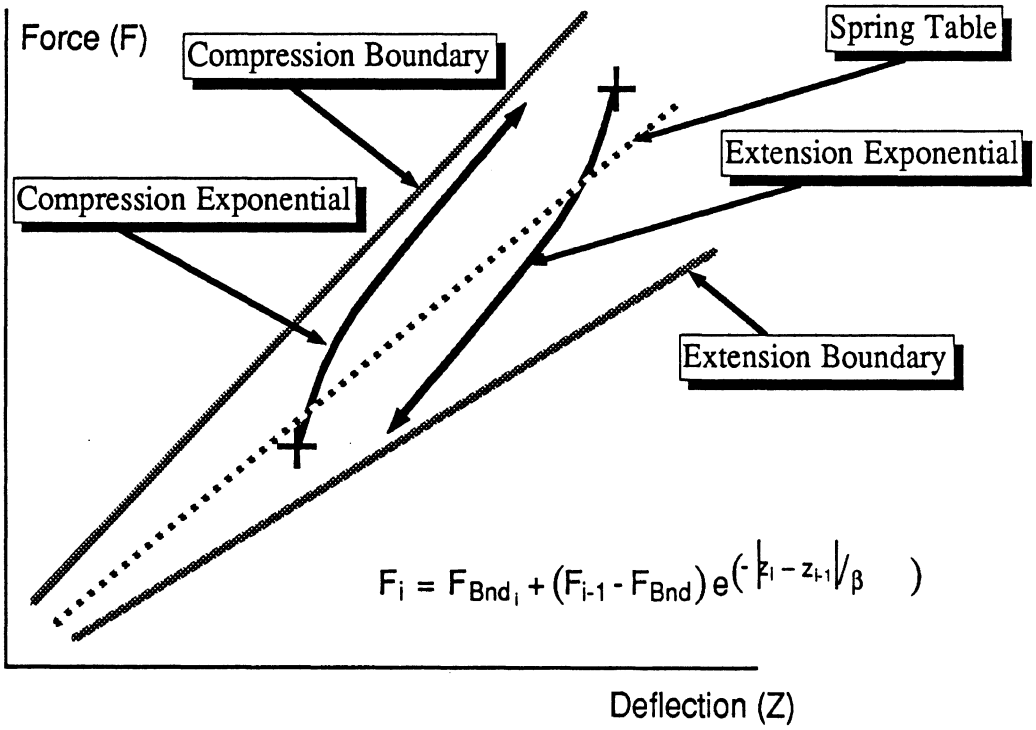


Figure 4. Parameters for the UMTRI leaf spring model.

the axle) taken *at zero roll angle.* (This slope indicates the height of the roll center relative to the height of the lateral motion transducer.)

Total and auxiliary roll stiffnesses. The roll stiffness of most suspensions is higher than what would be predicted from the vertical spring rates alone due to a variety of auxiliary mechanisms. Roll motion test data are used to produce plots of the axle roll moment (about the roll center) vs axle roll angle. The slope of this plot is presented as the "total" roll stiffness of the axle. Roll motion test data and vertical motion test data are applied to a simple suspension model (using the UMTRI exponential spring model) to determine what portion of the total roll stiffness is accounted for by the vertical spring rate and what portion derives from auxiliary stiffness. The latter is also reported on the data sheets. Roll stiffnesses for the John Deere chassis were determined with and without the anti-sway bar attached.

Spindle path. The graphical data indicating the path of the spindle in the X-Z plane during vertical motion is presented in reduced form in (1) tabular presentation of data points and (2) a second order Taylor series expansion derived from that data.

Jounce/Rebound Steer. The graphical data indicating the steer motions of the road wheels during vertical displacement of the front suspension was also reduced to the form of a second order Taylor series expansion.

Discussion of Results

Vertical Motion. The front suspension exhibited a vertical spring rate of about 600 lb/in and the measured rear suspension spring rate is about 950 lb/in. Contrary to the usual performance for trucks, the front suspension exhibited significantly *more* Coulomb friction than the rear suspension. (This is probably related to the shorter front springs.)

The front suspension shows significant jounce/rebound steer which is a strong function of vertical position. The data suggest that the drag link of the steering system is considerably longer than ideal, but is at nearly the ideal pitch angle at or near the operating load (5000 lbs) of the front axle.

Roll Motion. Compared to typical heavy truck suspensions, the rear suspension is somewhat soft in roll relative to the load that it carries (10,000 lb) while, by the same measure, the front suspension of this vehicle is relatively stiff. A typical ratio of roll stiffness (in-lb/deg) to load (lb) for the rear of a heavy truck might be 4:1, while in this vehicle that ratio is about 3.2:1. At the front, typical ratios are 2:1 while this vehicle exhibits about a 3.6:1 ratio.

Roll centers for both suspensions are as expected—near the height of the spring shackle points.

Roll steer for the rear suspension is moderate to low, varying from oversteer at light loads to slight understeer at 10,000 lb. Roll steer on the front suspension is moderately strong in the understeer direction near the static axle load, and decreases with increasing load.

Aligning Moment Response. The effective spring rate of the steering system ($K_S \approx$ 3,680 in-lb/deg) is very low compared to commercial trucks, and should result in a significant understeer influence. The tie-rod stiffness ($K_T \approx$ 12,500 in-lb/deg) is closer to the lower end of the "typical" range.

The aligning moment steer response of the rear suspension is low as expected, and should have a minor oversteer influence.

Lateral Force Response. Lateral deflection of both suspensions in response to lateral force is fairly large. The rear suspension would deflect on the order of 1 inch/g of lateral acceleration (given a 10,000 lb load), while the front suspension would deflect at a rate of about 0.4 inch/g (at 5000 lb load). Rear suspension lateral force steer represents another minor oversteer influence.

Appendix A:
Front Suspension Data

Single Steering Axle Suspension Reduced Data

Suspension I.D.: John Deere
Motor Home Chassis
Single Axle Front Suspension

Unsprung Weights Measured, Lbs

Left Side	Right Side
408.5	408.5

Spring Properties

Boundary Tables: See attached sheets

Vertical Stiffness : 591 lb/in

At: Suspension Load, Lbs	4,000	6,000	8,000
Compression ß	0.280	0.300	0.275
Extension ß	0.275	0.300	0.275

Suspension Properties

At: Suspension Load, Lbs	4,000		6,000		8,000	
Roll Center Height, in above the ground	16.78		14.97		13.75	
Auxiliary Roll Stiffness in-lb/deg	11,500		11,500		12,500	
Total Roll Stiffness in-lb/deg	18,000		17,800		20,700	
Auxiliary Roll Stiffness in-lb/deg (w/o A-roll bar)	N/A		3,200		N/A	
Total Roll Stiffness in-lb/deg (w/o A-roll bar)	N/A		9,500		N/A	
∂YAXLE/∂FH,in/lb	N/A		N/A		1.54E-04	
	Left	Right	Left	Right	Left	Right
Roll Steer Coefficient deg/deg	0.121	0.137	0.050	0.069	0.015	0.028
Aligning Moment Steer Coeff,deg/in-lb	N/A	N/A	5.61E-04	6.33E-04	5.44E-04	6.24E-04
Phase IV Steering System Parameters						
Kt, in-lb/deg	N/A		13,793		12,500	
Ks, in-lb/deg	N/A		3,568		3,680	

Spindle Path: XWAV = 0.1843 - 0.3012 * ZWAV + 0.0238 * ZWAV^2

Jounce/Rebound Steer: ∂ = 0.2487 - 0.4713 * ZWAV + 0.0477 * ZWAV^2

SPINDLE PATH

XWAV, in	ZWAV, in
-.01	.71
-.20	1.46
-.33	2.00
-.42	2.44
-.52	3.08
-.60	3.66
-.67	4.34
-.73	5.08
-.75	5.63
-.76	6.24
-.76	6.78
-.74	7.42
-.71	7.90
-.70	8.03

AXLE PATH

XAXLE, in	ZAXLE, in
-.02	1.19
-.17	1.86
-.32	2.58
-.42	3.15
-.52	3.80
-.60	4.47
-.67	5.05
-.72	5.66
-.77	6.37
-.80	7.02
-.82	7.69
-.82	8.20

JOUNCE/REBOUND STEER

ZWAV, in	SAAV, deg
.67	.05
.89	-.12
1.35	-.34
1.84	-.52
2.46	-.69
3.30	-.81
4.17	-.86
5.34	-.85
6.47	-.74
7.29	-.65

UNCORRECTED SPRING TABLE

Deflection, in	Force, lb
-.07	-159.32
1.00	464.41
2.00	1169.49
2.99	1793.22
3.99	2362.71
5.01	2959.32
6.01	3555.93
7.01	4233.90
9.25.	6213.56

CORRECTED SPRING TABLE

Deflection, in	Force, lb
-.07	-576.82
1.00	55.91
2.00	760.99
2.99	1384.72
3.99	1954.21
5.01	2550.82
6.01	3147.43
7.01	3825.40
9.25	5805.06

Uncorrected

COMPRESSION ENVELOPE

Deflection, in	Force, lb
.02	69.81
1.02	816.95
2.00	1549.15
2.99	2145.76
3.99	2742.37
4.99	3284.75
6.01	3935.59
7.03	4559.32
9.60	6755.93

EXTENSION ENVELOPE

Deflection, in	Force, lb
.09	-432.44
1.00	247.46
2.00	816.95
2.99	1359.32
3.99	2010.17
4.99	2525.42
6.01	3149.15
7.01	3827.12
9.49	5920.14

Corrected

COMPRESSION ENVELOPE

Deflection, in	Force, lb
.02	-338.69
1.02	408.45
2.00	1140.65
2.99	1737.26
3.99	2333.87
4.99	2876.25
6.01	3527.09
7.03	4150.82
9.60	6347.43

EXTENSION ENVELOPE

Deflection, in	Force, lb
.09	-840.94
1.00	-161.04
2.00	408.45
2.99	950.82
3.99	1601.67
4.99	2116.92
6.01	2740.65
7.01	3418.62
9.49	5511.64

DATE 5-14-1988 10:34: 4
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CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF1.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED. FULL VERTICAL TEST.

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 0.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILTY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:July 7, 1988.
John Deere
Motor Home Chassis
File: JDEEREF1.DAT

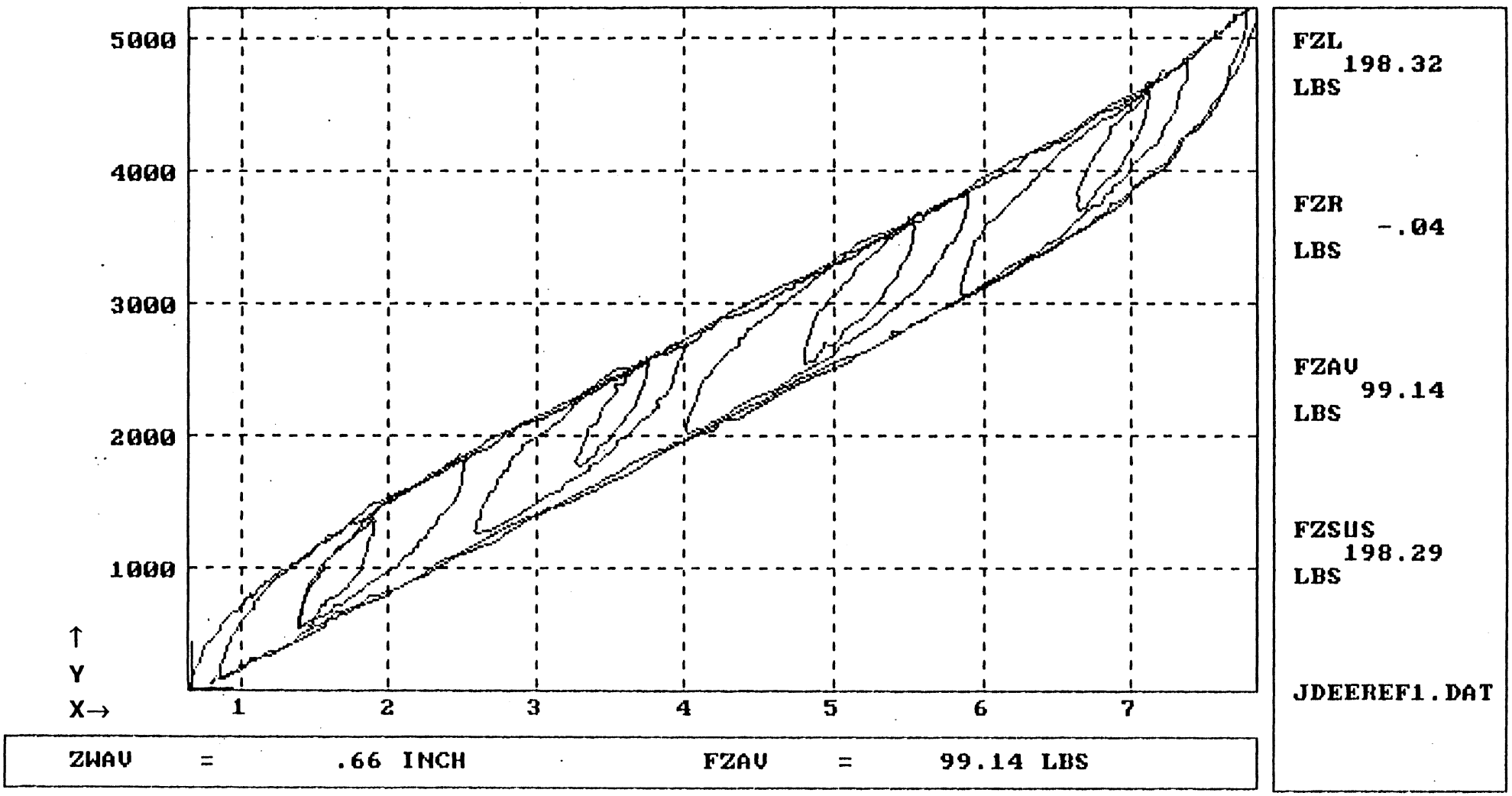
John Deere
Motor Home Chassis

File: JDEEREF1.DAT

Single Axle Front Suspension

Average Vertical Wheel Rate*

Date: July 7, 1988
Pitch = 0.0 degrees



Abscissa (X): Average vertical wheel displacement (ZWAV); in; spring compression, positive.

Ordinate (Y): Average vertical wheel load (FZAV); lb; spring compression, positive.

*Note: Engine on. Full vertical test.

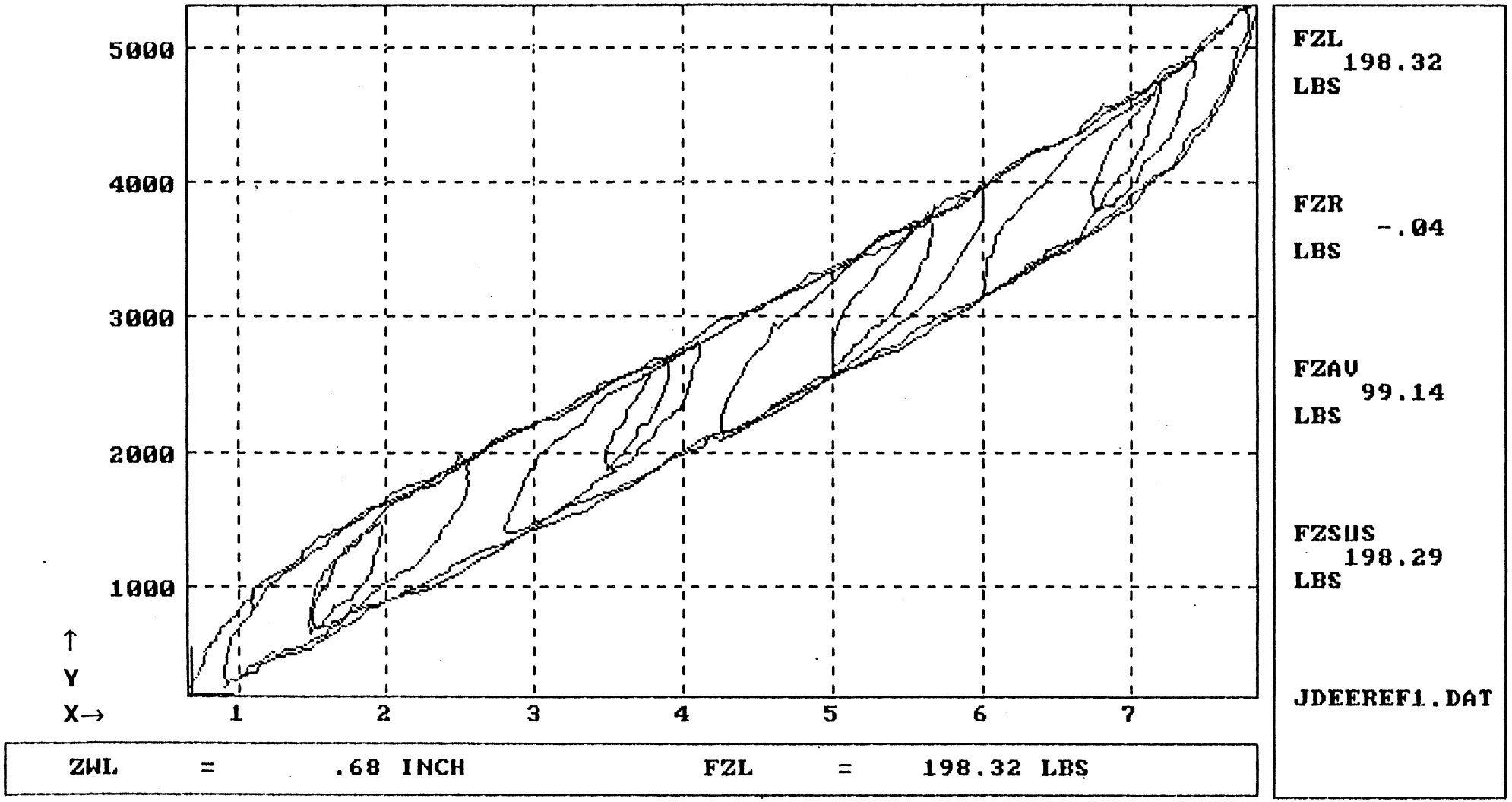
John Deere
Motor Home Chassis

File: JDEEREF1.DAT

Single Axle Front Suspension

Left Side Vertical Wheel Rate*

Date: July 7, 1988
Pitch = 0.0 degrees



Abscissa (X): Left wheel vertical displacement (ZWL); in; spring compression, positive.

Ordinate (Y): Left wheel vertical load (FZL); lb; spring compression, positive.

*Note: Engine on. Full vertical test.

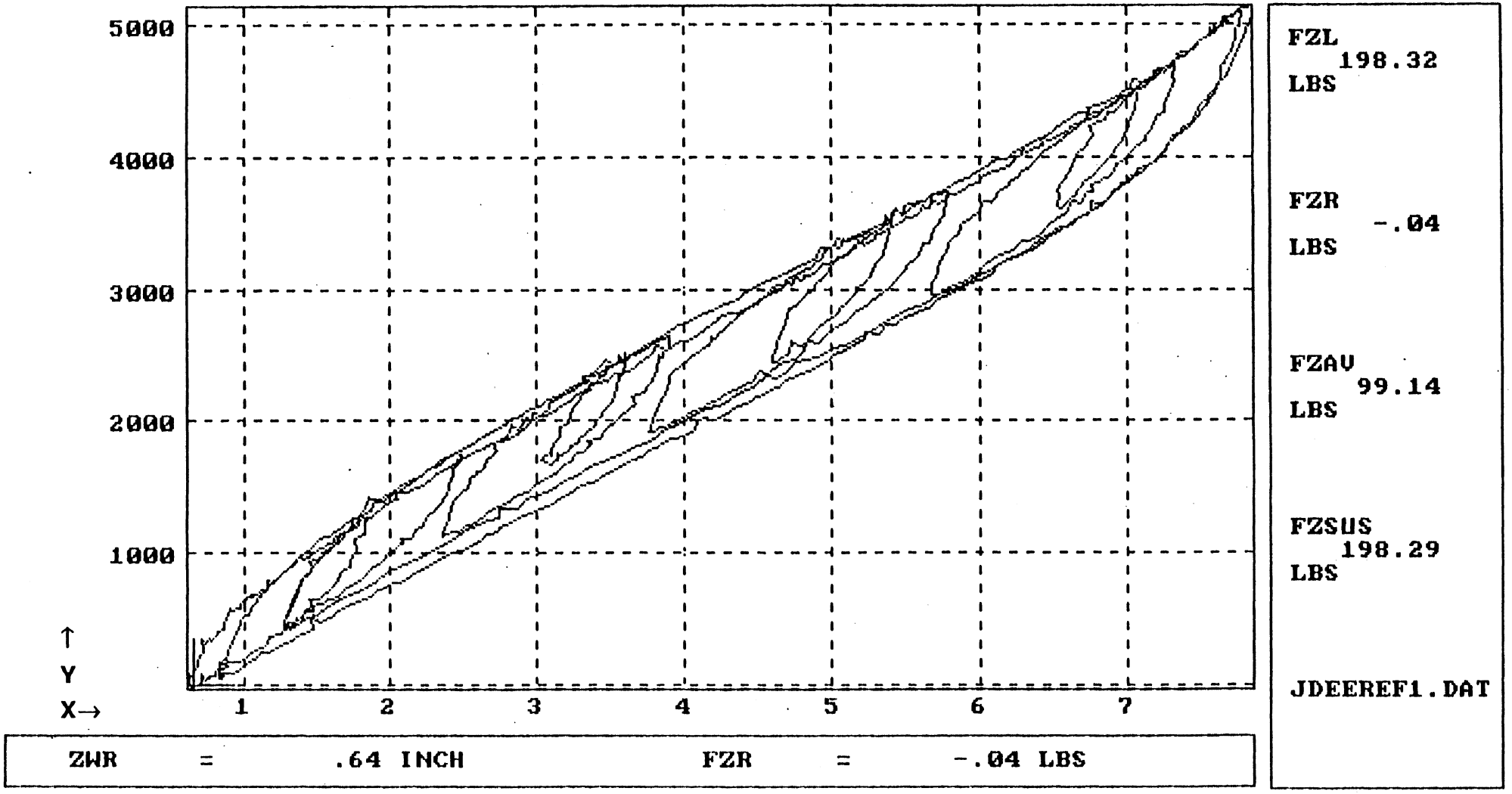
John Deere
Motor Home Chassis

File: JDEEREF1.DAT

Single Axle Front Suspension

Right Side Vertical Wheel Rate*

Date: July 7, 1988
Pitch = 0.0 degrees



Abscissa (X): Right wheel vertical displacement (ZWR); in; spring compression, positive.

Ordinate (Y): Right wheel vertical load (FZR); lb; spring compression, positive.

*Note: Engine on. Full vertical test.

DATE 5-14-1988 10:36:13
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CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF2.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED. SIMPLE VERTICAL TEST.

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TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 0.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILTY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREF2.DAT

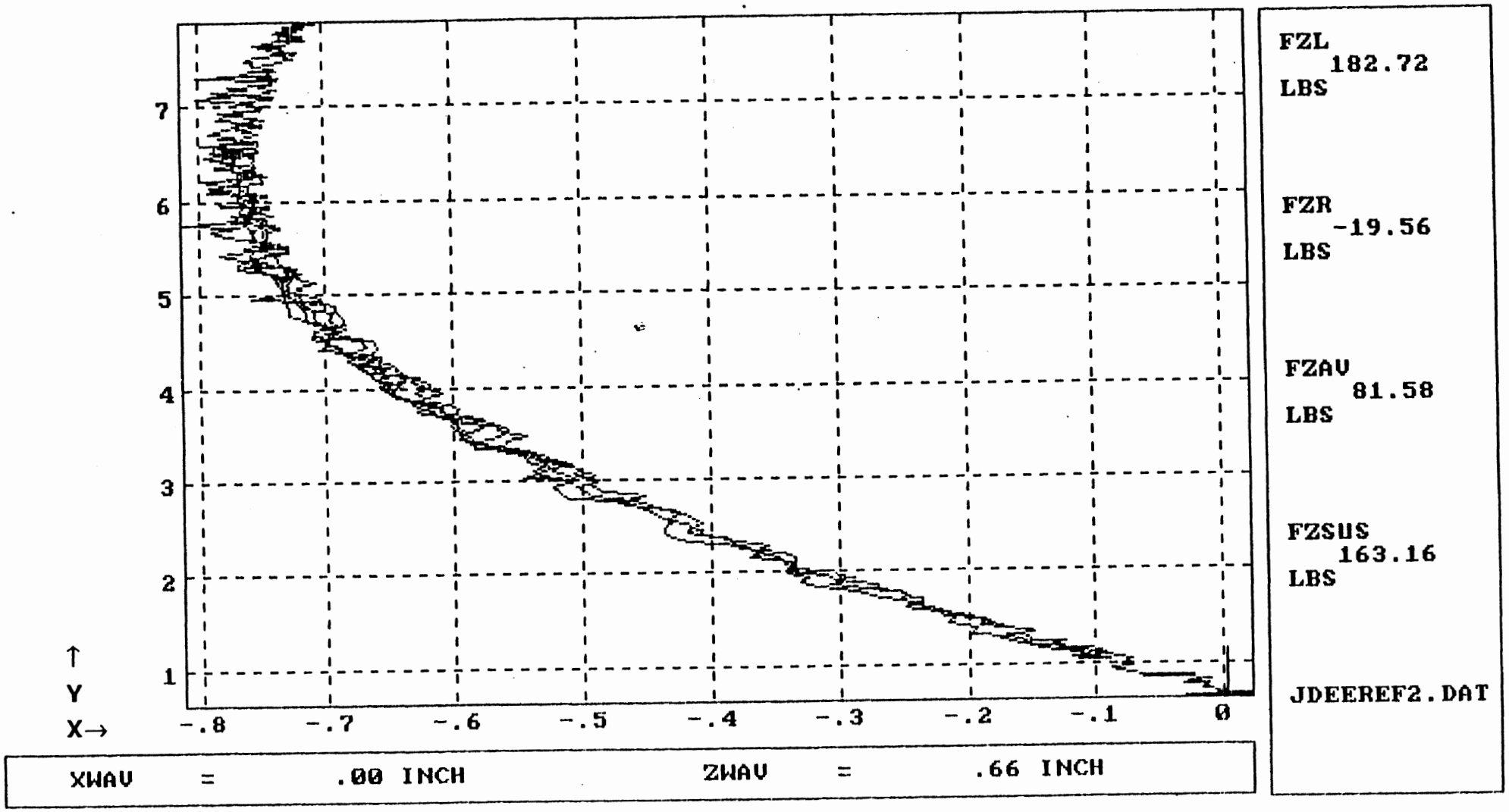
John Deere
Motor Home Chassis

File: JDEEREF2.DAT

Single Axle Front Suspension

Average Spindle Motion*

Date: July 7, 1988
Pitch = 0.0 degrees



Abscissa (X): Average longitudinal wheel center motion (XWAV); in; forward motion, positive.

Ordinate (Y): Average vertical wheel displacement (ZWAV); in; spring compression, positive.

*Note: Engine on. Full vertical test.

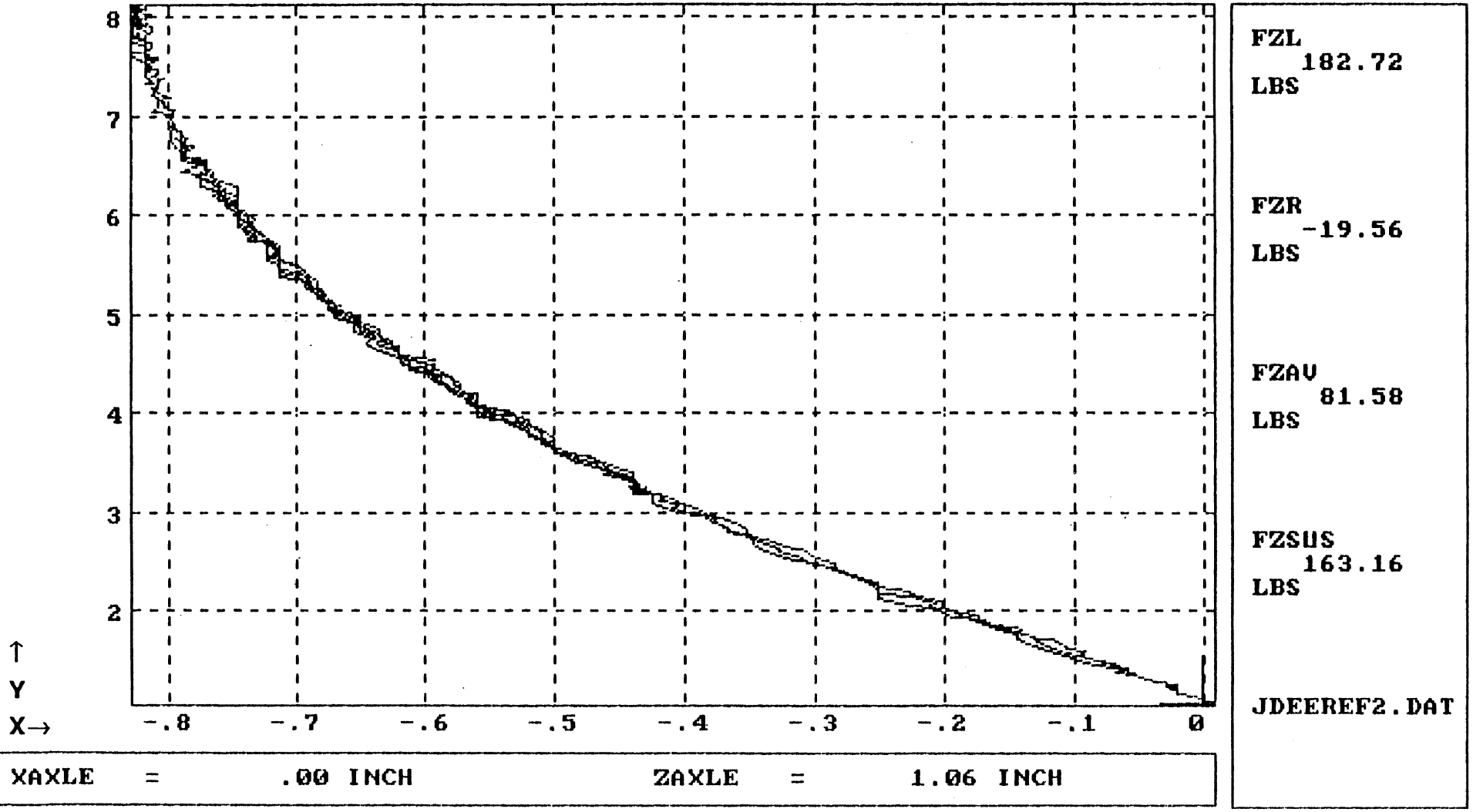
John Deere
Motor Home Chassis

File: JDEEREF2.DAT

Single Axle Front Suspension

Average Axle Center Motion*

Date: July 7, 1988
Pitch = 0.0 degrees



Abscissa (X): Average longitudinal axle center motion (XAXLE); in; forward motion, positive.

Ordinate (Y): Average vertical axle displacement (ZAXLE); in; spring compression, positive.

*Note: Engine on. Full vertical test.

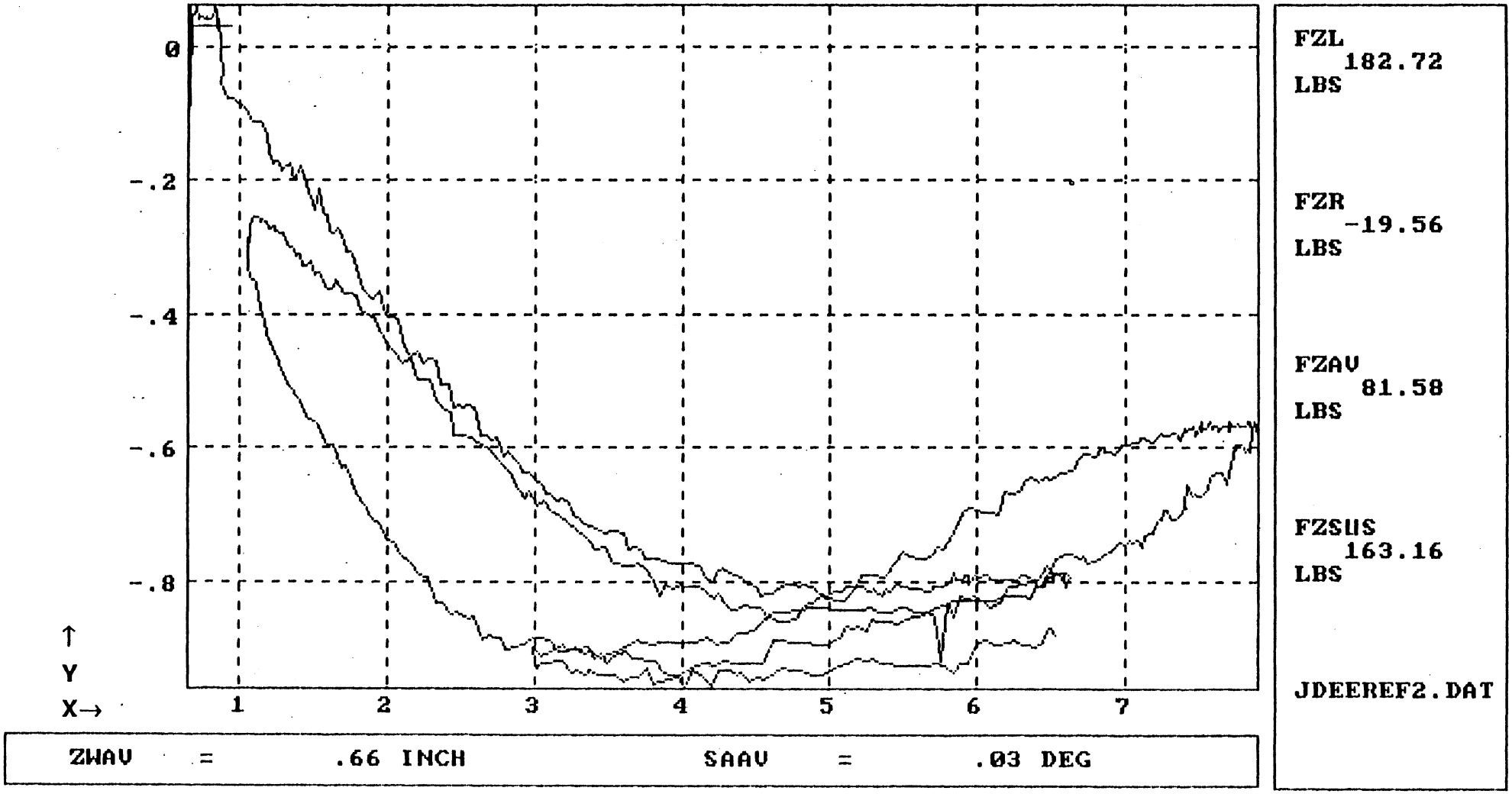
John Deere
Motor Home Chassis

File: JDEEREF2.DAT

Single Axle Front Suspension

Jounce/Rebound Steer*

Date: July 7, 1988
Pitch = 0.0 degrees



Abscissa (X): Average vertical wheel displacement (ZWAV); in; spring compression, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on. Full vertical test.

DATE 5-14-1988 12:41:53
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF6.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 4000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

****

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

****

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	18.38	4.75
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREF6.DAT

John Deere
Motor Home Chassis

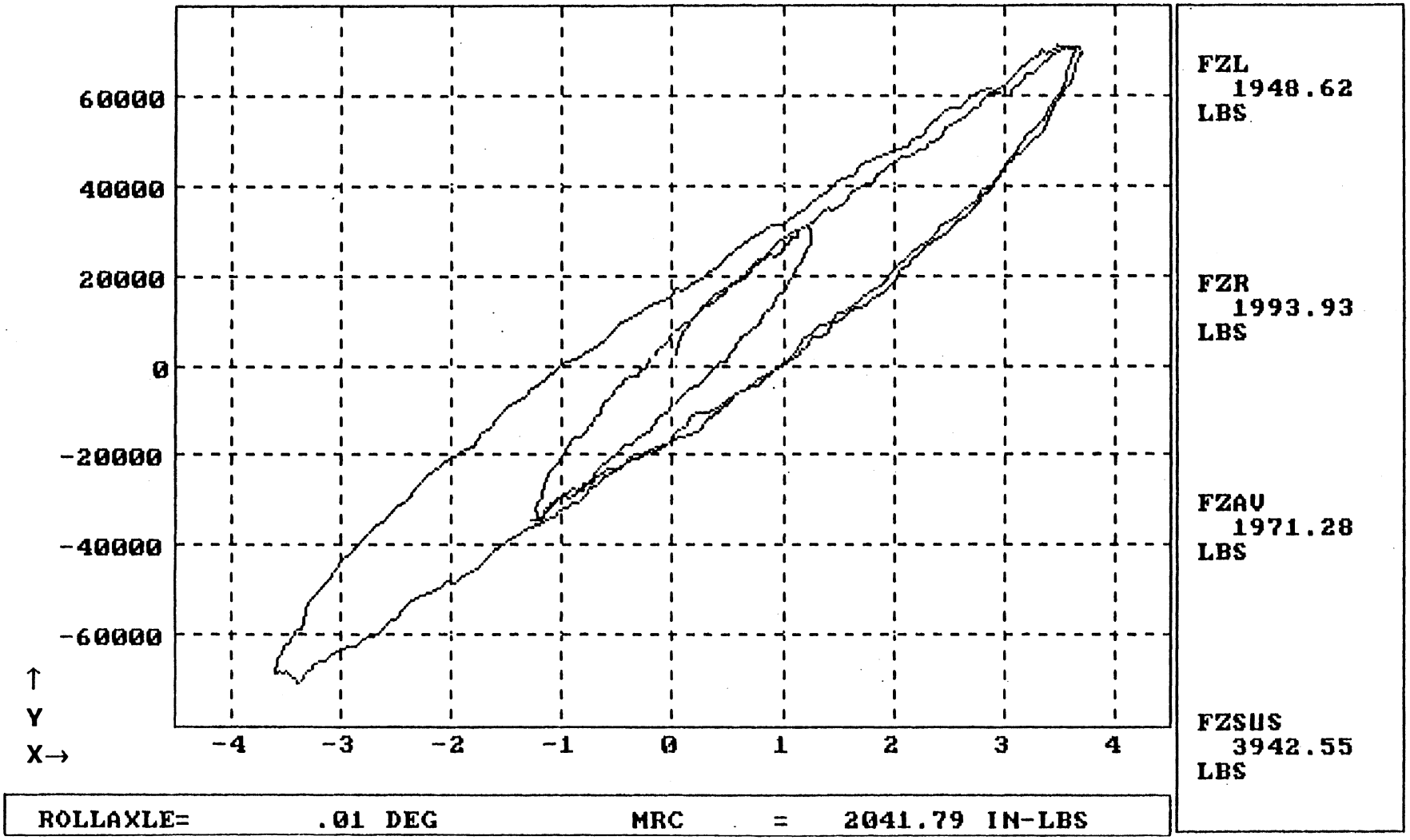
File: JDEEREF6.DAT

Single Axle Front Suspension

Axle Roll Rate*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 4,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

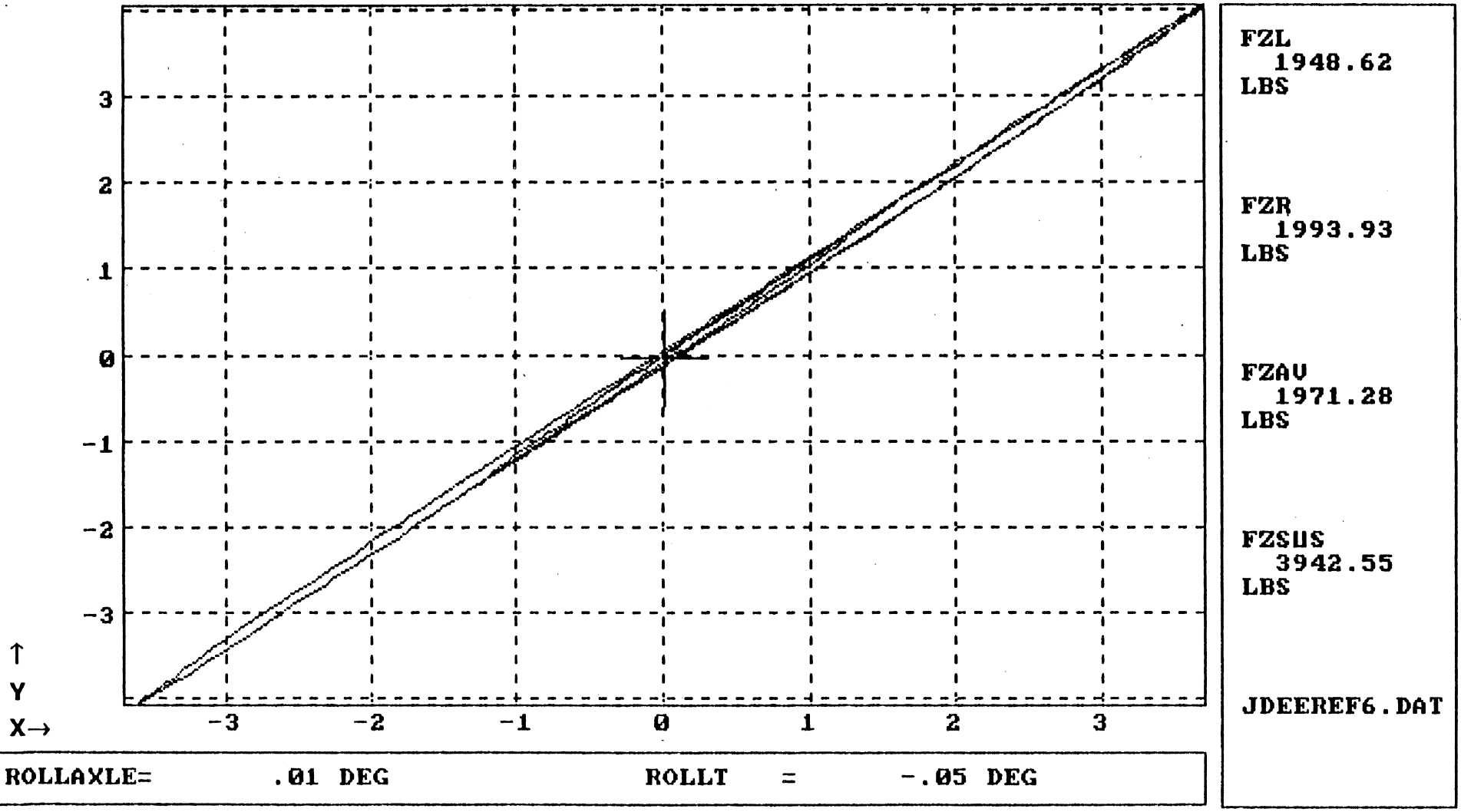
Single Axle Front Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF6.DAT

Table Roll Angle vs Axle Roll Angle*

Suspension Load = 4,000 lb.



ROLLAXLE=	.01 DEG	ROLLT =	-.05 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

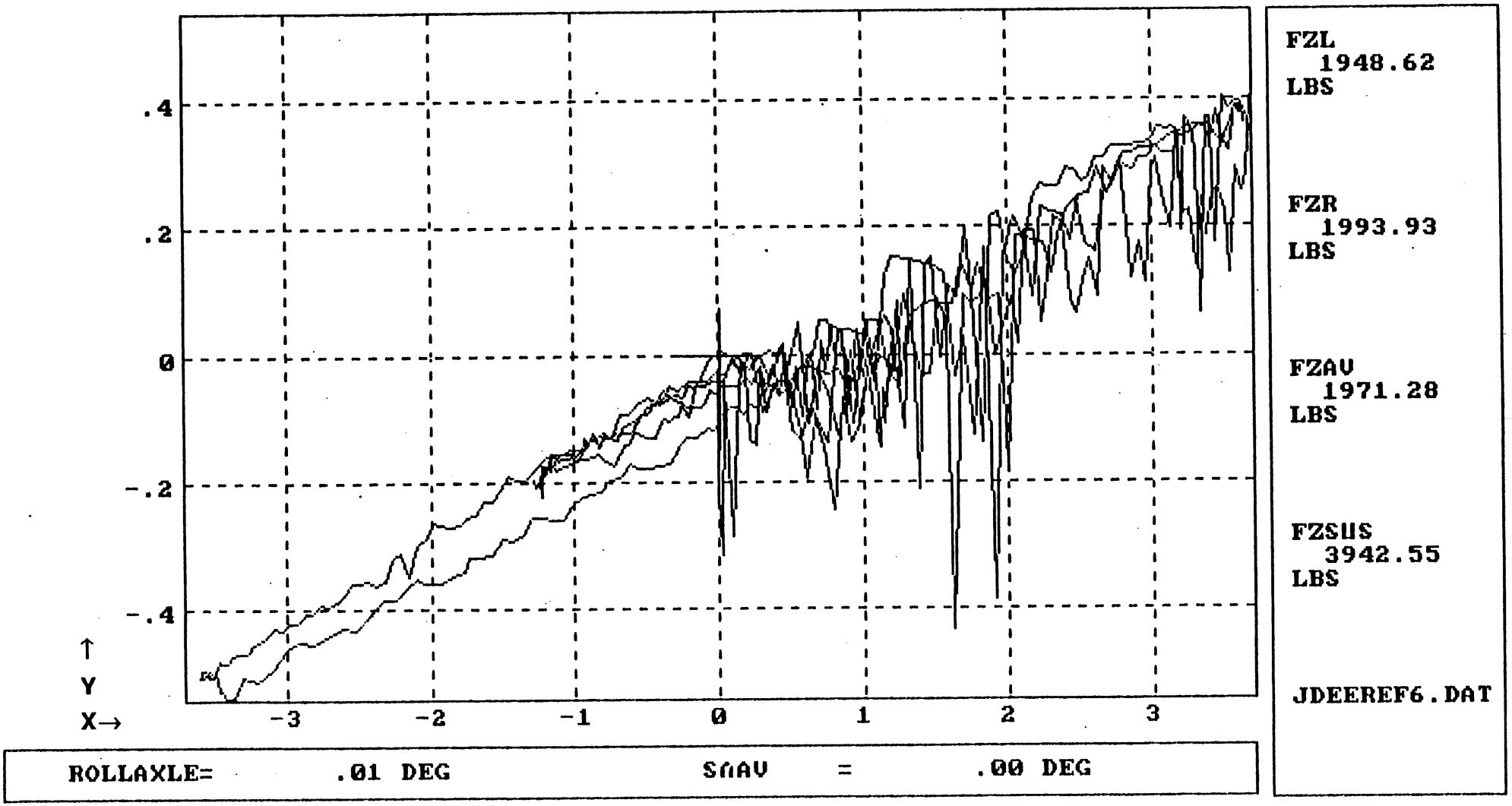
File: JDEEREF6.DAT

Single Axle Front Suspension

Average Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 4,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

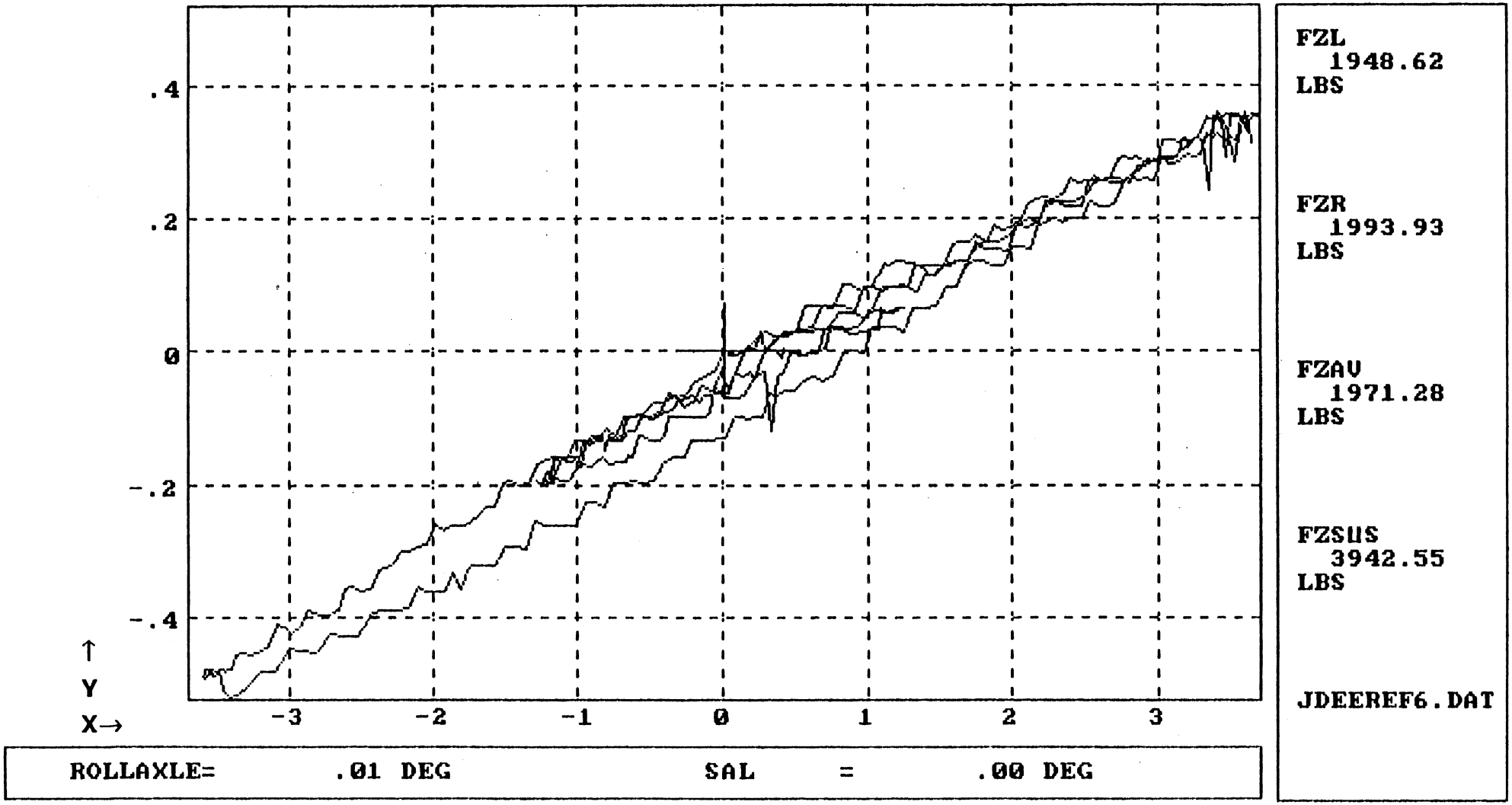
File: JDEEREF6.DAT

Single Axle Front Suspension

Left Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 4,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

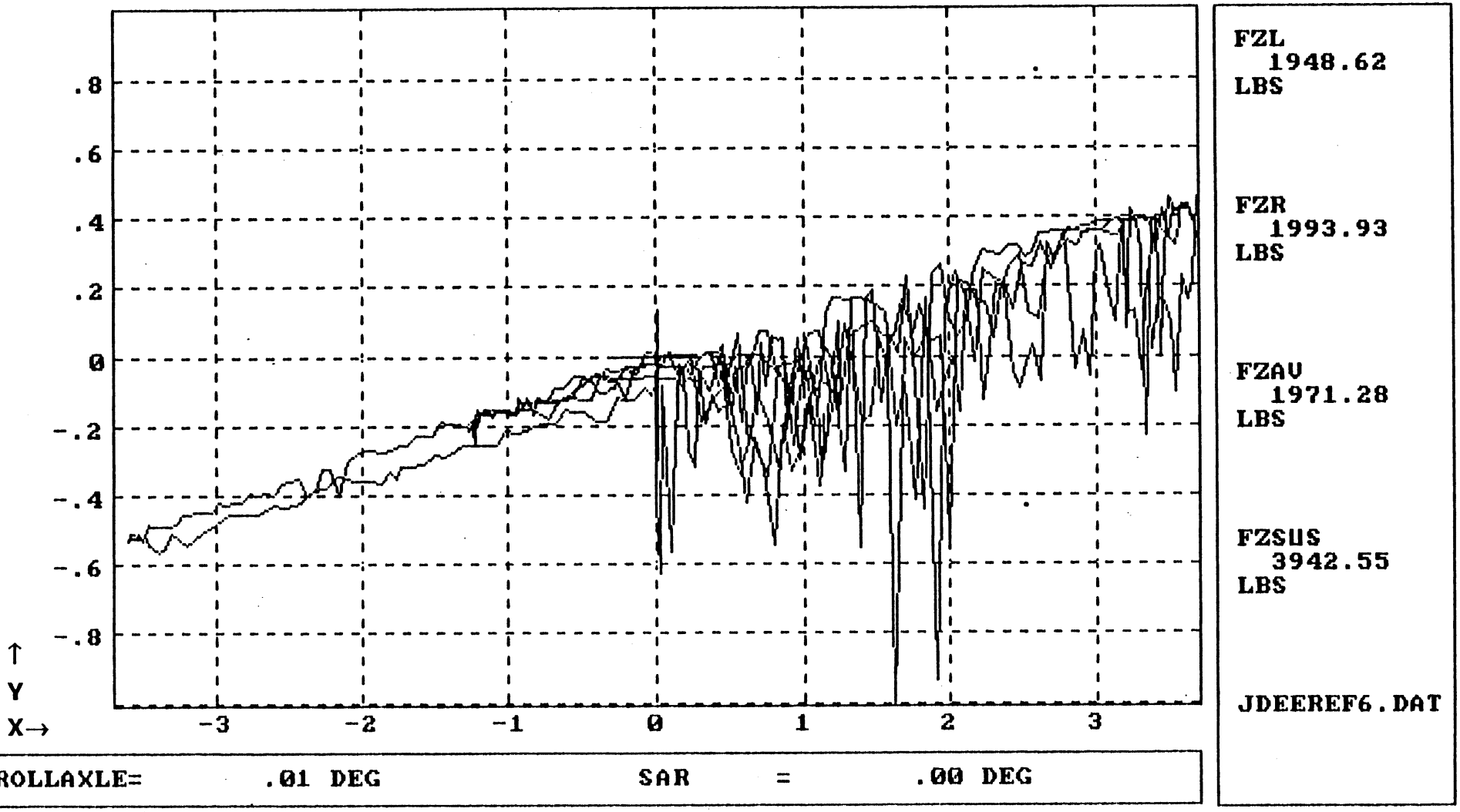
John Deere
Motor Home Chassis

File: JDEEREF6.DAT

Single Axle Front Suspension
Right Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 4,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

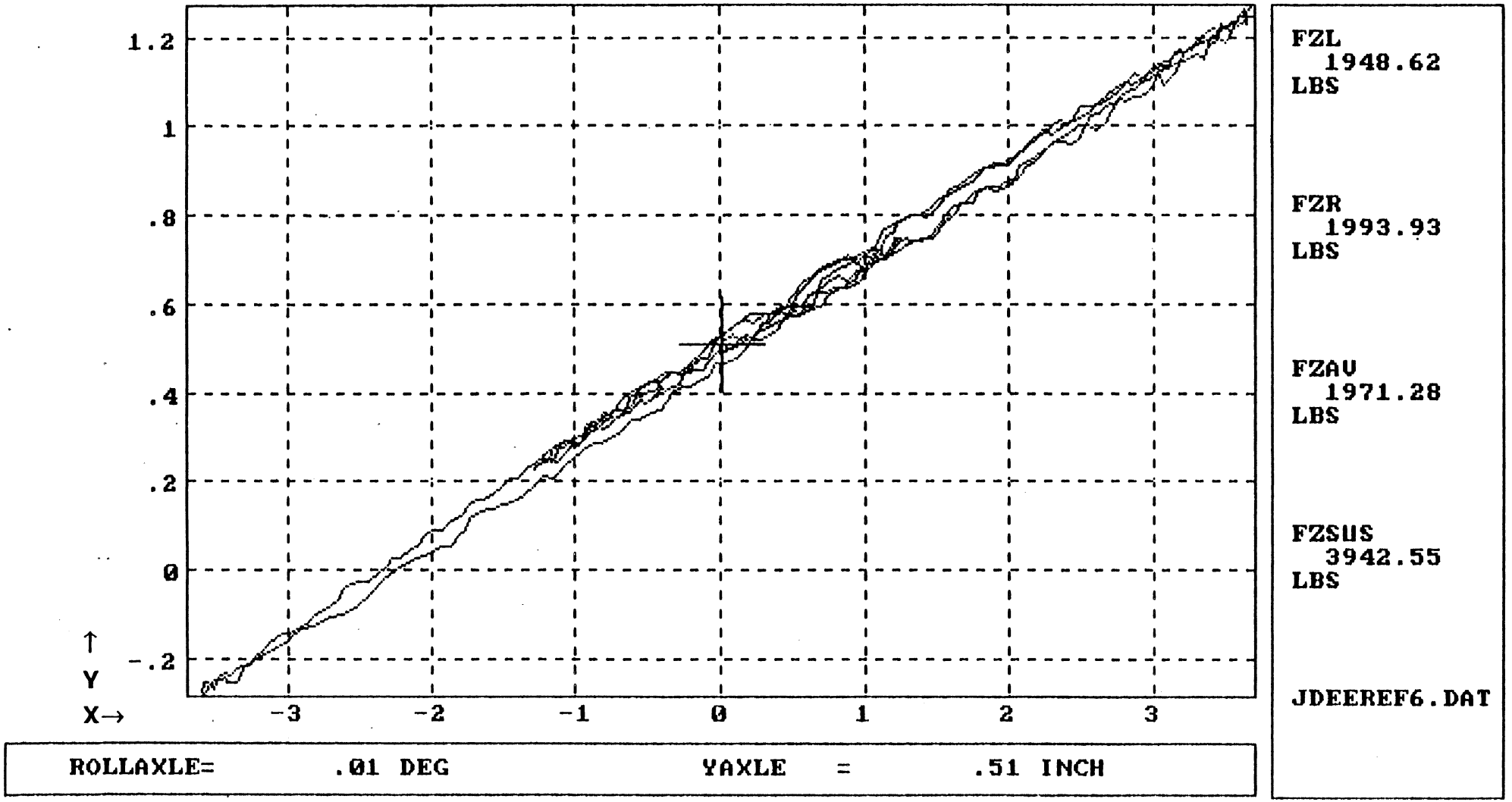
File: JDEEREF6.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 4,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 4.75 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

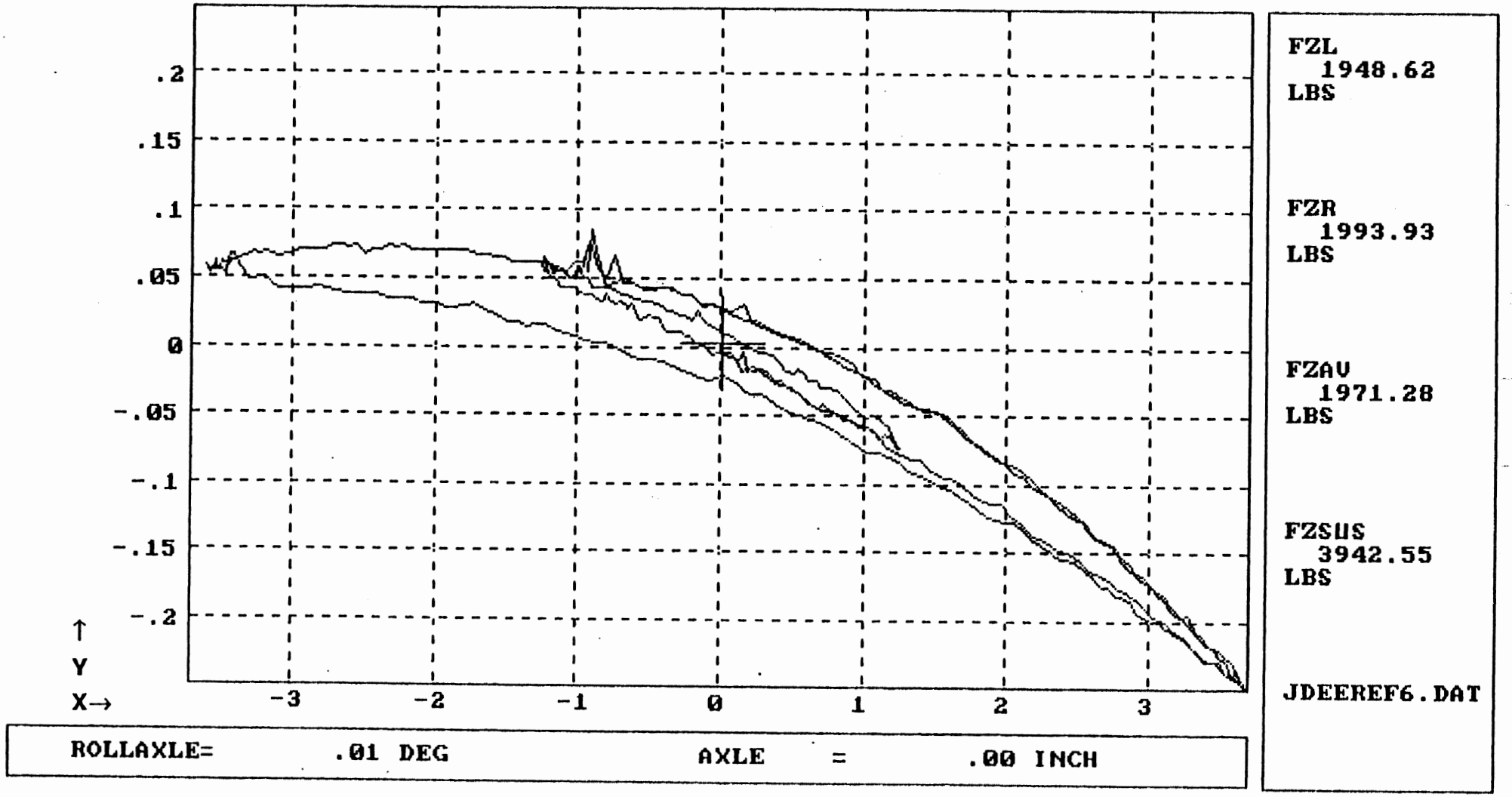
File: JDEEREF6.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 4,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLE) at a position 18.38 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar on.

DATE 5-14-1988 12:32: 4
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF4.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED. ANTIROLL BAR ON

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 6000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

****

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

****

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	16.25	4.31
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREF4.DAT

John Deere
Motor Home Chassis

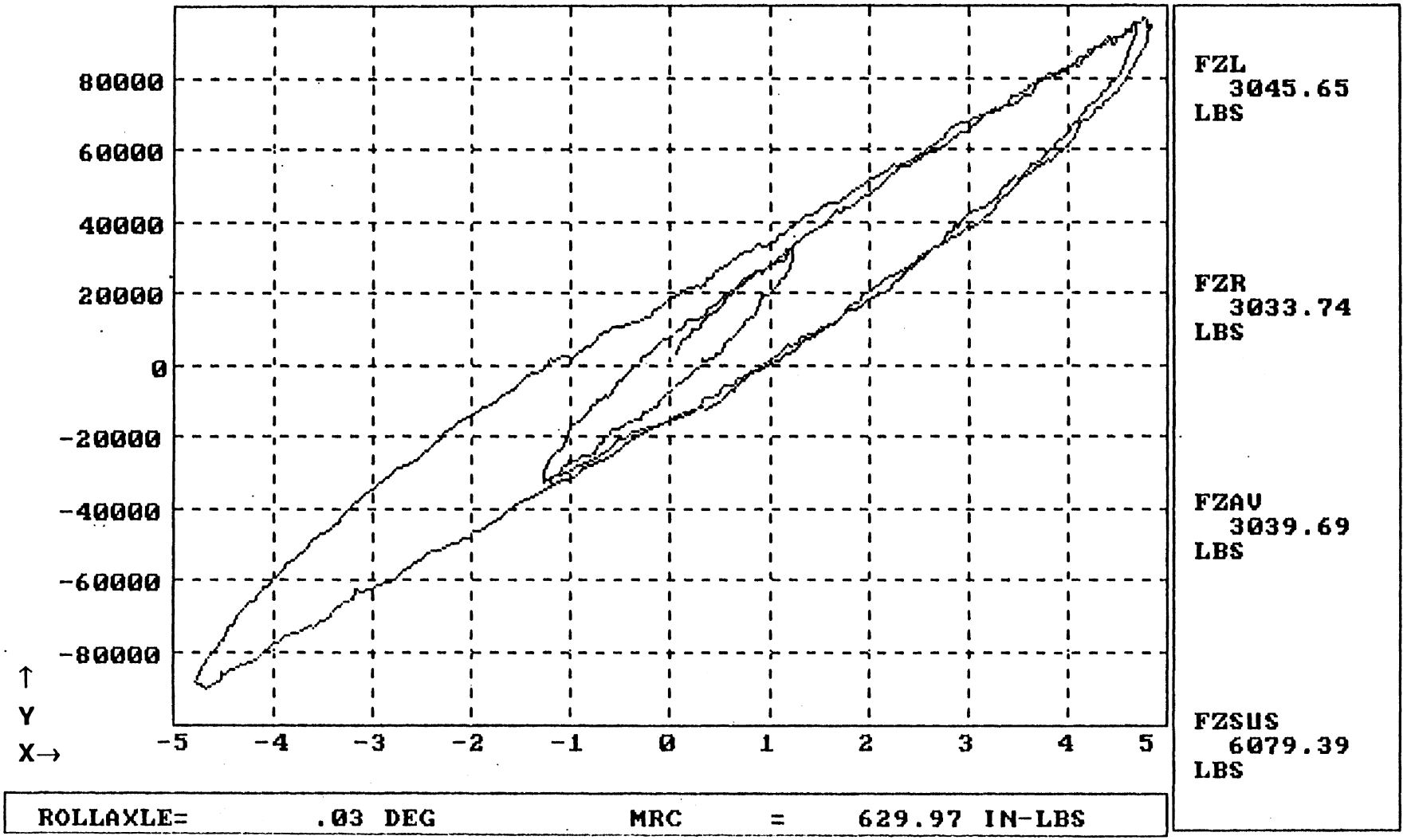
File: JDEEREF4.DAT

Single Axle Front Suspension

Axle Roll Rate*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

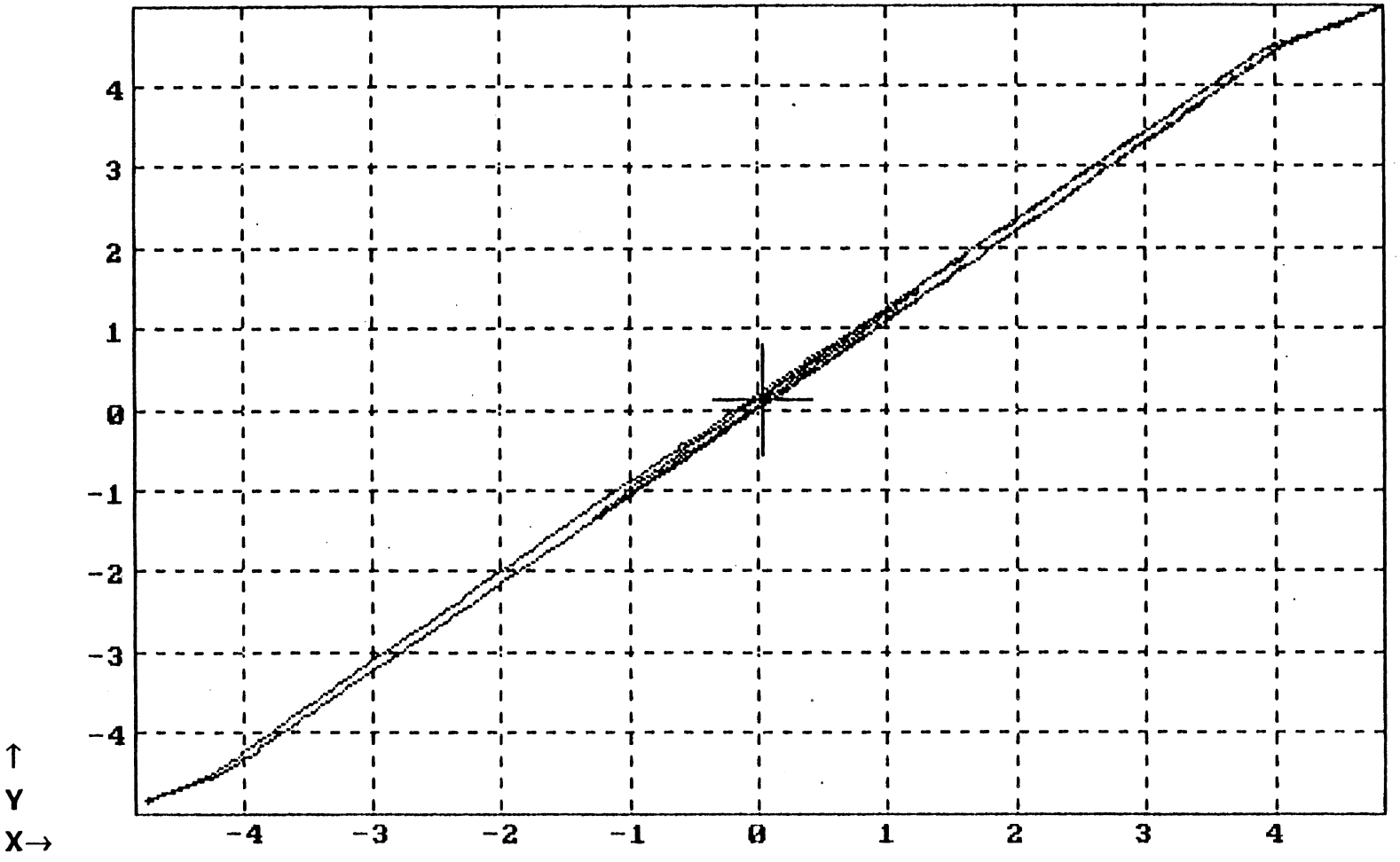
File: JDEEREF4.DAT

Single Axle Front Suspension

Table Roll Angle vs Axle Roll Angle*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



FZL
3045.65
LBS

FZR
3033.74
LBS

FZAV
3039.69
LBS

FZSUS
6079.39
LBS

JDEEREF4.DAT

ROLLAXLE= .03 DEG ROLLT = .12 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

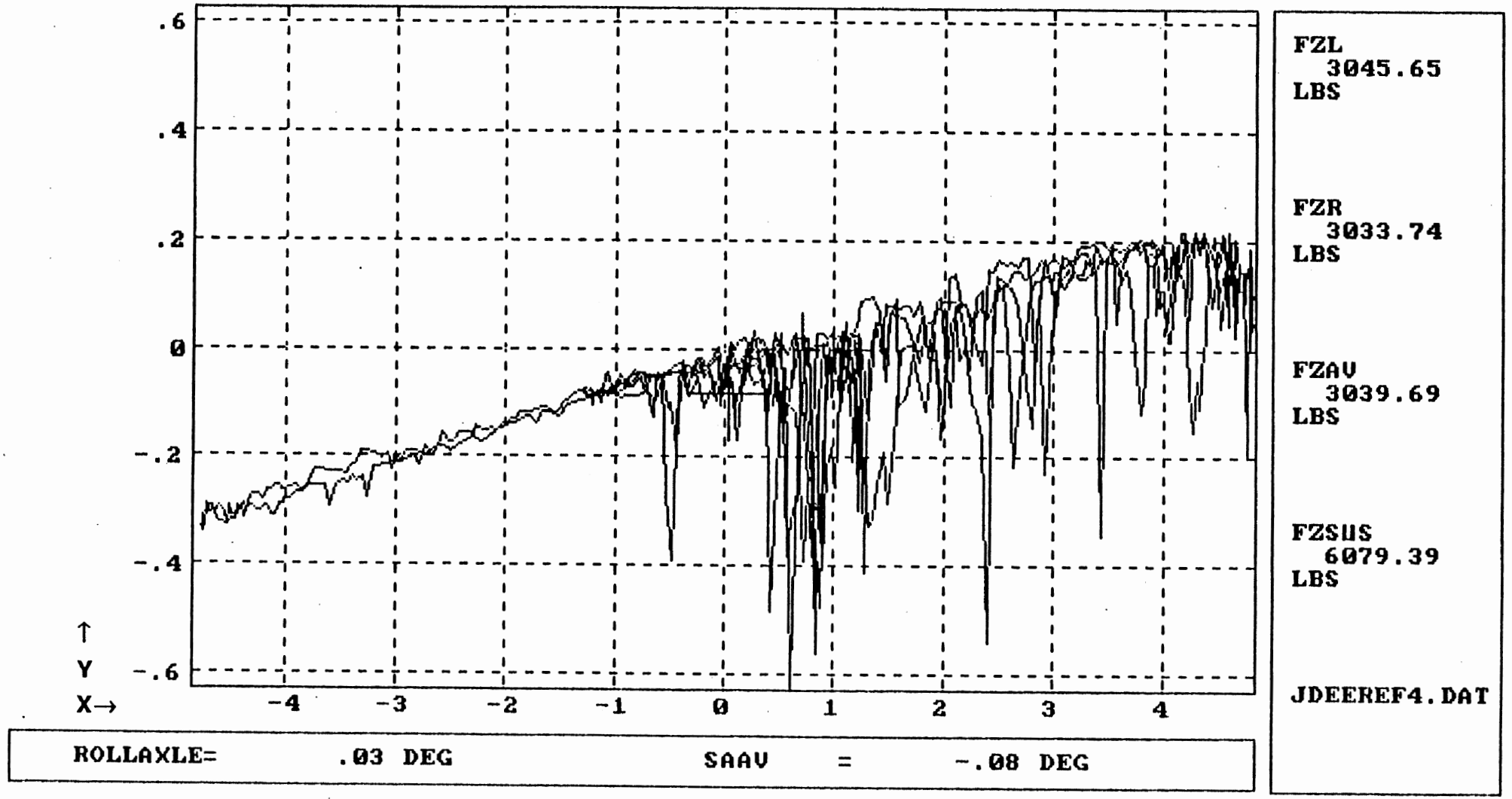
File: JDEEREF4.DAT

Single Axle Front Suspension

Average Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

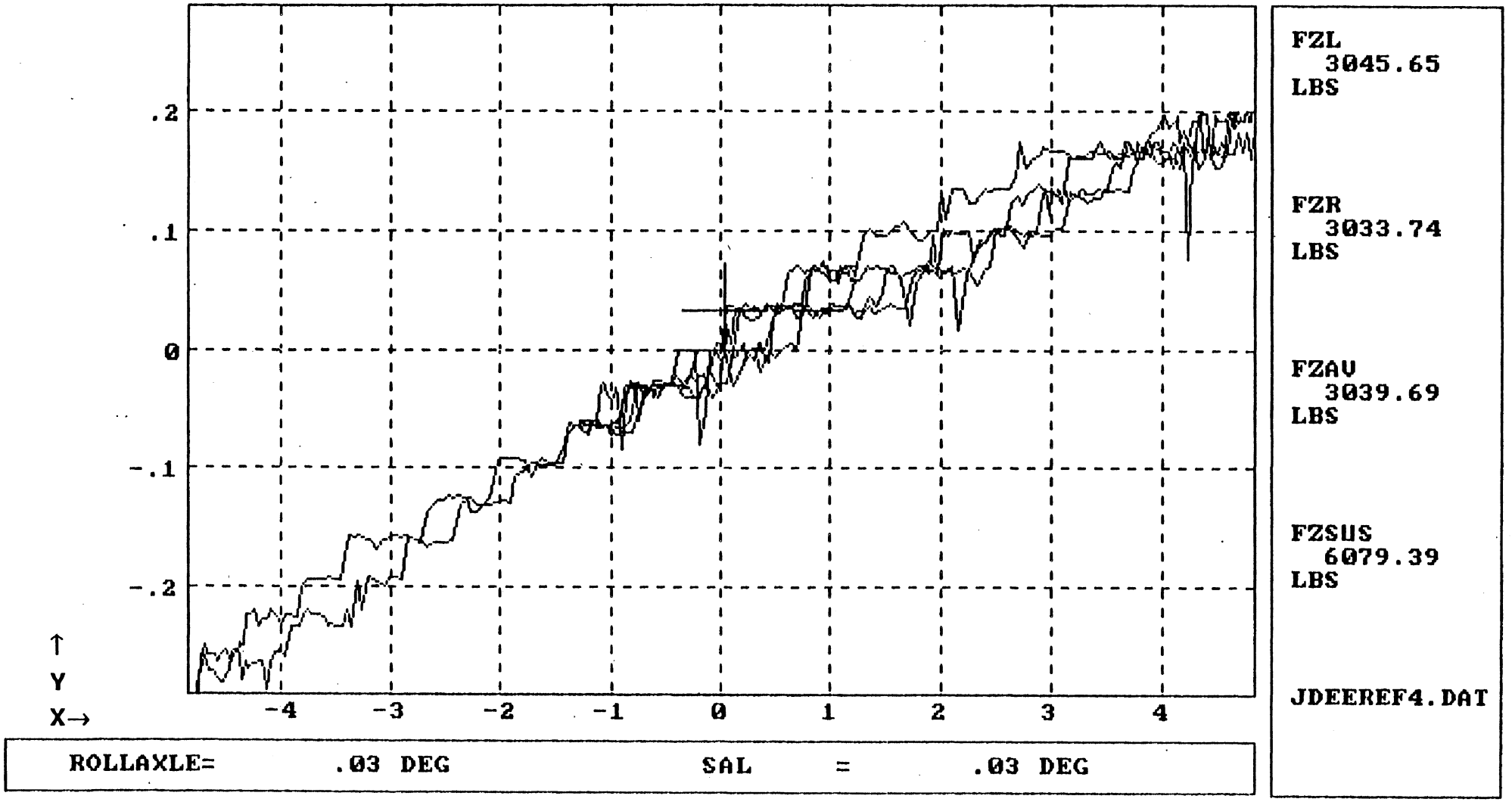
File: JDEEREF4.DAT

Single Axle Front Suspension

Left Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

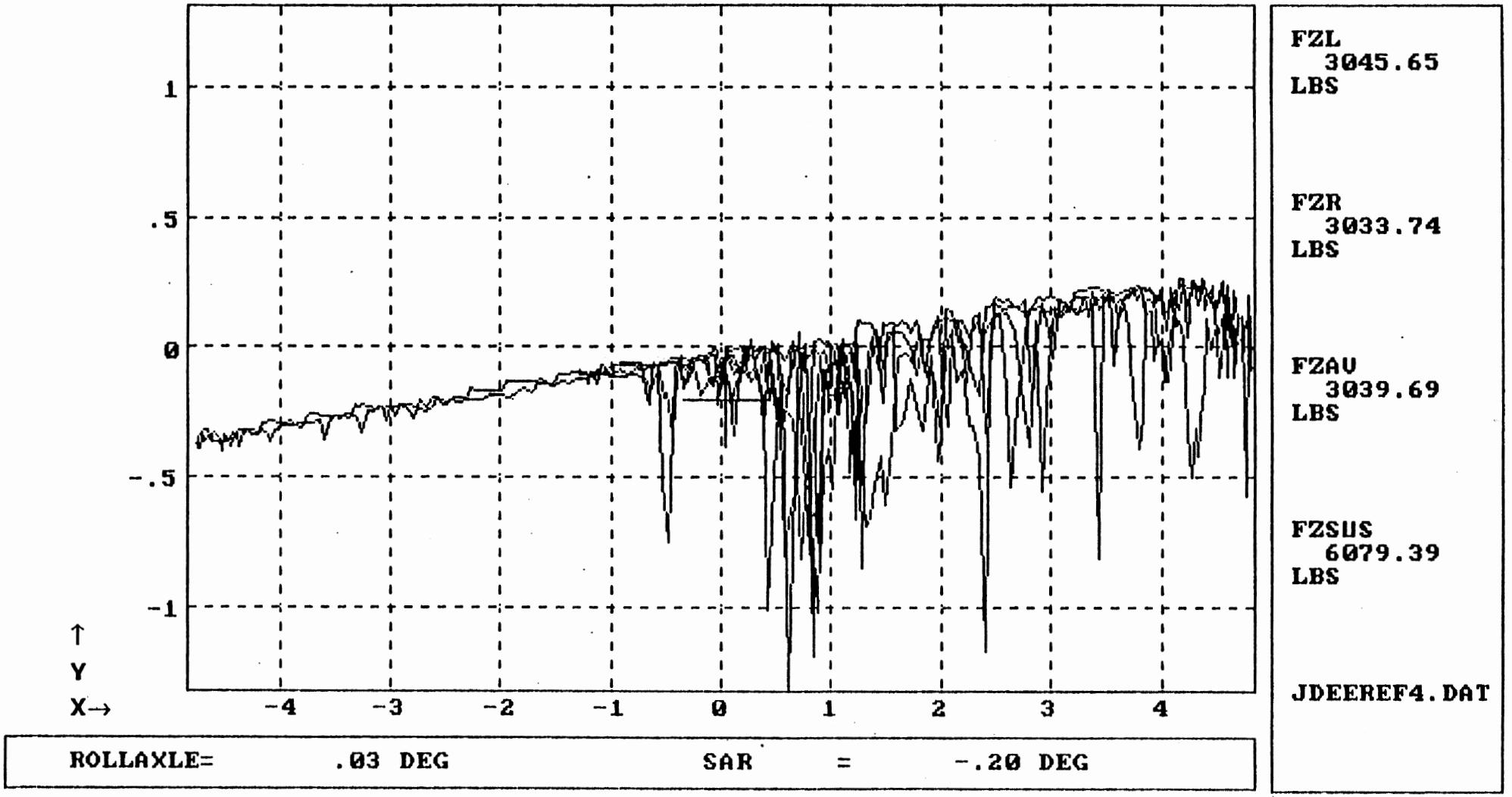
File: JDEEREF4.DAT

Single Axle Front Suspension

Right Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

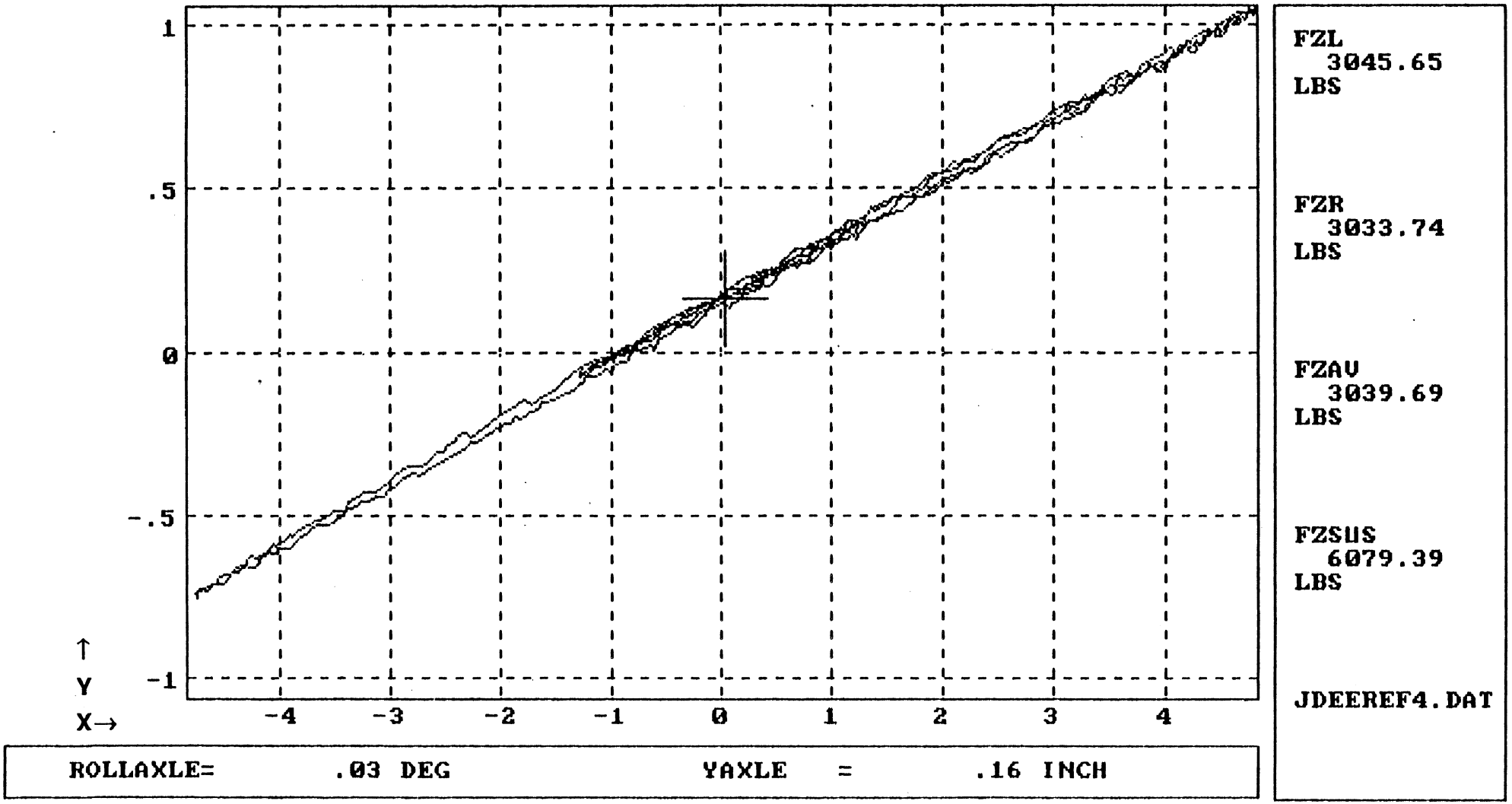
File: JDEEREF4.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 4.31 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

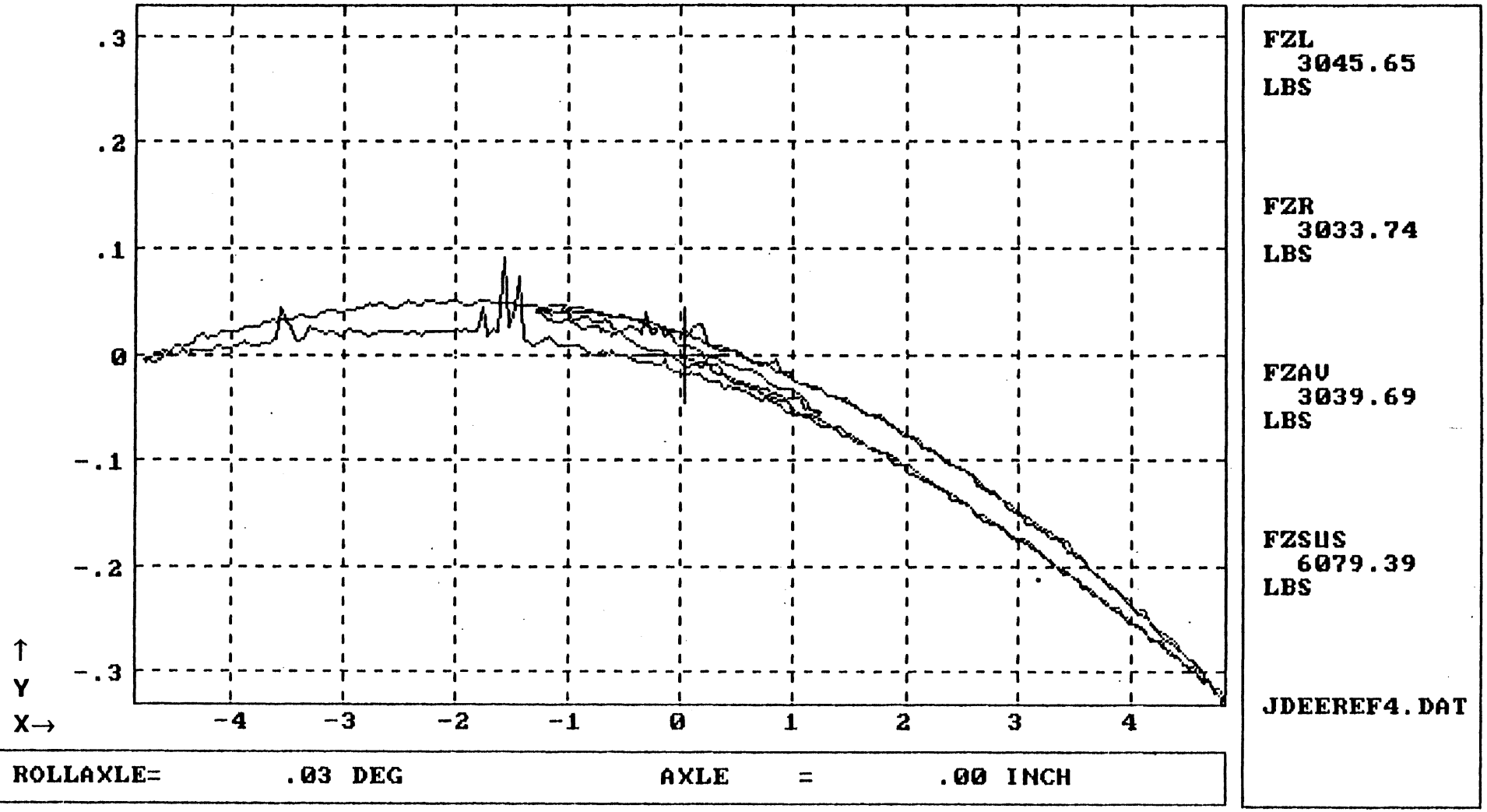
File: JDEEREF4.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLE) at a position 16.25 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar on.

DATE 5-14-1988 12:38:18
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF5.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 8000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	14.94	4.12

	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREF5.DAT

John Deere
Motor Home Chassis

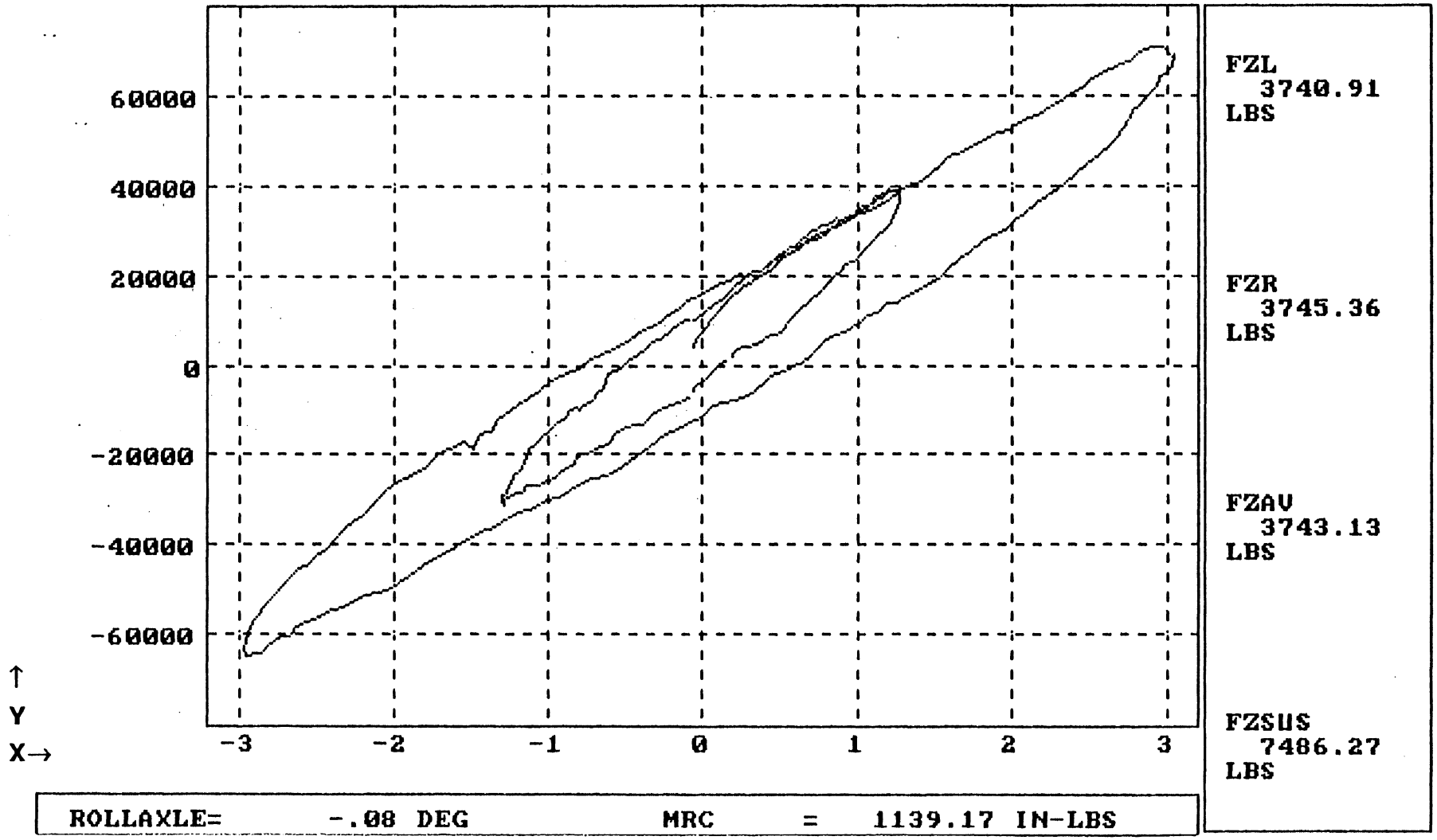
File: JDEEREF5.DAT

Single Axle Front Suspension

Axle Roll Rate*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 8,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

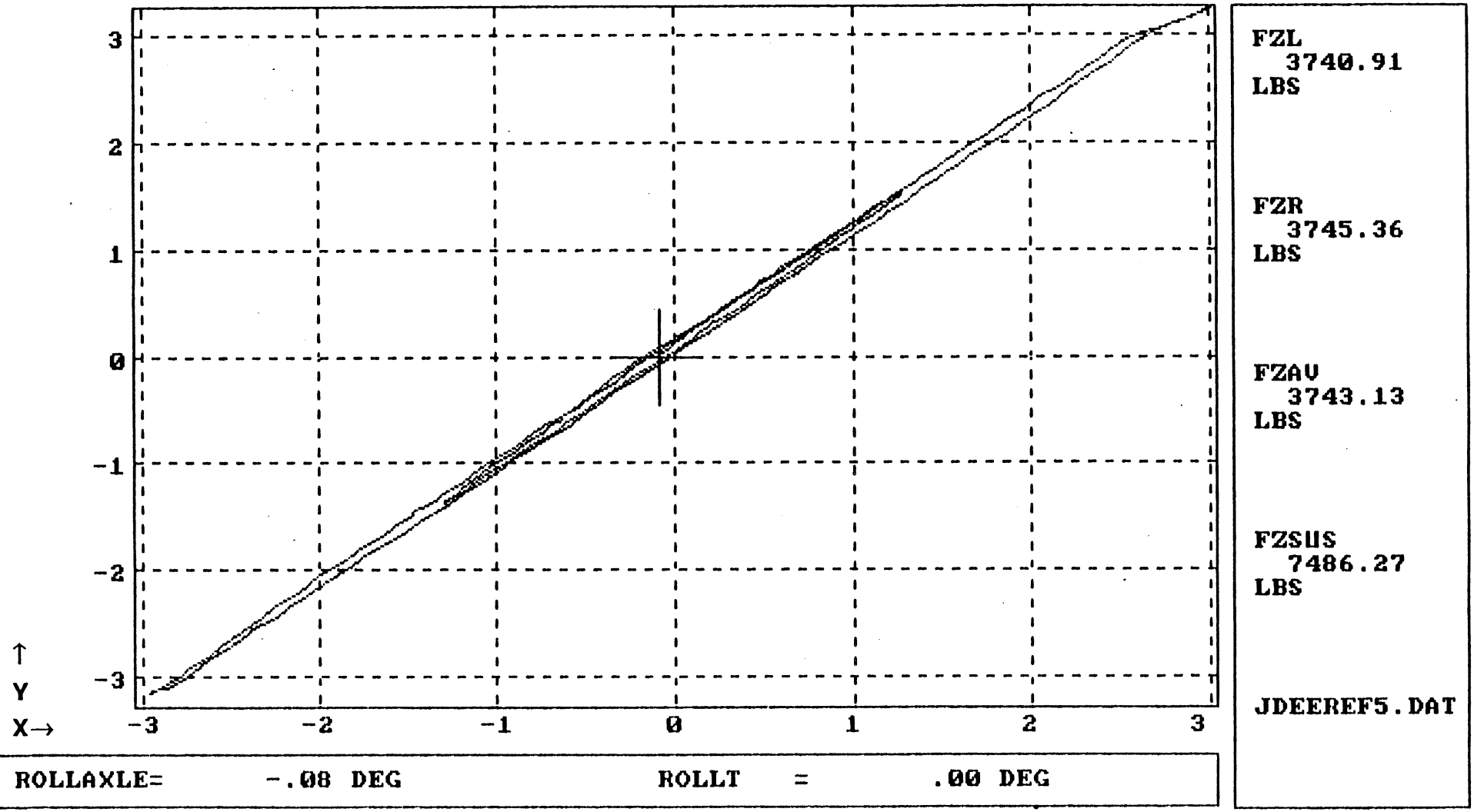
Single Axle Front Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF5.DAT

Table Roll Angle vs Axle Roll Angle*

Suspension Load = 8,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

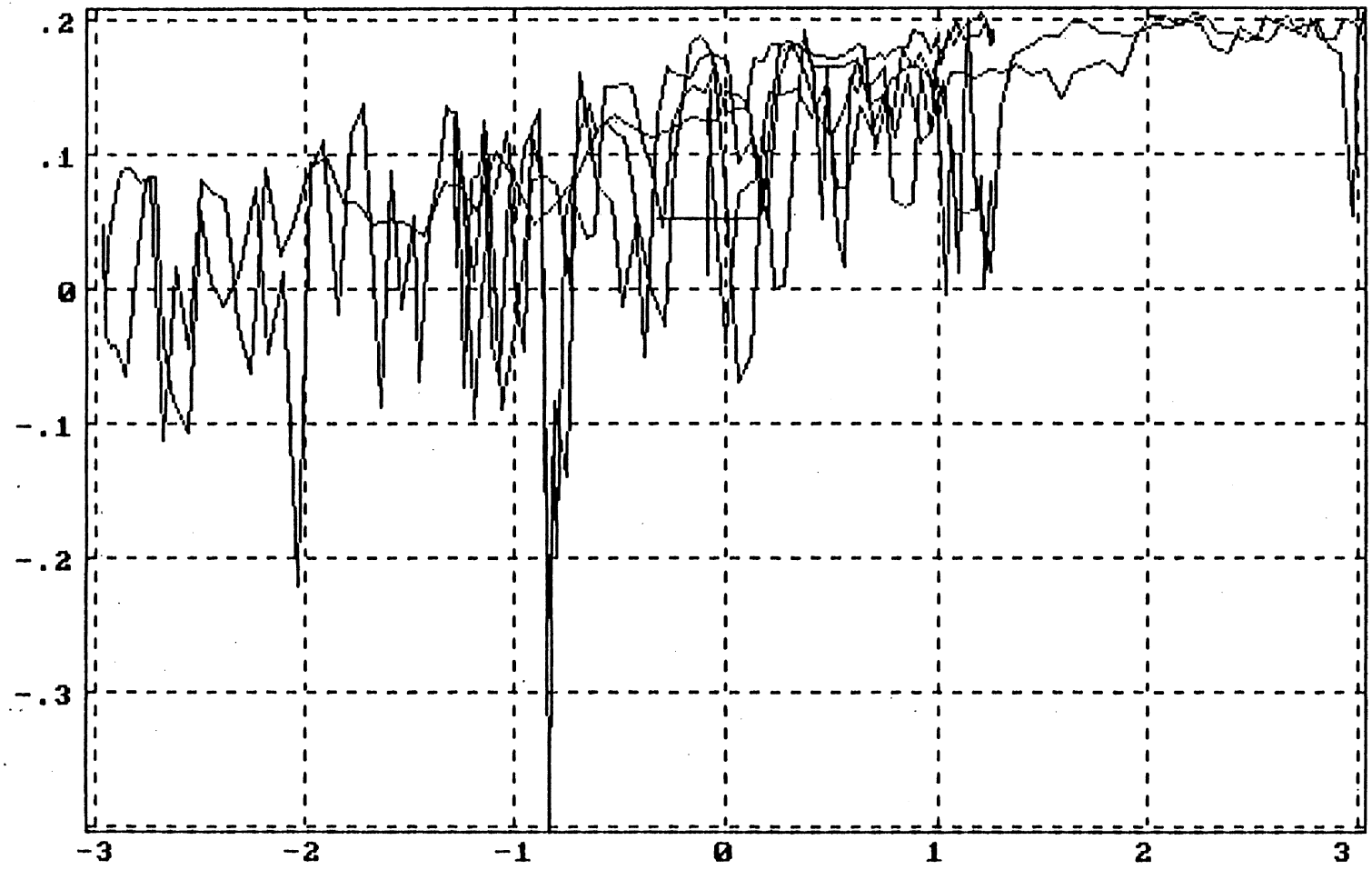
File: JDEEREF5.DAT

Single Axle Front Suspension

Average Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 8,000 lb.



FZL
3740.91
LBS

FZR
3745.36
LBS

FZAV
3743.13
LBS

FZSUS
7486.27
LBS

JDEEREF5.DAT

ROLLAXLE= -.08 DEG SAAV = .05 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

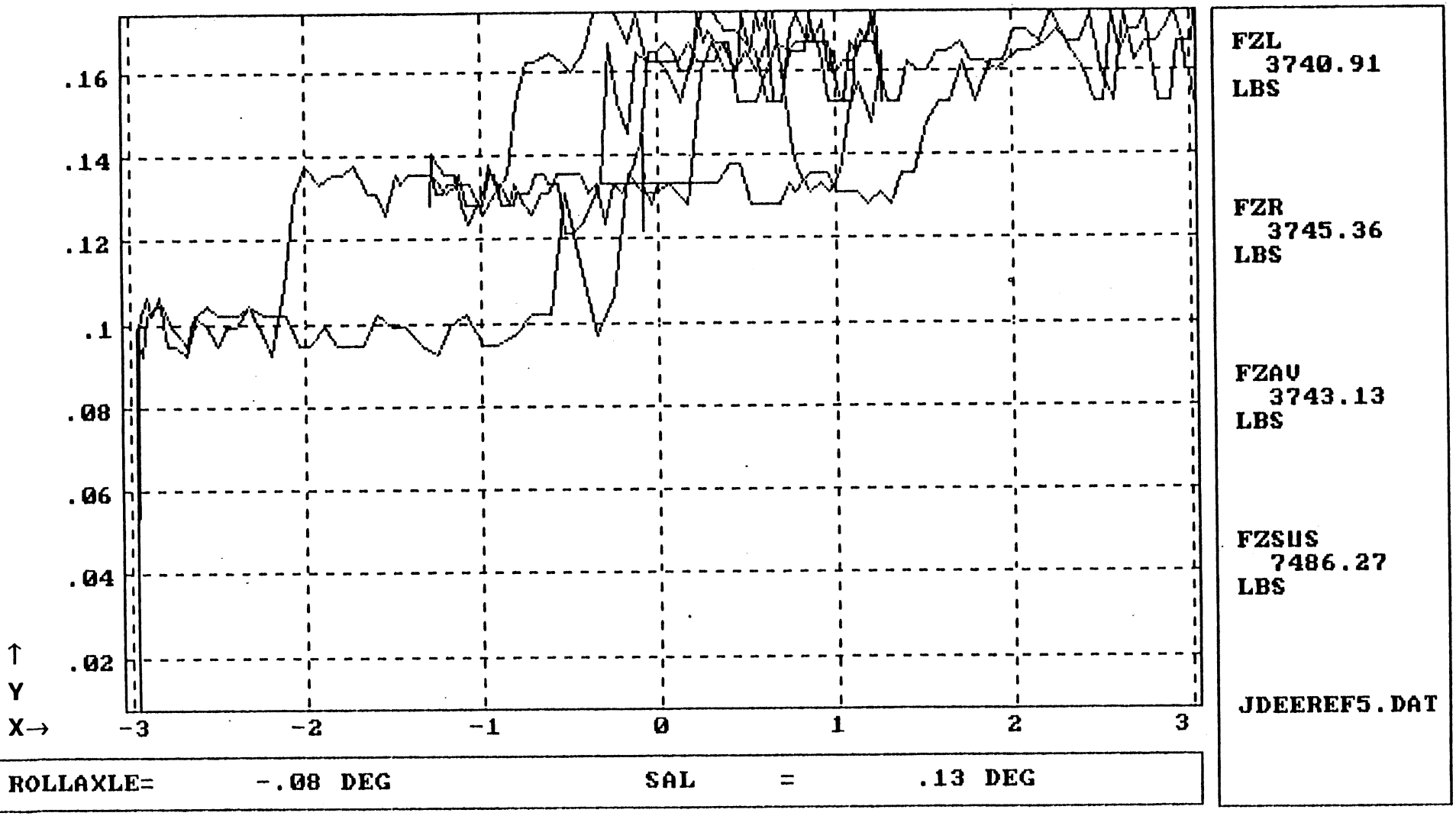
File: JDEEREF5.DAT

Single Axle Front Suspension

Left Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 8,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

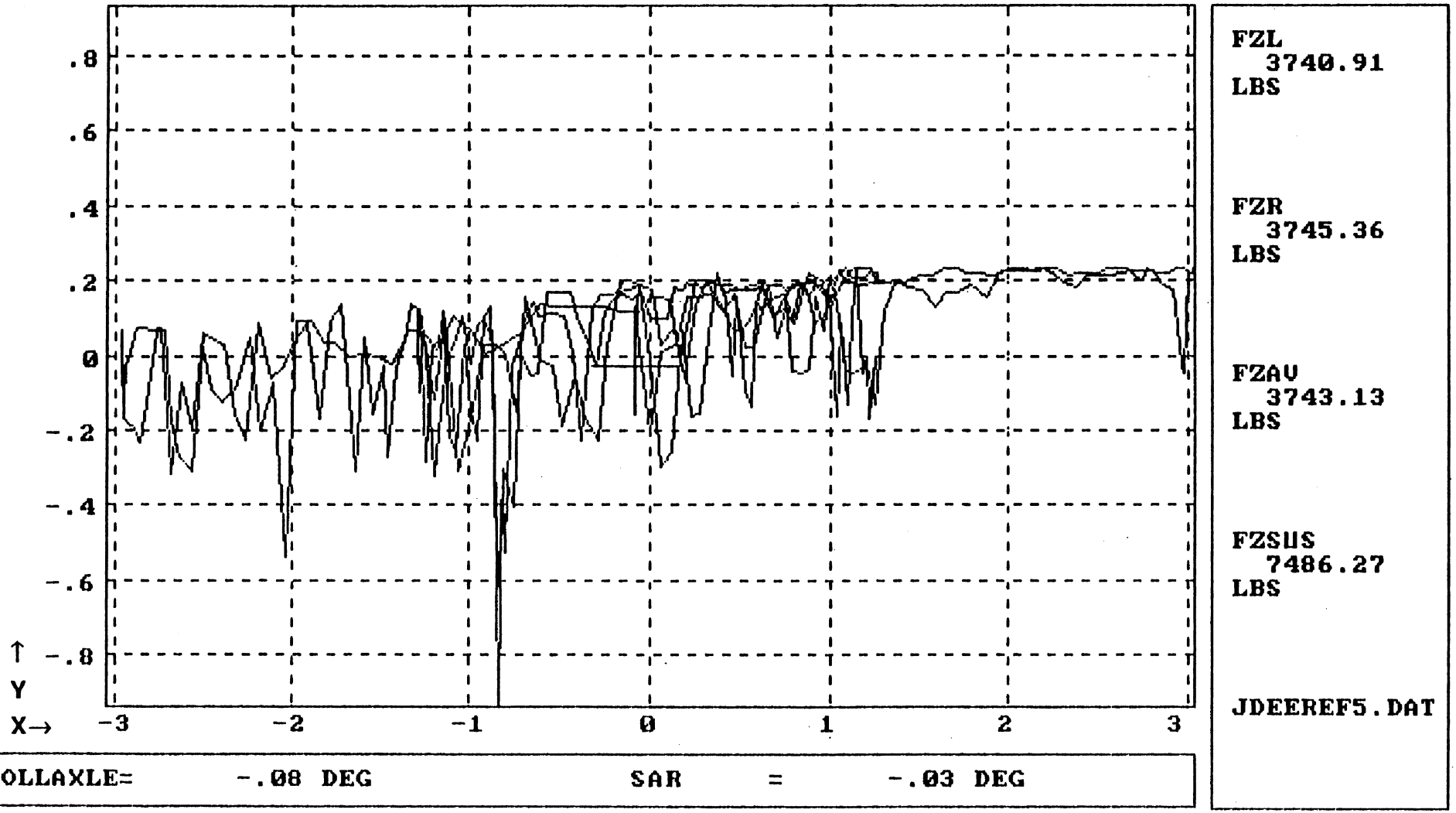
File: JDEEREF5.DAT

Single Axle Front Suspension

Right Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 8,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

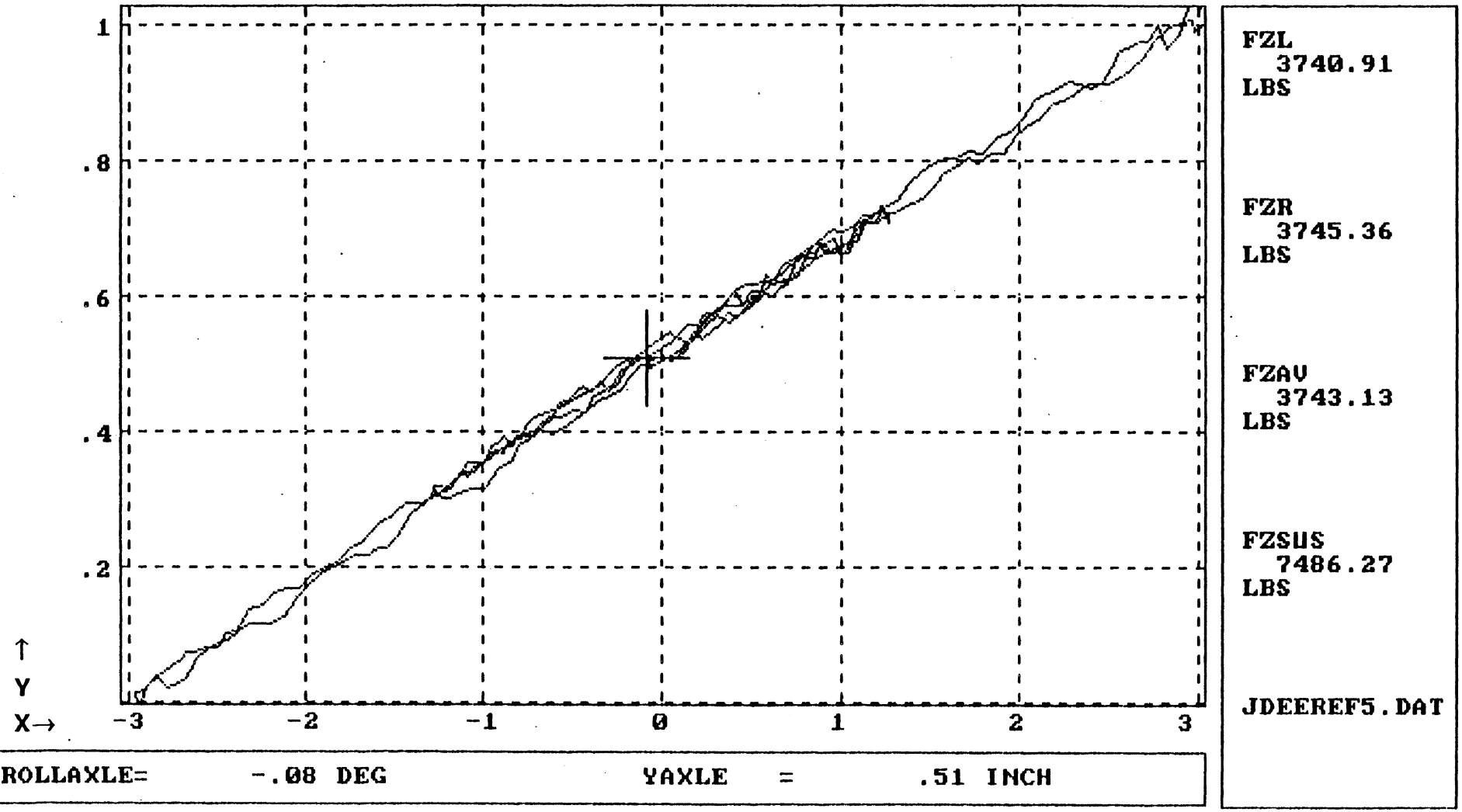
File: JDEEREF5.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 8,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 4.12 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar on.

John Deere
Motor Home Chassis

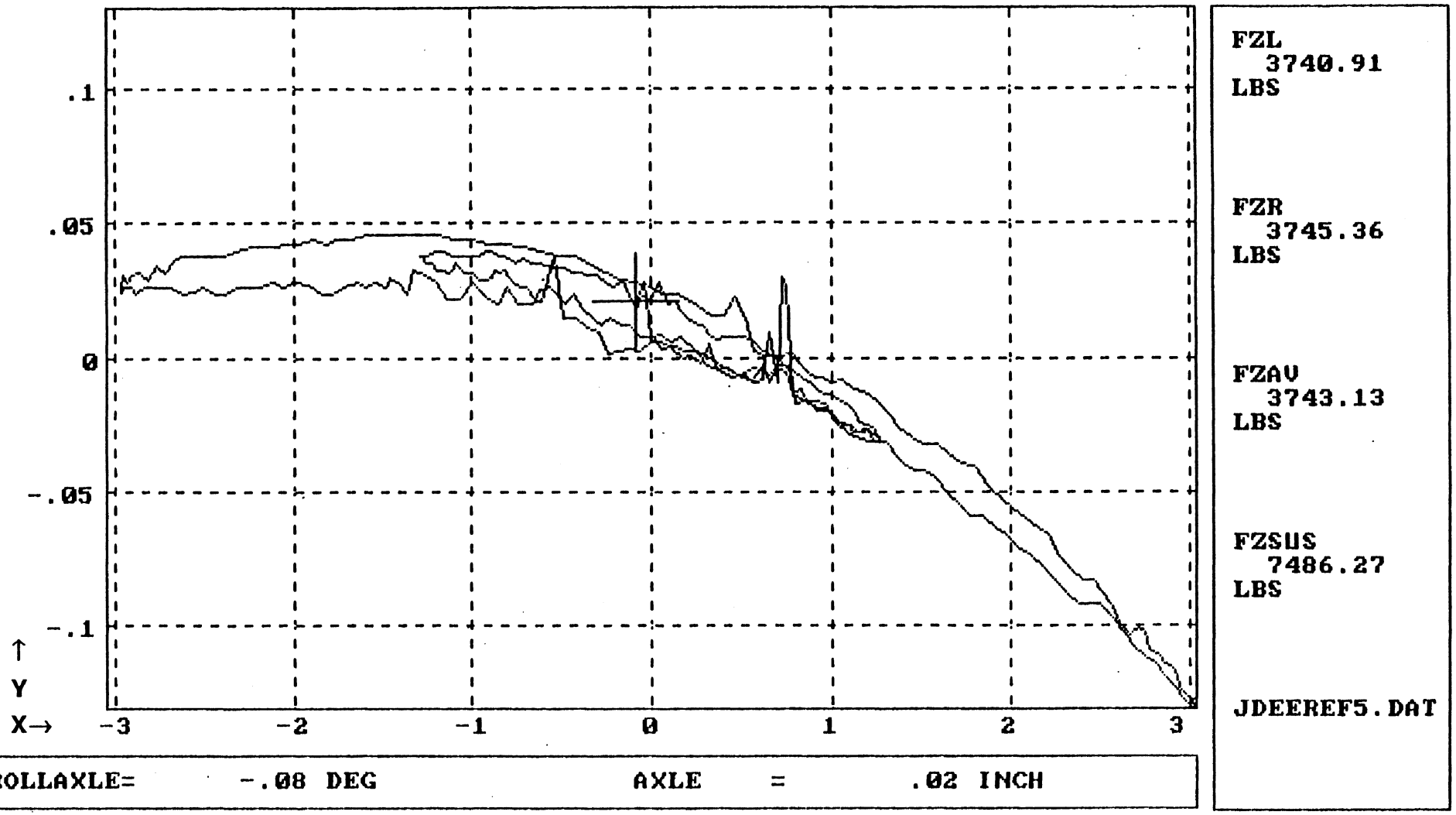
File: JDEEREF5.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 8,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLE) at a position 14.94 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar on.

DATE 5-14-1988 15:17:12
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF3.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED. ANTI ROLL BAR OFF

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 6000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTUREF:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	16.25	4.80
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date:July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREF3.DAT

John Deere
Motor Home Chassis

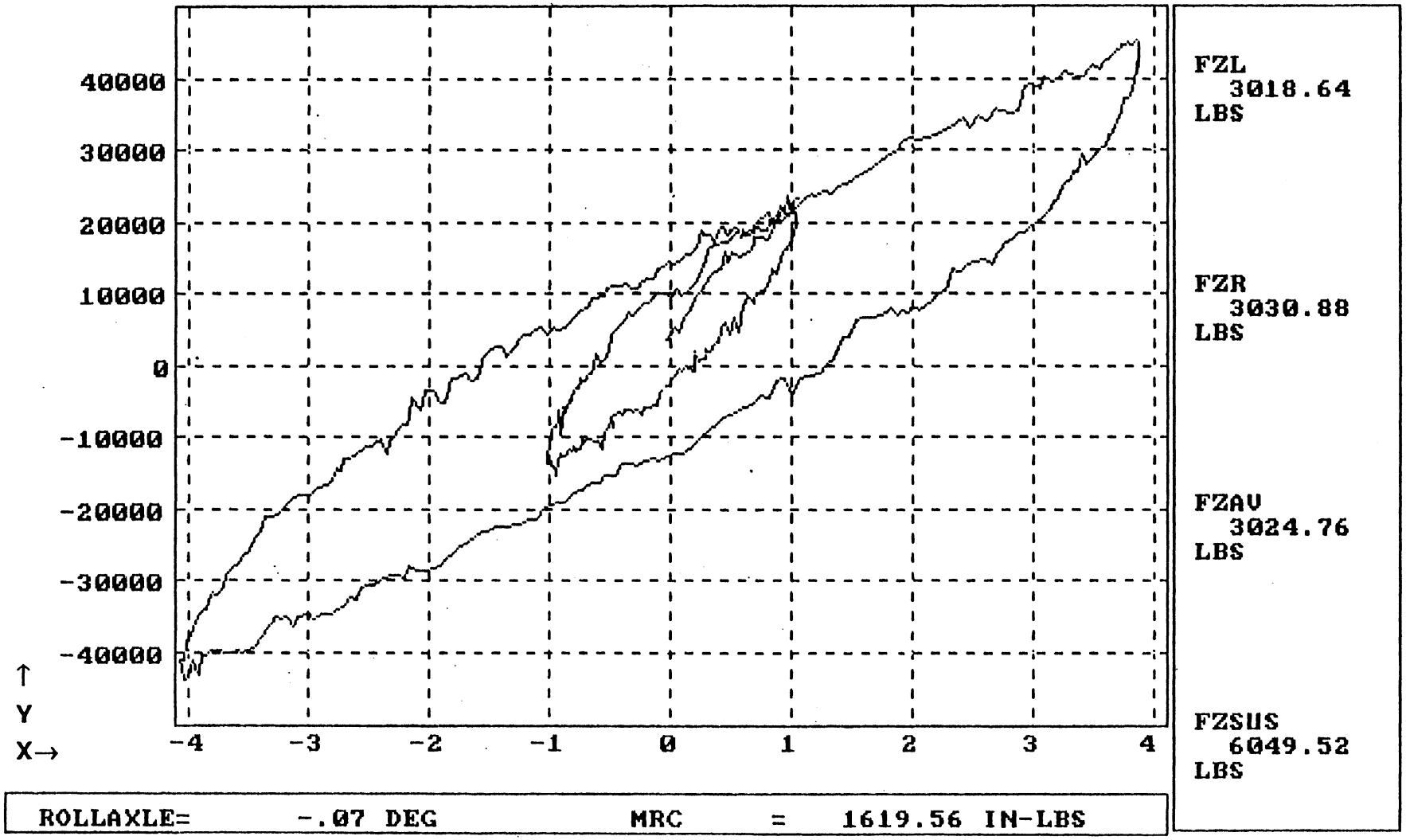
File: JDEEREF3.DAT

Single Axle Front Suspension

Axle Roll Rate*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Engine on. Antiroll bar off.

John Deere
Motor Home Chassis

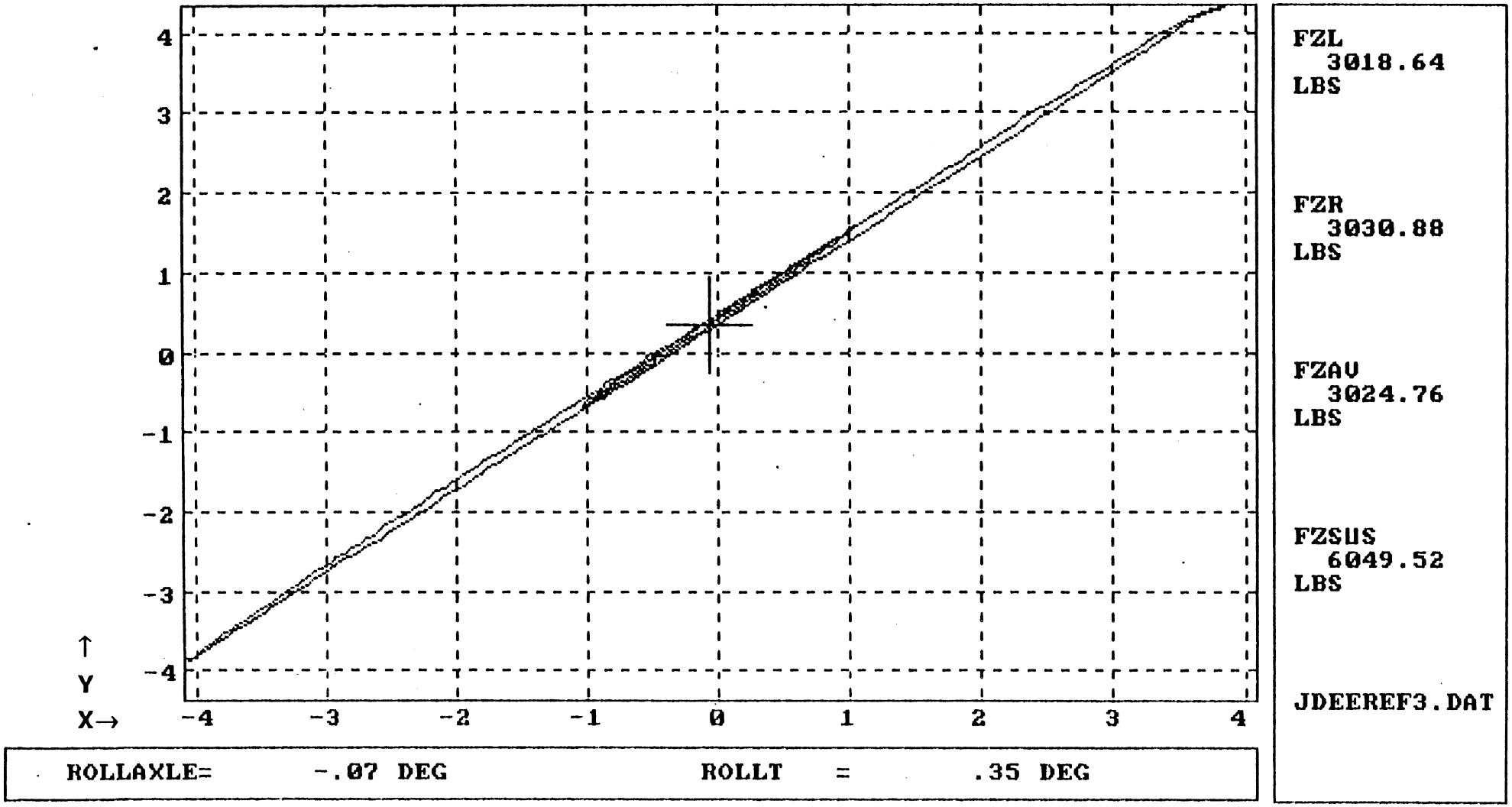
File: JDEEREF3.DAT

Single Axle Front Suspension

Table Roll Angle vs Axle Roll Angle*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar off.

John Deere
Motor Home Chassis

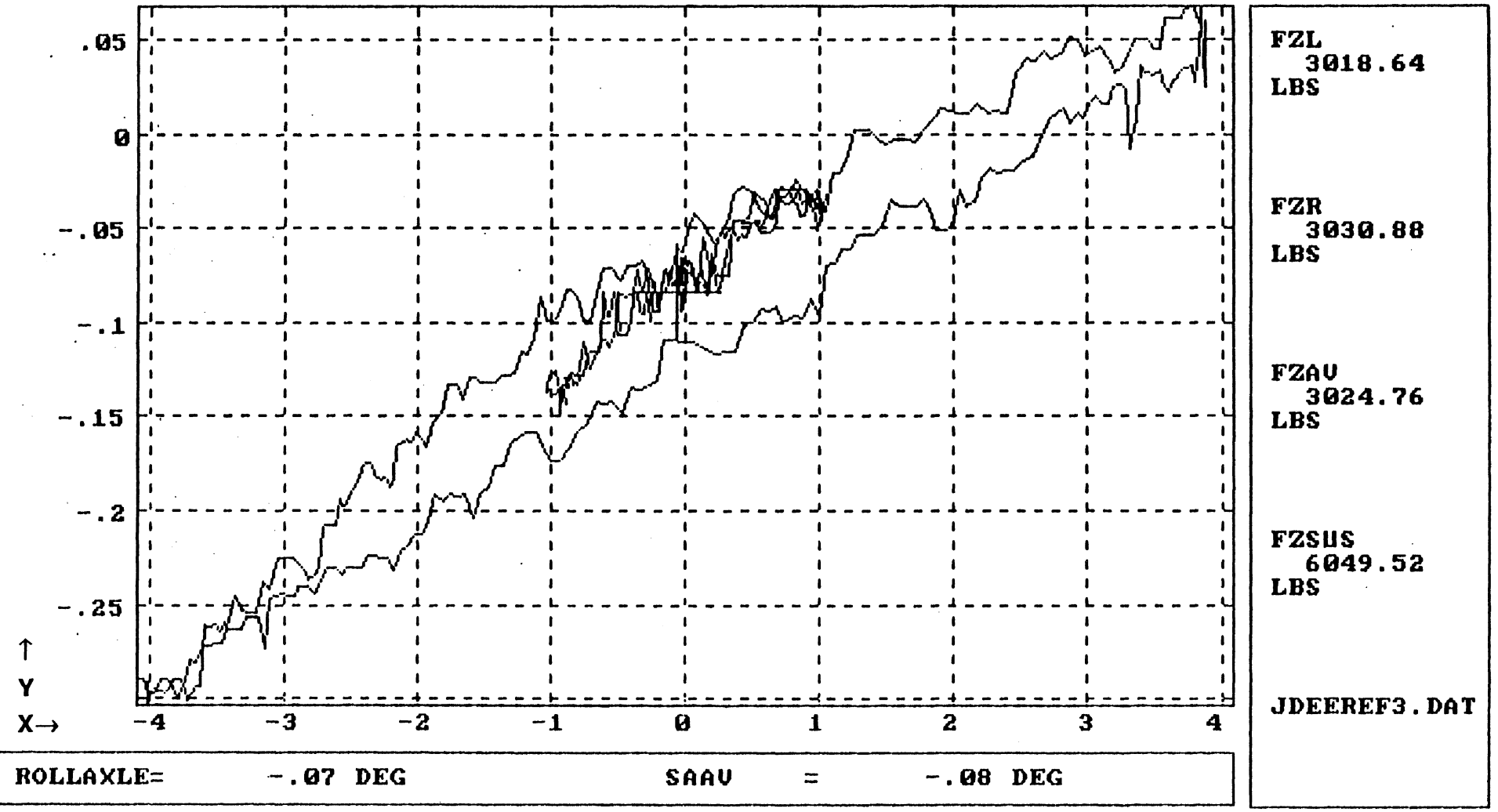
File: JDEEREF3.DAT

Single Axle Front Suspension

Average Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



ROLLAXLE=	-.07 DEG	SAAV =	-.08 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar off.

John Deere
Motor Home Chassis

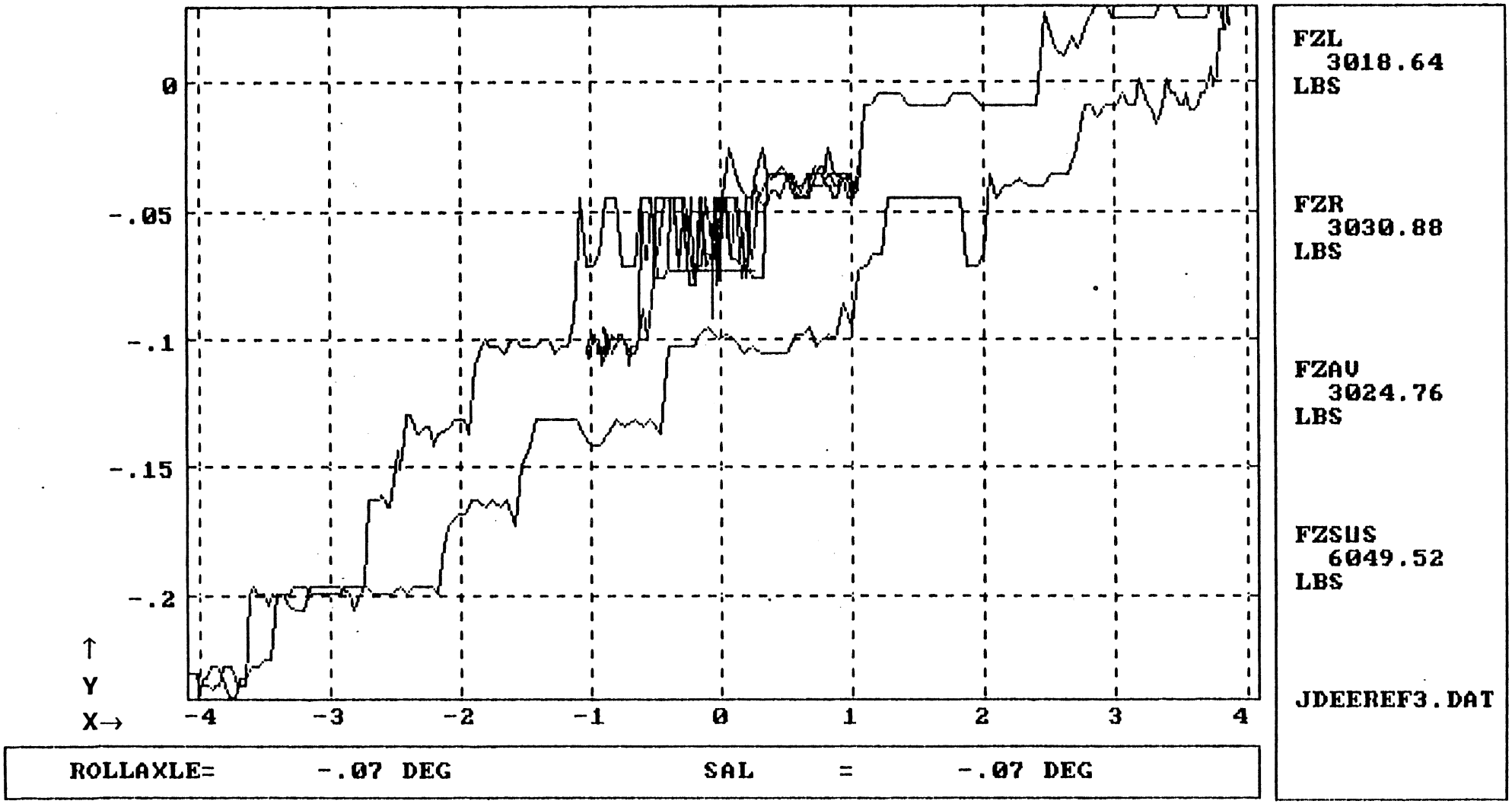
File: JDEEREF3.DAT

Single Axle Front Suspension

Left Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar off.

John Deere
Motor Home Chassis

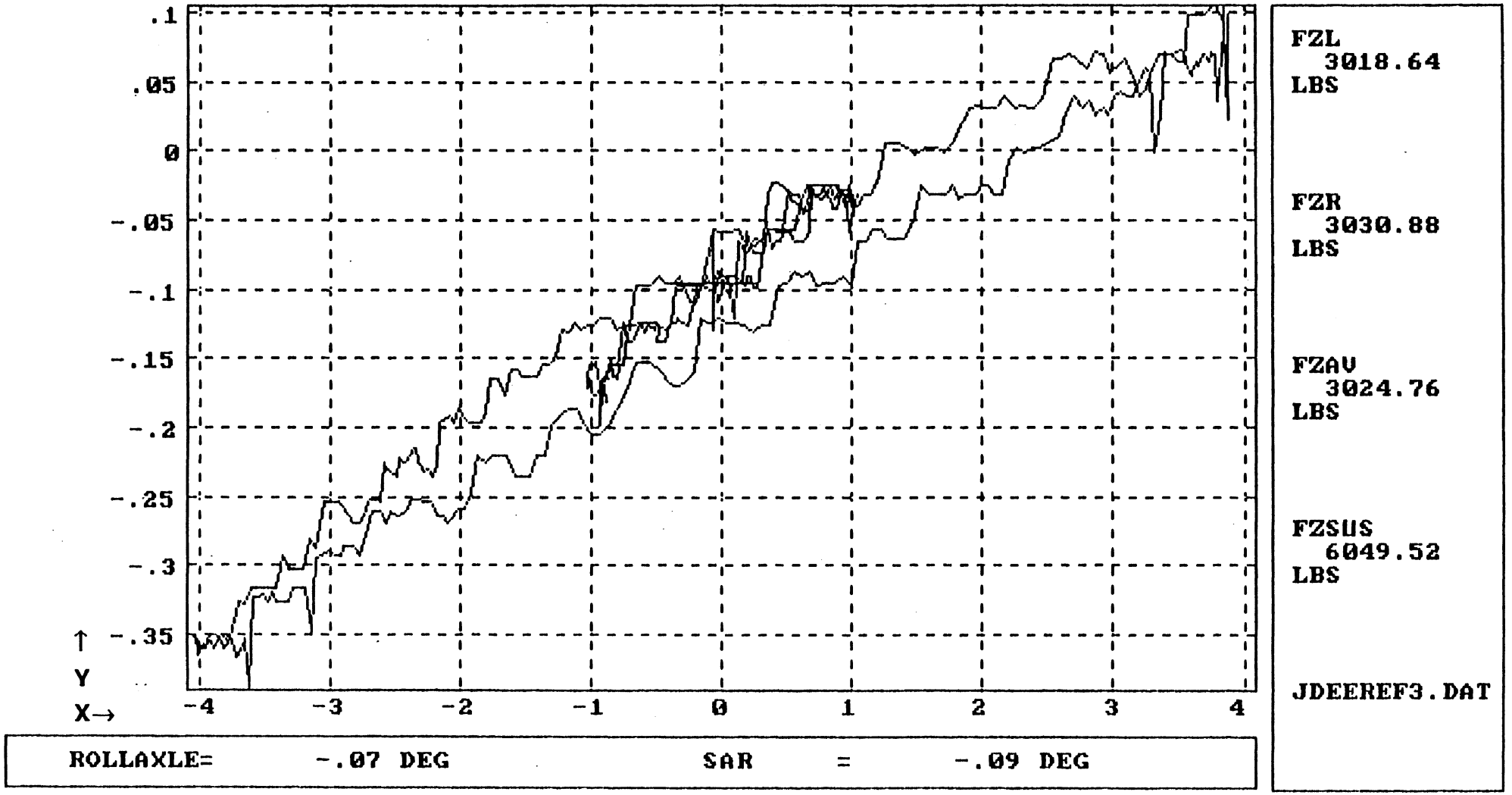
File: JDEEREF3.DAT

Single Axle Front Suspension

Right Wheel Roll Steer*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



ROLLAXLE= -.07 DEG SAR = -.09 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on. Antiroll bar off.

John Deere
Motor Home Chassis

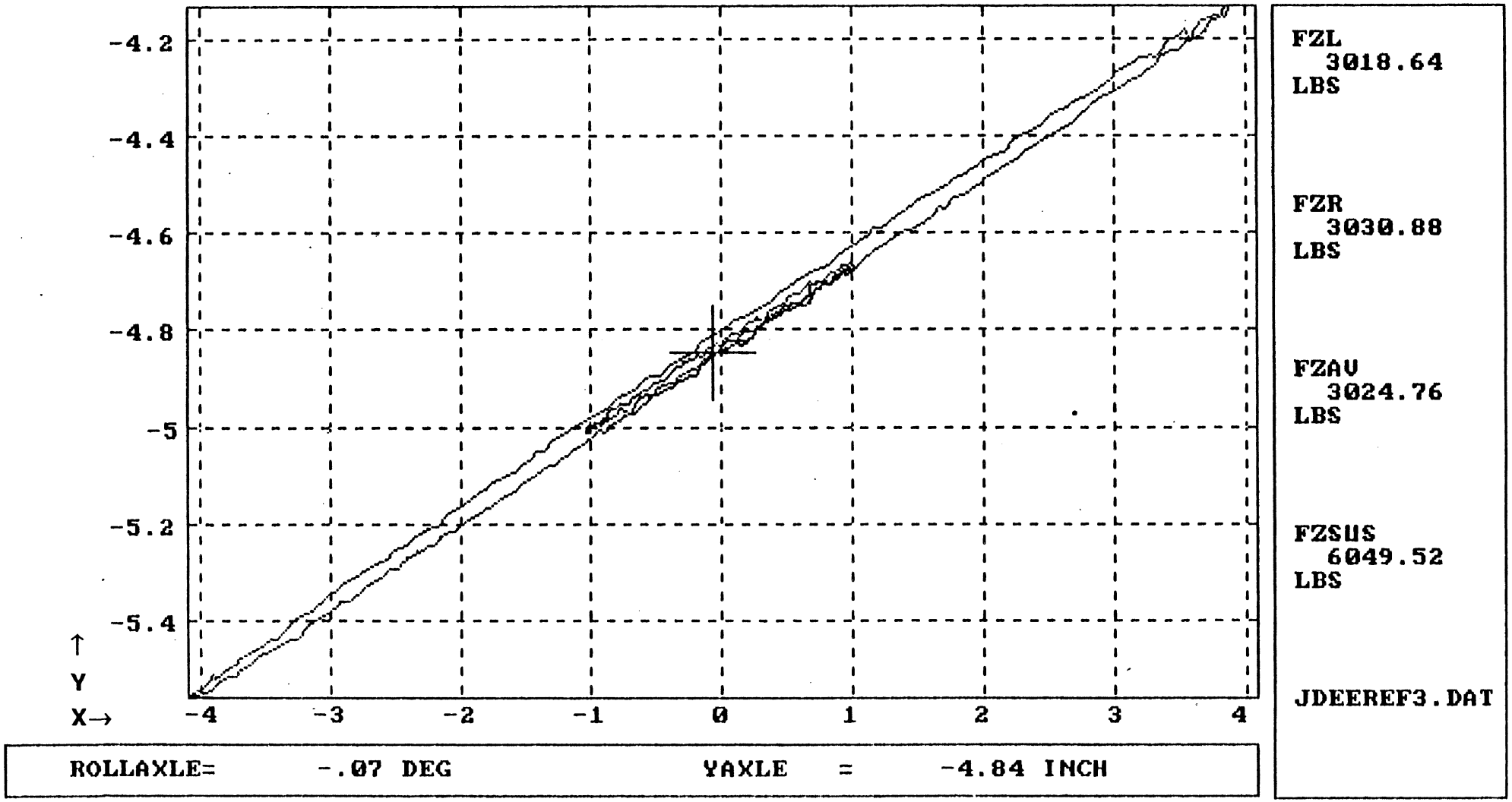
File: JDEEREF3.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 4.80 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar off.

John Deere
Motor Home Chassis

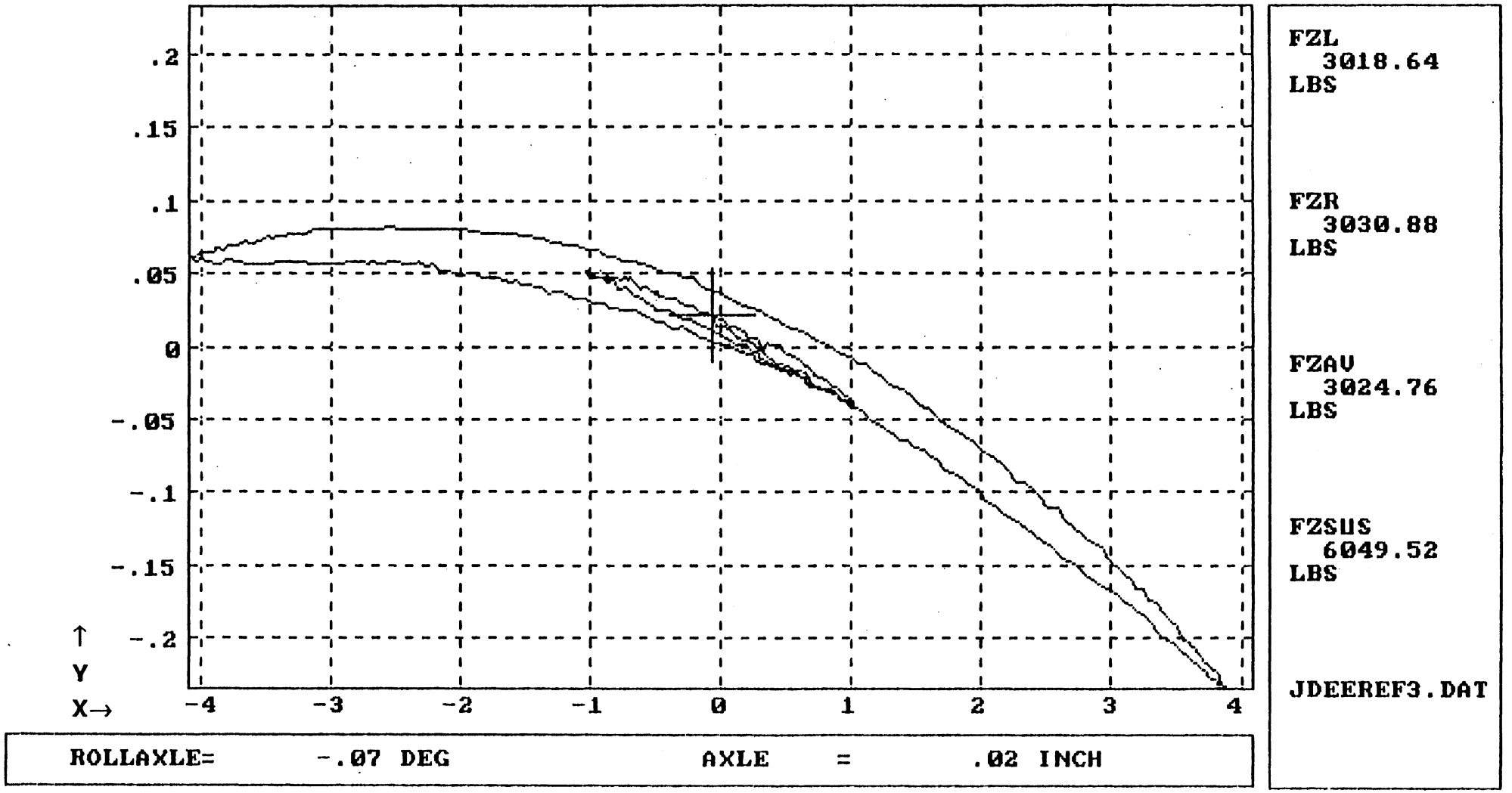
File: JDEEREF3.DAT

Single Axle Front Suspension

Roll Center Height*

Date: July 7, 1988
Pitch = 0.0 degrees

Suspension Load = 6,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLE) at a position 16.25 in above the ground; in; motion toward right, positive.

*Note: Engine on. Antiroll bar off.

DATE 5-14-1988 14:26:58
TYPE OF TEST:ALIGNING MOMENT
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF9.DAT
COMMENT:ENGNE ON STEERING WHEEL BLOCKED

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 4000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date: July 7, 1988.
John Deere
Motor Home Chassis
File: JDEEREF9.DAT

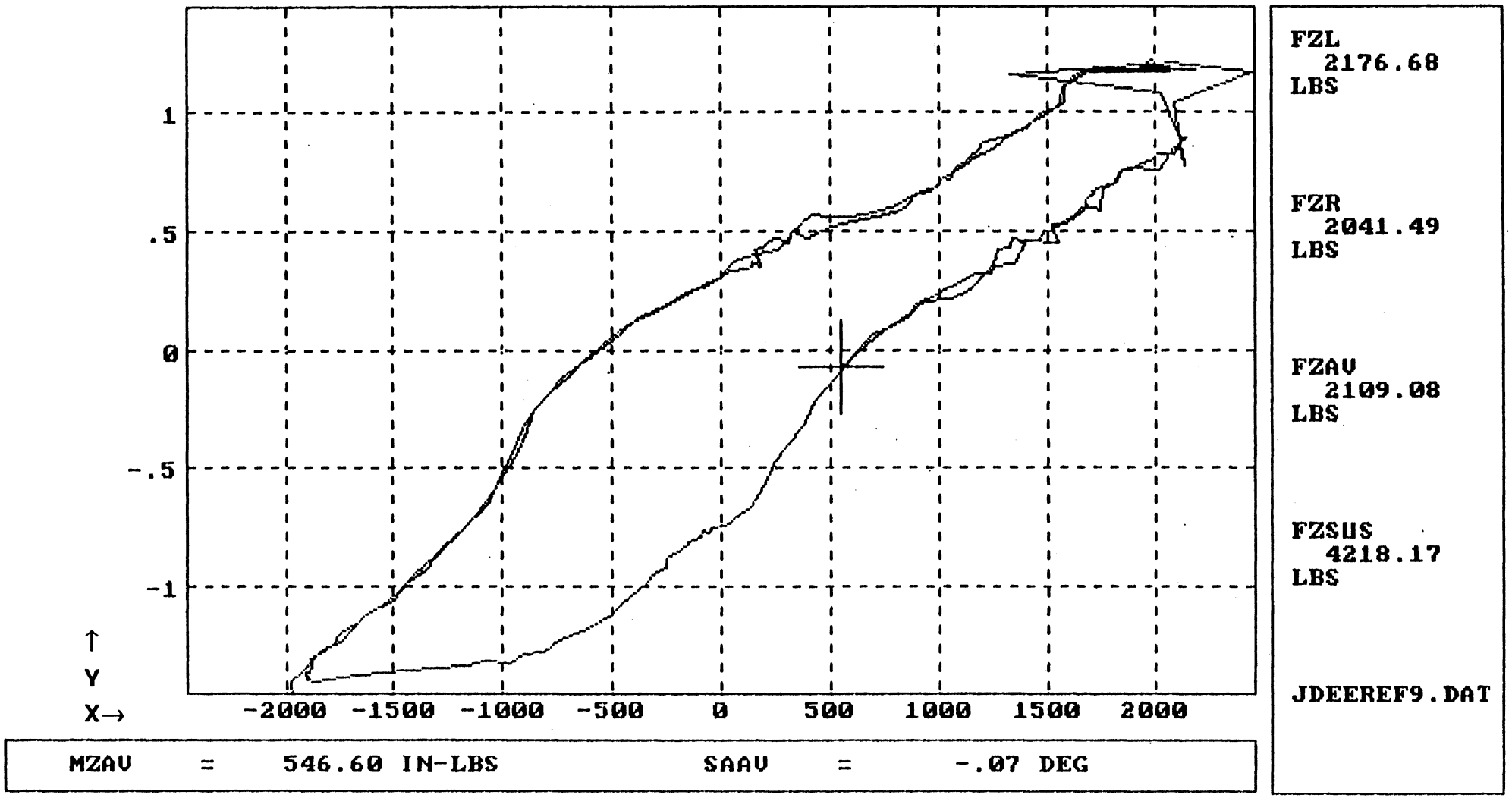
John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF9.DAT **Average Aligning Moment Compliance Steer***

Suspension Load = 4,000 lb.



MZAV = 546.60 IN-LBS SAAV = -.07 DEG

Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

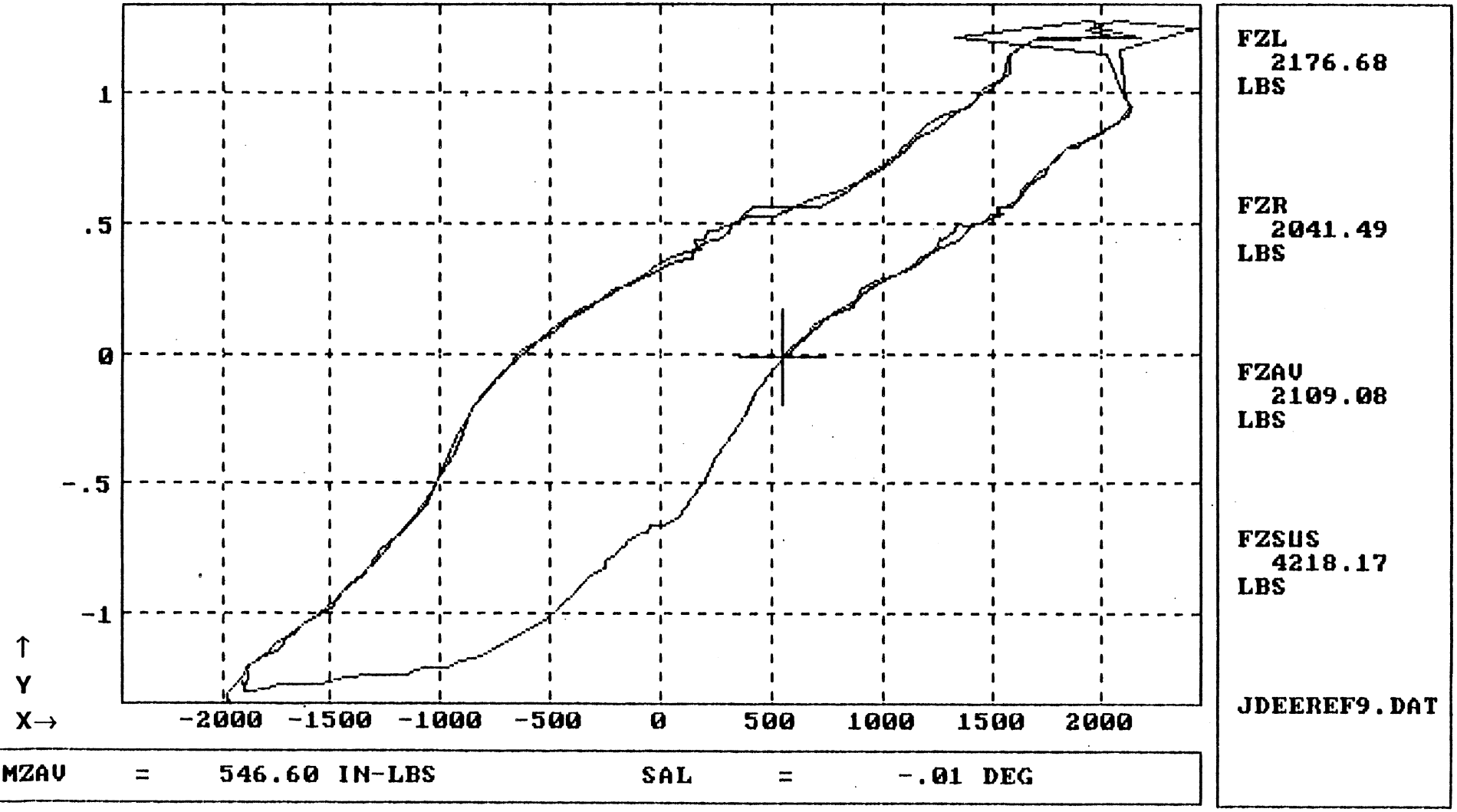
*Note: Engine on.

John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF9.DAT **Left Wheel Aligning Moment Compliance Steer*** Suspension Load = 4,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

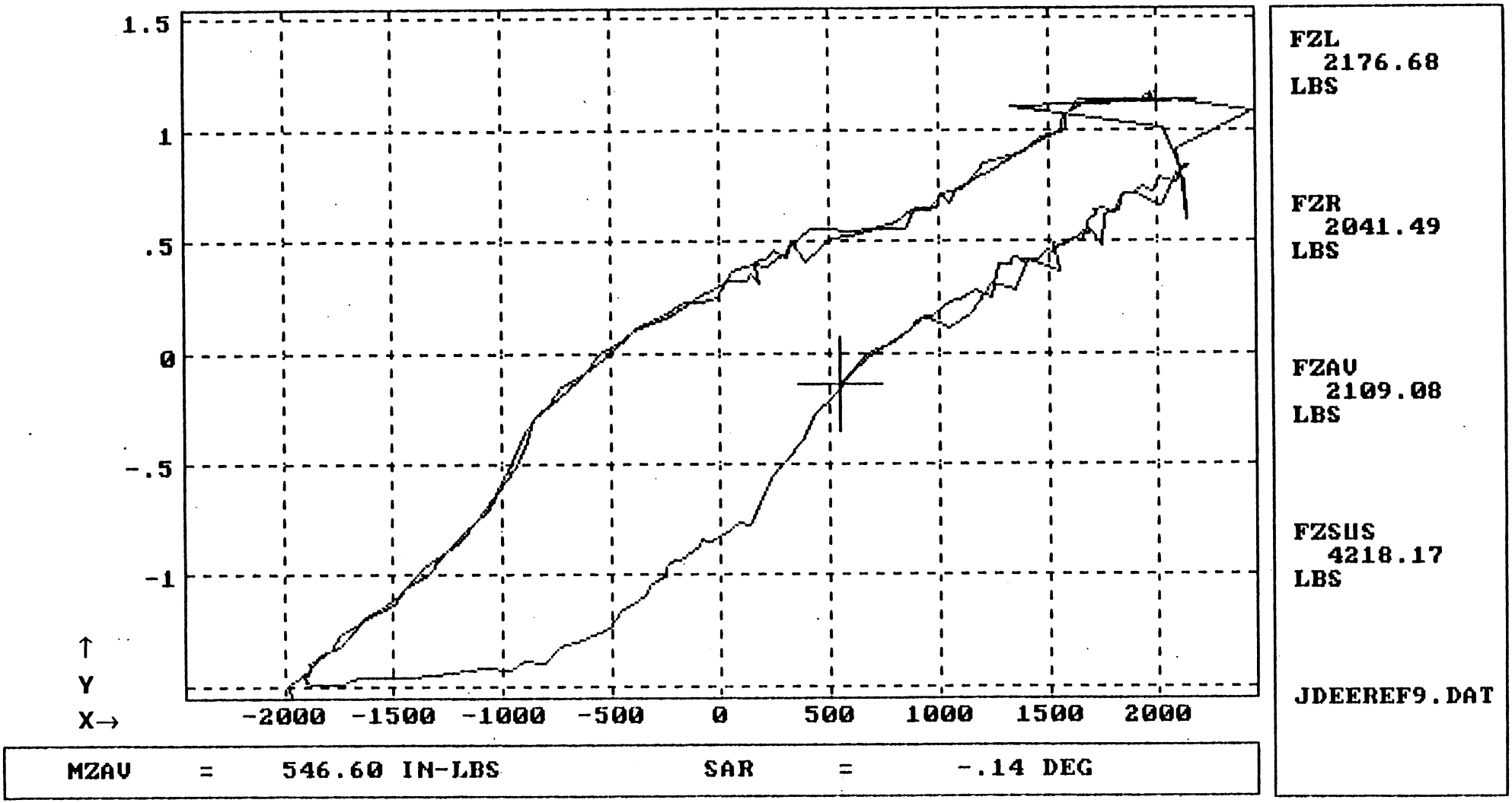
*Note: Engine on.

John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF9.DAT **Right Wheel Aligning Moment Compliance Steer*** Suspension Load = 4,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on.

DATE 5-14-1988 14:24:29
TYPE OF TEST:ALIGNING MOMENT
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF8.DAT
COMMENT:ENGINE ON STEERING WHEEL BLOCKED

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 6000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date: July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREF8.DAT

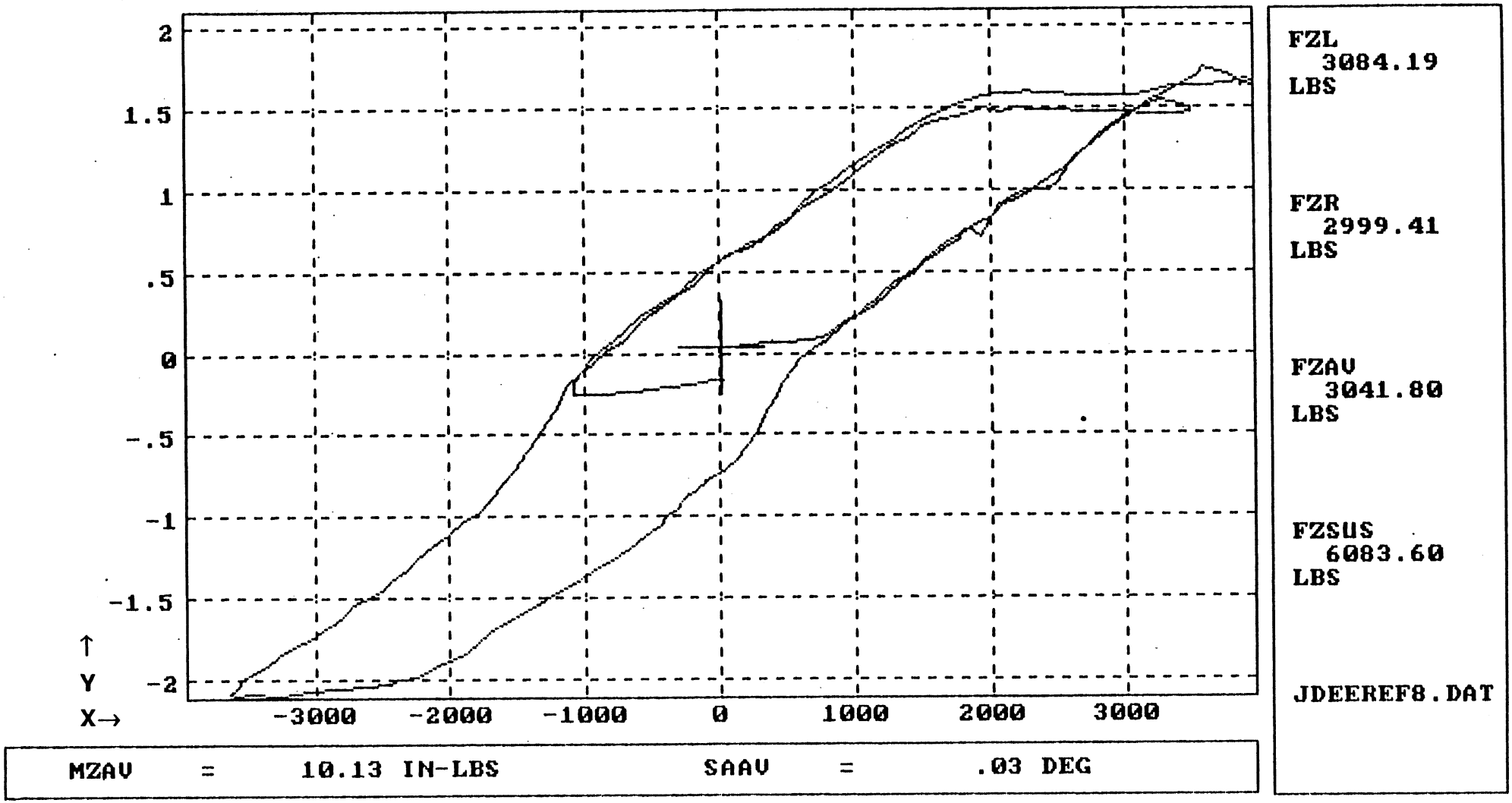
John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF8.DAT **Average Aligning Moment Compliance Steer***

Suspension Load = 6,000 lb.



MZAV	=	10.13 IN-LBS	SAAV	=	.03 DEG

Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on.

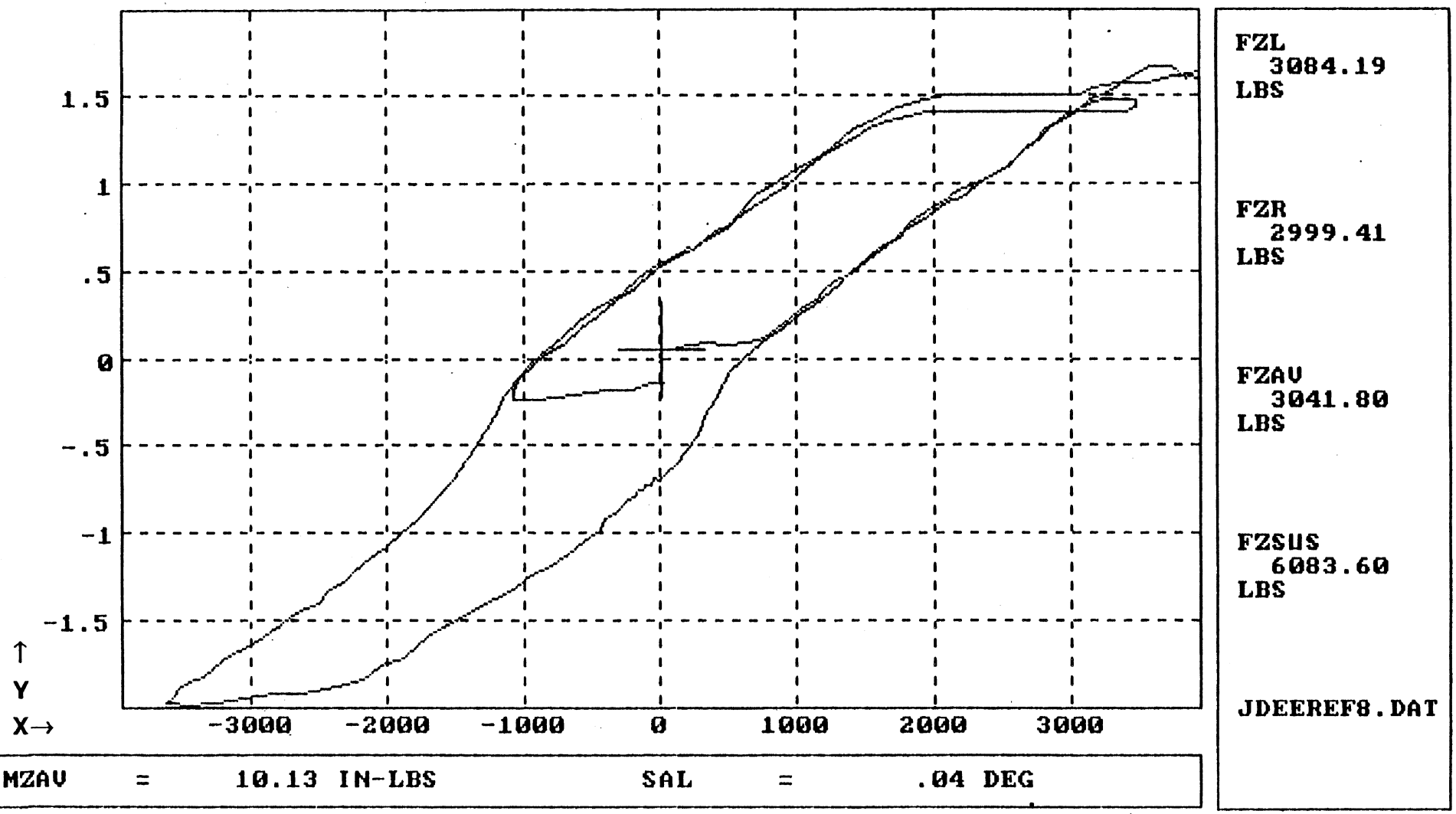
John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF8.DAT **Left Wheel Aligning Moment Compliance Steer***

Suspension Load = 6,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

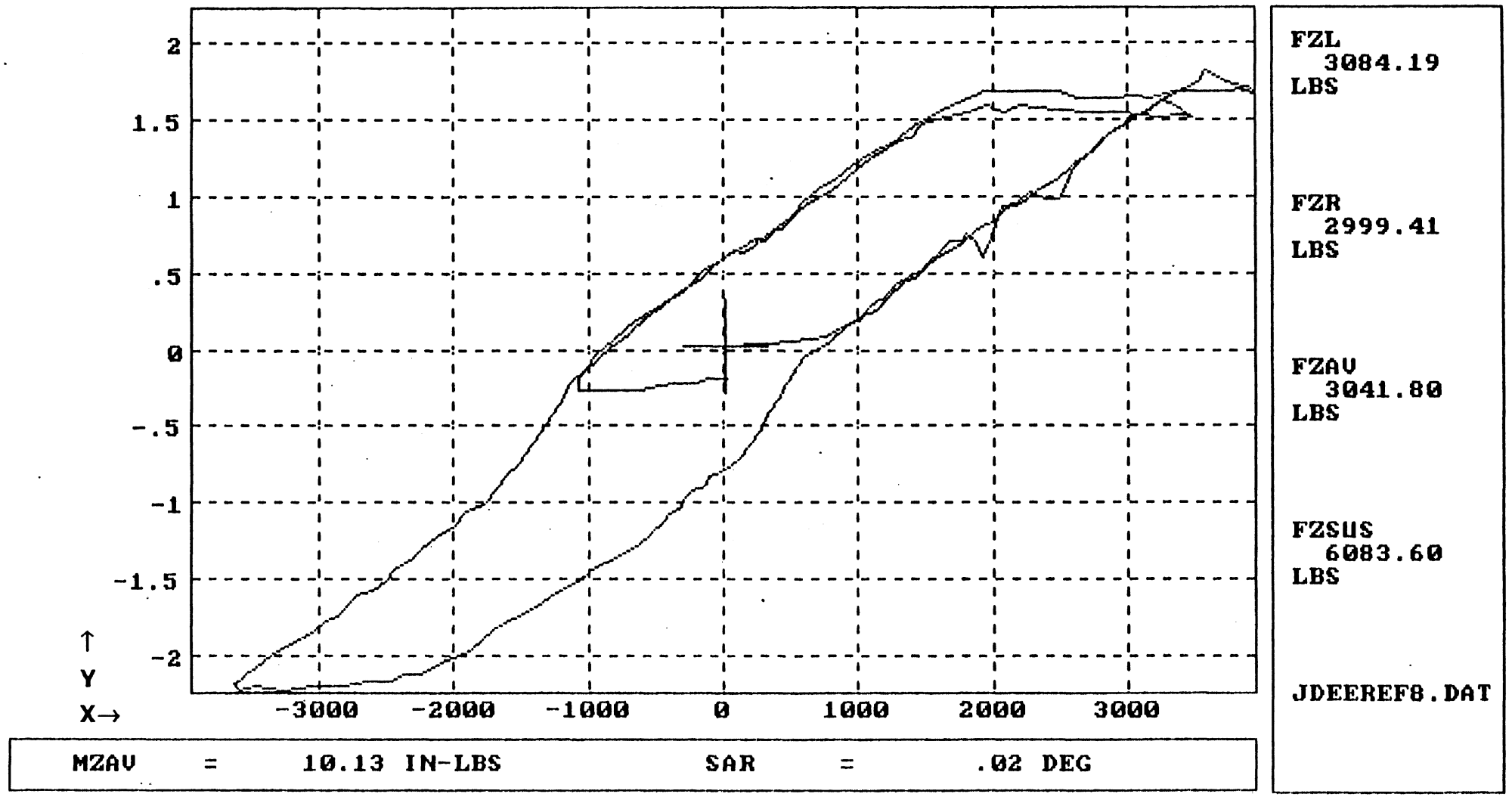
*Note: Engine on.

John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF8.DAT **Right Wheel Aligning Moment Compliance Steer*** Suspension Load = 6,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on.

DATE 5-14-1988 14:16:13
TYPE OF TEST:ALIGNING MOMENT
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREF7.DAT
COMMENT:ENGINE ON. STEERING WHEEL BLOCKED

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 8000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date: July 7, 1988
John Deere
Motor Home Chassis
File:JDEEREF7.DAT

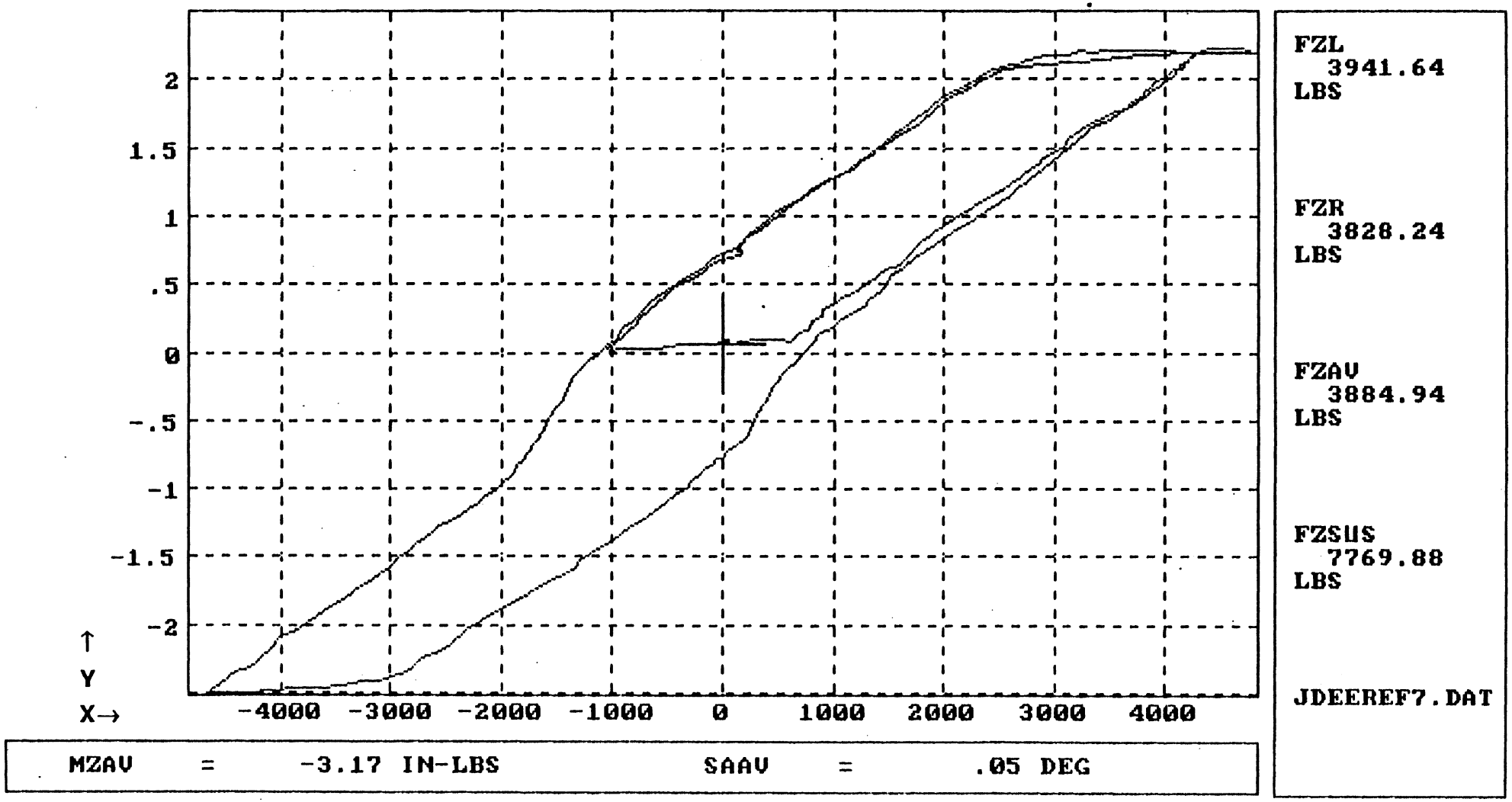
John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF7.DAT **Average Aligning Moment Compliance Steer***

Suspension Load = 8,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on.

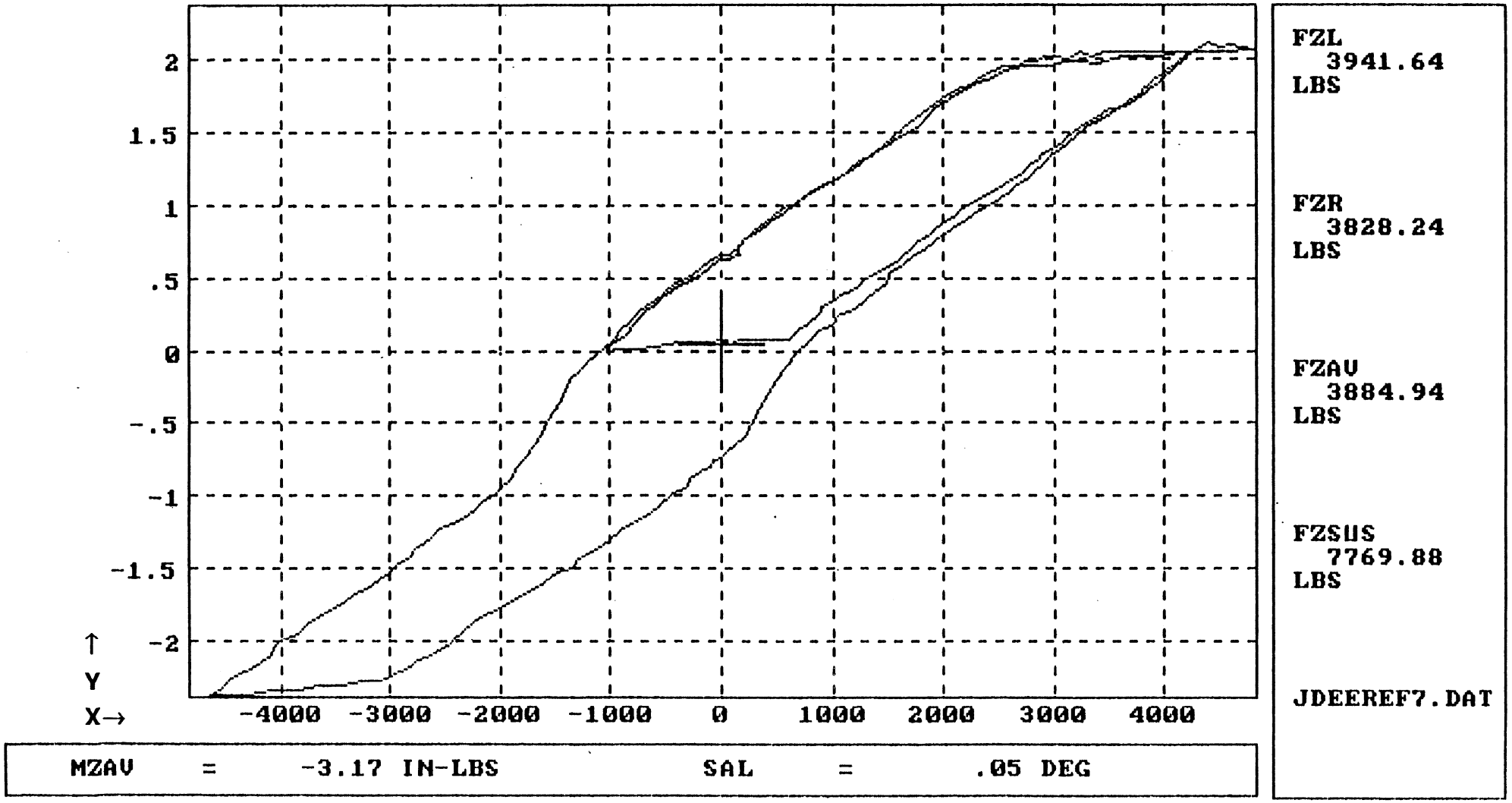
John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF7.DAT **Left Wheel Aligning Moment Compliance Steer***

Suspension Load = 8,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Left wheel steer angle (SAL); degrees; steer toward right, positive.

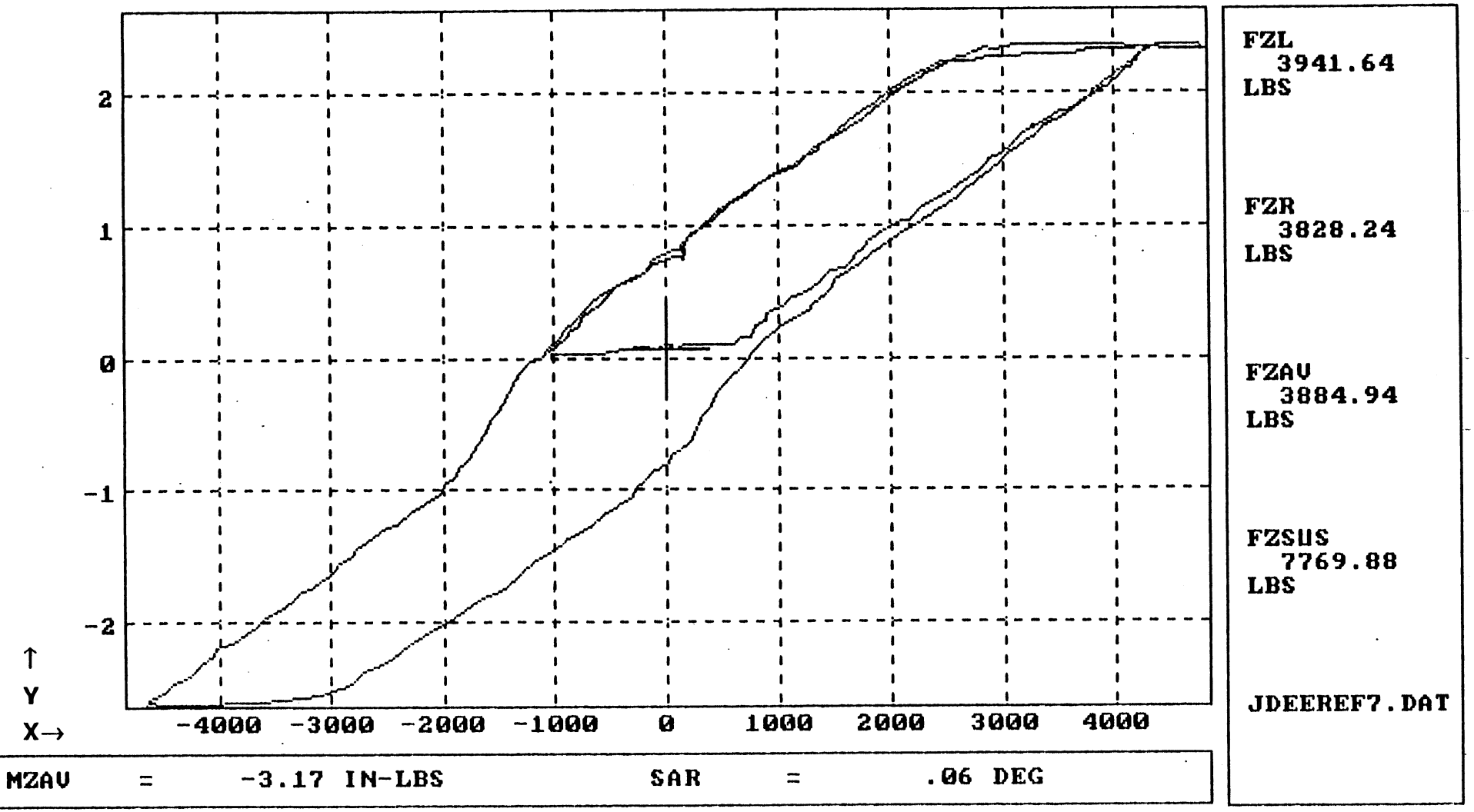
*Note: Engine on.

John Deere
Motor Home Chassis

Single Axle Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREF7.DAT **Right Wheel Aligning Moment Compliance Steer*** Suspension Load = 8,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Right wheel steer angle (SAR); degrees; steer toward right, positive.

*Note: Engine on.

DATE 5-14-1988 15:22:18
TYPE OF TEST:LATERAL FORCE
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEEREFA.DAT
COMMENT:ENGINE ON. PITMAN ARM BLOCKED

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 8000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING FRONT
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:6000 LB
OTHER:7 FLAT LEAF. 3 IN X 3/8 INCH 1 MAIN LEAF 51 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	31.00	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	70.00	.00
LATERAL Z-POT SPACING	87.00	.00
VERTICAL Y-POT POSITION	16.25	4.80

	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: July 7, 1988
John Deere
Motor Home Chassis
File: JDEEREFA.DAT

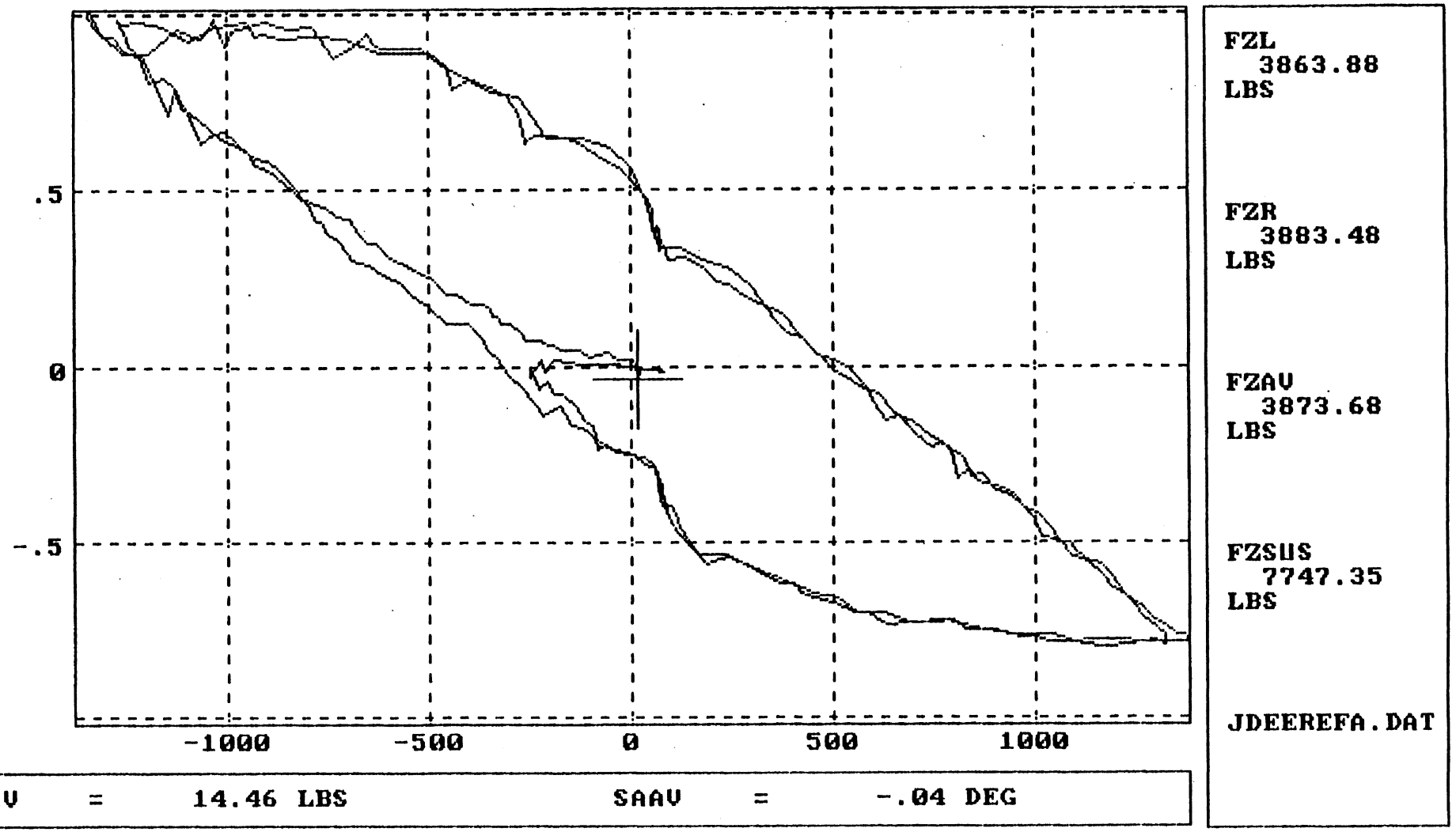
John Deere
Motor Home Chassis

Single Axle Front Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREFA.DAT **Average Lateral Force Compliance Steer***

Suspension Load = 8,000 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Engine on.

John Deere
Motor Home Chassis

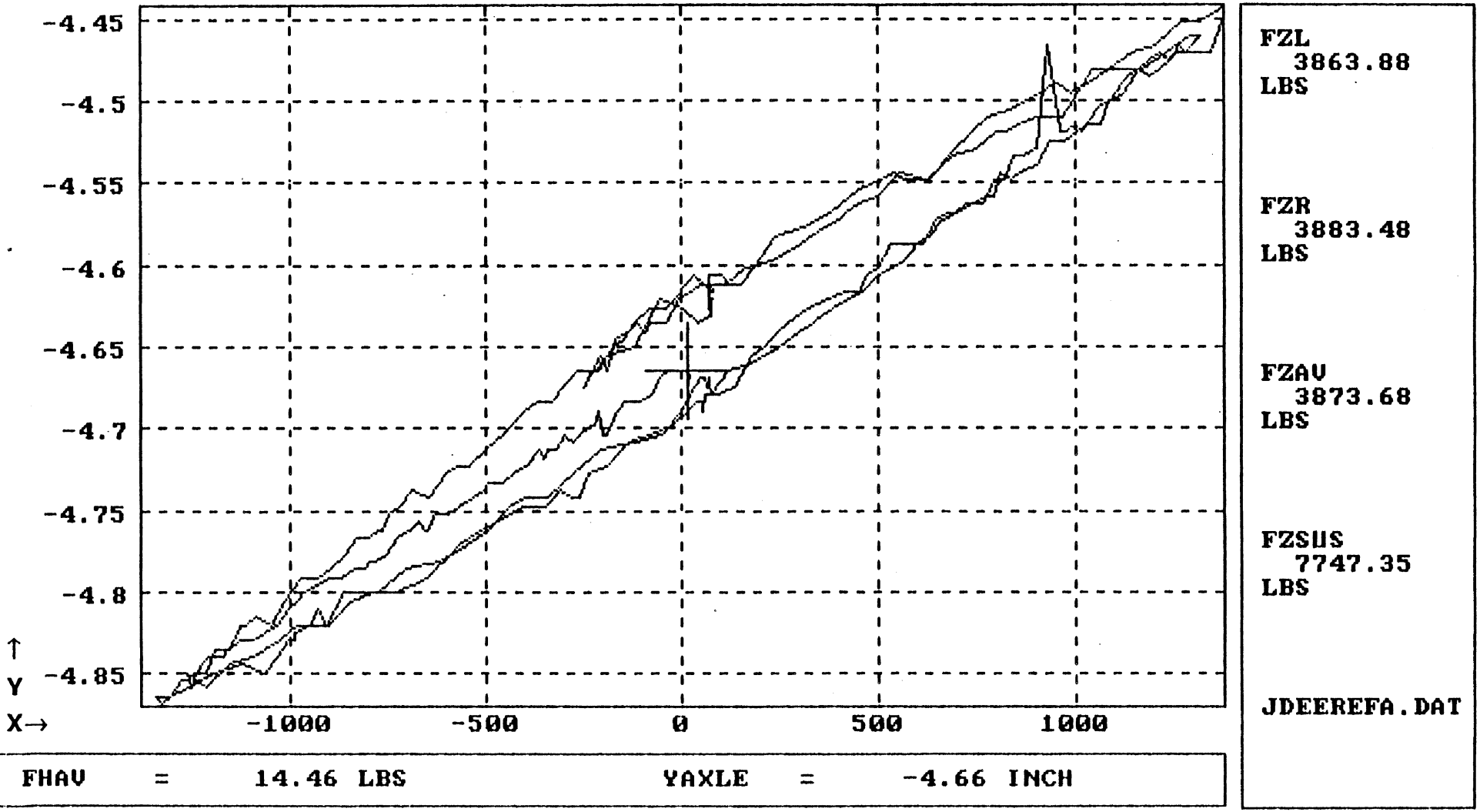
Single Axle Front Suspension

Date: July 7, 1988
Pitch = 0.0 degrees

File: JDEEREFA.DAT

Lateral Force Compliance (Linear)*

Suspension Load = 8,000 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Axle lateral translation (YAXLE); in; motion toward right, positive.

*Note: Engine on.

Appendix B:
Rear Suspension Data

Single Axle Rear Suspension Reduced Data

Suspension I.D.: John Deere
Motor Home Chassis
Single Axle Rear Suspension

Unsprung Weights Measured, Lbs

Left Side	Right Side
601	601

Spring Properties

Boundary Tables: See attached sheets

Vertical Stiffness : 946 lb/in

At: Suspension Load, Lbs	5,000	7,500	10,000
Compression ß	0.080	0.075	0.075
Extension ß	0.100	0.090	0.090

Suspension Properties

At: Suspension Load, Lbs	5,000	7,500	10,000
Roll Center Height, in above the ground	24.04	22.71	21.64
Auxiliary Roll Stiffness in-lb/deg	19,000	18,000	18,000
Total Roll Stiffness in-lb/deg	32,600	32,300	32,400
Auxiliary Roll Stiffness in-lb/deg (w/o A-roll bar)	4,800	4,000	4,000
Total Roll Stiffness in-lb/deg (w/o A-roll bar)	18,000	18,000	18,000
Roll Steer Coefficient deg/deg	0.062	0.002	-0.050
Aligning Moment Steer Coeff,deg/in-lb	1.45E-05	1.43E-05	1.30E-05
Lateral Force Steer Coeff,deg/lb	-1.28E-05	-1.07E-05	-2.43E-06
∂YAXLE/∂FH,in/lb	1.87E-04	1.90E-04	1.80E-04

XWAV vs. ZWAV

.00	.58
-.11	1.02
-.20	1.49
-.30	2.03
-.41	2.94
-.46	3.51
-.49	4.02
-.51	4.56
-.52	5.04
-.52	5.53
-.51	6.00
-.49	6.61
-.42	7.51
-.37	8.03
-.32	8.51
-.24	9.02

Uncorrected Spring Table

Deflection, in	Force, Lbs
.04	-430.21
.98	389.83
2.00	1279.66
2.99	2101.70
3.99	3055.94
4.99	3992.38
6.01	4982.21
7.01	5921.19
8.00	6944.92
9.31	9932.20

Corrected Spring Table

Deflection, in	Force, Lbs
.04	-1031.21
.98	-211.17
2.00	678.66
2.99	1500.70
3.99	2454.94
4.99	3391.38
6.01	4381.21
7.01	5320.19
8.00	6343.92
9.31	9331.20

Uncorrected

COMPRESSION ENVELOPE

Deflection, in	Force, Lbs
.02	-198.17
1.00	638.98
2.00	1493.22
2.99	2310.17
3.99	3263.56
5.00	4200.85
6.03	5172.88
7.01	6162.71
8.00	7117.80
8.87	8072.89
9.33	9932.20

EXTENSION ENVELOPE

Deflection, in	Force, Lbs
.27	-376.19
1.00	247.46
2.00	1066.10
2.99	1891.53
3.99	2811.87
4.99	3766.95
6.01	4722.03
7.01	5677.12
8.00	6684.75
9.00	7864.41
9.42	9593.22

Corrected

COMPRESSION ENVELOPE

Deflection, in	Force, Lbs
.02	-799.17
1.00	37.98
2.00	892.22
2.99	1709.17
3.99	2662.56
5.00	3599.85
6.03	4571.88
7.01	5561.71
8.00	6516.80
8.87	7471.89
9.33	9331.20

EXTENSION ENVELOPE

Deflection, in	Force, Lbs
.27	-977.19
1.00	-353.54
2.00	465.10
2.99	1290.53
3.99	2210.87
4.99	3165.95
6.01	4121.03
7.01	5076.12
8.00	6083.75
9.00	7263.41
9.42	8992.22

DATE 5-18-1988 16:24: 9
TYPE OF TEST:VERTICAL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER1.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 0.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10.000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONGS PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER1.DAT

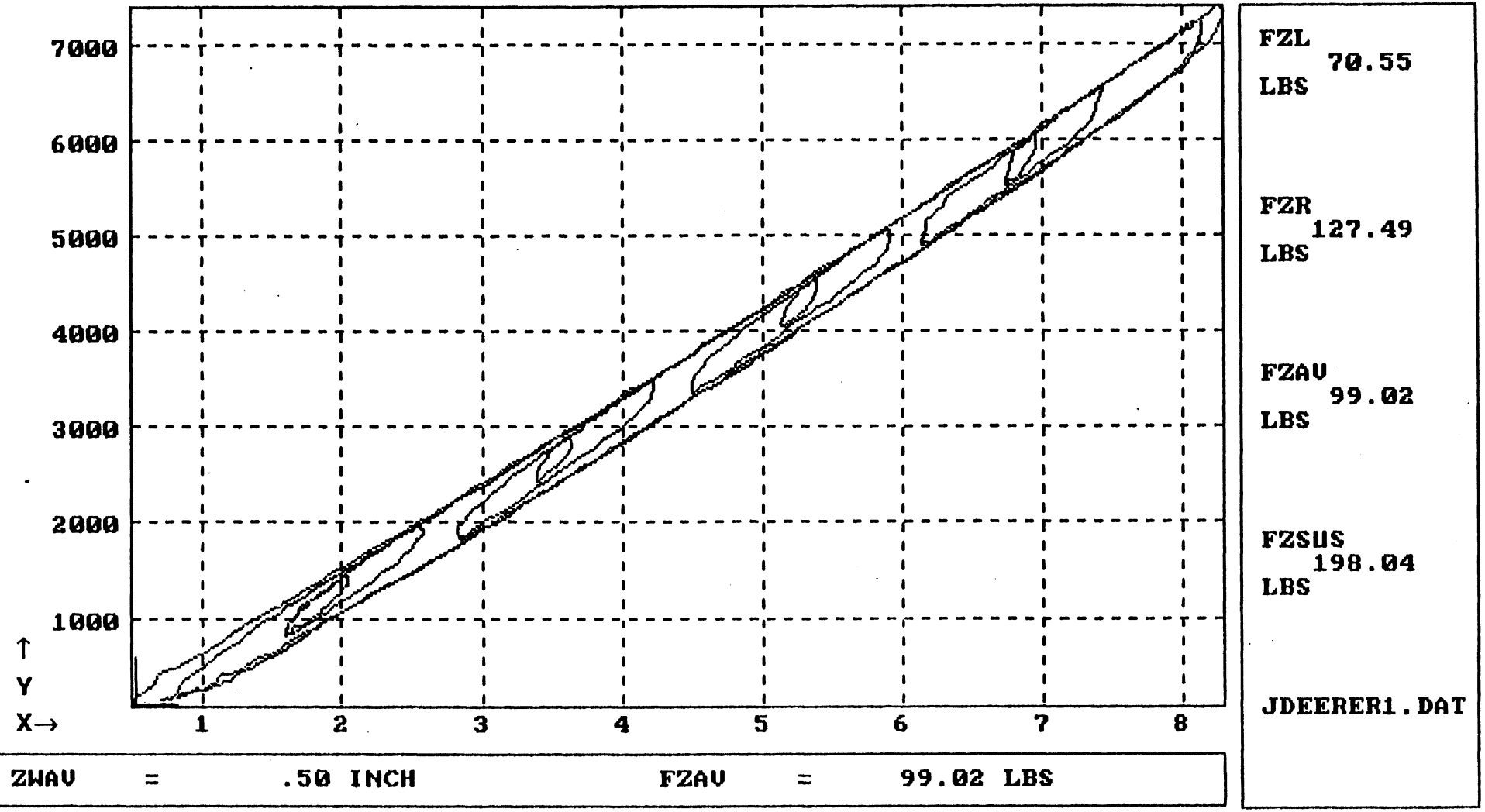
John Deere
Motor Home Chassis

File: JDEERER1.DAT

Single Axle Rear Suspension

Average Vertical Wheel Rate*

Date: June 9, 1988
Pitch = 0.0 degrees



Abscissa (X): Average vertical axle displacement (ZWAV); in; spring compression, positive.

Ordinate (Y): Average vertical wheel load (FZAV); lb; spring compression, positive.

*Note: Lower end.

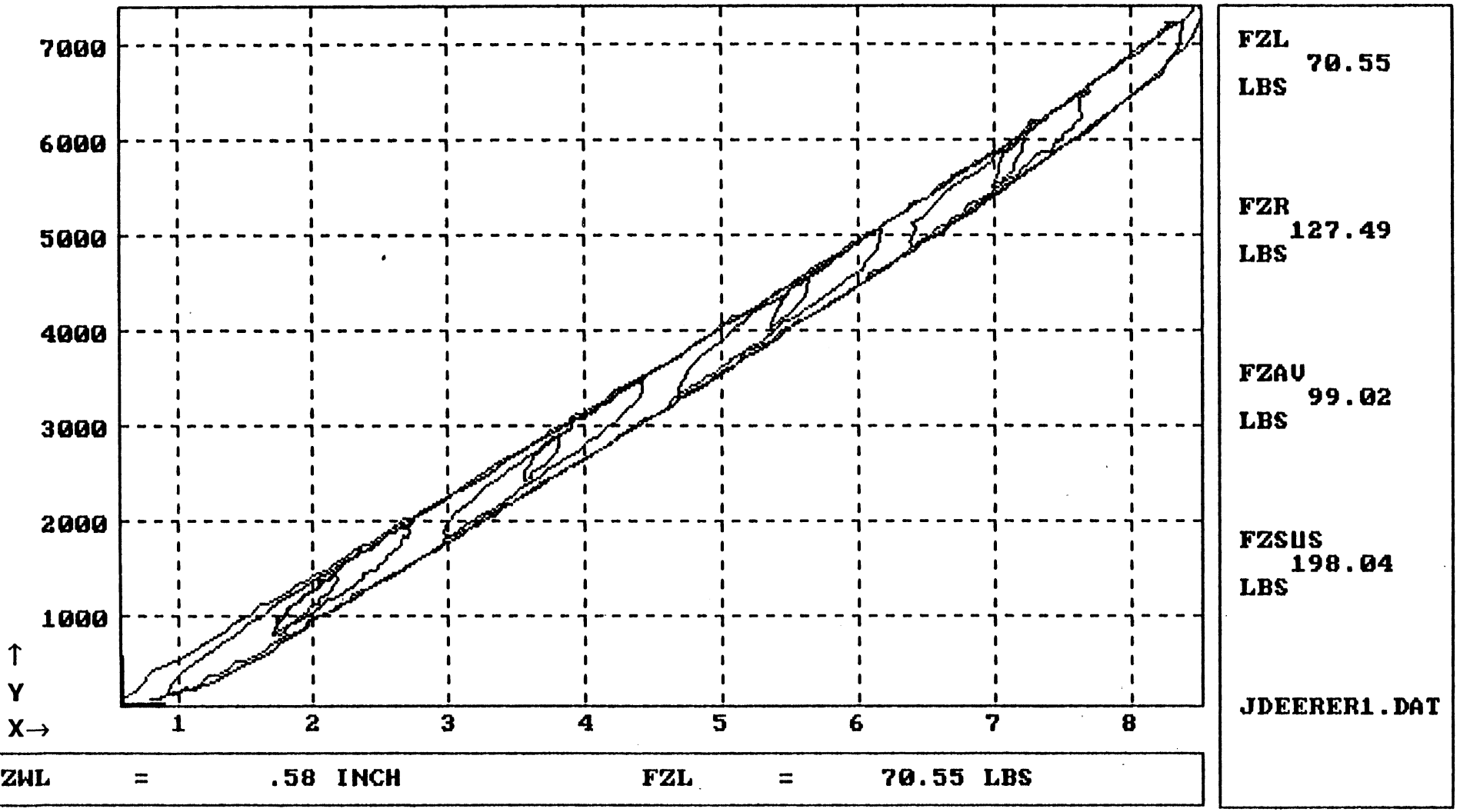
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER1.DAT

Left Side Vertical Wheel Rate*



Abscissa (X): Left wheel vertical displacement (ZWL); in; spring compression, positive.

Ordinate (Y): Left wheel vertical load (FZL); lb; spring compression, positive.

*Note: Lower end.

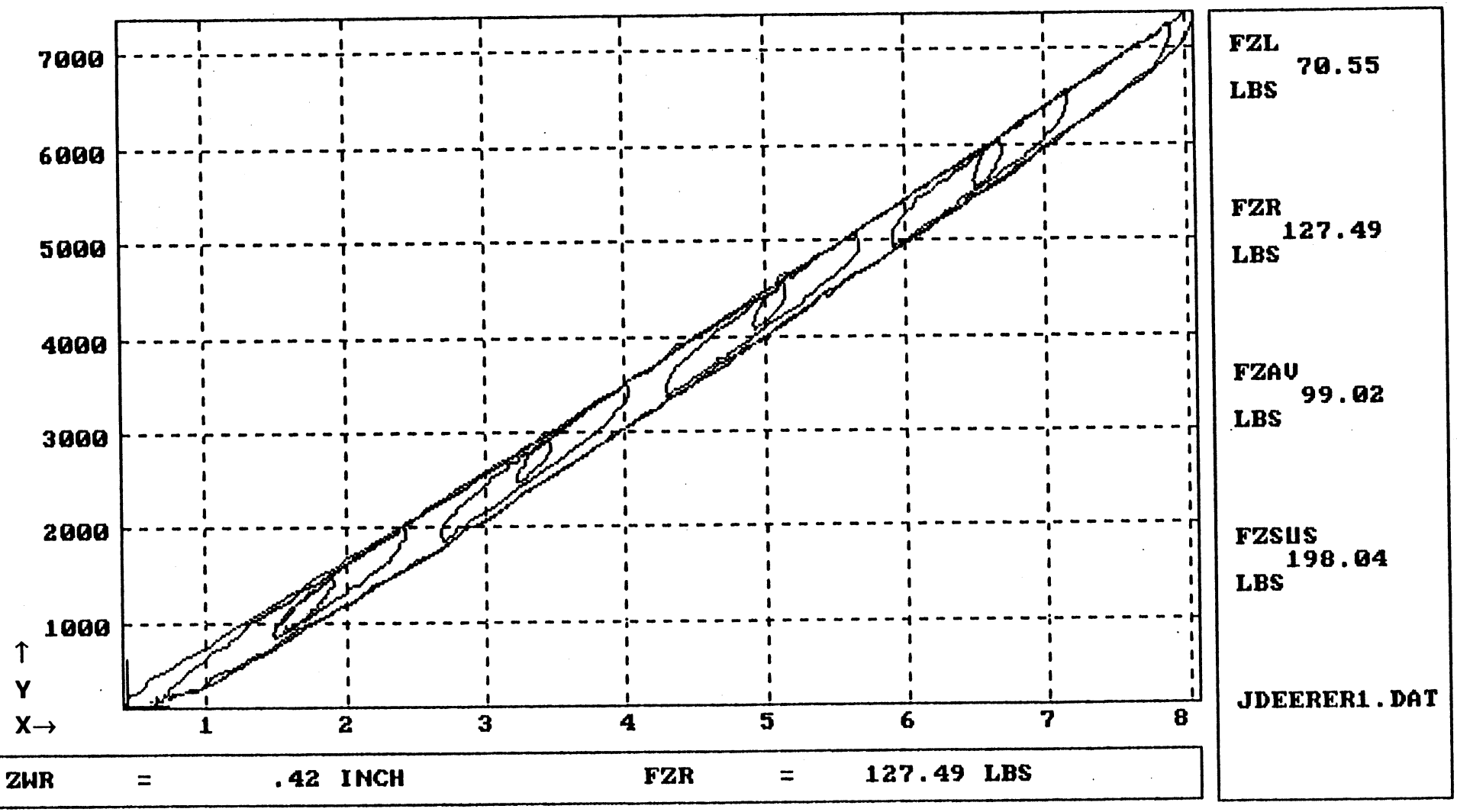
John Deere
Motor Home Chassis

File: JDEERER1.DAT

Single Axle Rear Suspension

Right Side Vertical Wheel Rate*

Date: June 9, 1988
Pitch = 0.0 degrees



Abscissa (X): Right wheel vertical displacement (ZWR); in; spring compression, positive.

Ordinate (Y): Right wheel vertical load (FZR); lb; spring compression, positive.

*Note: Lower end.

DATE 5-18-1988 16:35:15
TYPE OF TEST:VERTICAL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER2.DAT
COMMENT:VERTICAL RATE. TOP END

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 0.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER2.DAT

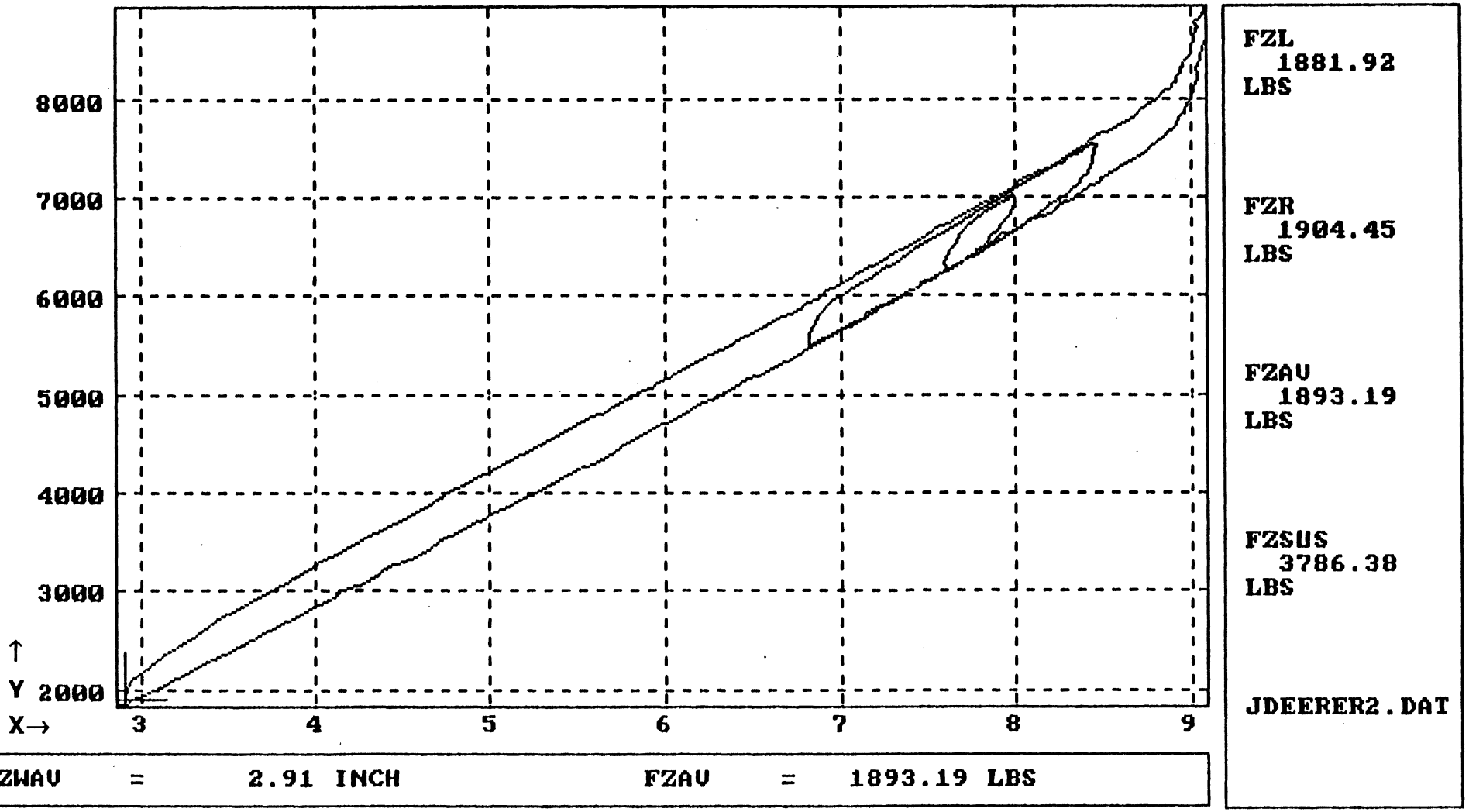
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER2.DAT

Average Vertical Wheel Rate*



ZWAV = 2.91 INCH	FZAV = 1893.19 LBS

Abscissa (X): Average vertical axle displacement (ZWAV); in; spring compression, positive.

Ordinate (Y): Average vertical wheel load (FZAV); lb; spring compression, positive.

*Note: Upper end.

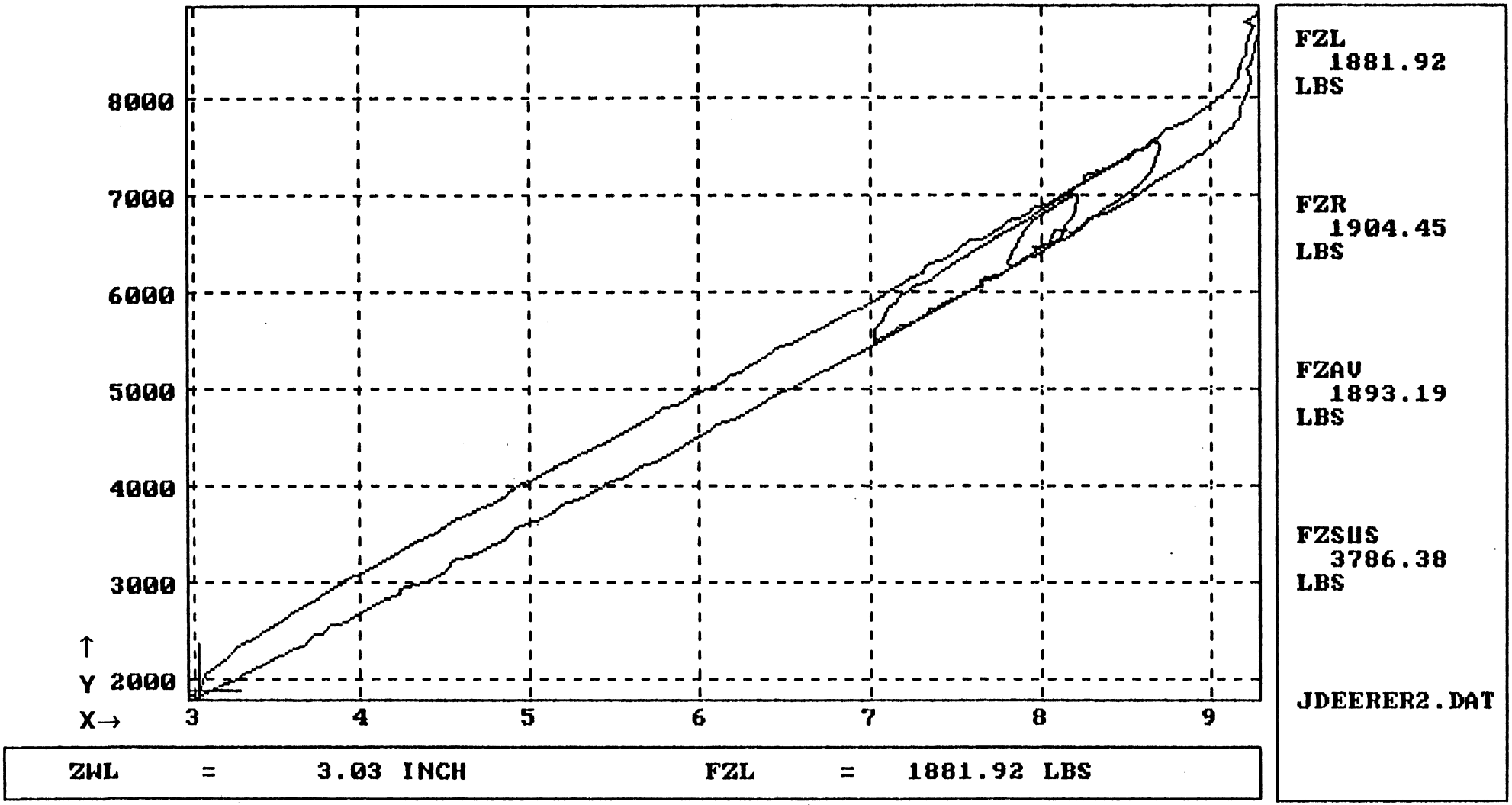
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER2.DAT

Left Side Vertical Wheel Rate*



Abscissa (X): Left wheel vertical displacement (ZWL); in; spring compression, positive.

Ordinate (Y): Left wheel vertical load (FZL); lb; spring compression, positive.

*Note: Upper end.

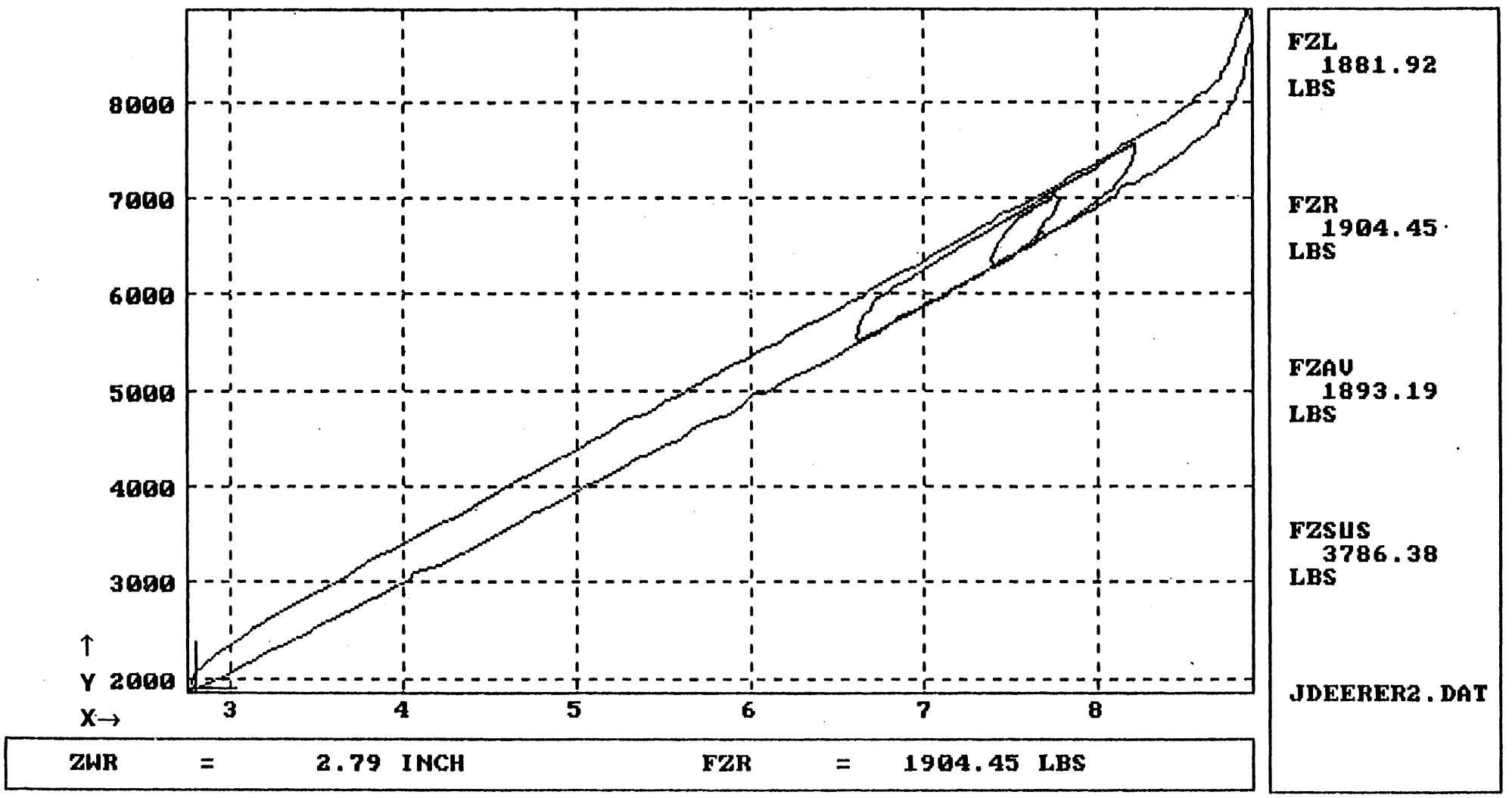
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER2.DAT

Right Side Vertical Wheel Rate*



Abscissa (X): Right wheel vertical displacement (ZWR); in; spring compression, positive.

Ordinate (Y): Right wheel vertical load (FZR); lb; spring compression, positive.

*Note: Upper end.

DATE 5-18-1988 16:39:44
TYPE OF TEST:VERTICAL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER4.DAT
COMMENT:VERTICAL. TOP END. SIMPLE

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 0.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER4.DAT

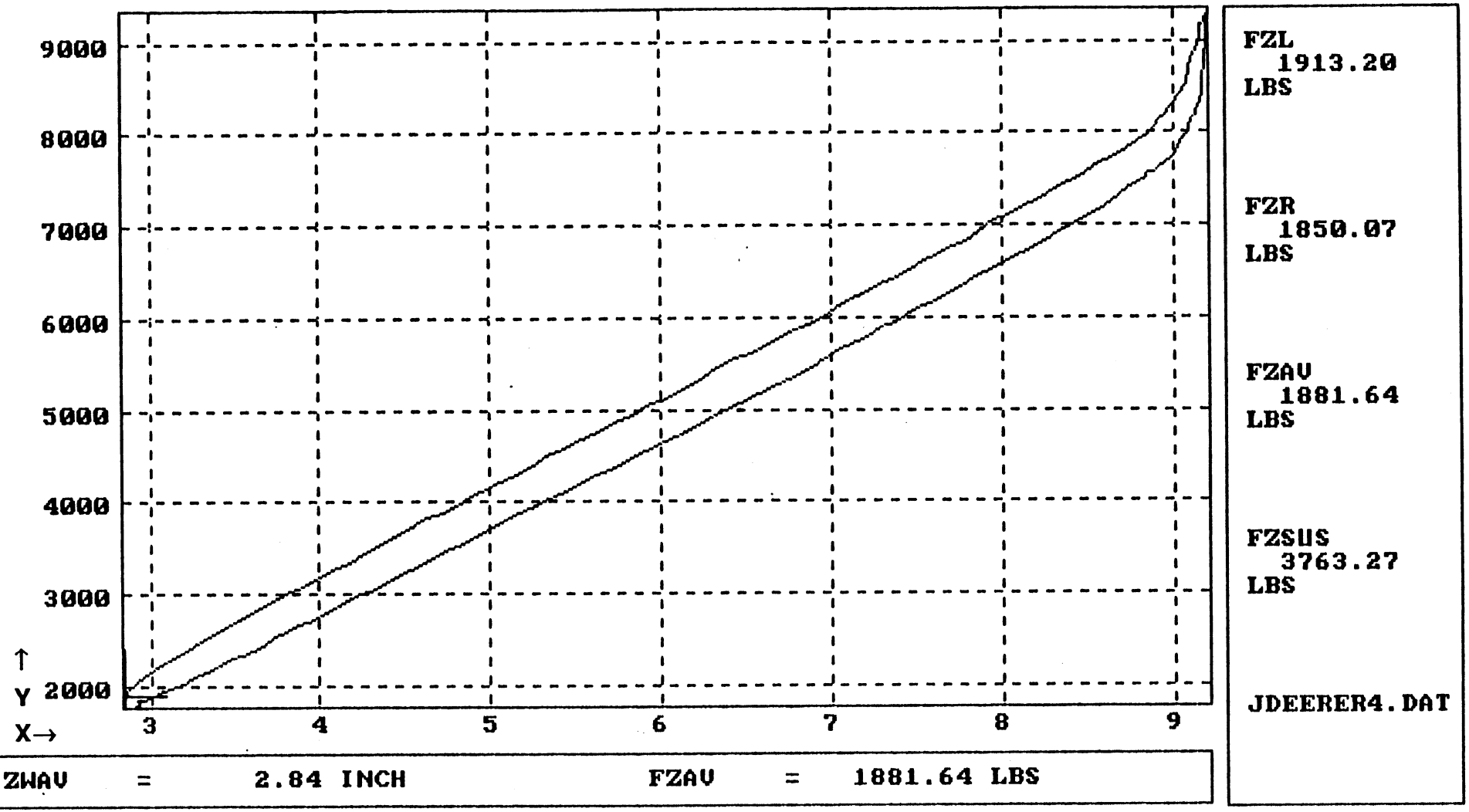
John Deere
Motor Home Chassis

File: JDEERER4.DAT

Single Axle Rear Suspension

Average Vertical Wheel Rate*

Date: June 9, 1988
Pitch = 0.0 degrees



ZWAV = 2.84 INCH	FZAV = 1881.64 LBS

Abscissa (X): Average vertical axle displacement (ZWAV); in; spring compression, positive.

Ordinate (Y): Average vertical wheel load (FZAV); lb; spring compression, positive.

*Note: Upper end.

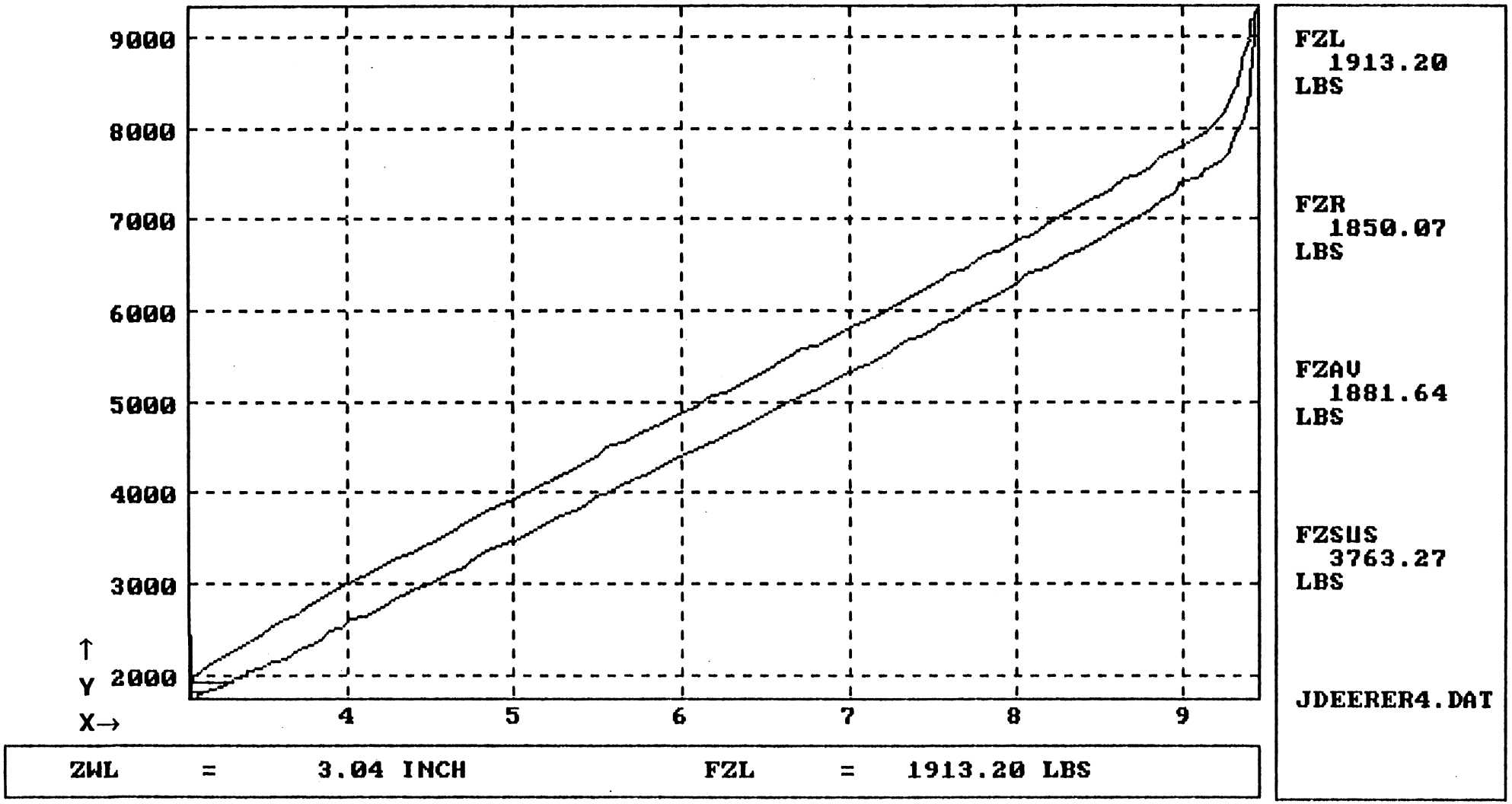
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File; JDEERER4.DAT

Left Side Vertical Wheel Rate*



Abscissa (X): Left wheel vertical displacement (ZWL); in; spring compression, positive.

Ordinate (Y): Left wheel vertical load (FZL); lb; spring compression, positive.

*Note: Upper end.

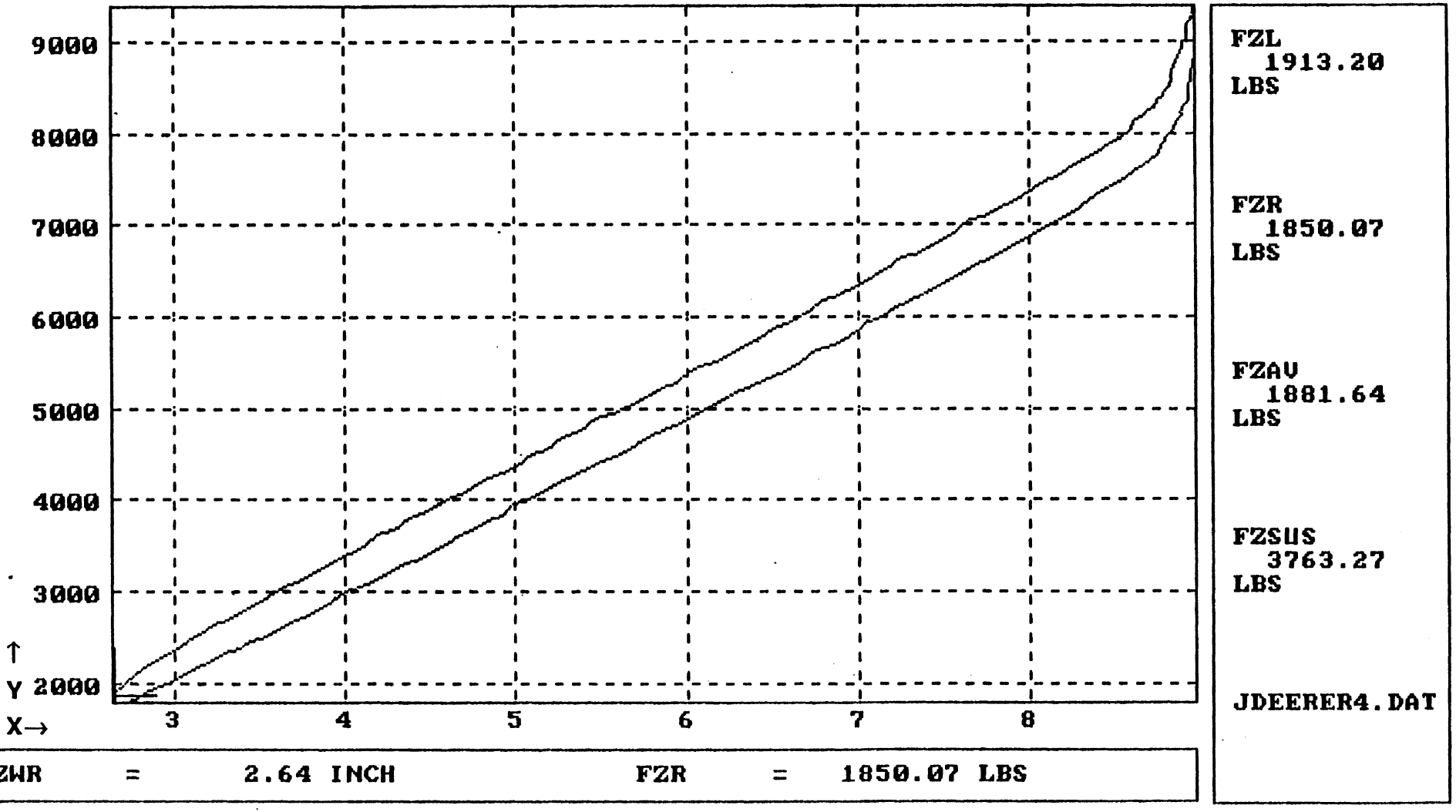
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER4.DAT

Right Side Vertical Wheel Rate*



Abscissa (X): Right wheel vertical displacement (ZWR); in; spring compression, positive.

Ordinate (Y): Right wheel vertical load (FZR); lb; spring compression, positive.

*Note: Upper end.

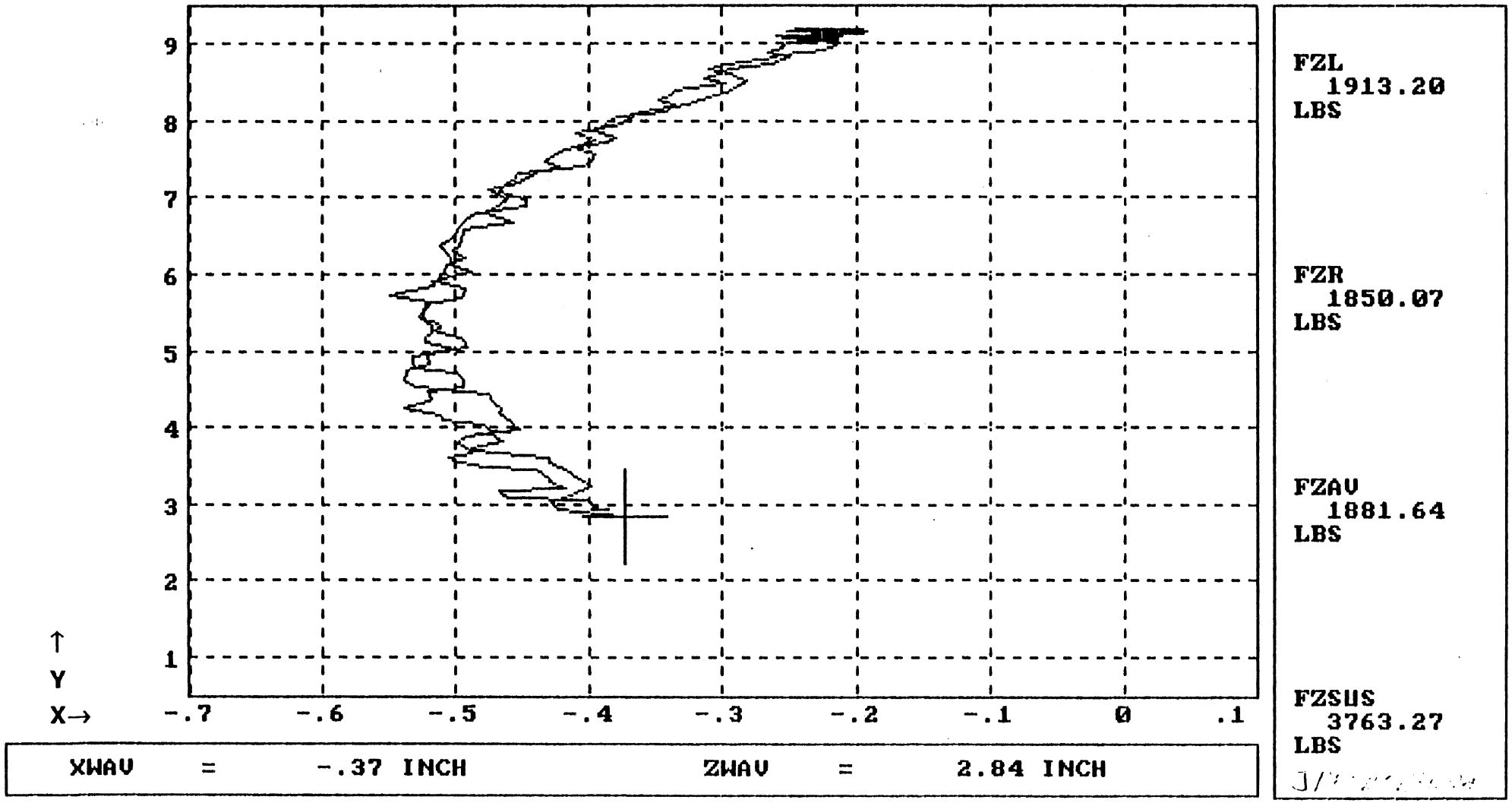
John Deere
Motor Home Chassis

File: JDEERER4.DAT

Single Axle Rear Suspension

Average Axle Center Motion*

Date: June 9, 1988
Pitch = 0.0 degrees



Abscissa (X): Average longitudinal wheel center motion (XWAV); in; forward motion, positive.

Ordinate (Y): Average vertical axle displacement (ZWAV); in; spring compression, positive.

*Note: Upper end.

LATE 5-18-1988 16:44:55
TYPE OF TEST:VERTICAL
(JSTOMER:JOHN DEERE
PERATOR:WINKLER
FILE NAME:C:JDEERER5.DAT
COMMENT:VERTICAL. LOWER END. SIMPLE

****

TEST CONDITIONS

PITCH ANGLE= .00
JMINAL SUSPENSION LOAD= 0.
(JMINAL STEER ANGLE= .00

****

SUSPENSION DATA

/PE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
ATING:10,000 LB
THER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

ANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

****

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

****

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	.00	.00
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER5.DAT

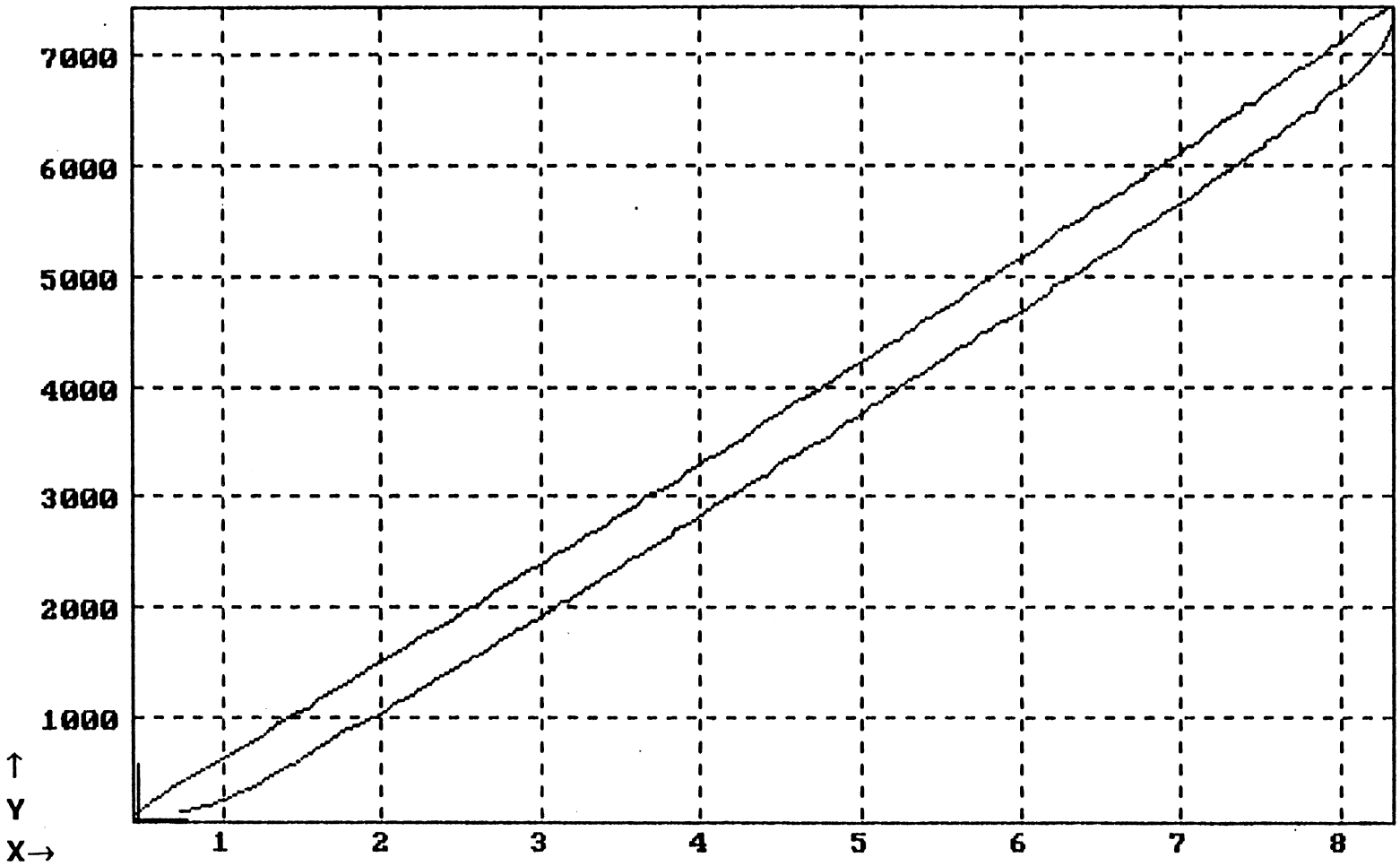
John Deere
Motor Home Chassis

File: JDEERER5.DAT

Single Axle Rear Suspension

Average Vertical Wheel Rate*

Date: June 9, 1988
Pitch = 0.0 degrees



FZL
66.56
LBS

FZR
100.50
LBS

FZAV
83.53
LBS

FZSUS
167.06
LBS

JDEERER5.DAT

ZWAV = .46 INCH FZAV = 83.53 LBS

Abscissa (X): Average vertical axle displacement (ZWAV); in; spring compression, positive.

Ordinate (Y): Average vertical wheel load (FZAV); lb; spring compression, positive.

*Note: Lower end.

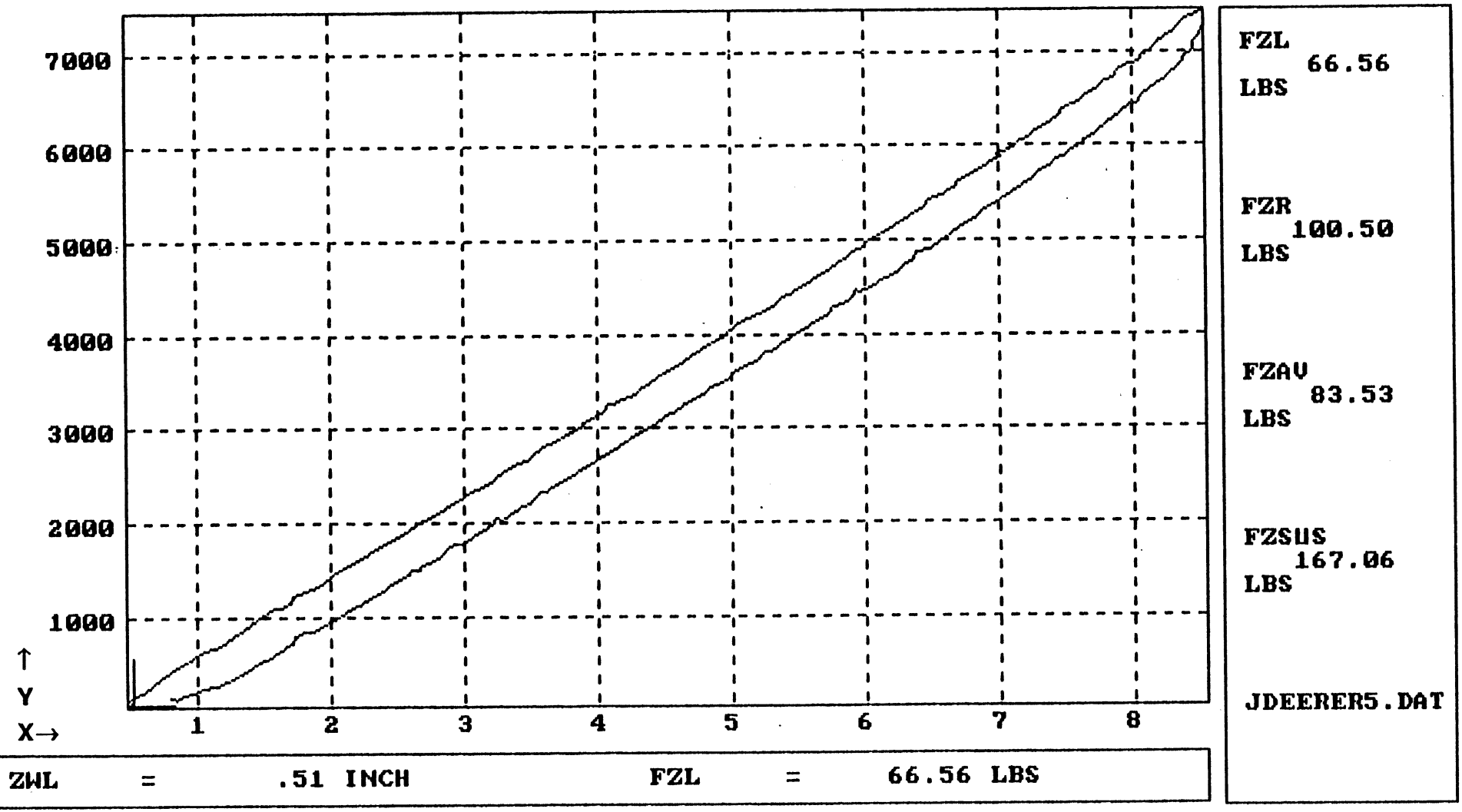
John Deere
Motor Home Chassis

File: JDEERER5.DAT

Single Axle Rear Suspension

Left Side Vertical Wheel Rate*

Date: June 9, 1988
Pitch = 0.0 degrees



Abscissa (X): Left wheel vertical displacement (ZWL); in; spring compression, positive.

Ordinate (Y): Left wheel vertical load (FZL); lb; spring compression, positive.

*Note: Lower end.

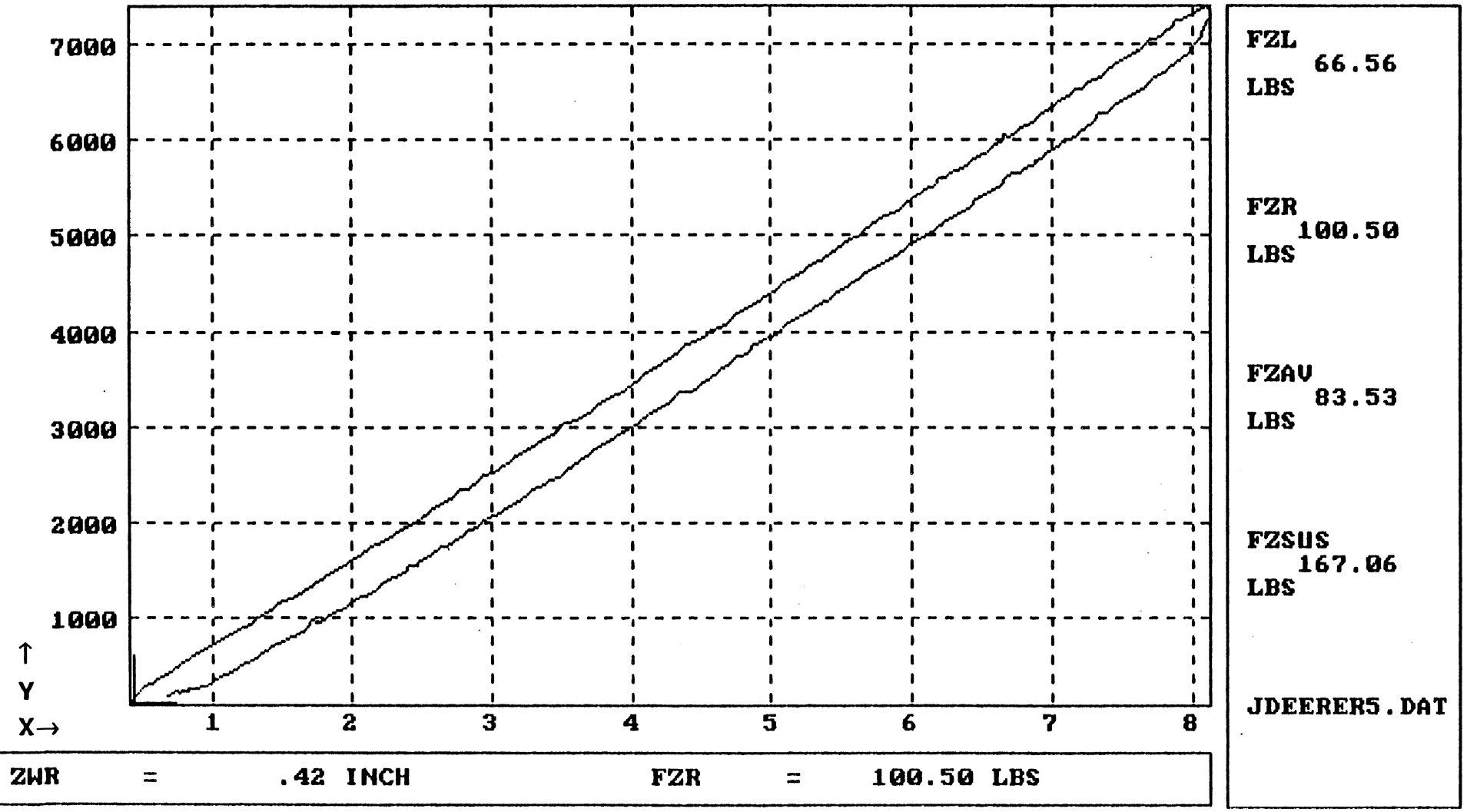
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER5.DAT

Right Side Vertical Wheel Rate*



Abscissa (X): Right wheel vertical displacement (ZWR); in; spring compression, positive.

Ordinate (Y): Right wheel vertical load (FZR); lb; spring compression, positive.

*Note: Lower end.

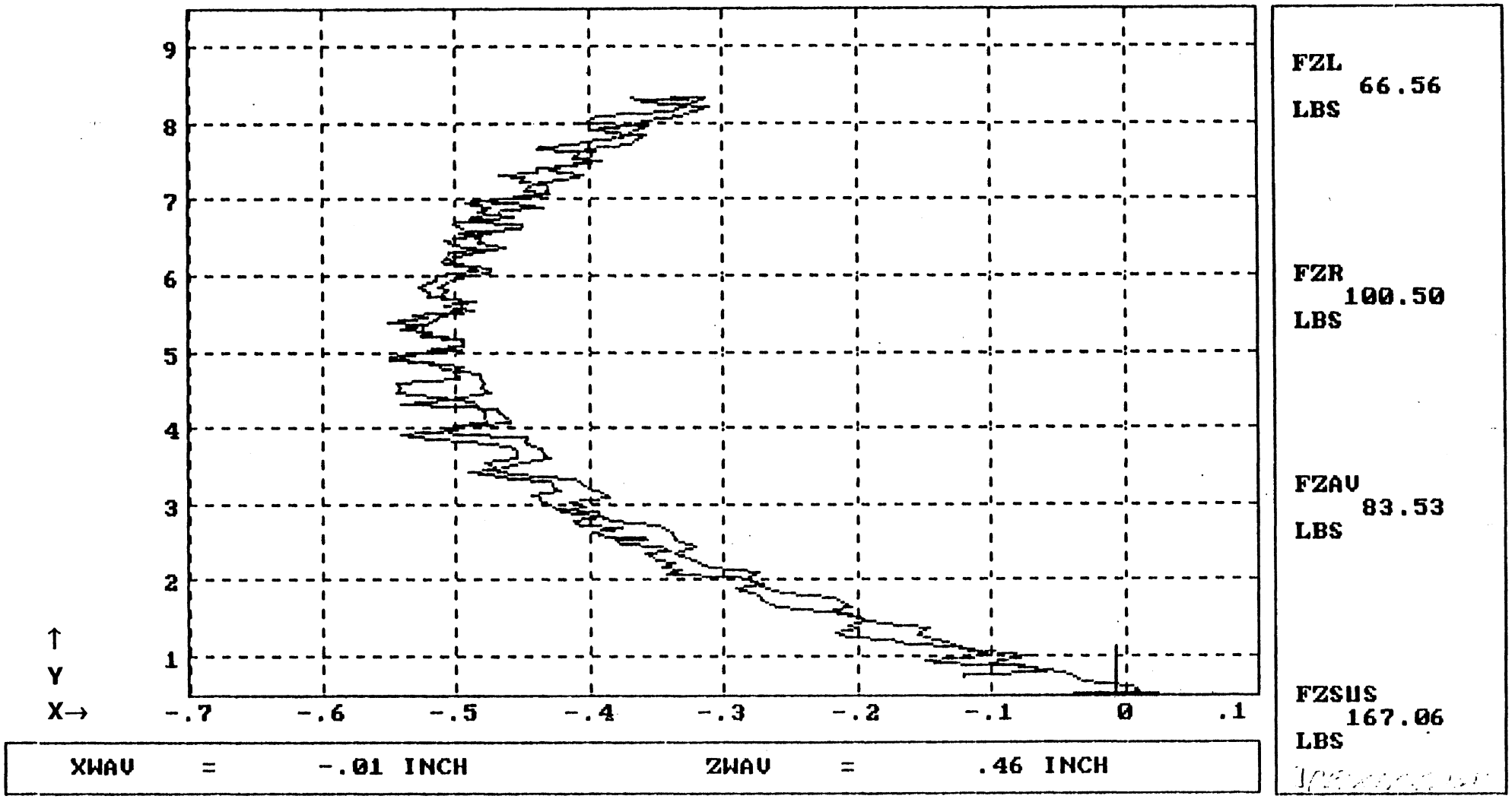
John Deere
Motor Home Chassis

File: JDEERER5.DAT

Single Axle Rear Suspension

Average Axle Center Motion*

Date: June 9, 1988
Pitch = 0.0 degrees



Abscissa (X): Average longitudinal wheel center motion (XWAV); in; forward motion, positive.

Ordinate (Y): Average vertical axle displacement (ZWAV); in; spring compression, positive.

*Note: Lower end.

DATE 5-20-1988 10:17:25
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERC.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 5000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	18.44	24.43
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERC.DAT

John Deere
Motor Home Chassis

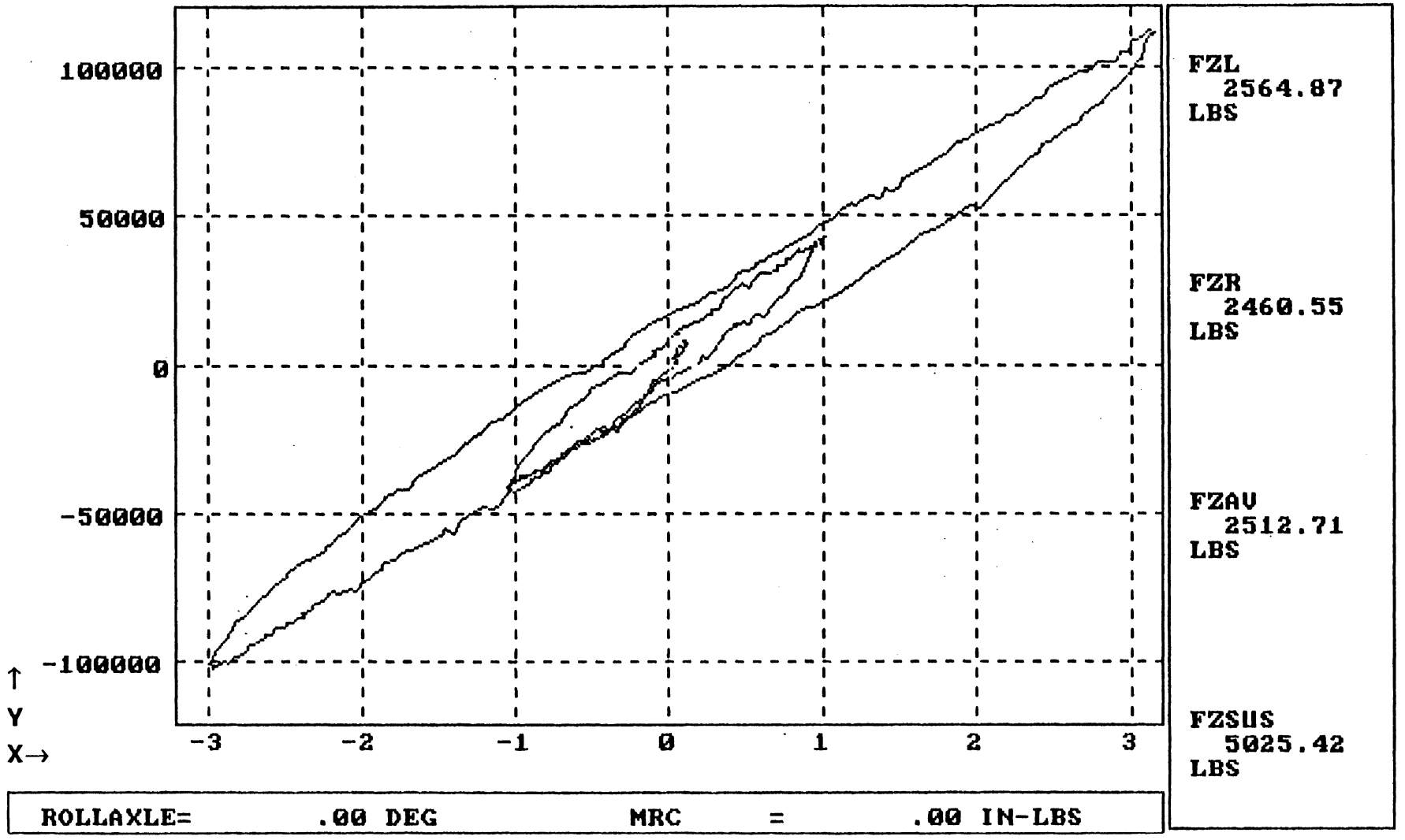
File: JDEERERC.DAT

Single Axle Rear Suspension

Axle Roll Rate*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note:

John Deere
Motor Home Chassis

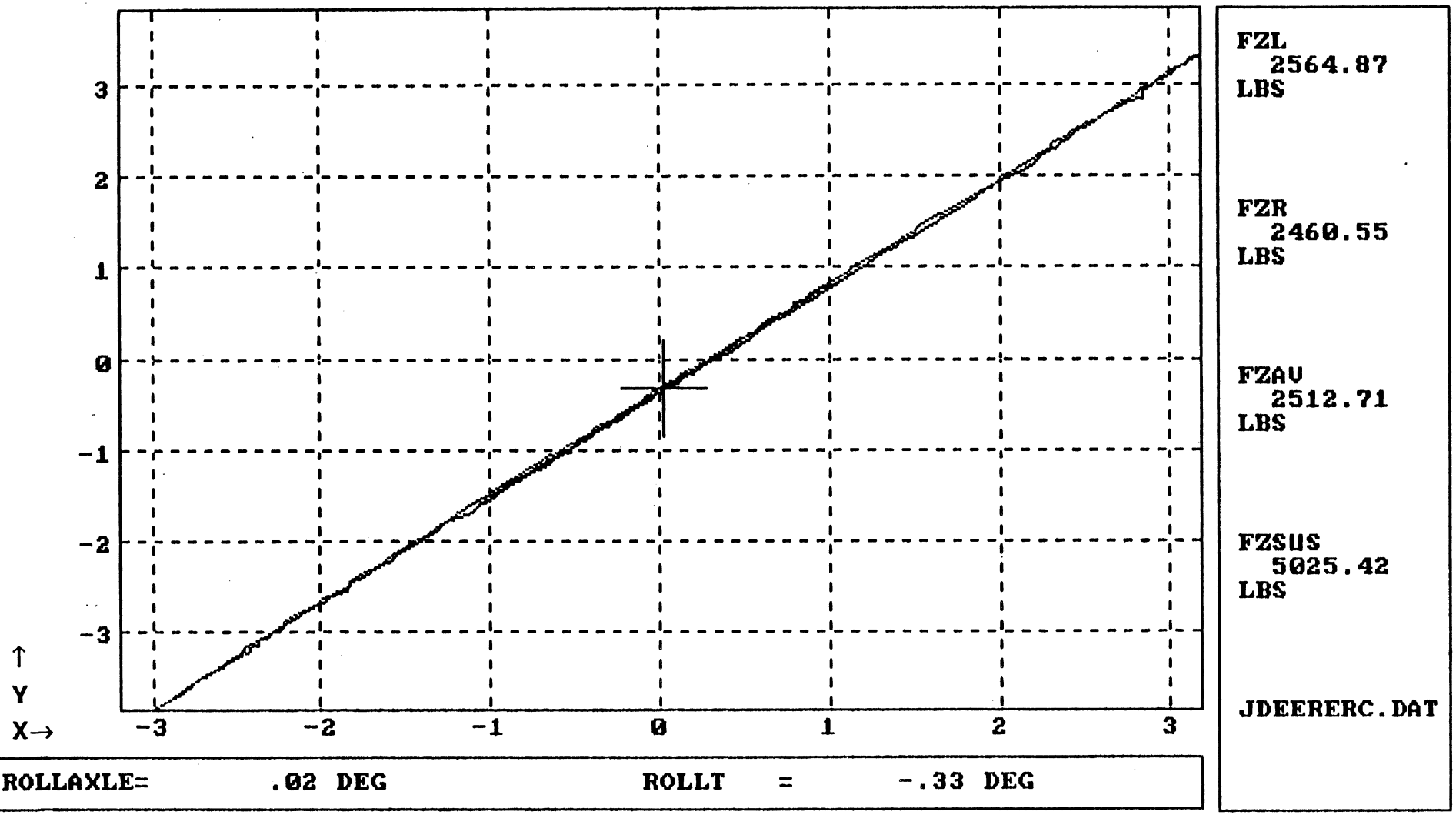
File: JDEERERC.DAT

Single Axle Rear Suspension

Table Roll Angle vs Axle Roll Angle*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



ROLLAXLE= .02 DEG ROLLT = -.33 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

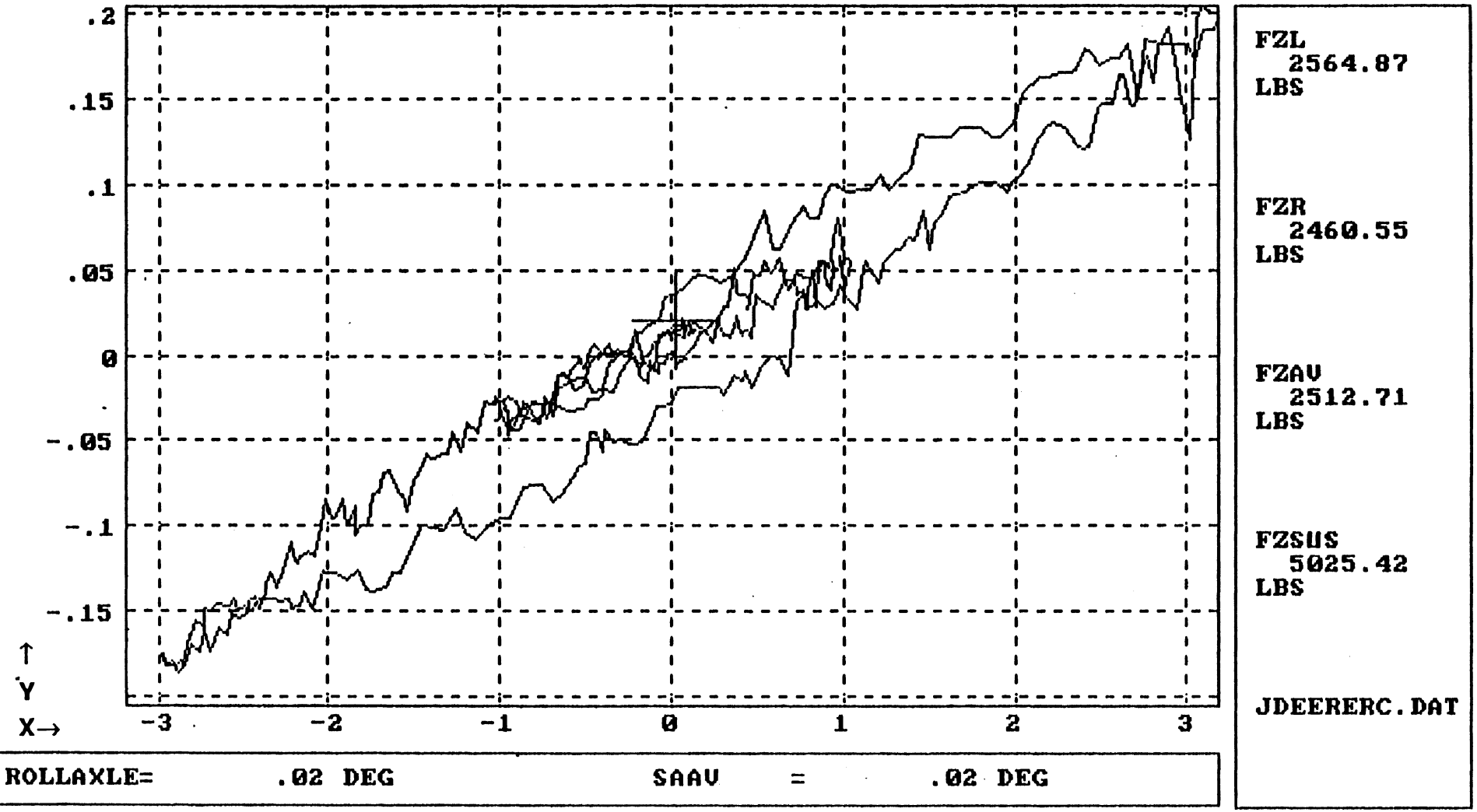
File: JDEERERC.DAT

Single Axle Rear Suspension

Average Roll Steer*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



ROLLAXLE= .02 DEG SAAV = .02 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

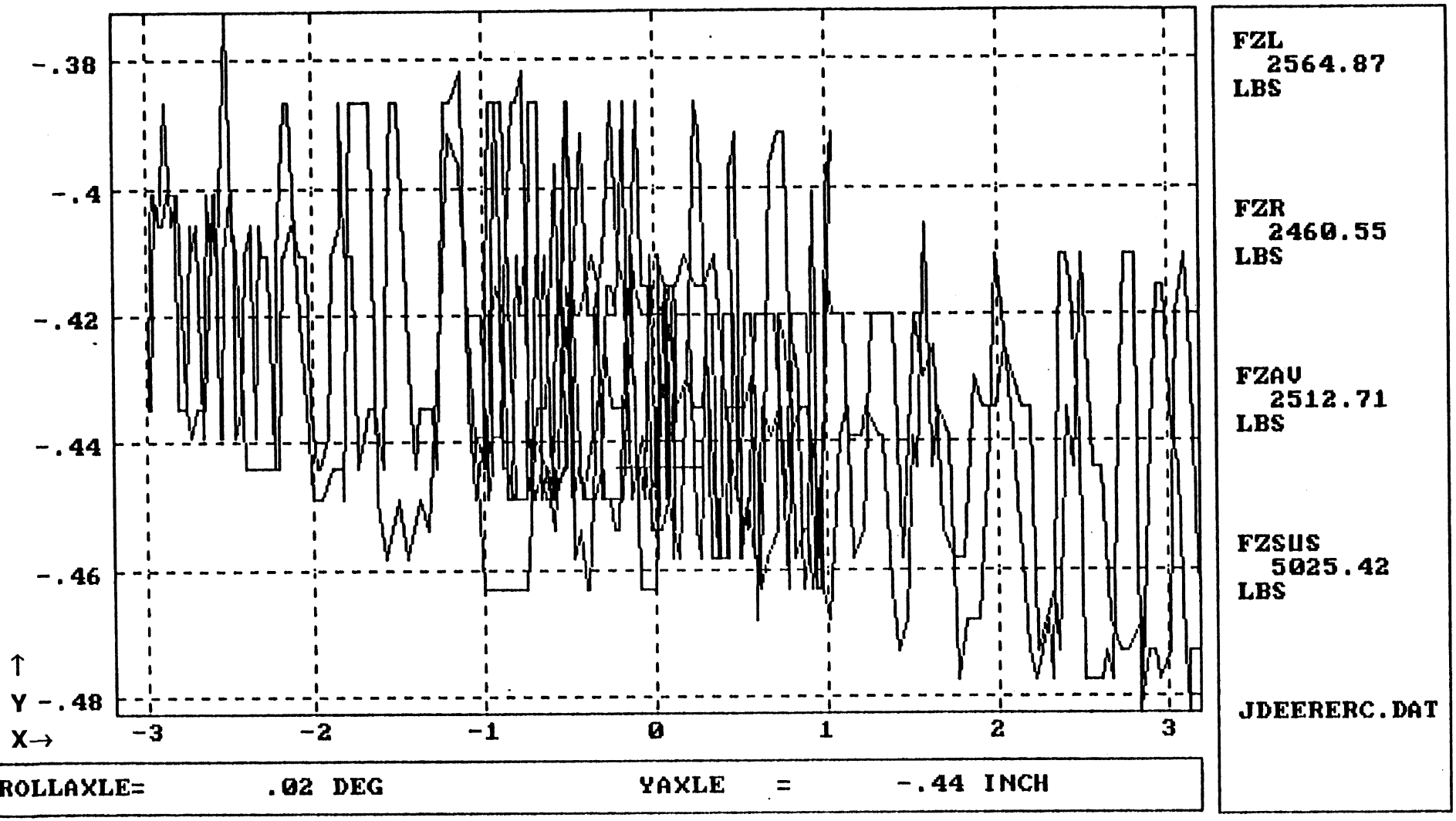
File: JDEERERC.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 24.43 in above the ground; in; motion toward right, positive.

*Note:

John Deere
Motor Home Chassis

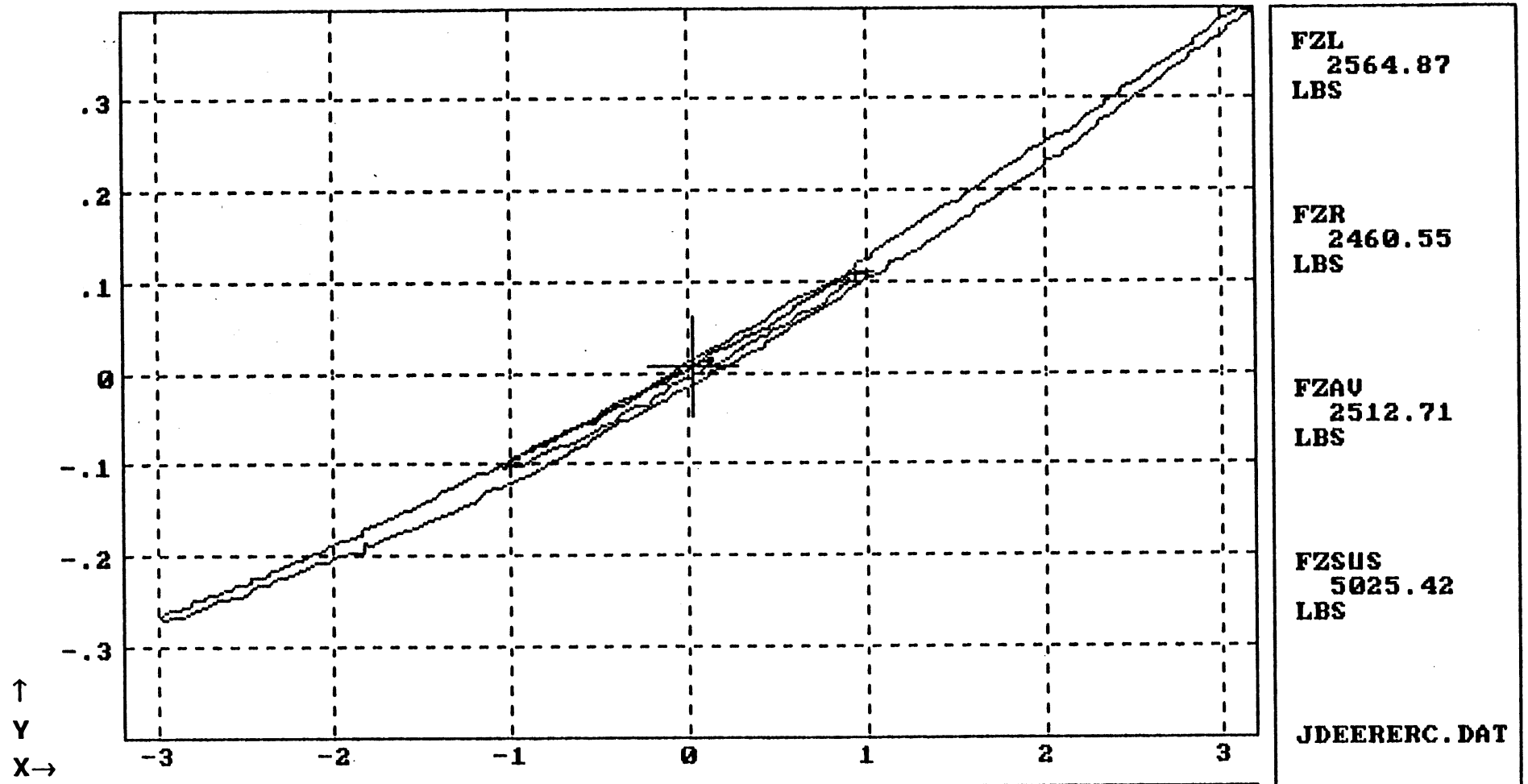
File: JDEERERC.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLEY) at a position 18.44 in above the ground; in; motion toward right, positive.

*Note:

DATE 5-20-1988 10:37:37
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERF.DAT
COMMENT:ANTI ROLL BAR OFF. NO YAXLE POT

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 5000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	18.50	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERF.DAT

John Deere
Motor Home Chassis

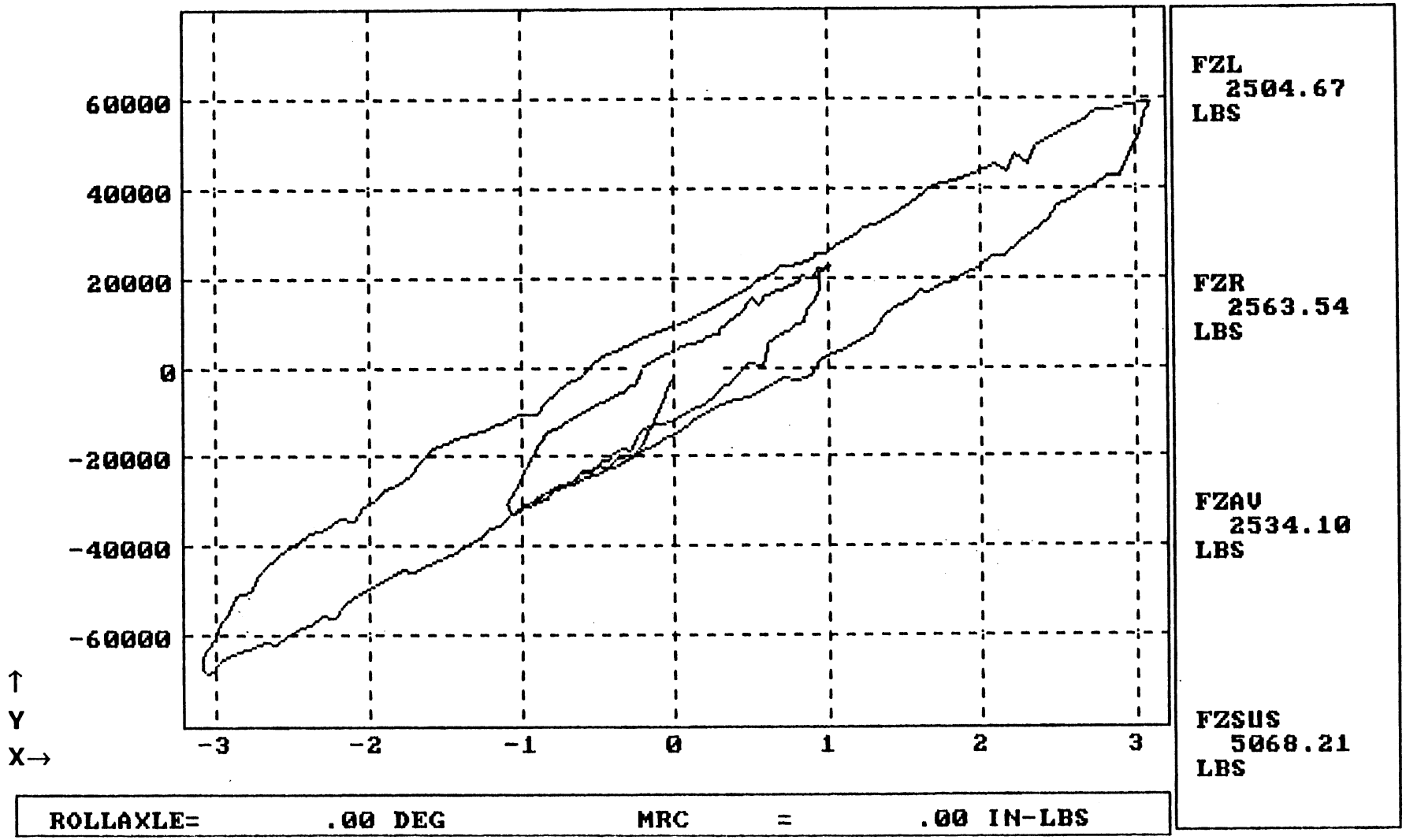
File: JDEERERF.DAT

Single Axle Rear Suspension

Axle Roll Rate*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

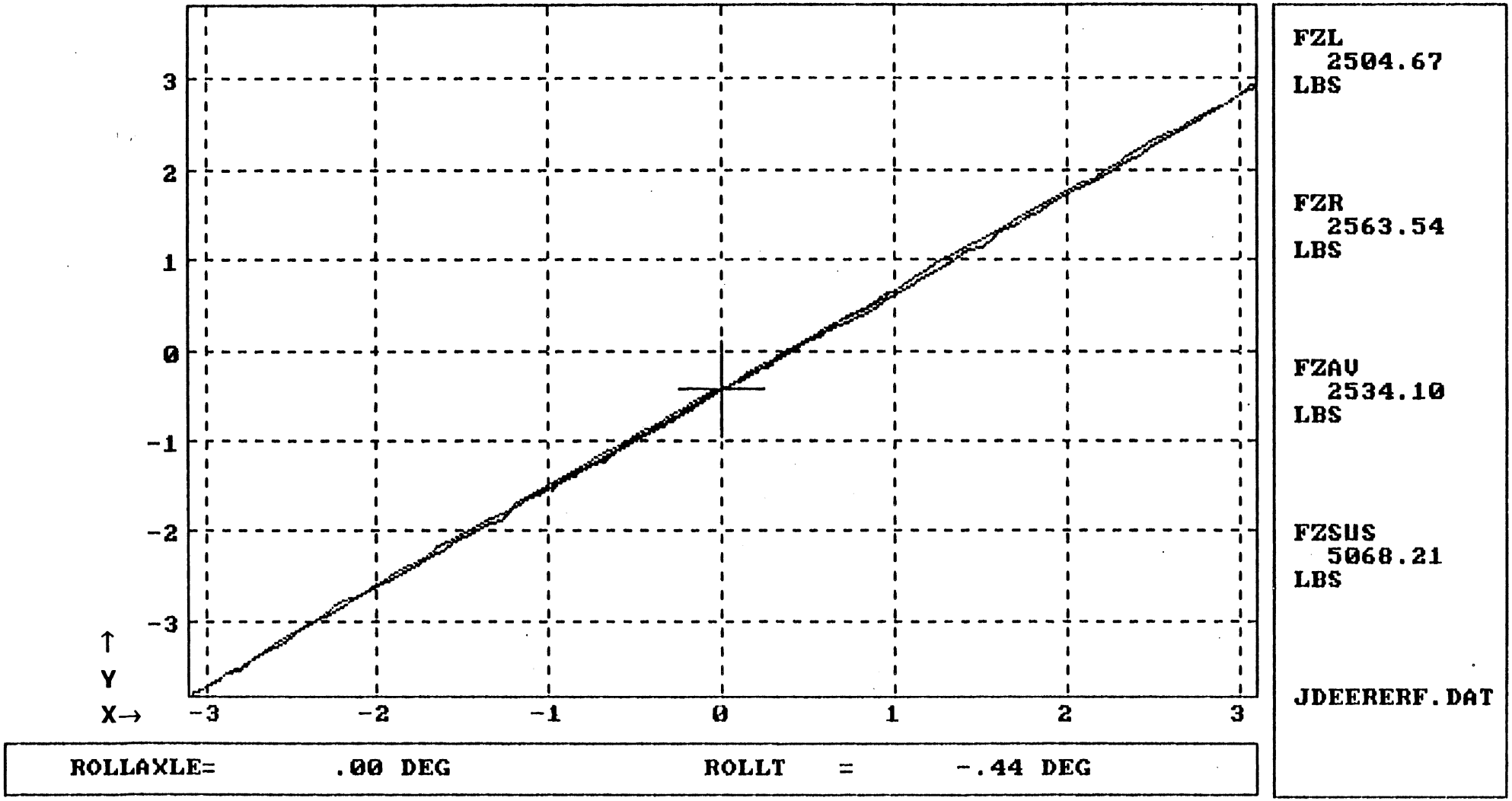
File: JDEERERF.DAT

Single Axle Rear Suspension

Table Roll Angle vs Axle Roll Angle*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

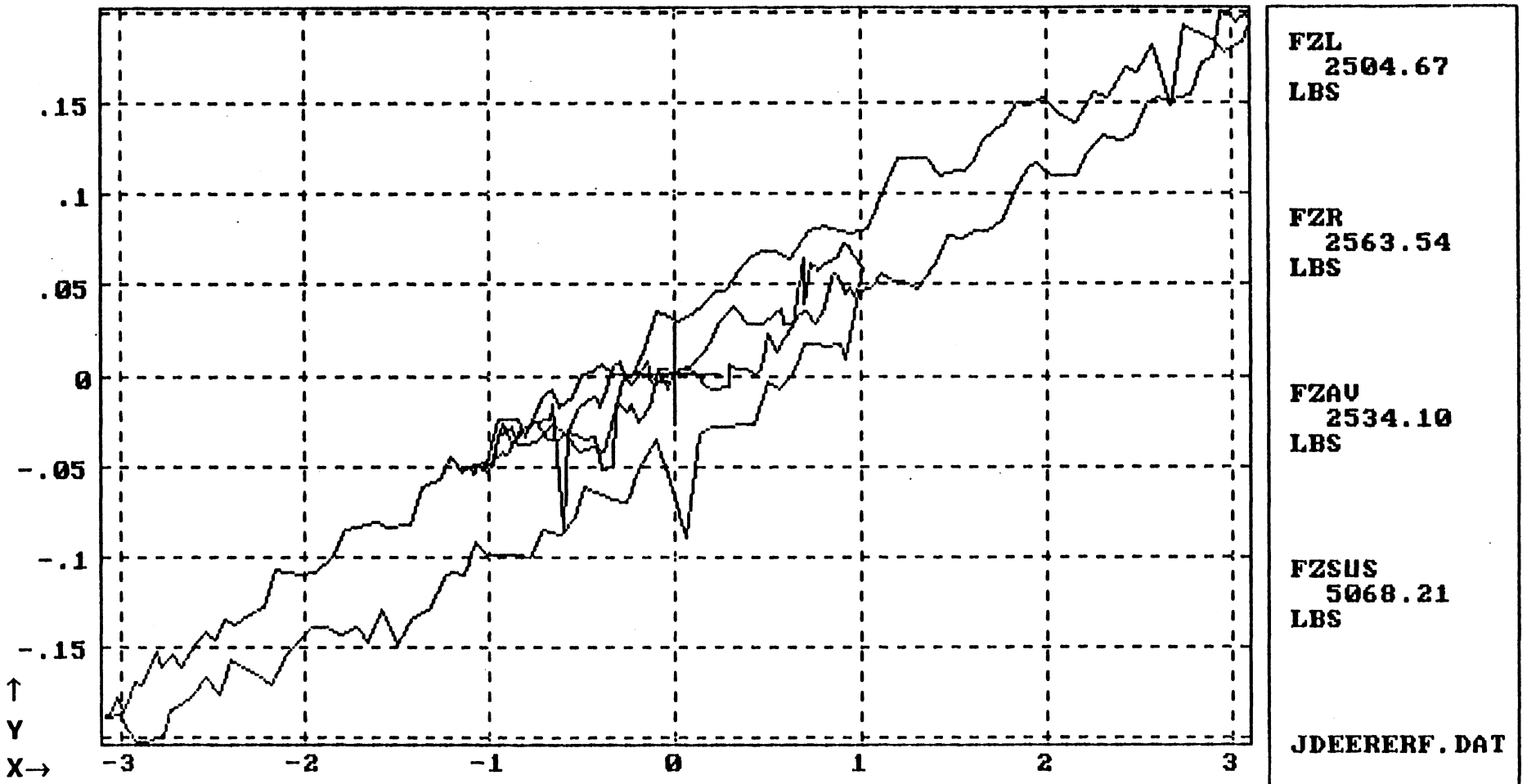
File: JDEERERF.DAT

Single Axle Rear Suspension

Average Roll Steer*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



ROLLAXLE= .00 DEG SAAV = .00 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

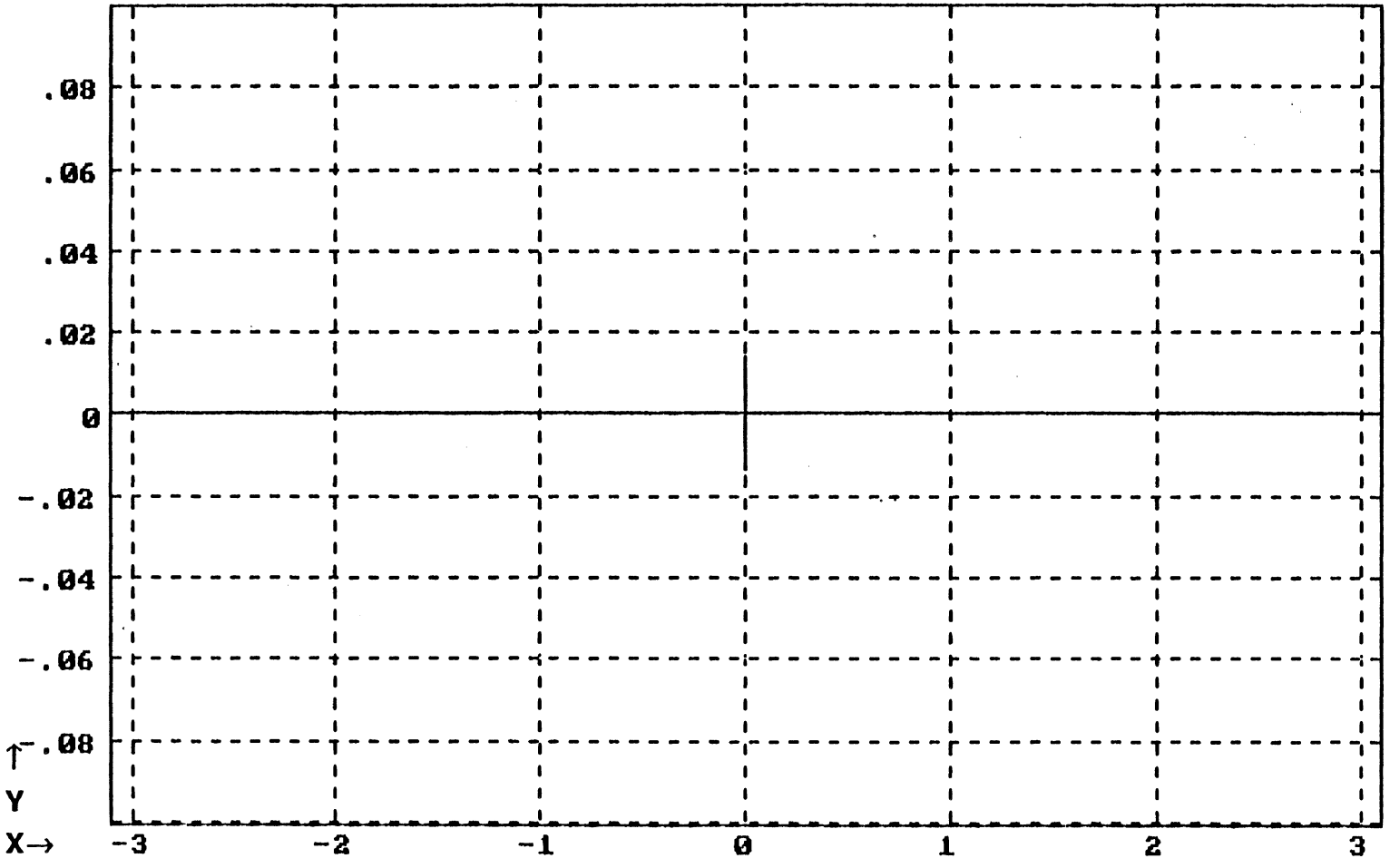
File: JDEERERF.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



FZL
2504.67
LBS

FZR
2563.54
LBS

FZAV
2534.10
LBS

FZSUS
5068.21
LBS

JDEERERF.DAT

ROLLAXLE= .00 DEG YAXLE = .00 INCH

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 24.43 in above the ground; in; motion toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

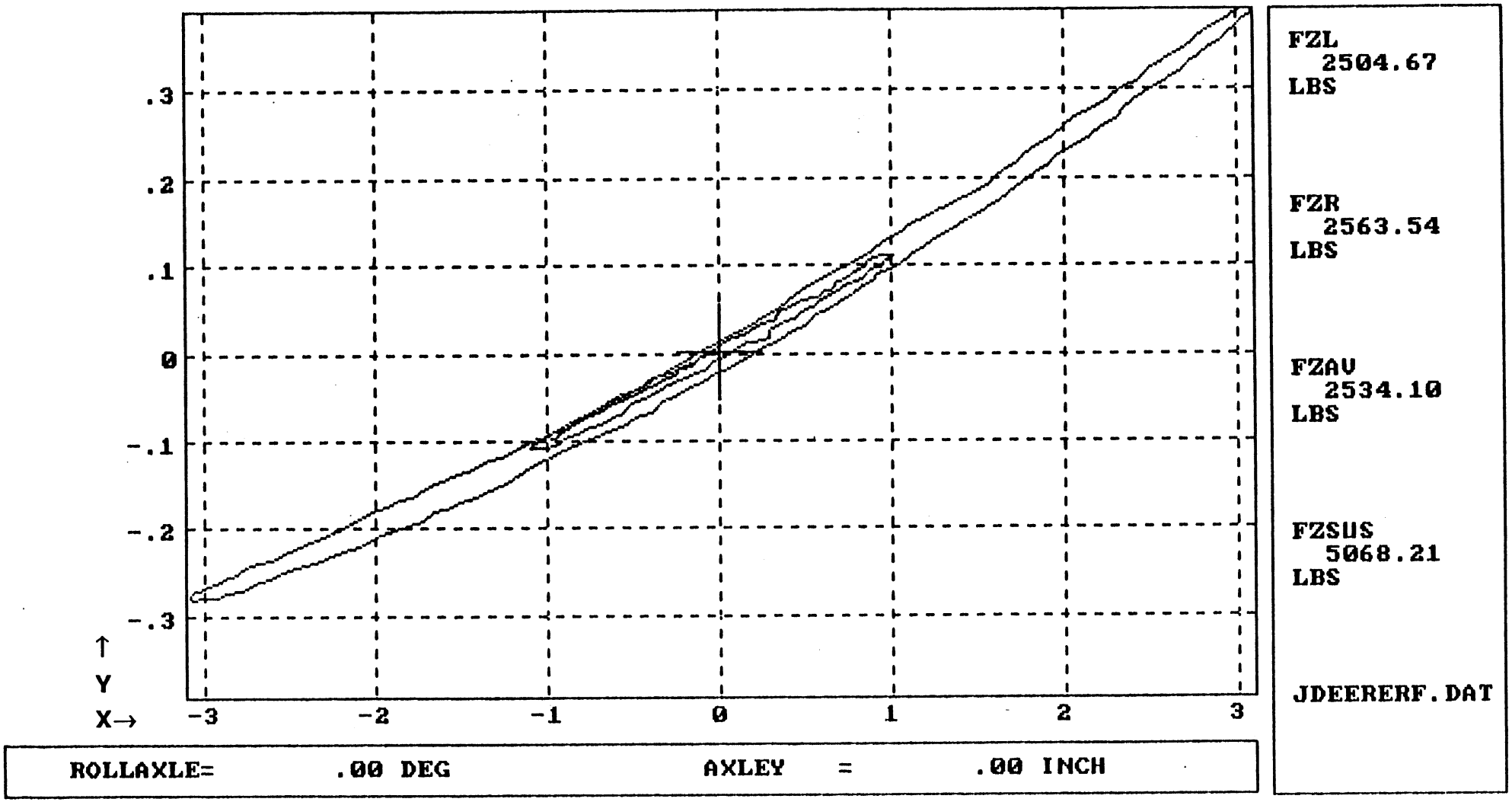
File: JDEERERF.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 5,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLEY) at a position 18.50 in above the ground; in; motion toward right, positive.

*Note: Anti roll bar off.

DATE 5-20-1988 9:58:17
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER9.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 7500.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	16.81	24.25
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER9.DAT

John Deere
Motor Home Chassis

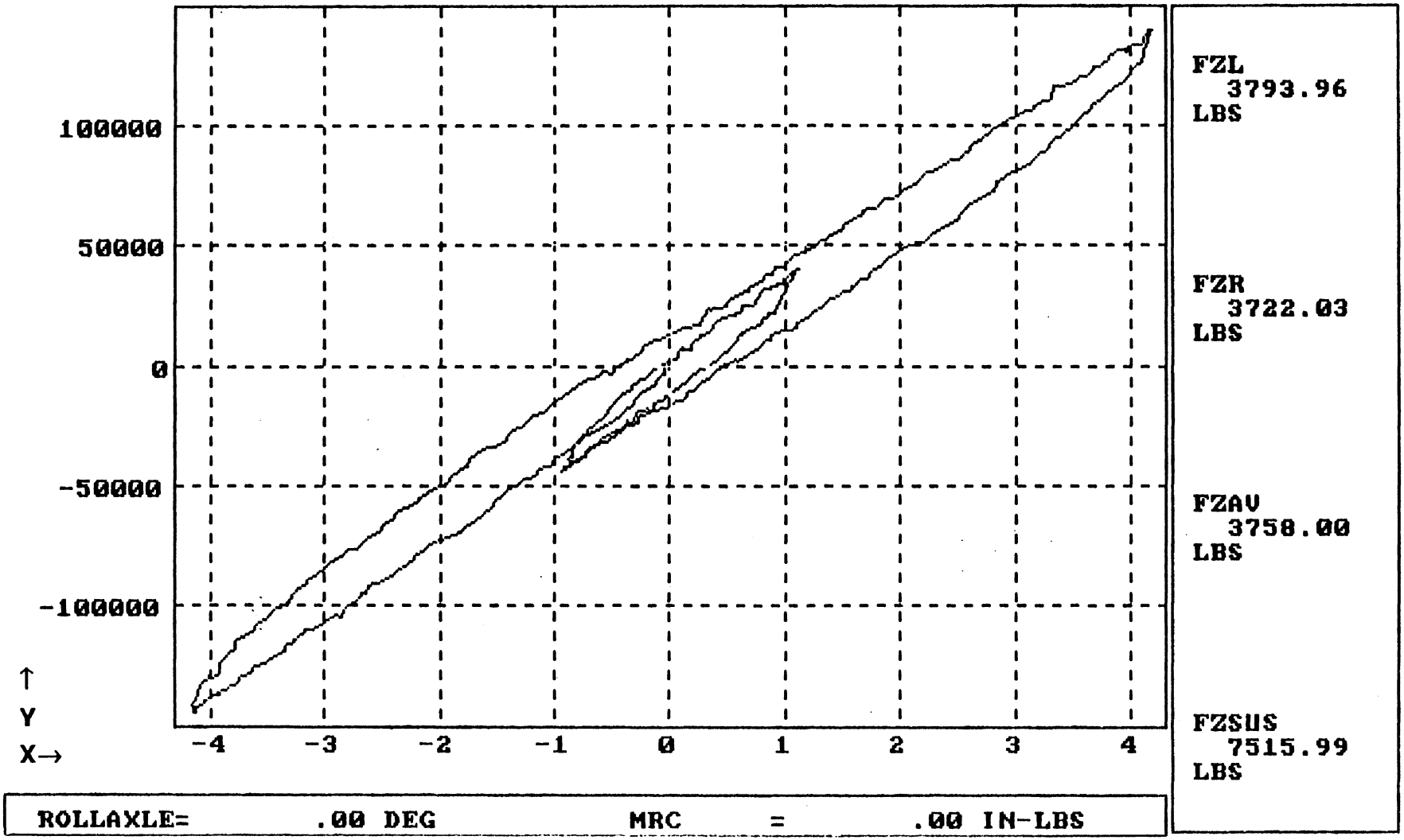
File: JDEERER9.DAT

Single Axle Rear Suspension

Axle Roll Rate*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note:

John Deere
Motor Home Chassis

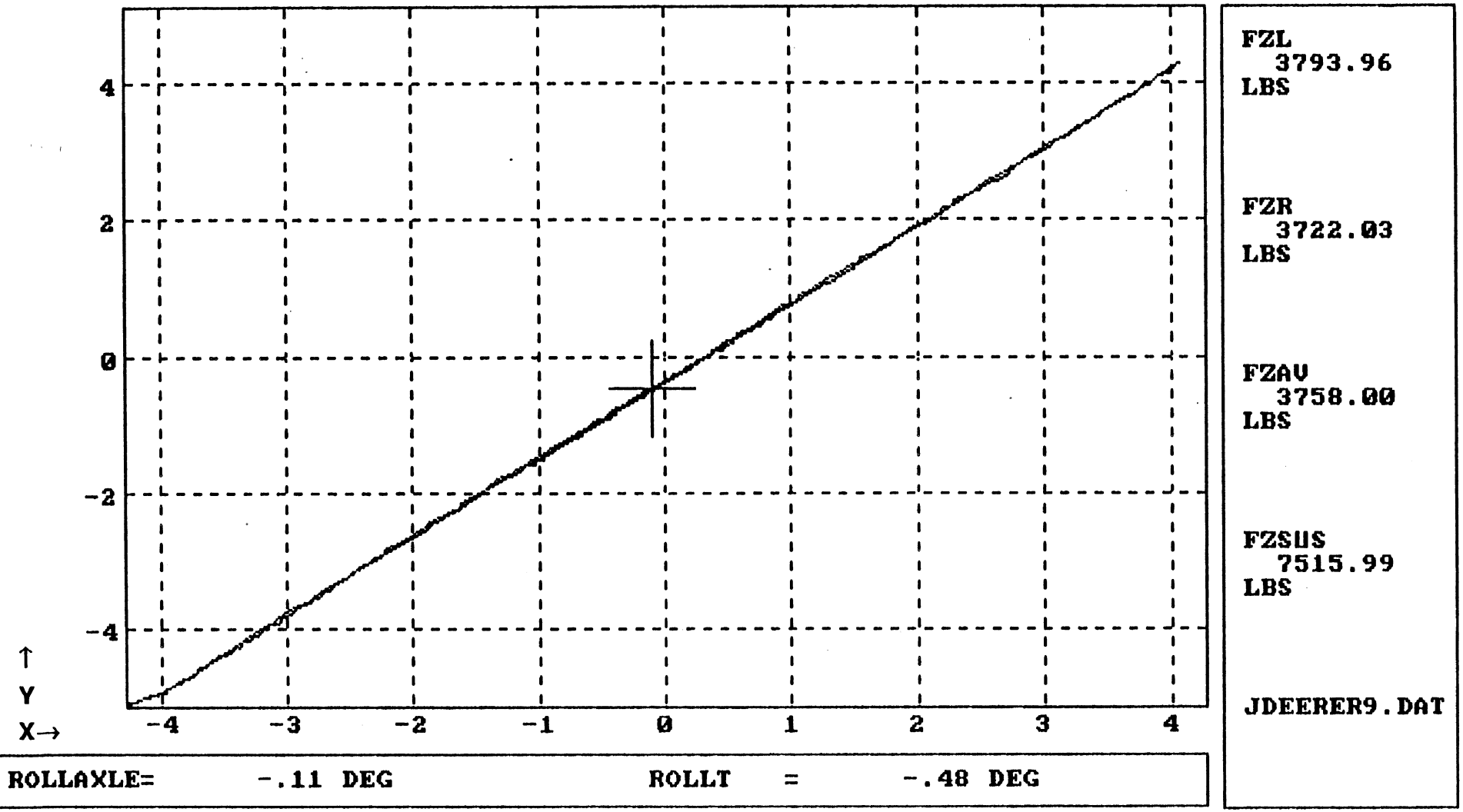
Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER9.DAT

Table Roll Angle vs Axle Roll Angle*

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

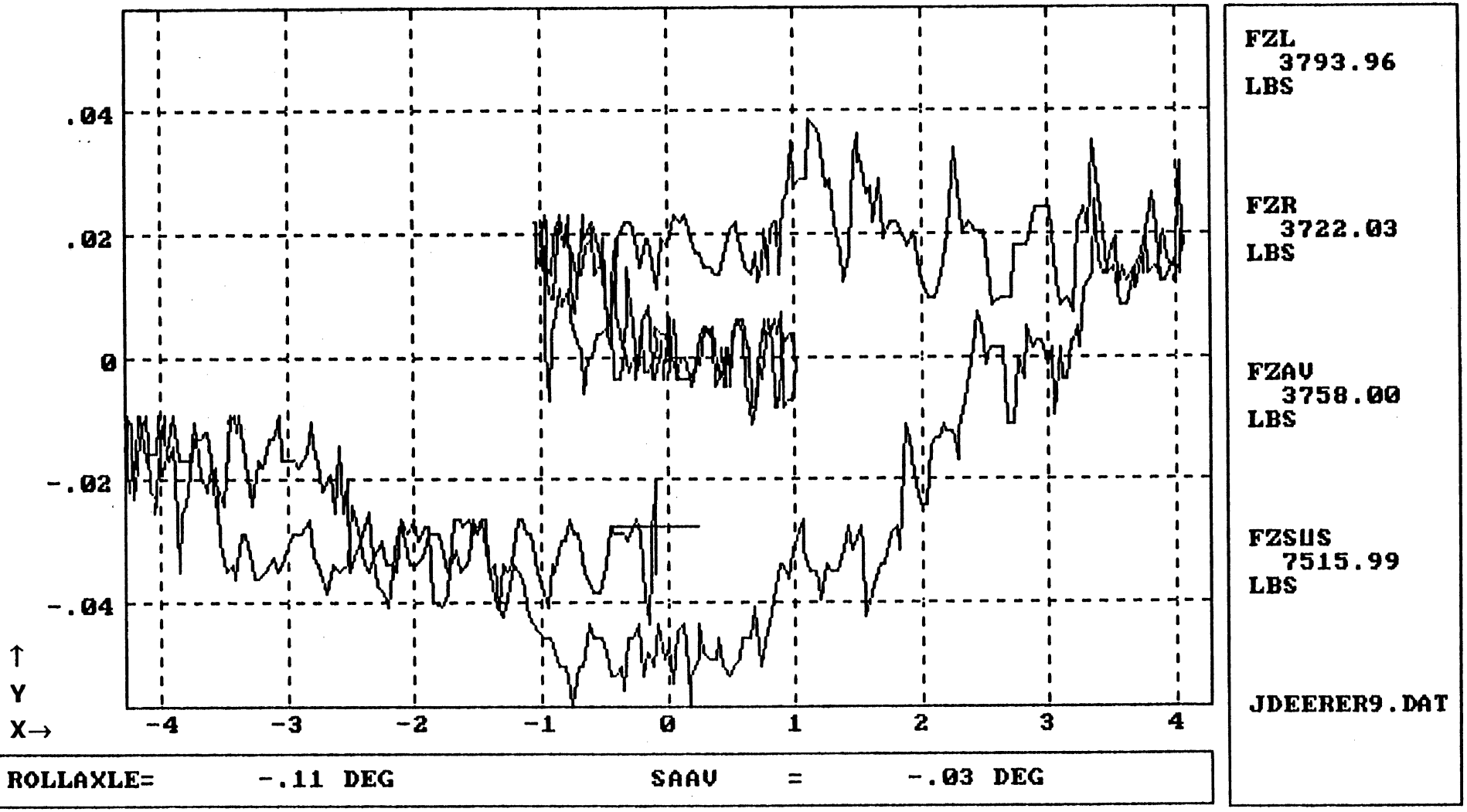
File: JDEERER9.DAT

Single Axle Rear Suspension

Average Roll Steer*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

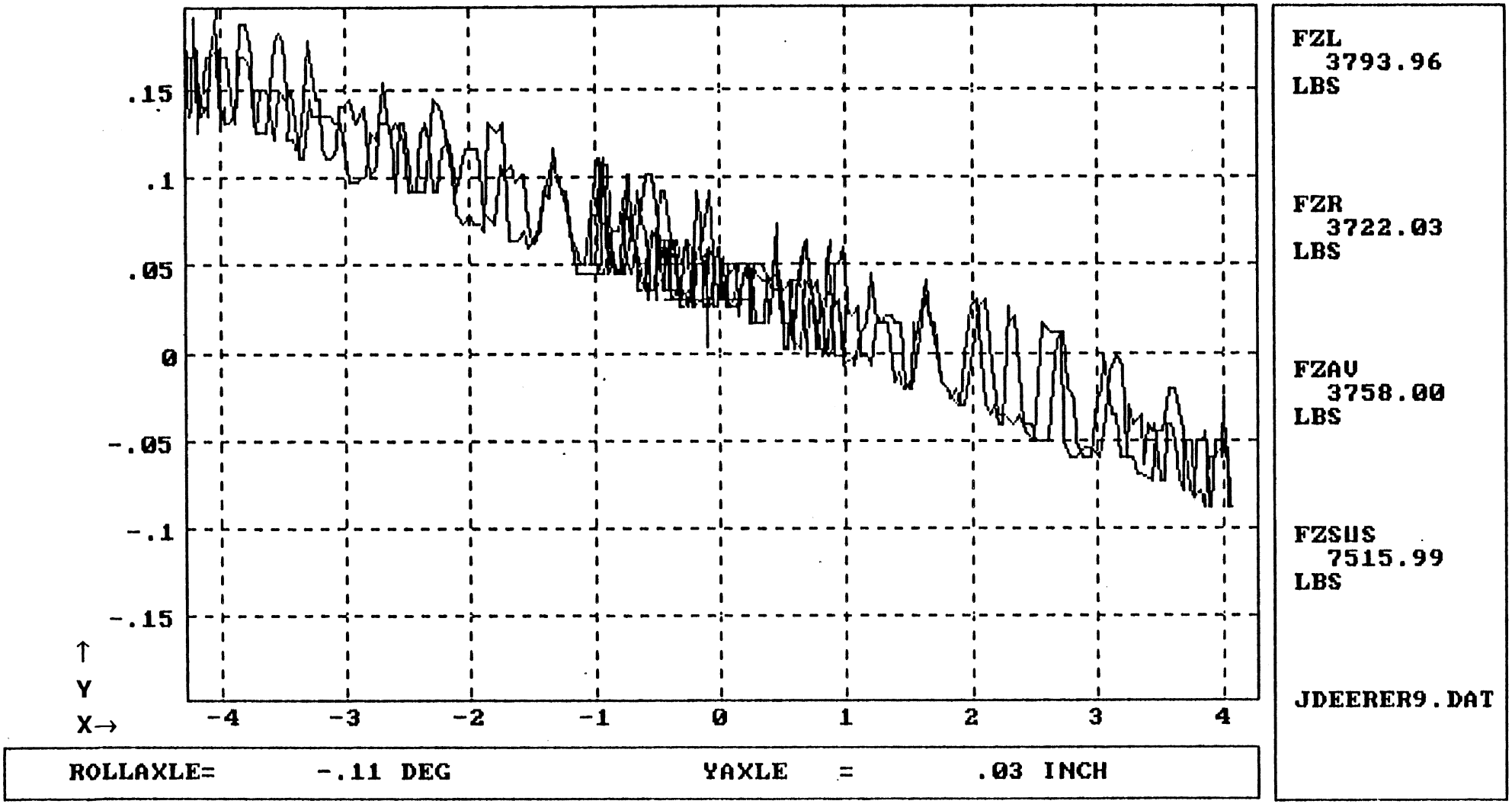
File: JDEERER9.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 24.25 in above the ground; in; motion toward right, positive.

*Note:

John Deere
Motor Home Chassis

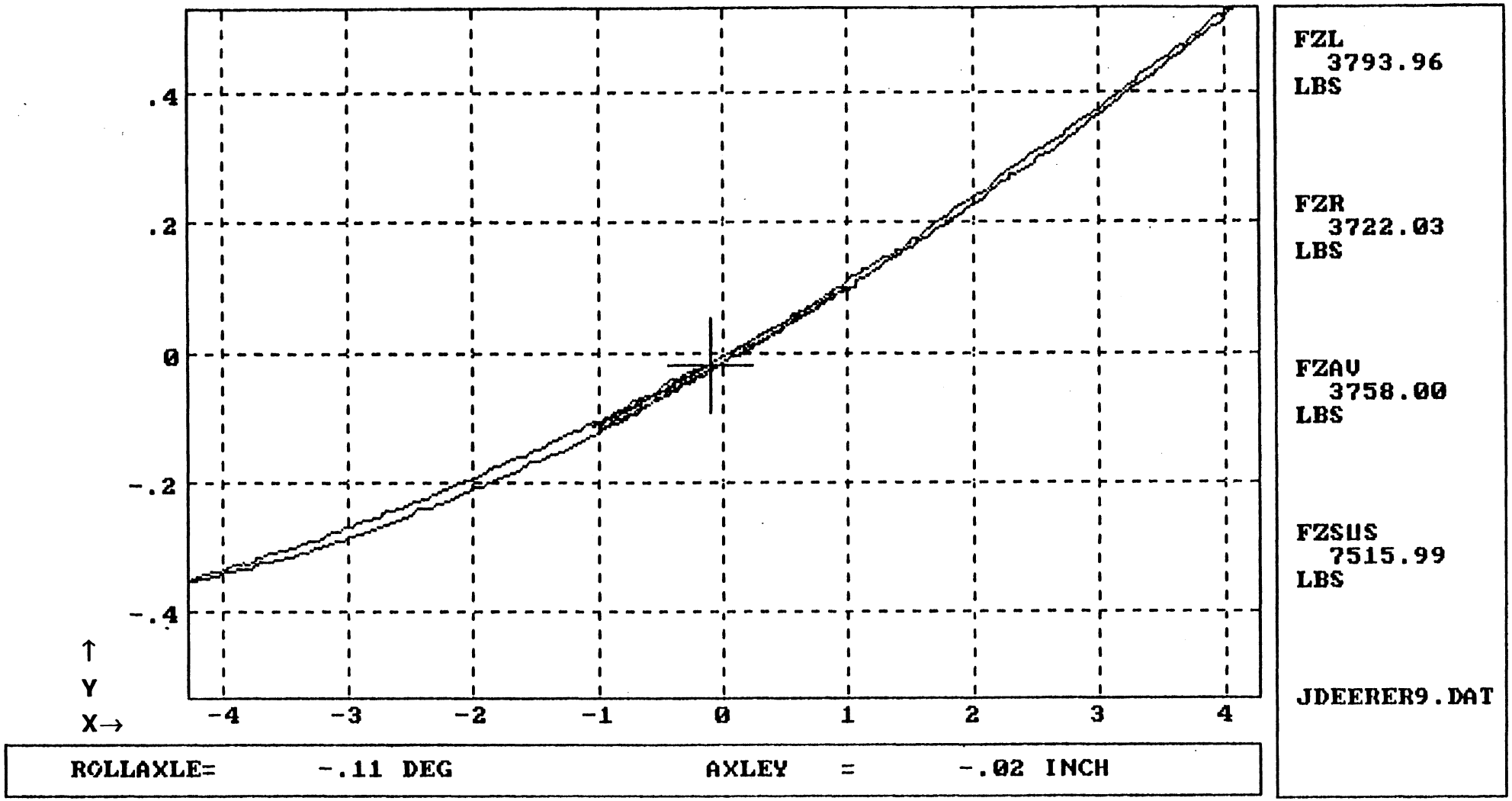
File: JDEERER9.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLEY) at a position 16.81 in above the ground; in; motion toward right, positive.

*Note:

DATE 5-20-1988 10:39:25
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERG.DAT
COMMENT:ANTI ROLL BAR OFF. NO YAXLE POT

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 7500.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10.000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	16.94	.00
	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERG.DAT

John Deere
Motor Home Chassis

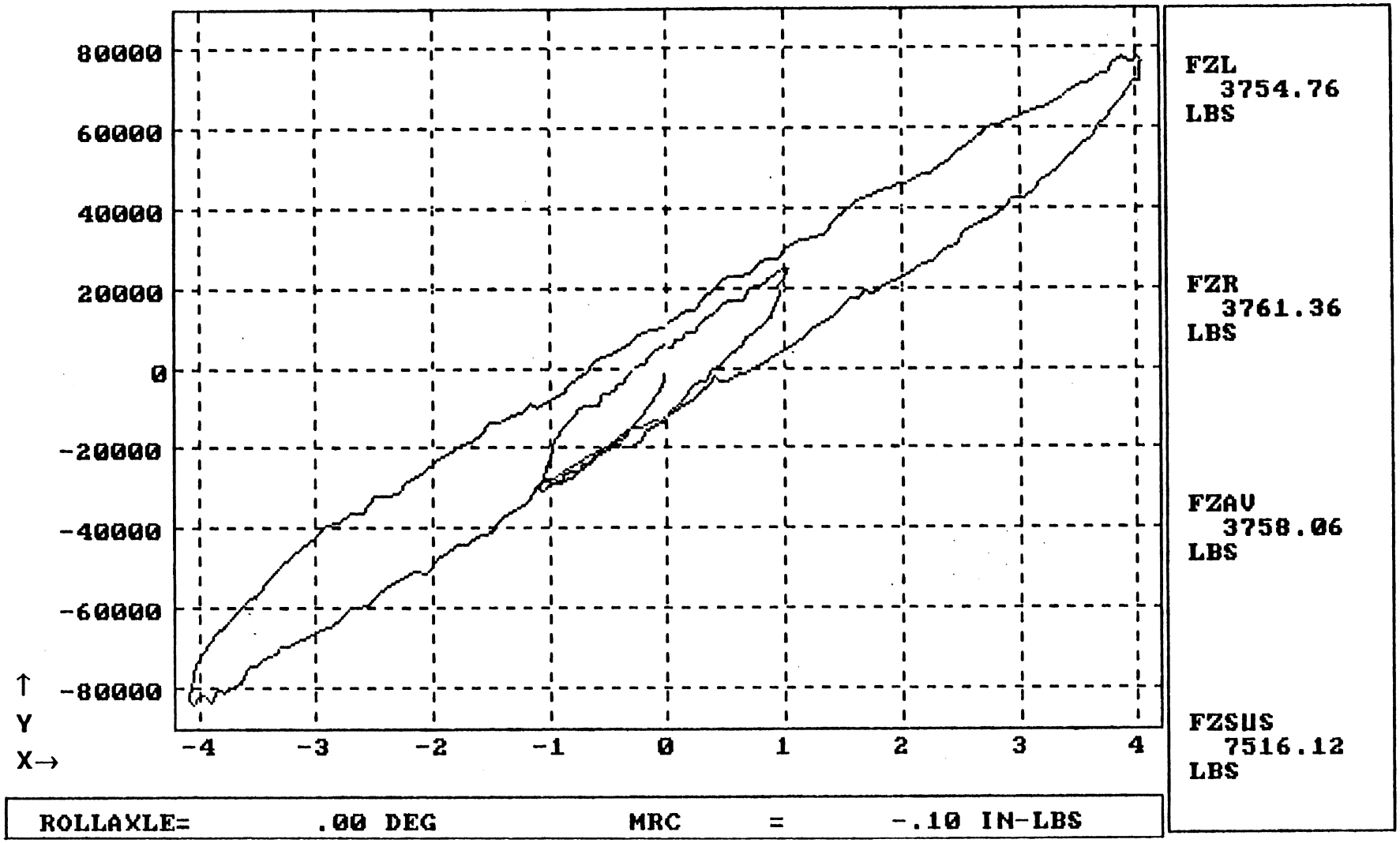
File: JDEERERG.DAT

Single Axle Rear Suspension

Axle Roll Rate*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

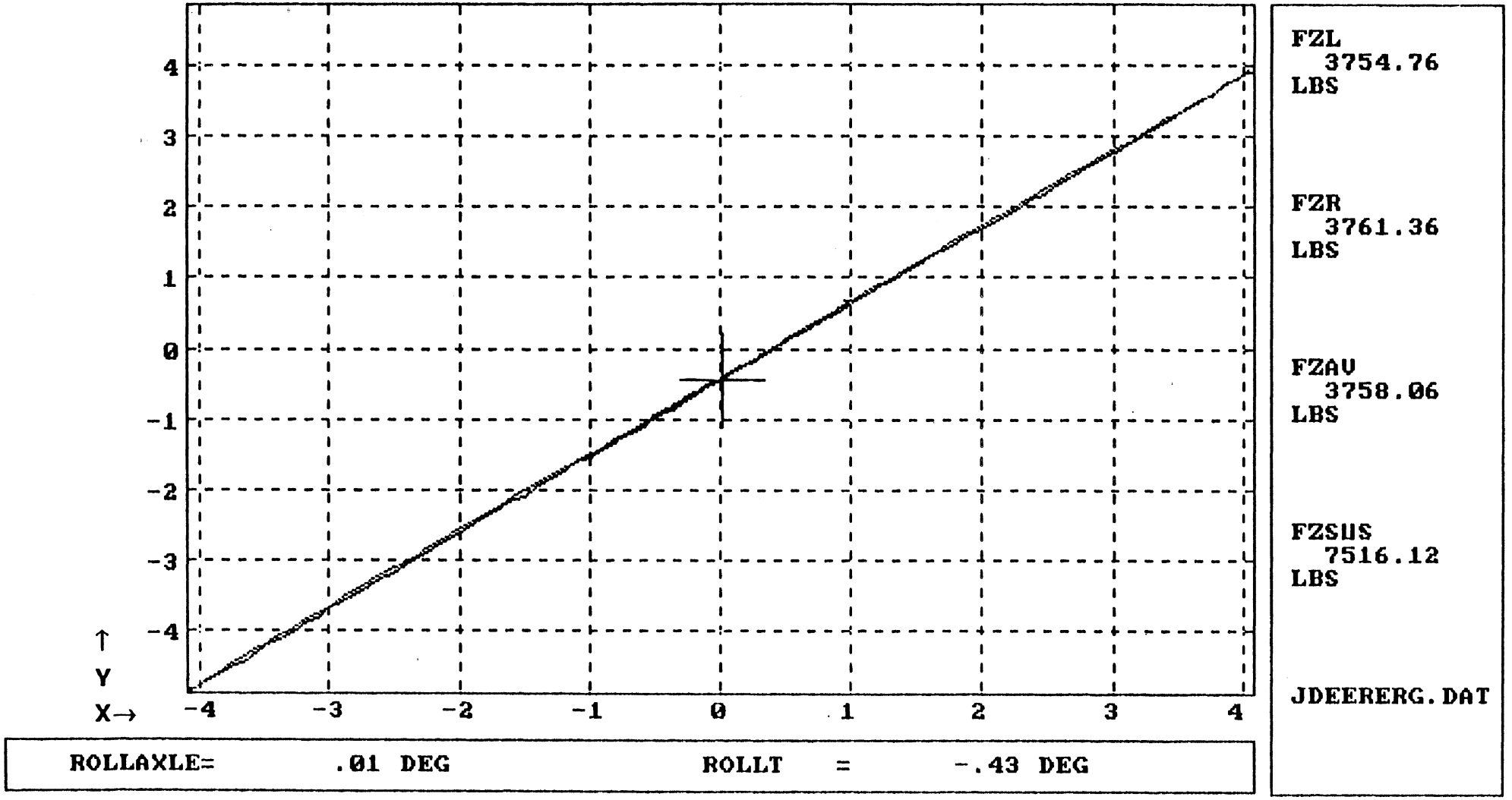
Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERG.DAT

Table Roll Angle vs Axle Roll Angle*

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

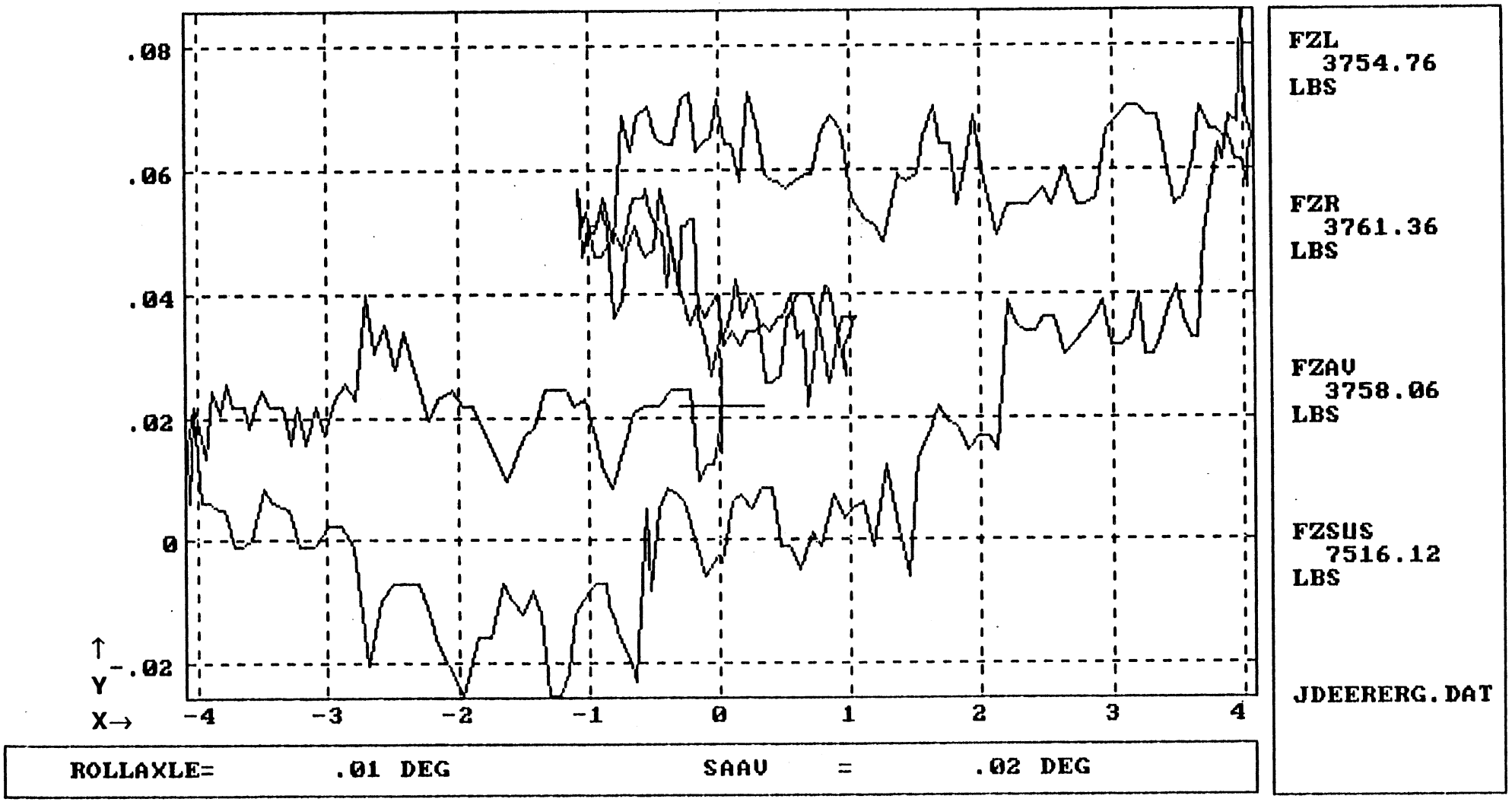
File: JDEERERG.DAT

Single Axle Rear Suspension

Average Roll Steer*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

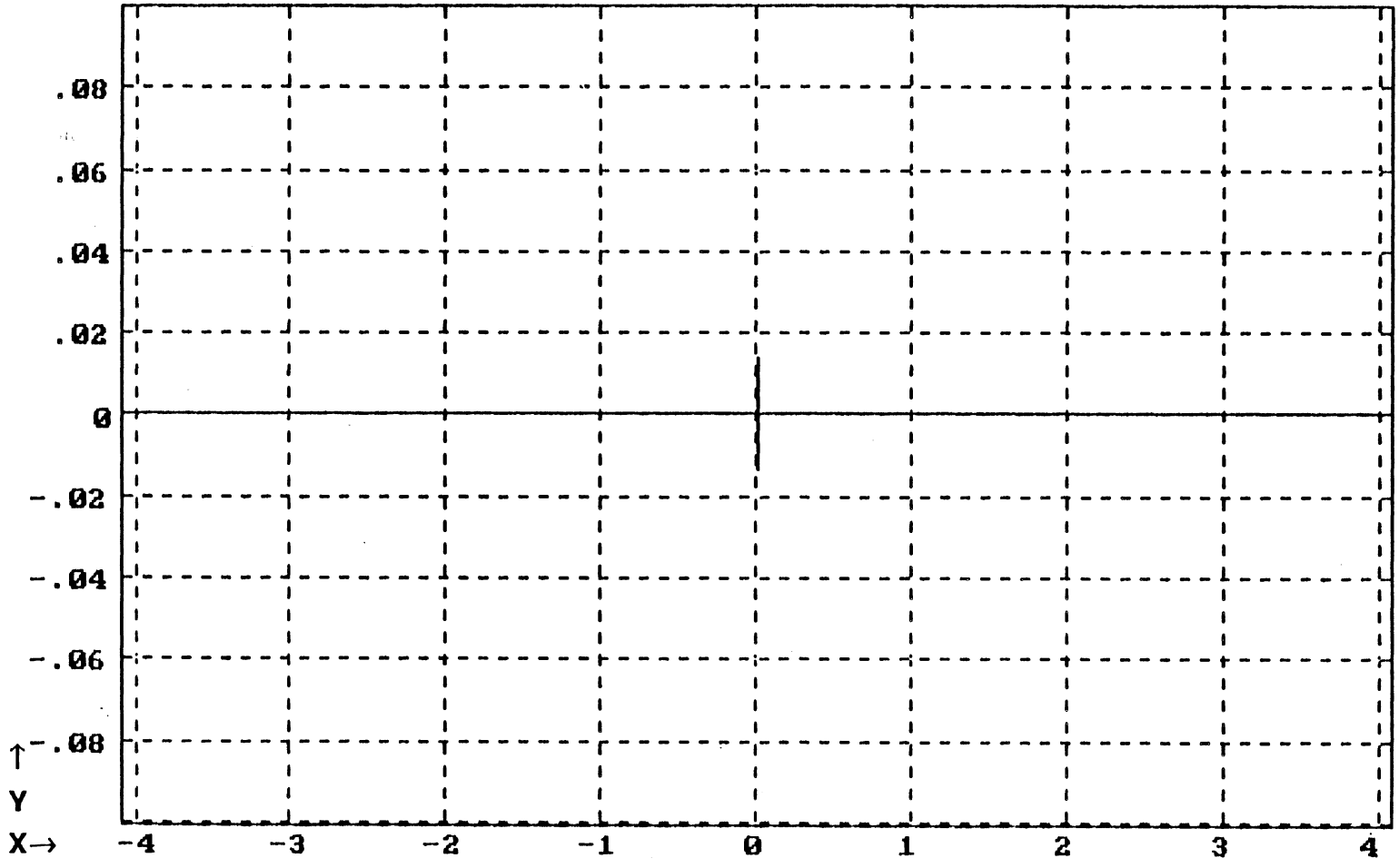
File: JDEERERG.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



FZL
3754.76
LBS

FZR
3761.36
LBS

FZAV
3758.06
LBS

FZSUS
7516.12
LBS

JDEERERG.DAT

ROLLAXLE= .01 DEG YAXLE = .00 INCH

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 24.25 in above the ground; in; motion toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

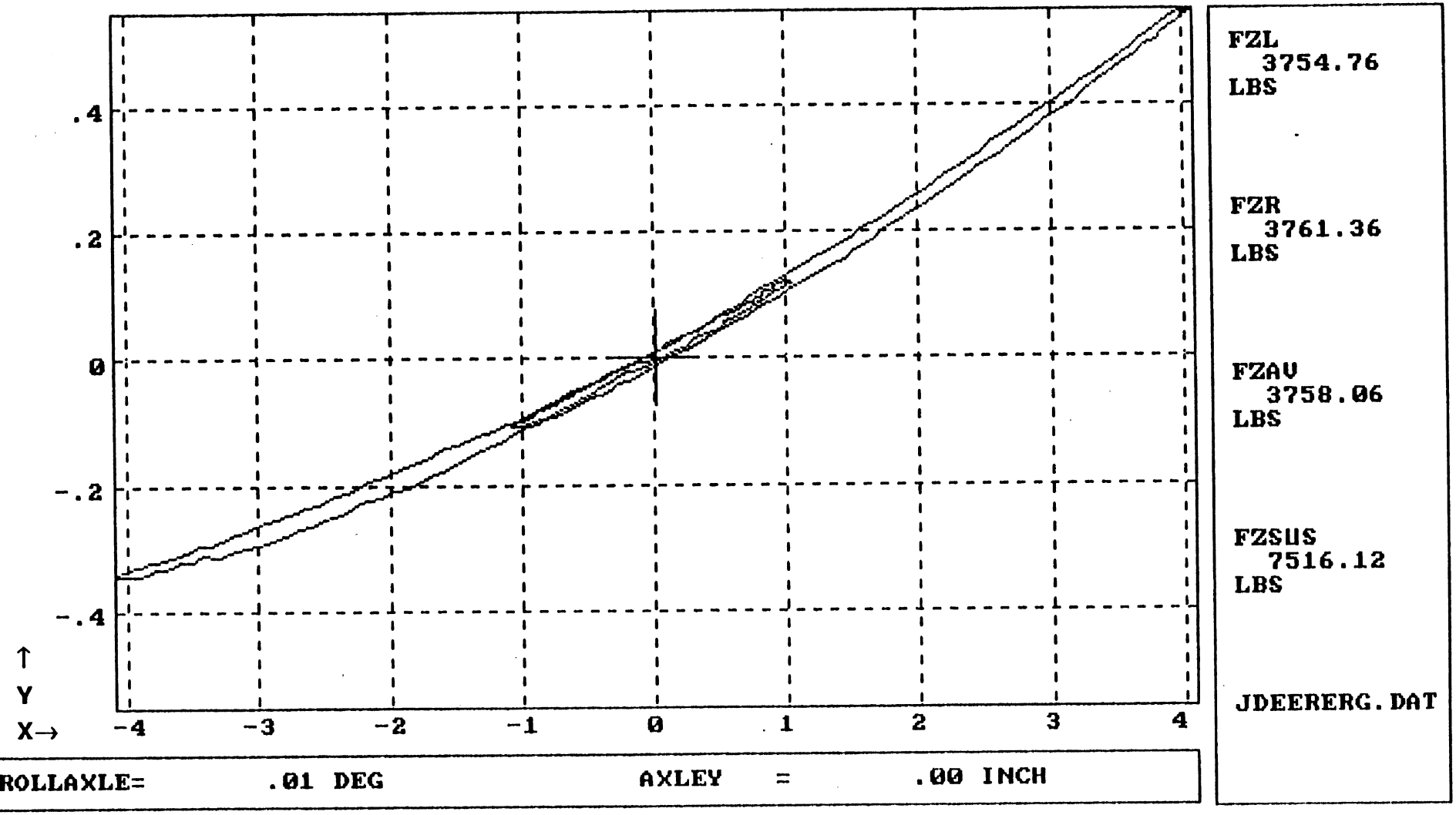
File: JDEERERG.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLEY) at a position 16.94 in above the ground; in; motion toward right, positive.

*Note: Anti roll bar off.

DATE 5-20-1988 9:47:52
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER6.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD=10000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	15.31	24.00
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER6.DAT

John Deere
Motor Home Chassis

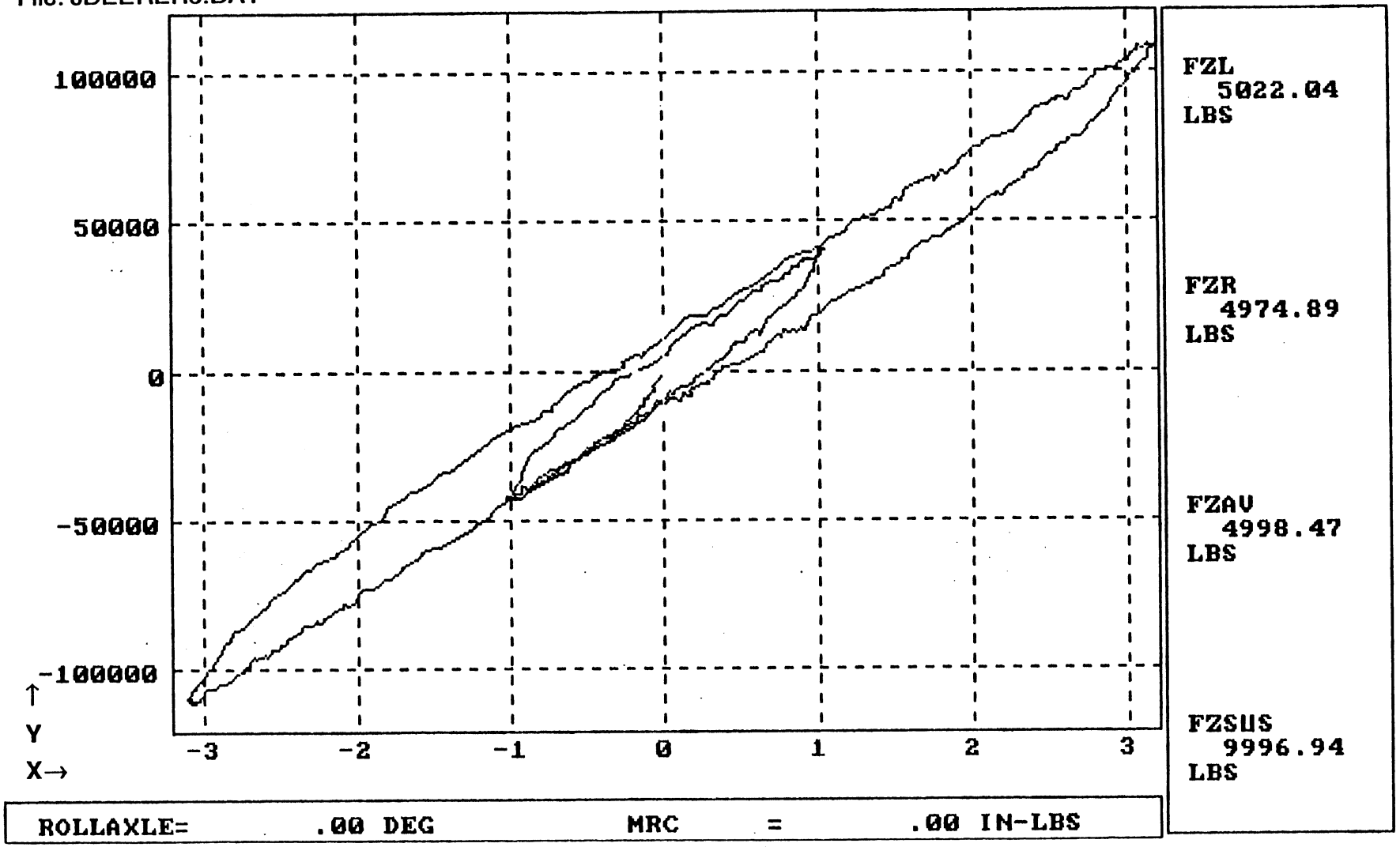
File: JDEERER6.DAT

Single Axle Rear Suspension

Axle Roll Rate*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note:

John Deere
Motor Home Chassis

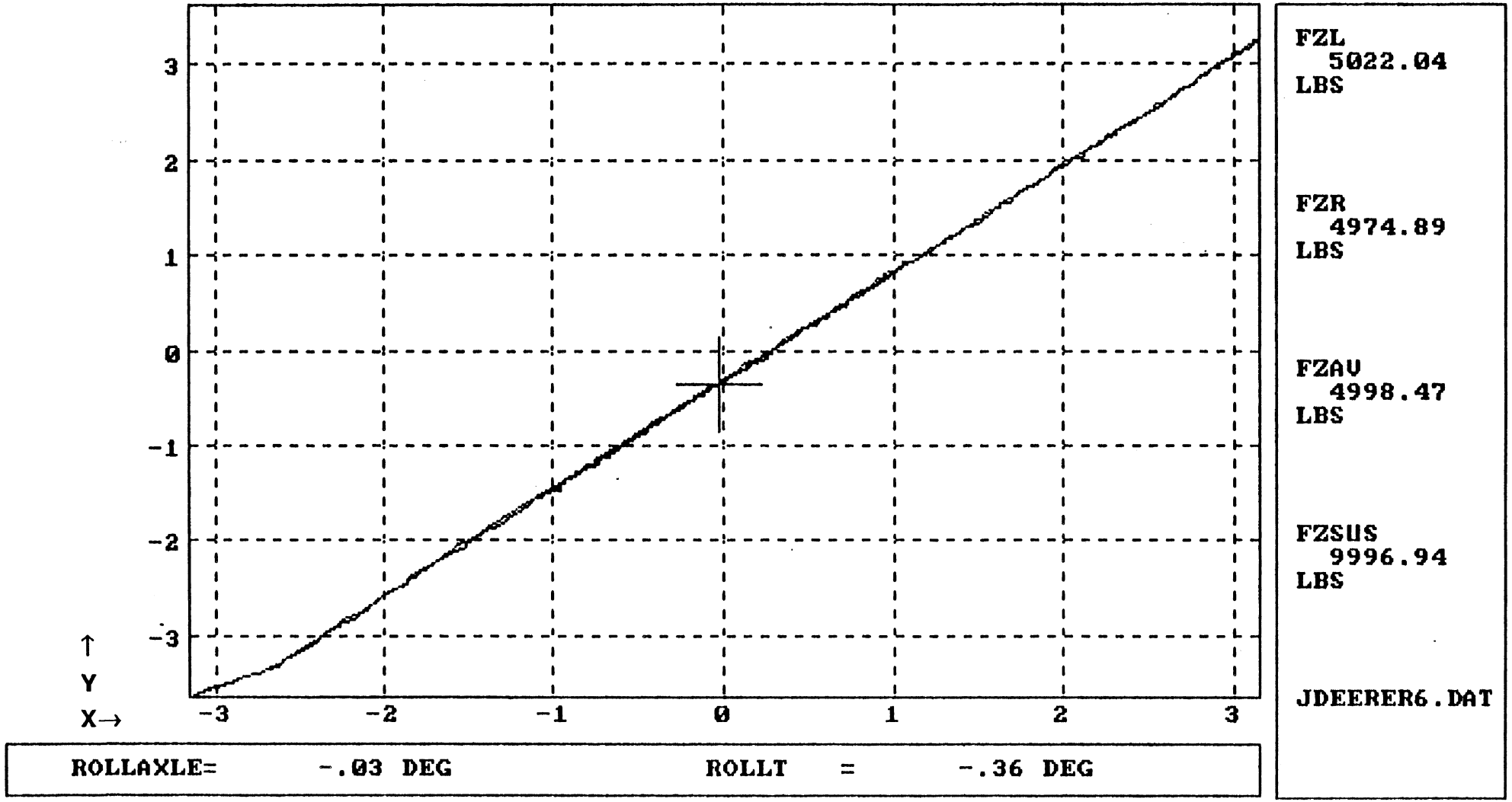
Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER6.DAT

Table Roll Angle vs Axle Roll Angle*

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

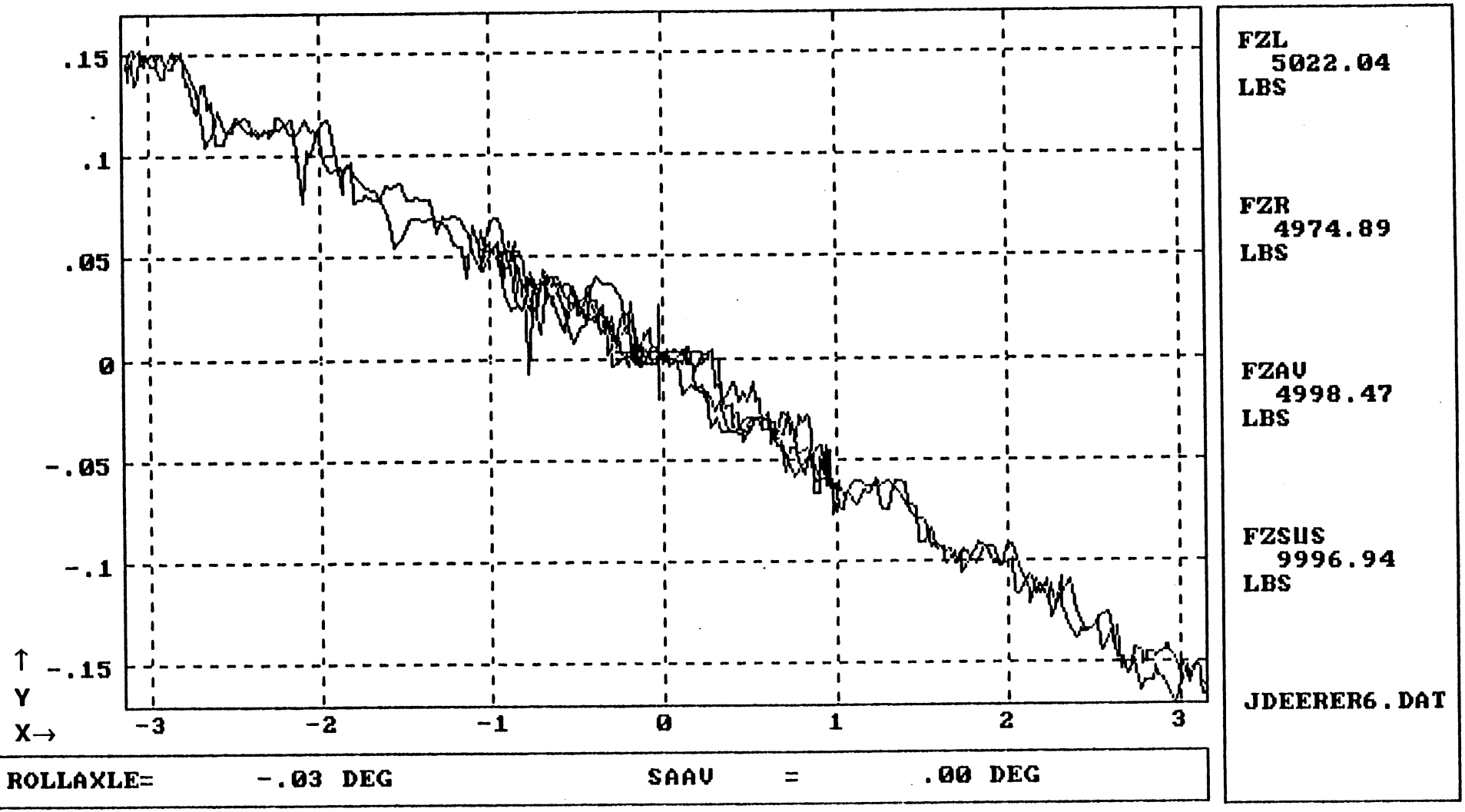
File: JDEERER6.DAT

Single Axle Rear Suspension

Average Roll Steer*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

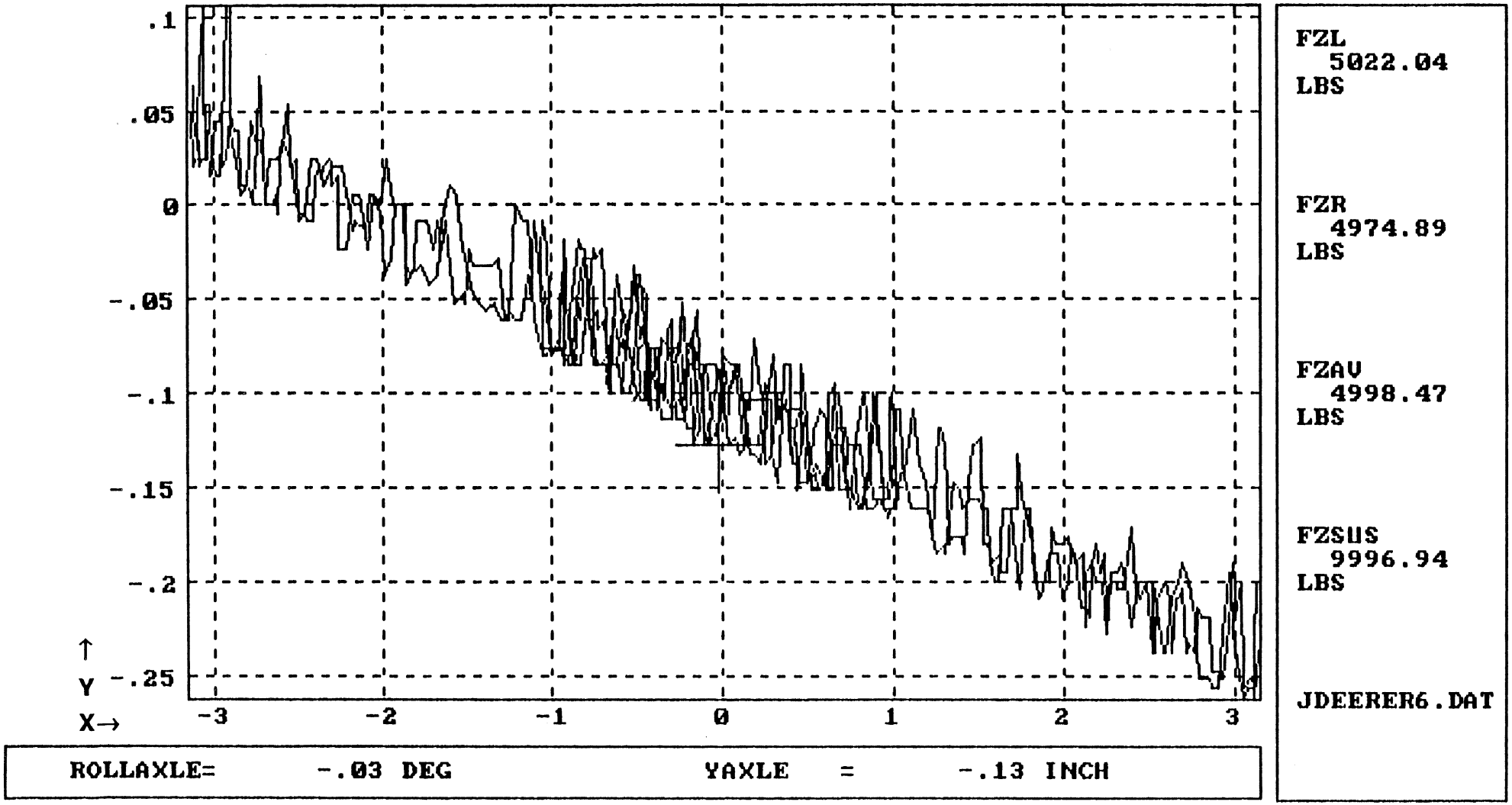
File: JDEERER6.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 24.00 in above the ground; in; motion toward right, positive.

*Note:

John Deere
Motor Home Chassis

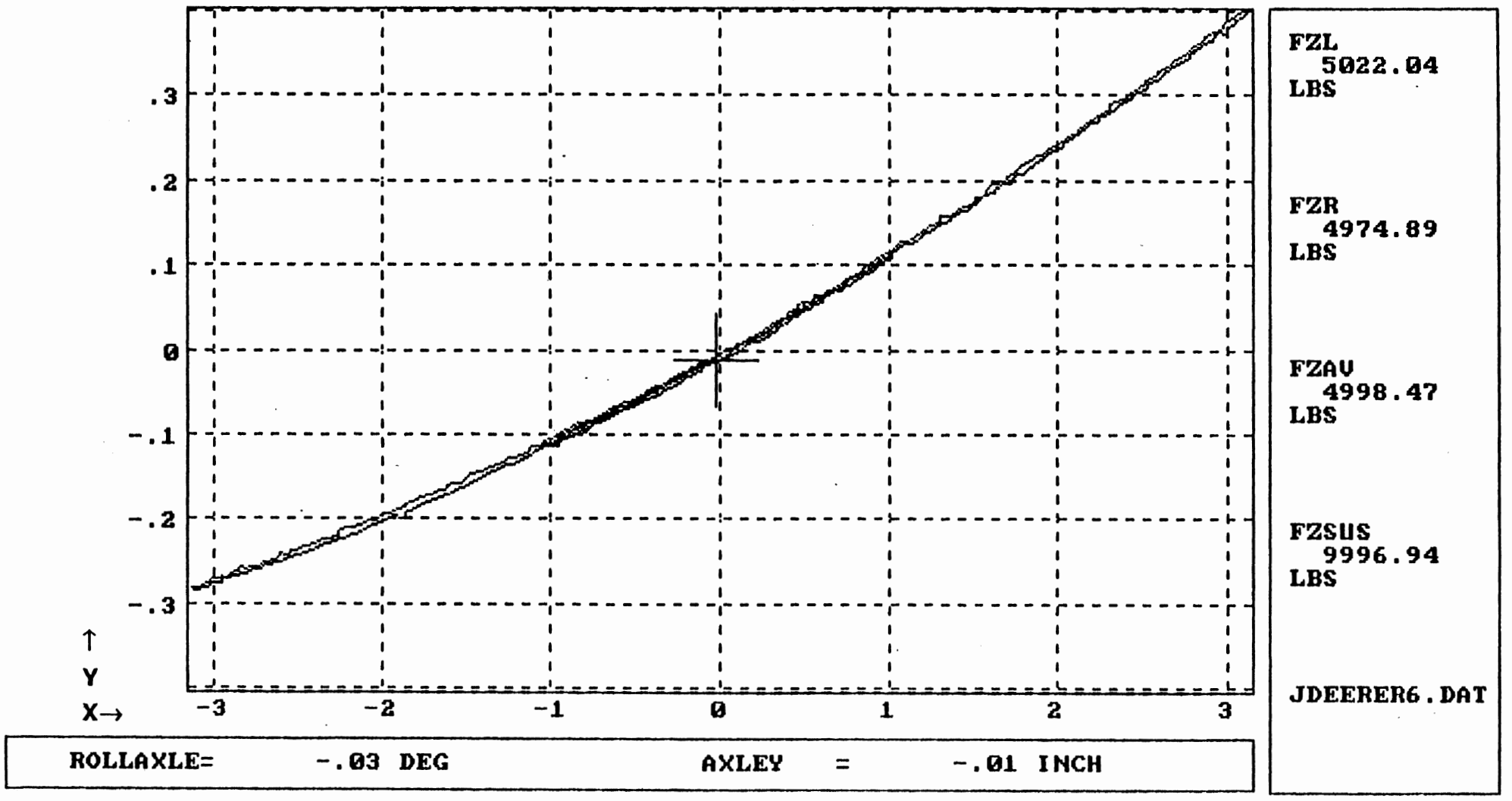
File: JDEERER6.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLEY) at a position 15.31 in above the ground; in; motion toward right, positive.

*Note:

DATE 5-20-1988 10:41: 5
TYPE OF TEST:ROLL
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERH.DAT
COMMENT:ANTI ROLL BAR OFF. NO YAXLE POT

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD=10000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	15.38	.00

	LEFT	RIGHT
LONG. PAD SPACING	.00	.00

Date:June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERH.DAT

John Deere
Motor Home Chassis

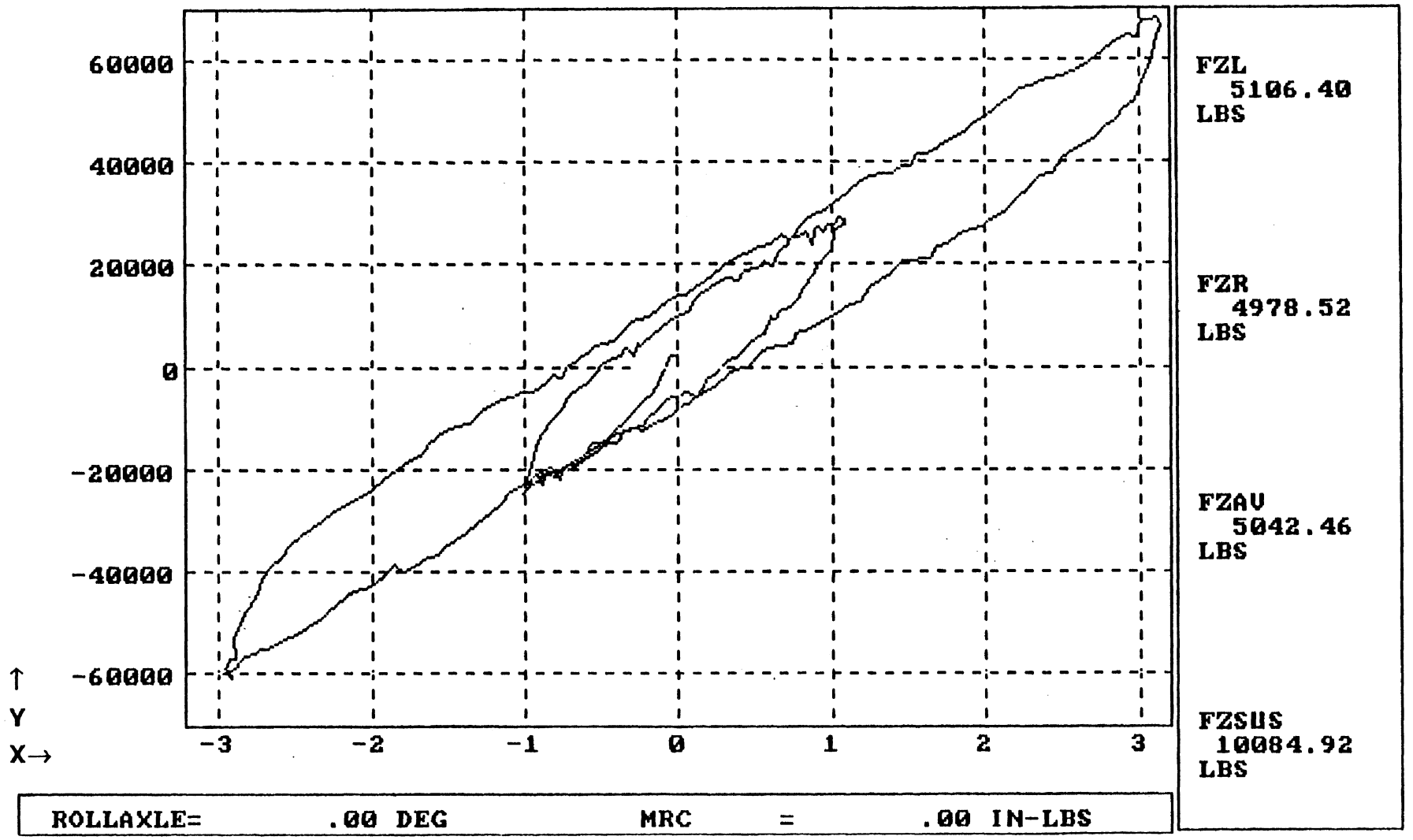
File: JDEERERH.DAT

Single Axle Rear Suspension

Axle Roll Rate*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Corrected axle roll moment about the roll center (MRC); in-lb; right side compressed, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

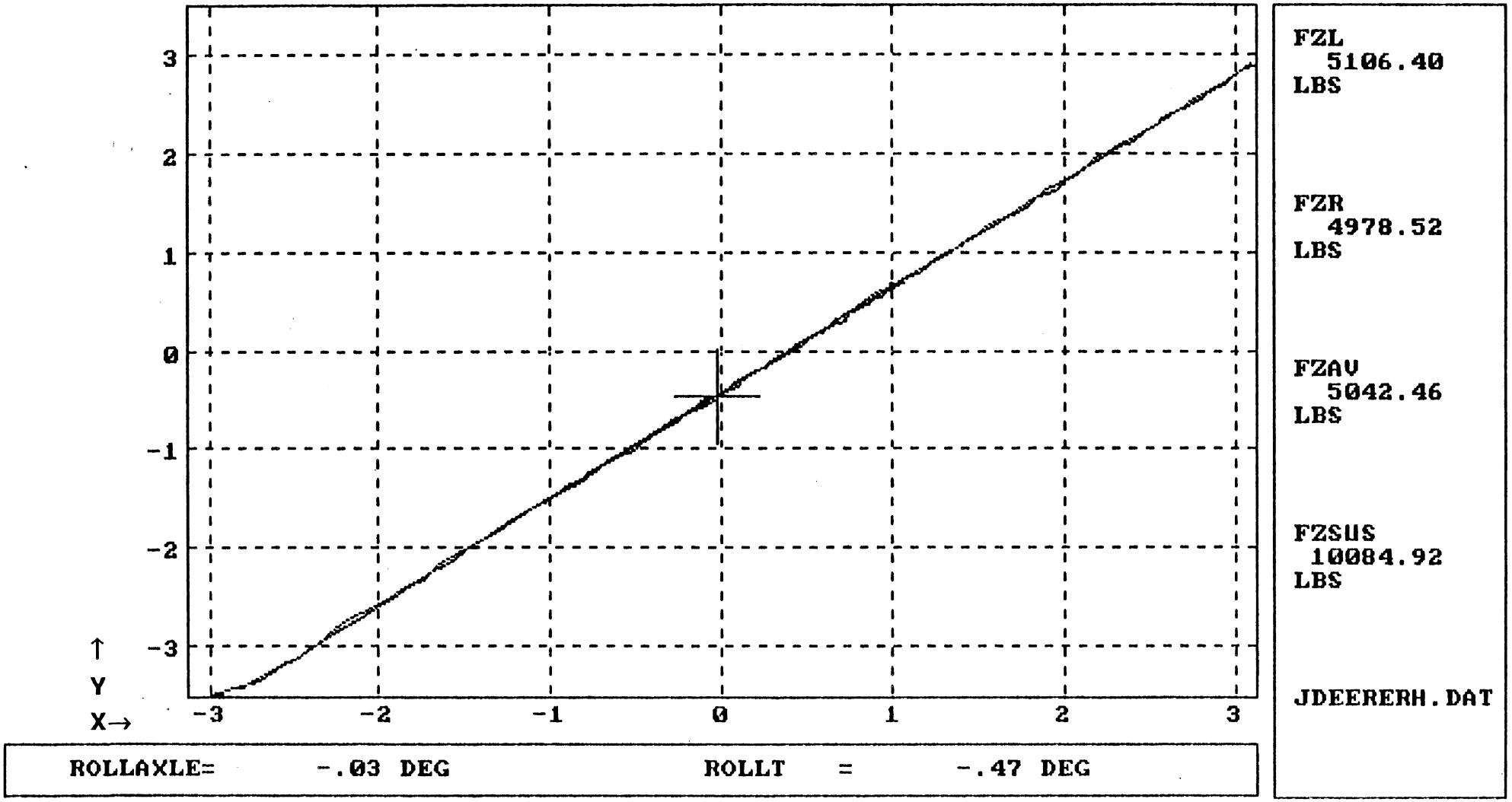
Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERH.DAT

Table Roll Angle vs Axle Roll Angle*

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Table Roll Angle (ROLLT); degrees; steer toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

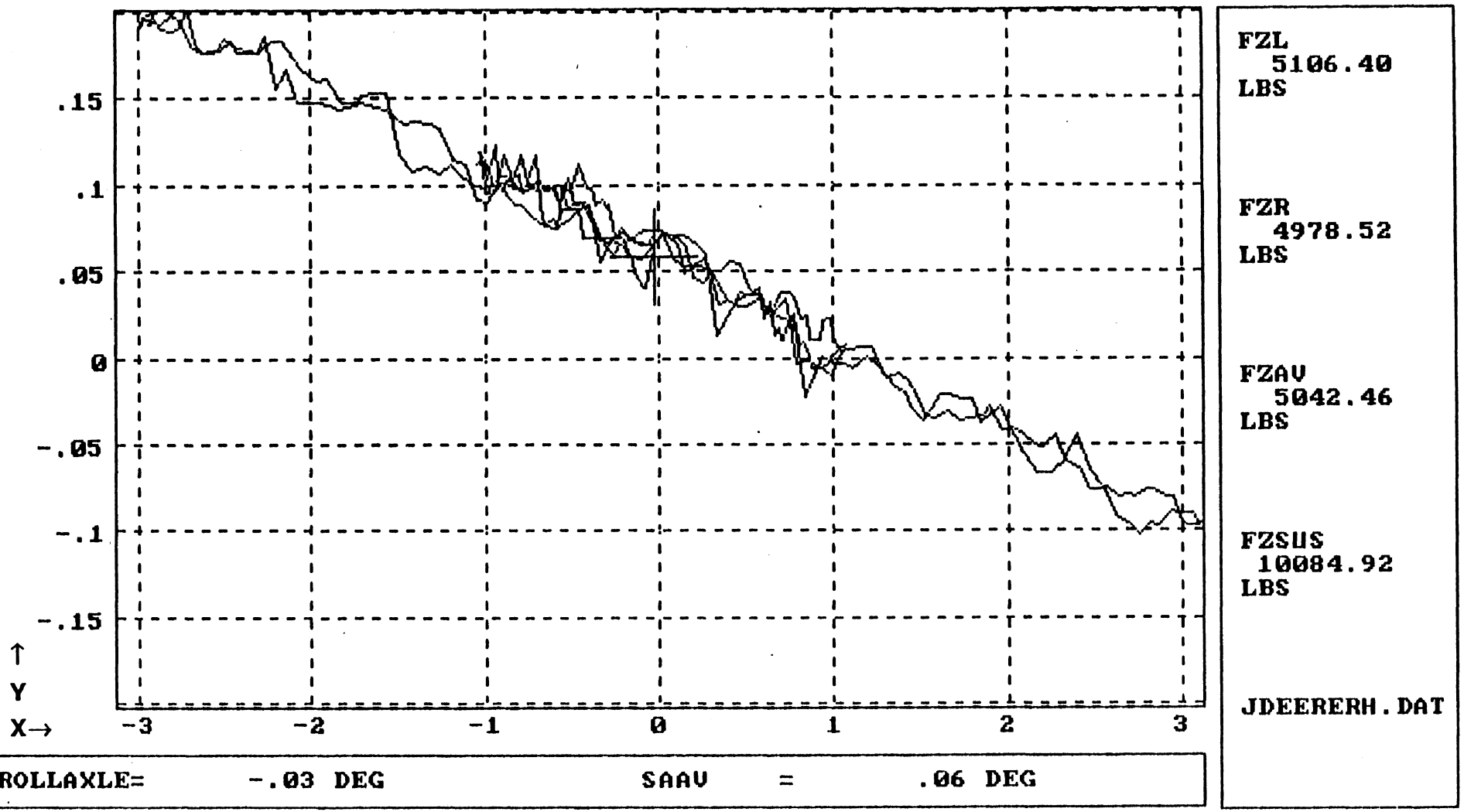
File: JDEERERH.DAT

Single Axle Rear Suspension

Average Roll Steer*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



ROLLAXLE= -.03 DEG SAAV = .06 DEG

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

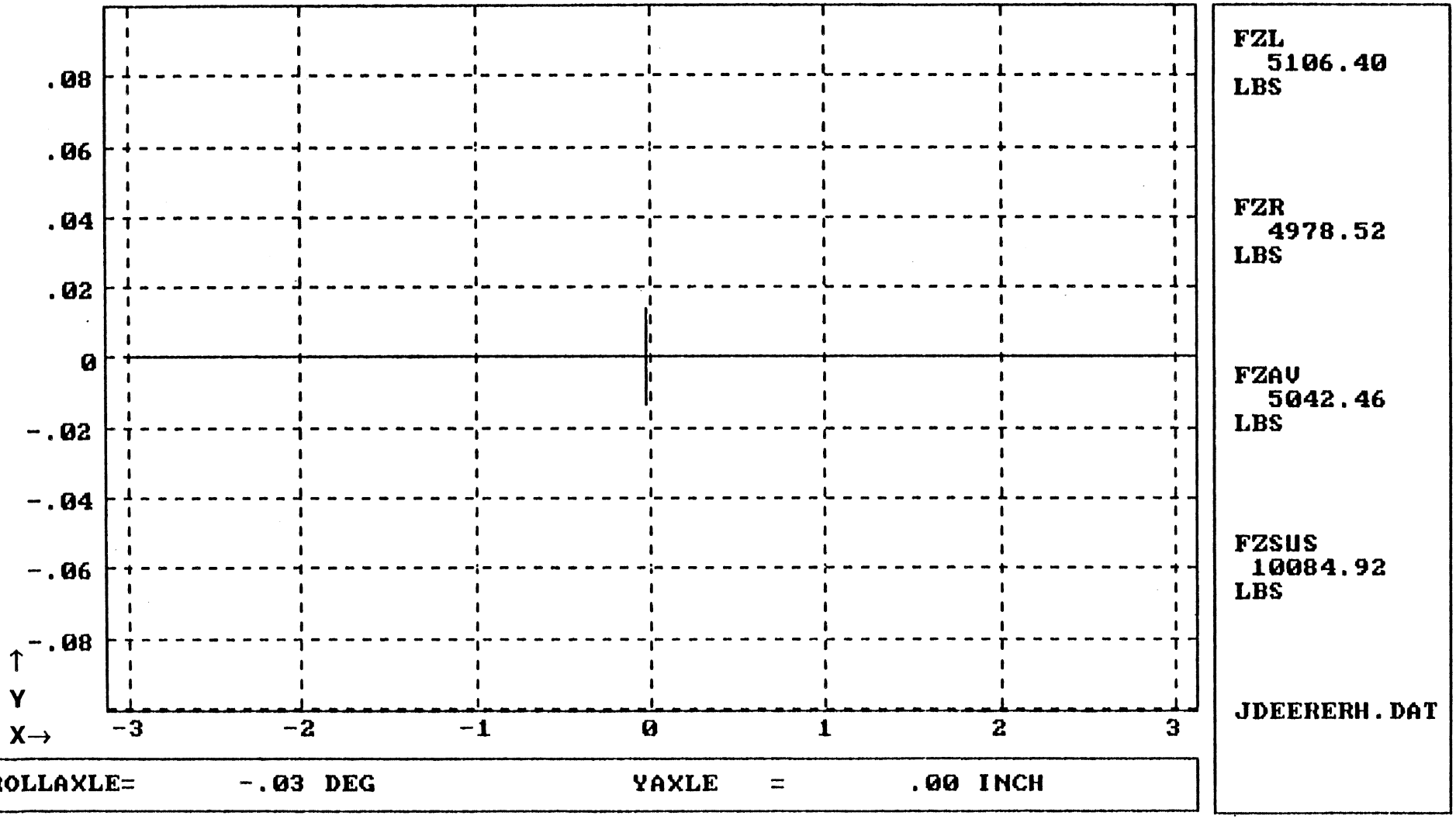
File: JDEERERH.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



ROLLAXLE= -.03 DEG YAXLE = .00 INCH

Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (YAXLE) at a position 24.00 in above the ground; in; motion toward right, positive.

*Note: Anti roll bar off.

John Deere
Motor Home Chassis

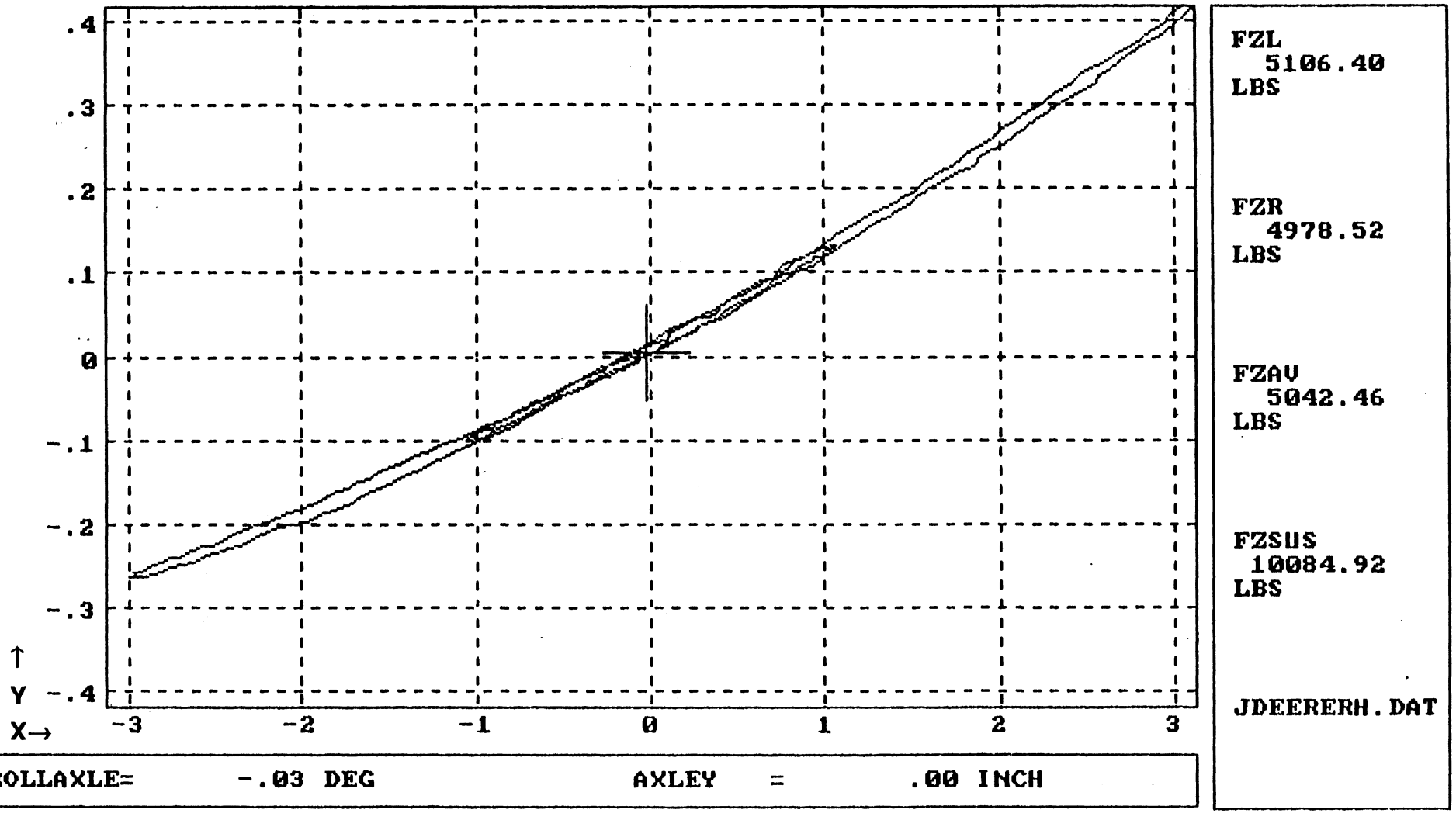
File: JDEERERH.DAT

Single Axle Rear Suspension

Roll Center Height*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 10,000 lb.



Abscissa (X): Axle roll angle (ROLLAXLE); degrees; right side compressed, positive.

Ordinate (Y): Axle lateral displacement (AXLEY) at a position 15.38 in above the ground; in; motion toward right, positive.

*Note: Anti roll bar off.

DATE 5-20-1988 10:21:42
TYPE OF TEST:LATERAL FORCE
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERD.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 5000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	18.44	24.43
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERD.DAT

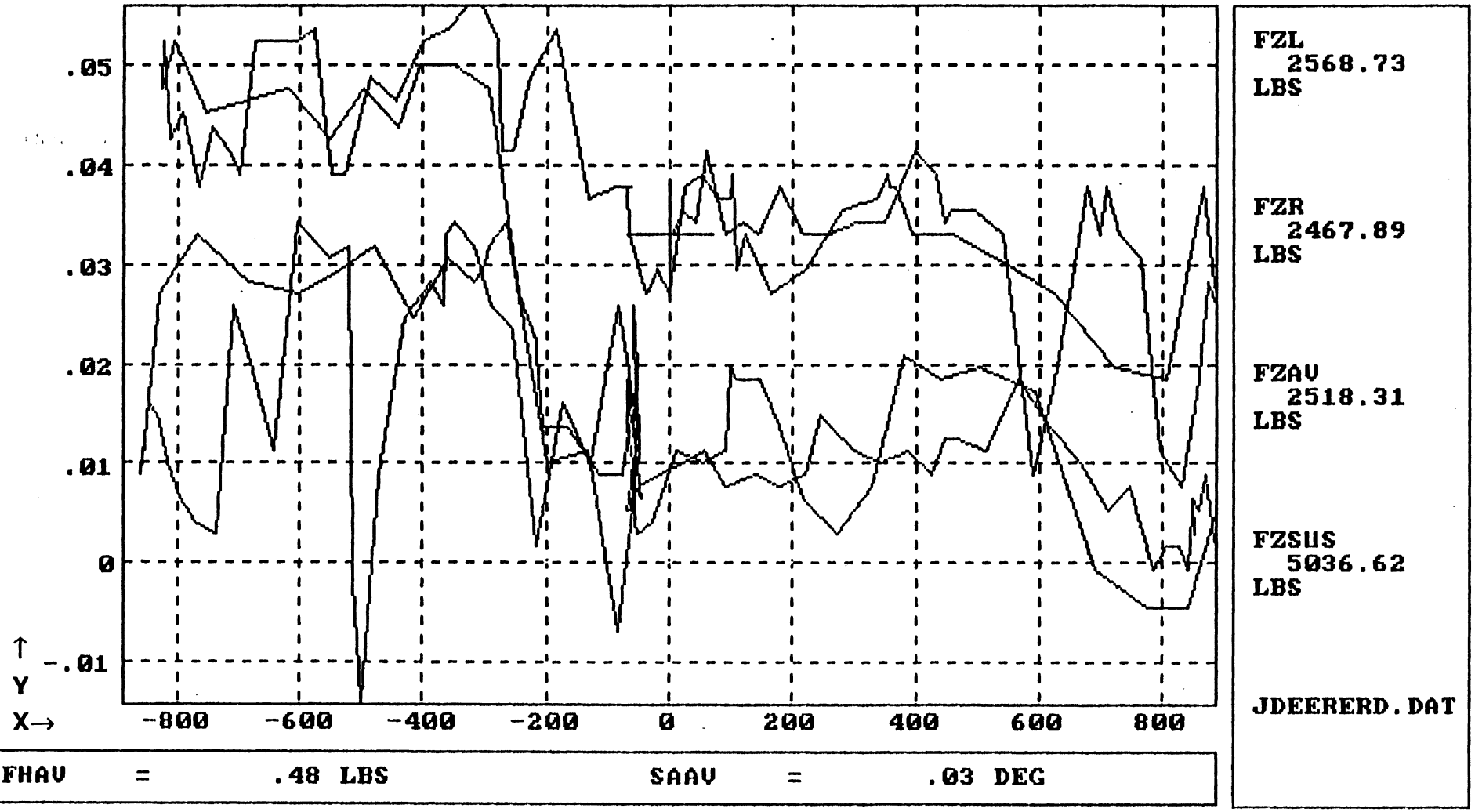
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERD.DAT **Average Lateral Force Compliance Steer***

Suspension Load = 5,000 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

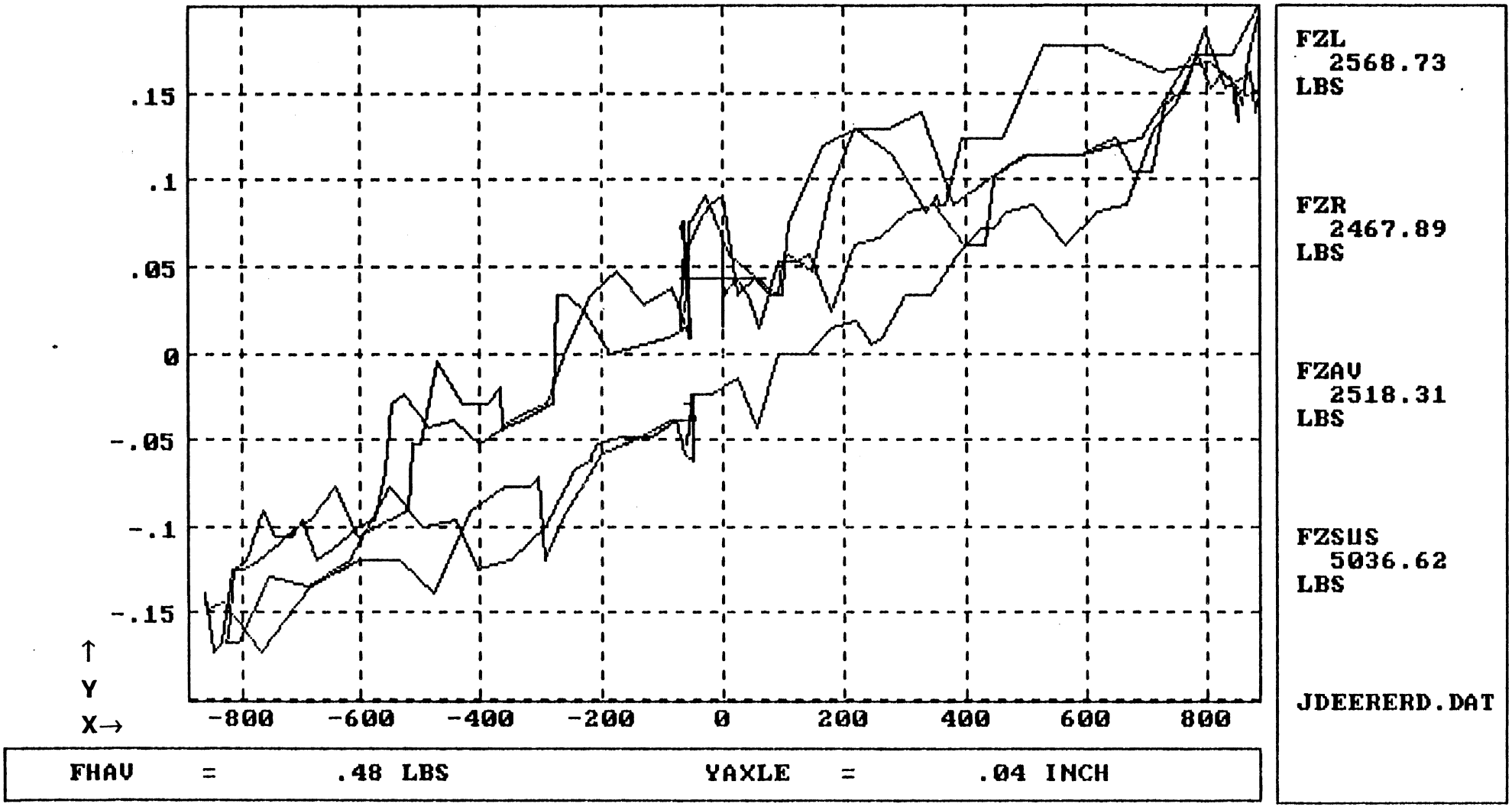
Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERD.DAT

Lateral Force Compliance (Linear)*

Suspension Load = 5,000 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Axle lateral translation (YAXLE); in; motion toward right, positive.

*Note:

DATE 5-20-1988 10: 2:36
TYPE OF TEST:LATERAL FORCE
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERA.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 7500.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	16.81	24.25

	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERA.DAT

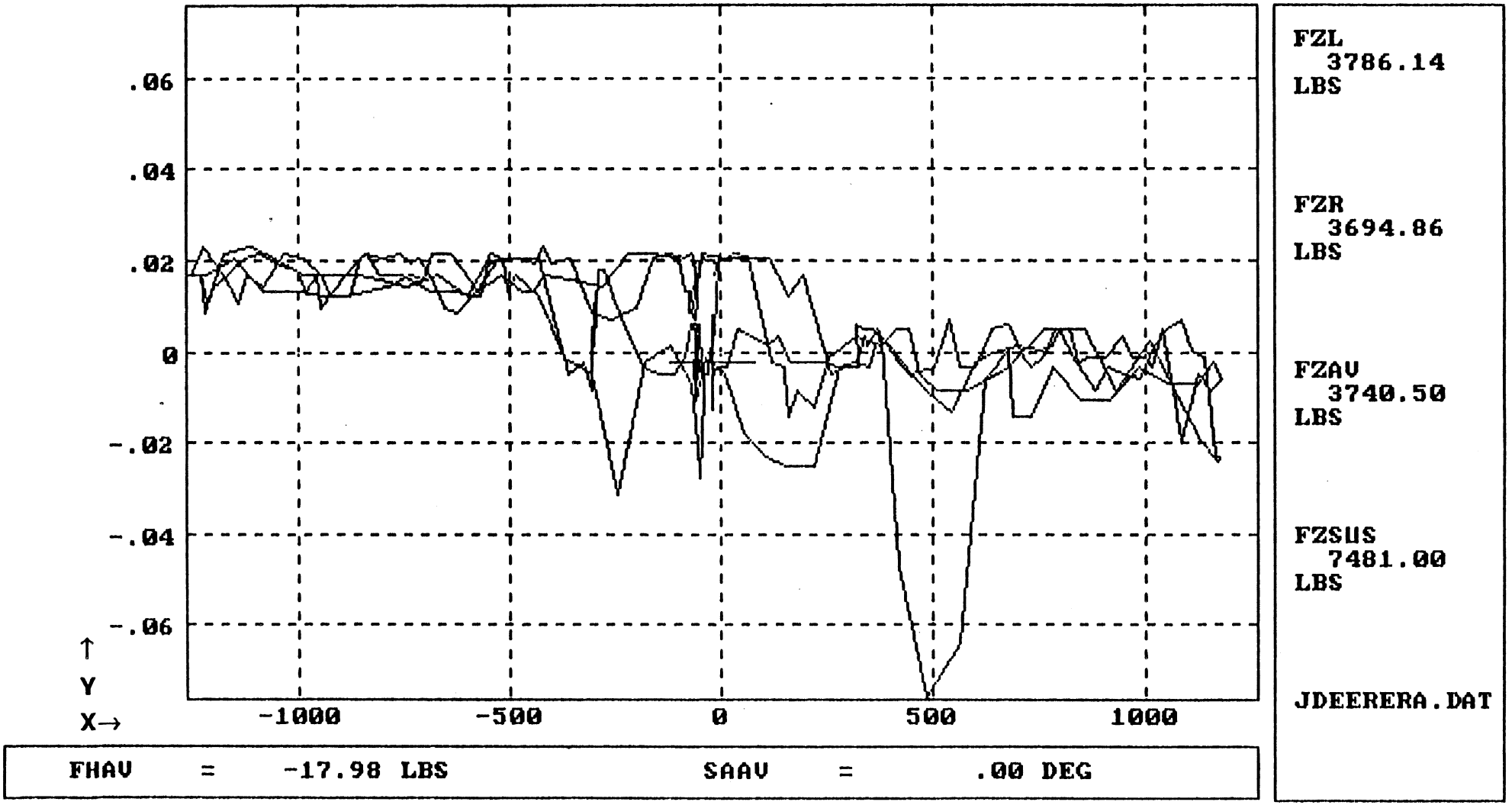
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERA.DAT **Average Lateral Force Compliance Steer***

Suspension Load = 7,500 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

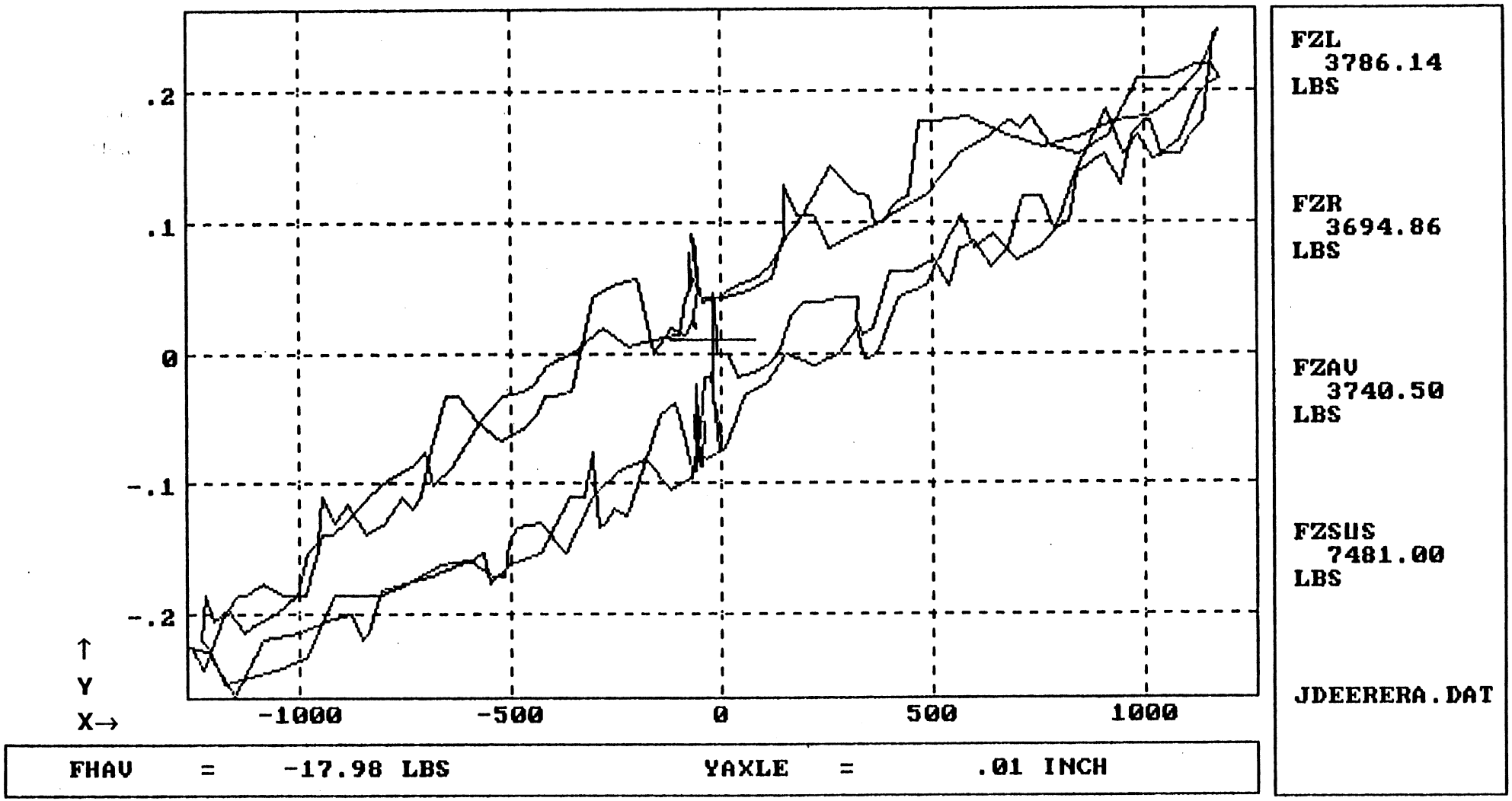
File: JDEERERA.DAT

Single Axle Rear Suspension

Lateral Force Compliance (Linear)*

Date: June 9, 1988
Pitch = 0.0 degrees

Suspension Load = 7,500 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Axle lateral translation (YAXLE); in; motion toward right, positive.

*Note:

DATE 5-20-1988 9:50:54
TYPE OF TEST:LATERAL FORCE
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER7.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD=10000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	15.31	24.00
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER7.DAT

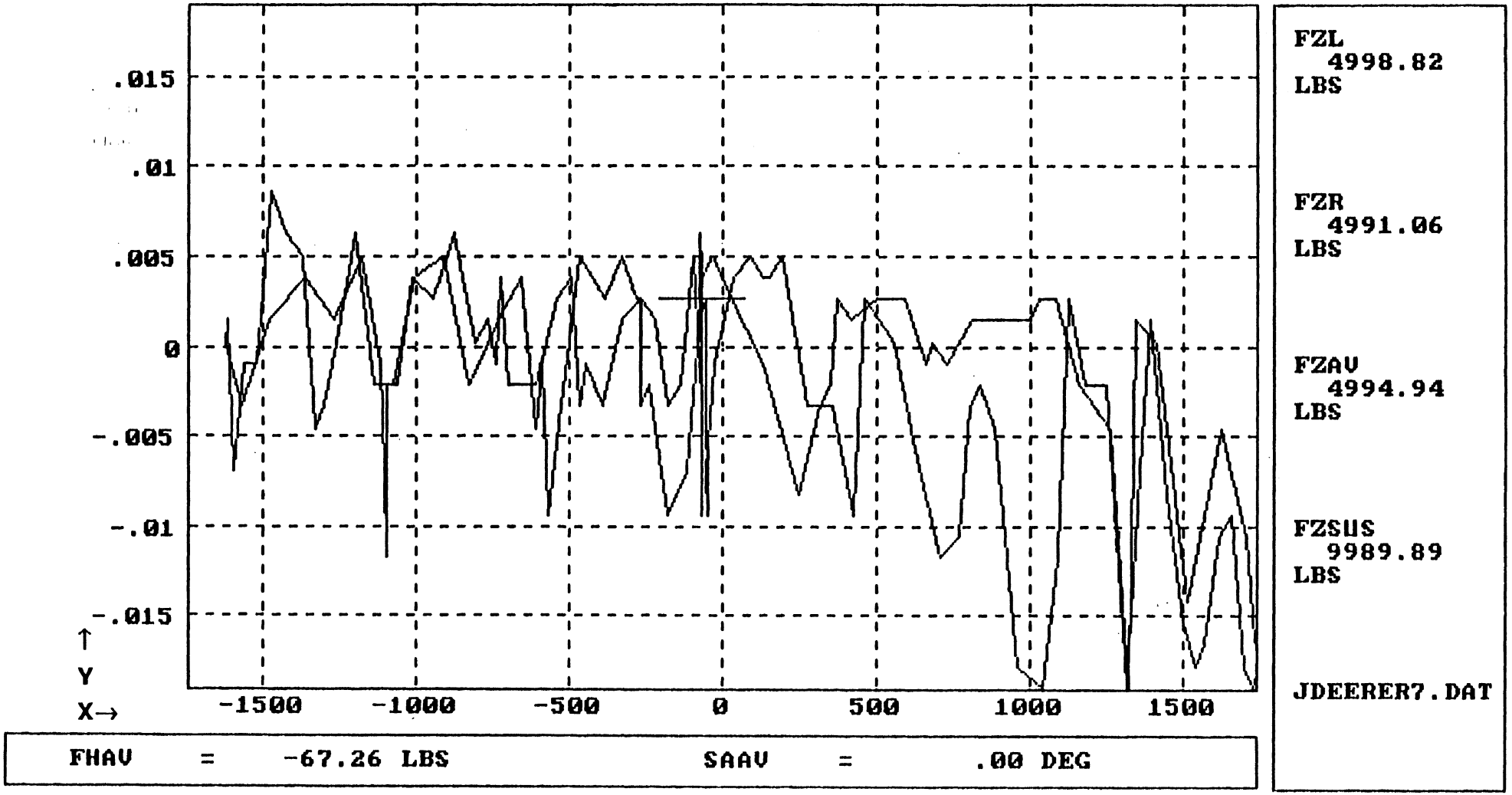
John Deere
Motor Home Chassis

Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER7.DAT **Average Lateral Force Compliance Steer***

Suspension Load = 10,000 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

John Deere
Motor Home Chassis

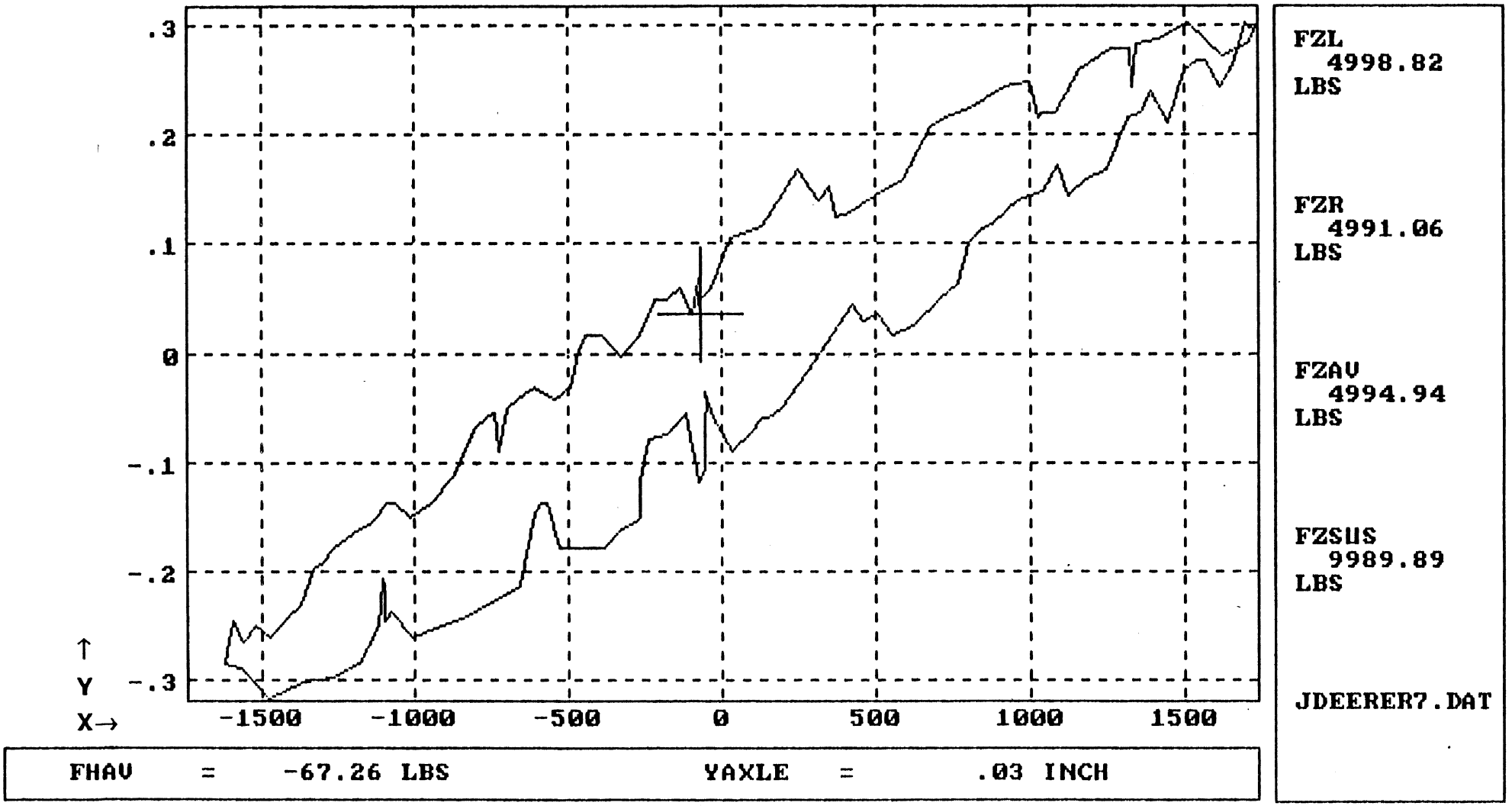
Single Axle Rear Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER7.DAT

Lateral Force Compliance (Linear)*

Suspension Load = 10,000 lb.



Abscissa (X): Average Lateral Force (FHAV); lb per wheel; applied to left and right wheel sets simultaneously; force applied toward right, positive.

Ordinate (Y): Axle lateral translation (YAXLE); in; motion toward right, positive.

*Note:

LATE 5-20-1988 10:22:59
TYPE OF TEST:ALIGNING MOMENT
USTOMER:JOHN DEERE
PERATOR:WINKLER
FILE NAME:C:JDEERERE.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
JMINAL SUSPENSION LOAD= 5000.
JMINAL STEER ANGLE= .00

****

SUSPENSION DATA

/PE:LEAF SPRING REAR
ANUFACTURER:JOHN DEERE
MODEL:??
ATING:10,000 LB
THER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

ANUFACTURER:JOHN DEERE
ODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	18.44	24.43

	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERE.DAT

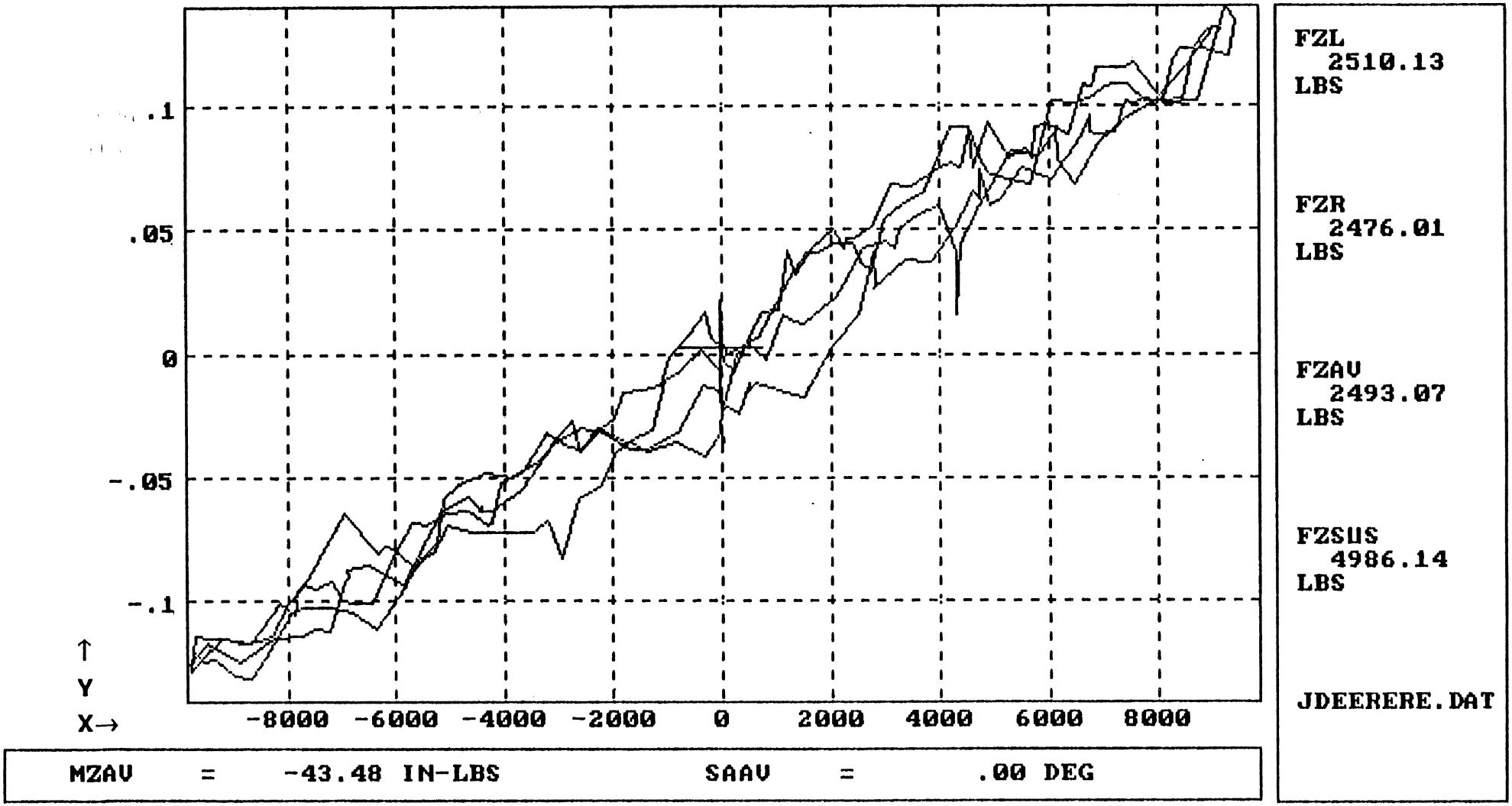
John Deere
Motor Home Chassis

Single Axle Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERE.DAT **Average Aligning Moment Compliance Steer***

Suspension Load = 5,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

LATE 5-20-1988 10: 3:47
TYPE OF TEST:ALIGNING MOMENT
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERERB.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD= 7500.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	16.81	24.25

	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: June 9, 1988
John Deere
Motor Home Chassis
File: JDEERERB.DAT

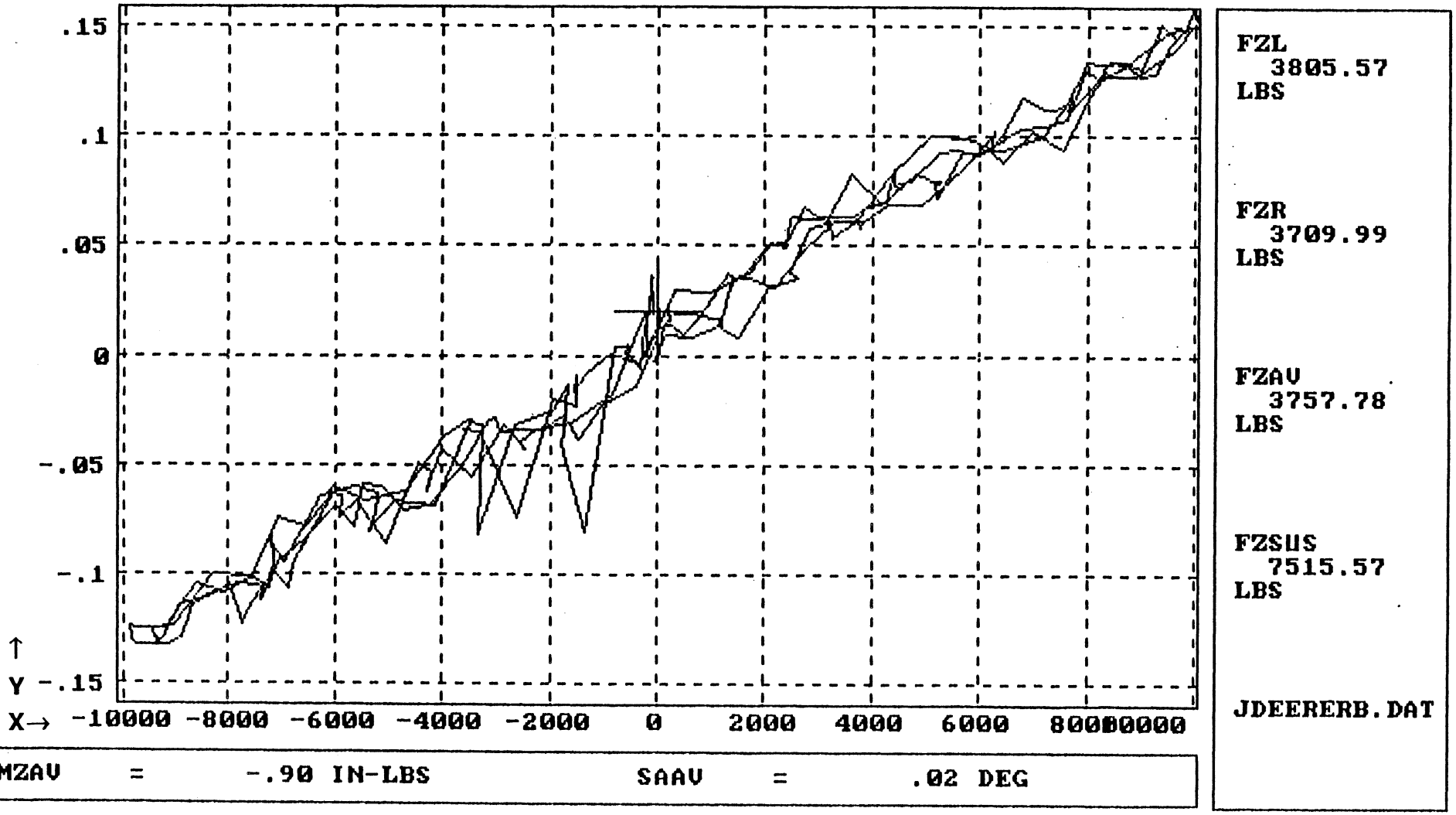
John Deere
Motor Home Chassis

Single Axle Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERERB.DAT **Average Aligning Moment Compliance Steer***

Suspension Load = 7,500 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note:

DATE 5-20-1988 9:52:16
TYPE OF TEST:ALIGNING MOMENT
CUSTOMER:JOHN DEERE
OPERATOR:WINKLER
FILE NAME:C:JDEERER8.DAT
COMMENT:

****

TEST CONDITIONS

PITCH ANGLE= .00
NOMINAL SUSPENSION LOAD=10000.
NOMINAL STEER ANGLE= .00

****

SUSPENSION DATA

TYPE:LEAF SPRING REAR
MANUFACTURER:JOHN DEERE
MODEL:??
RATING:10,000 LB
OTHER:10 FLAT LEAF 3 IN X 3/8 INCH 1 MAIN LEAF 53.5 INCH LONG

****

VEHICLE DATA

MANUFACTURER:JOHN DEERE
MODEL:MOTOR HOME CHASSIS
OTHER:17N630126HW005043 JUNE 1987

MEASURED DATA

SUSPENSION	LEADING AXLE	TRAILING AXLE
UNSPRUNG MASS	.00	.00
SPRING LENGTH	.00	.00
SPRING SPACING	41.38	.00
SPRING LASH	.00	.00
TANDEM SPREAD	.00	.00

FACILITY	LEADING AXLE	TRAILING AXLE
LATERAL PAD SPACING	67.50	.00
LATERAL Z-POT SPACING	93.75	.00
VERTICAL Y-POT POSITION	15.31	24.00
	LEFT	RIGHT
LONG PAD SPACING	.00	.00

Date: June 9, 1988
John Deere
Motor Home Chassis
File: JDEERER8.DAT

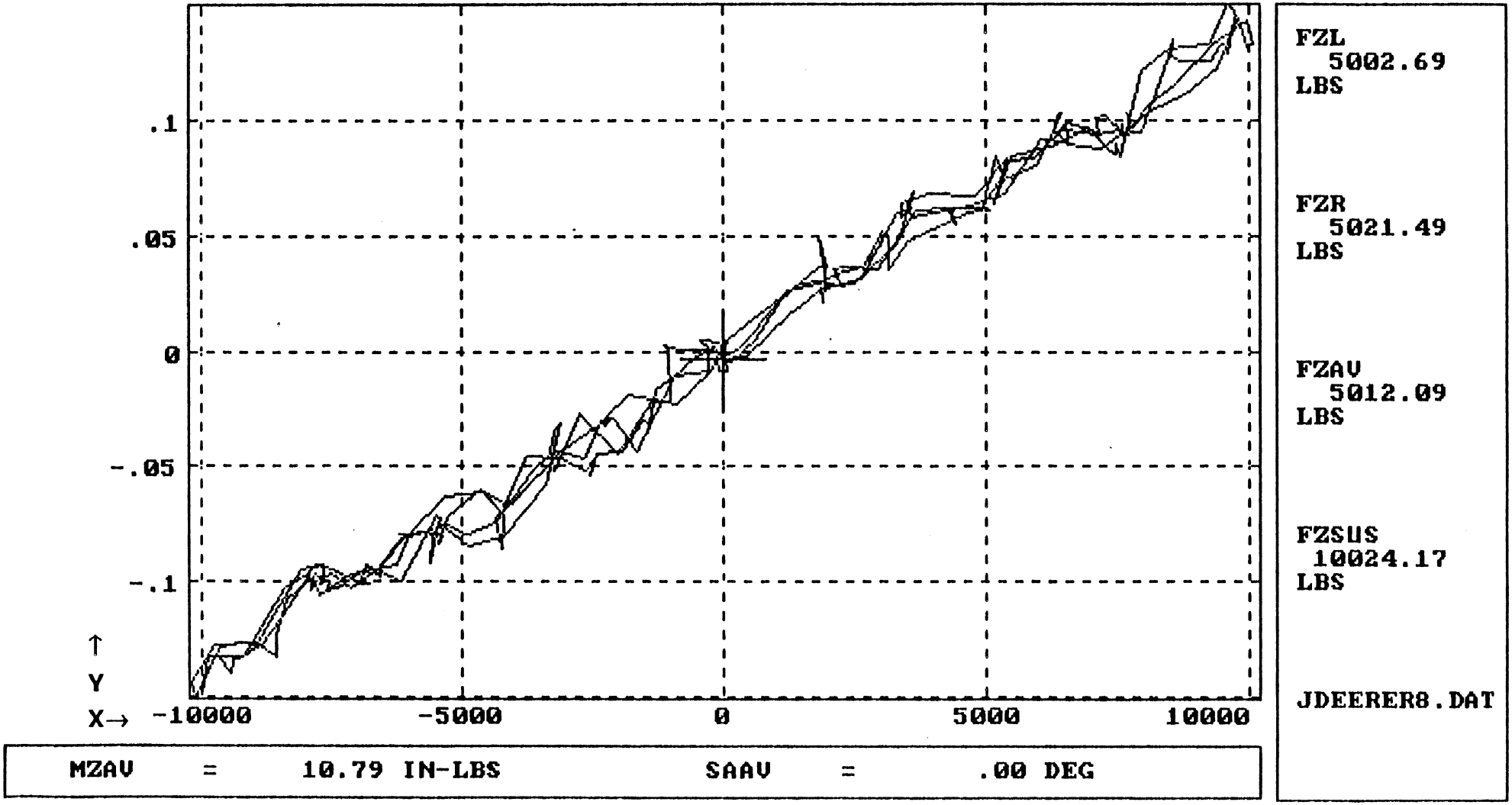
John Deere
Motor Home Chassis

Single Axle Suspension

Date: June 9, 1988
Pitch = 0.0 degrees

File: JDEERER8.DAT **Average Aligning Moment Compliance Steer***

Suspension Load = 10,000 lb.



Abscissa (X): Average aligning moment (MZAV); in-lb per wheel; applied to left and right wheel sets simultaneously; downward (right hand rule) moment vector, positive.

Ordinate (Y): Average steer angle (SAAV); degrees; steer toward right, positive.

*Note: