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Department
of Transportation

National Highway
Traffic Safety
Administration

DOT HS 808 217

November 1994

Final Report

Final Report of a 1992 Plymouth Voyager into a 50% Left Offset Barrier in Support of CRASH3 Damage Algorithm Reformulation

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| <p>16. Abstract</p> <p>Five (5) 50% left offset barrier impact tests were conducted for research and development in support of the CRASH3 damage algorithm reformulation. These tests were conducted on a 1992 Plymouth Voyager, VIN 2P4GH25K8NR555705, at Transportation Research Center Inc. on October 25, 1994. The following five tests were conducted on the vehicle:</p> <table border="1" data-bbox="178 1267 1305 1533"> <thead> <tr> <th>Test No.</th> <th>Date</th> <th>Time</th> <th>Speed (kph)</th> <th>Maximum Cumulative Crush (mm)</th> </tr> </thead> <tbody> <tr> <td>941025-1</td> <td>10/25/94</td> <td>0938</td> <td>7.7</td> <td>25</td> </tr> <tr> <td>941025-2</td> <td>10/25/94</td> <td>1111</td> <td>15.8</td> <td>207</td> </tr> <tr> <td>941025-3</td> <td>10/25/94</td> <td>1227</td> <td>15.8</td> <td>282</td> </tr> <tr> <td>941025-4</td> <td>10/25/94</td> <td>1336</td> <td>32.0</td> <td>519</td> </tr> <tr> <td>941025-5</td> <td>10/25/94</td> <td>1454</td> <td>56.3</td> <td>1016</td> </tr> </tbody> </table> | | | | Test No. | Date | Time | Speed (kph) | Maximum Cumulative Crush (mm) | 941025-1 | 10/25/94 | 0938 | 7.7 | 25 | 941025-2 | 10/25/94 | 1111 | 15.8 | 207 | 941025-3 | 10/25/94 | 1227 | 15.8 | 282 | 941025-4 | 10/25/94 | 1336 | 32.0 | 519 | 941025-5 | 10/25/94 | 1454 | 56.3 | 1016 |
| Test No. | Date | Time | Speed (kph) | Maximum Cumulative Crush (mm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 941025-1 | 10/25/94 | 0938 | 7.7 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 941025-2 | 10/25/94 | 1111 | 15.8 | 207 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 941025-3 | 10/25/94 | 1227 | 15.8 | 282 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 941025-4 | 10/25/94 | 1336 | 32.0 | 519 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 941025-5 | 10/25/94 | 1454 | 56.3 | 1016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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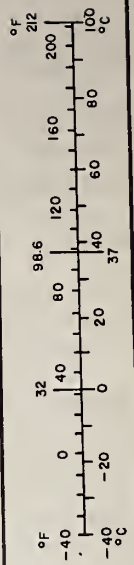
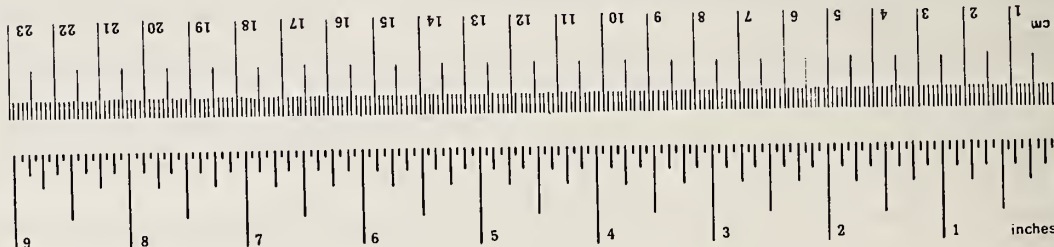
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METRIC CONVERSION FACTORS

| Approximate Conversions to Metric Measures | | | Approximate Conversions from Metric Measures | | |
|--|---------------|-------------|--|-----------------------------------|-------------------|
| Symbol | When You Know | Multiply by | Symbol | When You Know | Multiply by |
| LENGTH | | | | | |
| in | inches | *2.5 | mm | millimeters | 0.04 |
| ft | feet | 30 | cm | centimeters | 0.4 |
| yd | yards | 0.9 | m | meters | 3.3 |
| mi | miles | 1.6 | km | kilometers | 0.6 |
| AREA | | | | | |
| in ² | square inches | 6.5 | cm ² | square centimeters | 0.16 |
| ft ² | square feet | 0.09 | m ² | square meters | 1.2 |
| yd ² | square yards | 0.8 | km ² | square kilometers | 0.4 |
| mi ² | square miles | 2.6 | ha | hectares (10,000 m ²) | 2.5 |
| MASS (weight) | | | | | |
| oz | ounces | 28 | g | grams | 0.035 |
| lb | pounds | 0.45 | kg | kilograms | 2.2 |
| | short tons | 0.9 | t | tonnes (1000 kg) | 1.1 |
| | (2000 lb) | | VOLUME | | |
| tsp | teaspoons | 5 | ml | milliliters | 0.03 |
| Tbsp | tablespoons | 15 | l | liters | 2.1 |
| fl oz | fluid ounces | 30 | l | liters | 1.06 |
| c | cups | 0.24 | l | liters | 0.26 |
| pt | pints | 0.47 | m ³ | cubic meters | 35 |
| qt | quarts | 0.95 | m ³ | cubic meters | 1.3 |
| gal | gallons | 3.8 | TEMPERATURE (exact) | | |
| ft ³ | cubic feet | 0.03 | °C | Celsius temperature | 9/5 (then add 32) |
| yd ³ | cubic yards | 0.76 | °F | Fahrenheit temperature | |



* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10/286.

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Section 1.0

Purpose and Test Procedure

Purpose and Test Procedure

The purpose of the five (5) 50% left offset barrier impact tests was for research and development in support of the CRASH3 damage algorithm reformulation.

The 1992 Plymouth Voyager was equipped with a 2.5-liter, 4-cylinder, transverse, gasoline engine with a 3-speed automatic transmission. A third axle was placed 540 mm behind the vehicle's front wheel centerline to raise the front wheels so that it could withstand five (5) impacts. The test weight of the vehicle with third axle was 1639 kilograms.

The vehicle was instrumented with eleven (11) accelerometers oriented to measure vehicle X-, Y-, and Z-axis accelerations.

Each crash test event was recorded by three (3) high-speed motion picture cameras operating at approximately 1000 frames per second.

Section 2.0

Vehicle and Test Data

Table 1 Test Vehicle Information, Cont'd.

Tires On Vehicle (Mfr., Line, Size): Dunlop, SP4N, P195/75R14

Tire Pressure With Maximum Capacity Vehicle Load: Front: 221 kPa

Rear: 221 kPa

Spare Tire (Mfr., Line, Size): The vehicle did not contain a spare tire.

Type Of Seats: Front: Bucket

Rear: Bench

Type Of Front Seat Backs: Adjustable

Maximum Width: 1522 mm

Wheelbase: 2847 mm

Location Of Label Stating Tire Data:

The label was located on the driver's door.

Tire & Capacity Data From Vehicle's Label:

Recommended Tire Size: P195/75R14

Recommended Cold Tire Pressure: Front: 35 psi; Rear: 35 psi

Designated Seating Capacity: 2 Front 5 Rear 7 Total

Vehicle Capacity Weight: NA lbs.

Test Vehicle Attitude (All Measurements Are In Millimeters):

Delivered Attitude: LF 744, RF 733, LR 755, RR 747

Pre-Test Attitude¹: LF 773, RF 778, LR 770, RR 774

¹Pre-test attitude measured with third axle installed.

Table 1 Test Vehicle Information, Cont'd.

Weight Of Test Vehicle As Received (With Maximum Fluids):

| | | | | | |
|------------------------|------|----|---------------------------------|-----|----|
| Right Front | 454 | KG | Right Rear | 304 | KG |
| Left Front | 461 | KG | Left Rear | 291 | KG |
| Total Front Weight | 915 | KG | (60.6% Of Total Vehicle Weight) | | |
| Total Rear Weight | 595 | KG | (39.4% Of Total Vehicle Weight) | | |
| Total Delivered Weight | 1510 | KG | | | |

Weight Of Test Vehicle¹:

| | | | | | |
|---------------------------------|------|----|---------------------------------|-----|----|
| Right Front ² | 590 | KG | Right Rear | 225 | KG |
| Left Front ² | 592 | KG | Left Rear | 232 | KG |
| Total Front Weight ² | 1182 | KG | (72.1% Of Total Vehicle Weight) | | |
| Total Rear Weight | 457 | KG | (27.9% Of Total Vehicle Weight) | | |
| Total Test Weight ¹ | 1639 | KG | | | |

Weight Of Ballast Secured In Vehicle Cargo Area: 0 KG

Components Removed To Meet Target Test Weight: None

CG = 1334 MM Rearward of Front Wheel Centerline

¹ Weight of third axle included in total test weight.

² The front wheel weights are for third axle wheels.

TABLE 2 PROFILE MEASUREMENTS AT VEHICLE BUMPER HEIGHT 593 MM

| LOCATION | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | |
|-------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| PRE-TEST | 2645 | 558 | 2567 | 561 | 2493 | 560 | 2417 | 563 | 2345 | 565 | 2267 | 565 | 2193 | 566 | 2115 | 568 |
| POST-TEST 1 | 2645 | 558 | 2567 | 561 | 2493 | 560 | 2417 | 563 | 2345 | 565 | 2267 | 565 | 2193 | 566 | 2115 | 568 |
| POST-TEST 2 | 2645 | 558 | 2567 | 561 | 2493 | 560 | 2417 | 563 | 2345 | 565 | 2267 | 565 | 2193 | 566 | 2115 | 568 |
| POST-TEST 3 | 2635 | 555 | 2555 | 554 | 2482 | 555 | 2408 | 557 | 2335 | 561 | 2260 | 559 | 2182 | 558 | 2108 | 561 |
| POST-TEST 4 | 2638 | 550 | 2560 | 559 | 2490 | 562 | 2415 | 554 | 2342 | 557 | 2270 | 557 | 2190 | 558 | 2114 | 558 |
| POST-TEST 5 | 2646 | 575 | 2575 | 577 | 2567 | 490 | 2492 | 465 | 2419 | 465 | 2342 | 447 | 2267 | 443 | 2192 | 444 |

| LOCATION | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | |
|-------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| PRE-TEST | 2041 | 569 | 1967 | 571 | 1891 | 572 | 1815 | 573 | 1740 | 575 | 1663 | 576 | 1591 | 578 | 1521 | 580 |
| POST-TEST 1 | 2041 | 569 | 1967 | 571 | 1891 | 572 | 1815 | 573 | 1740 | 575 | 1663 | 576 | 1591 | 578 | 1521 | 580 |
| POST-TEST 2 | 2041 | 569 | 1967 | 571 | 1891 | 572 | 1815 | 573 | 1740 | 575 | 1655 | 576 | 1584 | 577 | 1508 | 578 |
| POST-TEST 3 | 2030 | 556 | 1958 | 555 | 1882 | 550 | 1810 | 563 | 1735 | 562 | 1656 | 564 | 1585 | 567 | 1512 | 567 |
| POST-TEST 4 | 2042 | 562 | 1970 | 557 | 1889 | 558 | 1809 | 558 | 1734 | 563 | 1662 | 566 | 1578 | 564 | 1510 | 566 |
| POST-TEST 5 | 2117 | 445 | 2044 | 446 | 1970 | 452 | 1895 | 459 | 1822 | 446 | 1746 | 469 | 1677 | 472 | 1621 | 516 |

| LOCATION | 16 | | 17 | | 18 | | 19 | | 20 | | 21 | | 22 | | 23 | |
|-------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| PRE-TEST | 1442 | 581 | 1365 | 566 | 1300 | 561 | 1222 | 560 | 1150 | 561 | 1067 | 563 | 990 | 567 | 918 | 571 |
| POST-TEST 1 | 1442 | 581 | 1365 | 566 | 1300 | 561 | 1222 | 560 | 1150 | 561 | 1066 | 560 | 988 | 564 | 914 | 571 |
| POST-TEST 2 | 1441 | 578 | 1364 | 555 | 1297 | 543 | 1225 | 534 | 1155 | 531 | 1077 | 520 | 1002 | 513 | 931 | 515 |
| POST-TEST 3 | 1450 | 562 | 1380 | 537 | 1310 | 520 | 1237 | 507 | 1165 | 500 | 1087 | 490 | 1012 | 481 | 940 | 474 |
| POST-TEST 4 | 1470 | 553 | 1394 | 517 | 1352 | 473 | 1296 | 425 | 1245 | 376 | 1172 | 335 | 1110 | 331 | 1048 | 360 |
| POST-TEST 5 | 1616 | 522 | 1581 | 460 | 1618 | 384 | 1623 | 313 | 1626 | 238 | 1702 | 159 | 1608 | 102 | 1561 | 153 |

All measurements are in millimeters. Column readings are 75 millimeters apart starting on the left side of the vehicle.

All X-axis measurements taken from a reference plane 4718 millimeters from and parallel to the rear bumper.

All Y-axis measurements taken from a reference plane 1425 millimeters from and parallel to the vehicle's longitudinal centerline

TABLE 2 PROFILE MEASUREMENTS AT VEHICLE BUMPER HEIGHT 593 MM

| LOCATION | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | | | | |
|-------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|
| PRE-TEST | X 842 | Y 579 | X 684 | Y 582 | X 540 | Y 605 | X 465 | Y 623 | X 393 | Y 649 | X 341 | Y 697 | | | | |
| POST-TEST 1 | X 841 | Y 579 | X 683 | Y 585 | X 536 | Y 591 | X 483 | Y 627 | X 416 | Y 650 | X 368 | Y 700 | | | | |
| POST-TEST 2 | X 856 | Y 528 | X 780 | Y 498 | X 607 | Y 548 | X 540 | Y 583 | X 474 | Y 625 | X 441 | Y 683 | | | | |
| POST-TEST 3 | X 872 | Y 492 | X 800 | Y 448 | X 628 | Y 508 | X 572 | Y 456 | X 511 | Y 606 | X 488 | Y 664 | | | | |
| POST-TEST 4 | X 994 | Y 402 | X 941 | Y 461 | X 899 | Y 412 | X 850 | Y 456 | X 794 | Y 497 | X 738 | Y 546 | | | | |
| POST-TEST 5 | X 1516 | Y 222 | X 1475 | Y 289 | X 1306 | Y 339 | X 1270 | Y 404 | X 1223 | Y 450 | X 1173 | Y 505 | X 1152 | Y 578 | X 1162 | Y 645 |

| LOCATION | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | | | | | | | | |
|-------------|--------|-------|--------|-------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| PRE-TEST | X 311 | Y 763 | X 292 | Y 838 | X 276 | Y 914 | X 264 | Y 988 | X 256 | Y 1058 | X 249 | Y 1140 | X 243 | Y 1211 | X 239 | Y 1287 |
| POST-TEST 1 | X 309 | Y 763 | X 293 | Y 845 | X 284 | Y 923 | X 279 | Y 1000 | X 275 | Y 1068 | X 264 | Y 1148 | X 264 | Y 1223 | X 264 | Y 1300 |
| POST-TEST 2 | X 430 | Y 759 | X 423 | Y 832 | X 422 | Y 913 | X 421 | Y 981 | X 421 | Y 1051 | X 427 | Y 1132 | X 450 | Y 1203 | X 422 | Y 1275 |
| POST-TEST 3 | X 490 | Y 738 | X 493 | Y 810 | X 493 | Y 885 | X 508 | Y 960 | X 521 | Y 1028 | X 531 | Y 1105 | X 523 | Y 1181 | X 508 | Y 1252 |
| POST-TEST 4 | X 674 | Y 744 | X 687 | Y 817 | X 703 | Y 892 | X 726 | Y 966 | X 746 | Y 1033 | X 762 | Y 1112 | X 762 | Y 1176 | X 742 | Y 1243 |
| POST-TEST 5 | X 1164 | Y 721 | X 1171 | Y 793 | X 1188 | Y 868 | X 1212 | Y 937 | X 1233 | Y 1000 | X 1251 | Y 1070 | X 1259 | Y 1148 | X 1250 | Y 1212 |

| LOCATION | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | | | | | | | | |
|-------------|--------|--------|--------|--------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| PRE-TEST | X 236 | Y 1363 | X 236 | Y 1435 | X 236 | Y 1493 | X 238 | Y 1569 | X 242 | Y 1641 | X 246 | Y 1719 | X 255 | Y 1794 | X 267 | Y 1869 |
| POST-TEST 1 | X 255 | Y 1375 | X 253 | Y 1397 | X 249 | Y 1490 | X 256 | Y 1568 | X 251 | Y 1643 | X 246 | Y 1717 | X 258 | Y 1792 | X 265 | Y 1869 |
| POST-TEST 2 | X 389 | Y 1347 | X 374 | Y 1418 | X 355 | Y 1468 | X 346 | Y 1543 | X 329 | Y 1616 | X 312 | Y 1691 | X 306 | Y 1765 | X 297 | Y 1841 |
| POST-TEST 3 | X 493 | Y 1323 | X 453 | Y 1390 | X 422 | Y 1432 | X 401 | Y 1505 | X 380 | Y 1578 | X 357 | Y 1650 | X 338 | Y 1725 | X 335 | Y 1797 |
| POST-TEST 4 | X 710 | Y 1309 | X 662 | Y 1360 | X 606 | Y 1385 | X 551 | Y 1438 | X 504 | Y 1493 | X 456 | Y 1553 | X 410 | Y 1622 | X 362 | Y 1678 |
| POST-TEST 5 | X 1184 | Y 1236 | X 1104 | Y 1255 | X 1027 | Y 1230 | X 951 | Y 1269 | X 880 | Y 1297 | X 811 | Y 1310 | X 735 | Y 1328 | X 667 | Y 1345 |

All measurements are in millimeters. Column readings are 75 millimeters apart starting on the left side of the vehicle.

All X-axis measurements taken from a reference plane 4718 millimeters from and parallel to the rear bumper.

All Y-axis measurements taken from a reference plane 1425 millimeters from and parallel to the vehicle's longitudinal centerline

TABLE 2 PROFILE MEASUREMENTS AT VEHICLE BUMPER HEIGHT 593 MM

| LOCATION | 48 | | 49 | | 50 | | 51 | | 52 | | 53 | | 54 | | 55 | |
|-------------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|
| | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| PRE-TEST | 273 | 1940 | 290 | 2016 | 308 | 2090 | 332 | 2156 | 383 | 2212 | 450 | 2238 | 522 | 2255 | 595 | 2270 |
| POST-TEST 1 | 268 | 1937 | 279 | 2014 | 295 | 2090 | 320 | 2164 | 367 | 2220 | 435 | 2249 | 506 | 2260 | 575 | 2272 |
| POST-TEST 2 | 292 | 1914 | 291 | 1990 | 303 | 2065 | 304 | 2138 | 340 | 2195 | 404 | 2232 | 476 | 2251 | 548 | 2260 |
| POST-TEST 3 | 305 | 1870 | 297 | 1946 | 290 | 2024 | 300 | 2098 | 325 | 2170 | 390 | 2216 | 450 | 2250 | 525 | 2282 |
| POST-TEST 4 | 315 | 1741 | 271 | 1807 | 239 | 1870 | 224 | 1938 | 215 | 2012 | 245 | 2076 | 283 | 2140 | 330 | 2194 |
| POST-TEST 5 | 595 | 1376 | 530 | 1406 | 458 | 1429 | 402 | 1475 | 360 | 1537 | 349 | 1605 | 349 | 1675 | 347 | 1744 |

| LOCATION | 56 | | 57 | | 58 | | 59 | | 60 | | 61 | | 62 | | 63 | |
|-------------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|------|------|
| | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| PRE-TEST | 670 | 2281 | 742 | 2292 | 820 | 2288 | 891 | 2297 | 966 | 2303 | 1041 | 2307 | 1116 | 2311 | 1191 | 2312 |
| POST-TEST 1 | 652 | 2275 | 725 | 2292 | 800 | 2287 | 873 | 2295 | 942 | 2304 | 1012 | 2306 | 1116 | 2311 | 1191 | 2312 |
| POST-TEST 2 | 623 | 2272 | 692 | 2251 | 802 | 2280 | 875 | 2290 | 951 | 2305 | 1025 | 2305 | 1099 | 2305 | 1176 | 2312 |
| POST-TEST 3 | 590 | 2302 | 660 | 2335 | 820 | 2270 | 890 | 2284 | 960 | 2292 | 1135 | 2302 | 1112 | 2305 | 1185 | 2310 |
| POST-TEST 4 | 376 | 2247 | 430 | 2294 | 805 | 2248 | 877 | 2264 | 949 | 2276 | 1032 | 2288 | 1106 | 2299 | 1180 | 2291 |
| POST-TEST 5 | 354 | 1814 | 366 | 1888 | 793 | 2114 | 863 | 2141 | 938 | 2162 | 1016 | 2181 | 1084 | 2214 | 1156 | 2238 |

| LOCATION | 64 | | 65 | | 66 | | 67 | | 68 | | 69 | | 70 | | 71 | |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y | X | Y |
| PRE-TEST | 1267 | 2310 | 1340 | 2301 | 1424 | 2282 | 1498 | 2281 | 1575 | 2283 | 1651 | 2284 | 1725 | 2287 | 1800 | 2288 |
| POST-TEST 1 | 1267 | 2310 | 1340 | 2301 | 1424 | 2282 | 1498 | 2281 | 1575 | 2283 | 1651 | 2284 | 1725 | 2287 | 1800 | 2288 |
| POST-TEST 2 | 1250 | 2312 | 1325 | 2308 | 1407 | 2285 | 1484 | 2278 | 1562 | 2280 | 1635 | 2286 | 1725 | 2287 | 1800 | 2288 |
| POST-TEST 3 | 1260 | 2302 | 1333 | 2295 | 1415 | 2278 | 1500 | 2275 | 1575 | 2278 | 1650 | 2278 | 1725 | 2282 | 1795 | 2282 |
| POST-TEST 4 | 1250 | 2307 | 1324 | 2303 | 1406 | 2288 | 1490 | 2286 | 1567 | 2292 | 1642 | 2291 | 1718 | 2310 | 1793 | 2308 |
| POST-TEST 5 | 1229 | 2262 | 1291 | 2268 | 1373 | 2277 | 1493 | 2275 | 1568 | 2274 | 1644 | 2278 | 1722 | 2284 | 1795 | 2285 |

All measurements are in millimeters. Column readings are 75 millimeters apart starting on the left side of the vehicle.

All X-axis measurements taken from a reference plane 4718 millimeters from and parallel to the rear bumper.

All Y-axis measurements taken from a reference plane 1425 millimeters from and parallel to the vehicle's longitudinal centerline

TABLE 2 PROFILE MEASUREMENTS AT VEHICLE BUMPER HEIGHT 593 MM

| LOCATION | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
|-------------|------|------|------|------|------|------|------|------|
| PRE-TEST | X | Y | X | Y | X | Y | X | Y |
| | 1875 | 2290 | 1950 | 2293 | 2025 | 2295 | 2100 | 2296 |
| POST-TEST 1 | X | Y | X | Y | X | Y | X | Y |
| | 1875 | 2290 | 1950 | 2293 | 2025 | 2295 | 2100 | 2296 |
| POST-TEST 2 | X | Y | X | Y | X | Y | X | Y |
| | 1875 | 2290 | 1950 | 2293 | 2025 | 2295 | 2100 | 2296 |
| POST-TEST 3 | X | Y | X | Y | X | Y | X | Y |
| | 1870 | 2285 | 1942 | 2285 | 2020 | 2291 | 2095 | 2290 |
| POST-TEST 4 | X | Y | X | Y | X | Y | X | Y |
| | 1868 | 2306 | 1941 | 2298 | 2015 | 2302 | 2091 | 2303 |
| POST-TEST 5 | X | Y | X | Y | X | Y | X | Y |
| | 1871 | 2287 | 1945 | 2295 | 2021 | 2296 | 2096 | 2293 |

| LOCATION | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 |
|-------------|------|------|------|------|------|------|------|------|
| PRE-TEST | X | Y | X | Y | X | Y | X | Y |
| | 2477 | 2305 | 2550 | 2304 | 2625 | 2306 | 2625 | 2306 |
| POST-TEST 1 | X | Y | X | Y | X | Y | X | Y |
| | 2477 | 2305 | 2550 | 2304 | 2625 | 2306 | 2625 | 2306 |
| POST-TEST 2 | X | Y | X | Y | X | Y | X | Y |
| | 2477 | 2305 | 2550 | 2304 | 2625 | 2306 | 2625 | 2306 |
| POST-TEST 3 | X | Y | X | Y | X | Y | X | Y |
| | 2470 | 2300 | 2545 | 2298 | 2620 | 2298 | 2620 | 2298 |
| POST-TEST 4 | X | Y | X | Y | X | Y | X | Y |
| | 2465 | 2314 | 2540 | 2313 | 2618 | 2313 | 2618 | 2313 |
| POST-TEST 5 | X | Y | X | Y | X | Y | X | Y |
| | 2474 | 2307 | 2547 | 2308 | 2628 | 2306 | 2628 | 2306 |

| LOCATION | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
|-------------|----|----|----|----|----|----|----|----|
| PRE-TEST | X | Y | X | Y | X | Y | X | Y |
| | | | | | | | | |
| POST-TEST 1 | X | Y | X | Y | X | Y | X | Y |
| | | | | | | | | |
| POST-TEST 2 | X | Y | X | Y | X | Y | X | Y |
| | | | | | | | | |
| POST-TEST 3 | X | Y | X | Y | X | Y | X | Y |
| | | | | | | | | |
| POST-TEST 4 | X | Y | X | Y | X | Y | X | Y |
| | | | | | | | | |
| POST-TEST 5 | X | Y | X | Y | X | Y | X | Y |
| | | | | | | | | |

All measurements are in millimeters. Column readings are 75 millimeters apart starting on the left side of the vehicle.

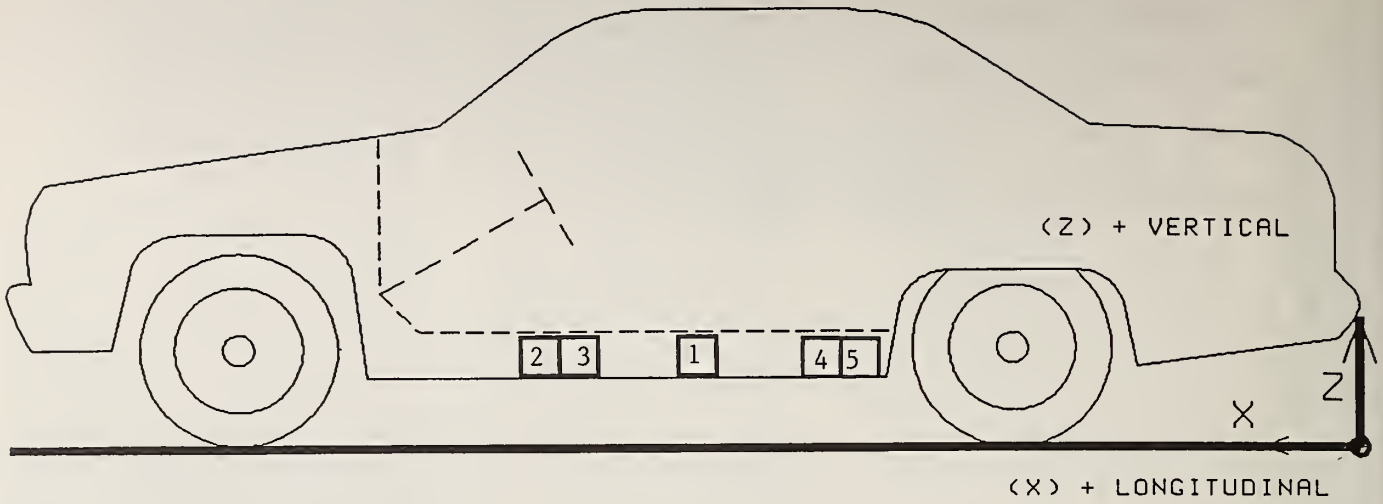
All X-axis measurements taken from a reference plane 4718 millimeters from and parallel to the rear bumper.

All Y-axis measurements taken from a reference plane 1425 millimeters from and parallel to the vehicle's longitudinal centerline

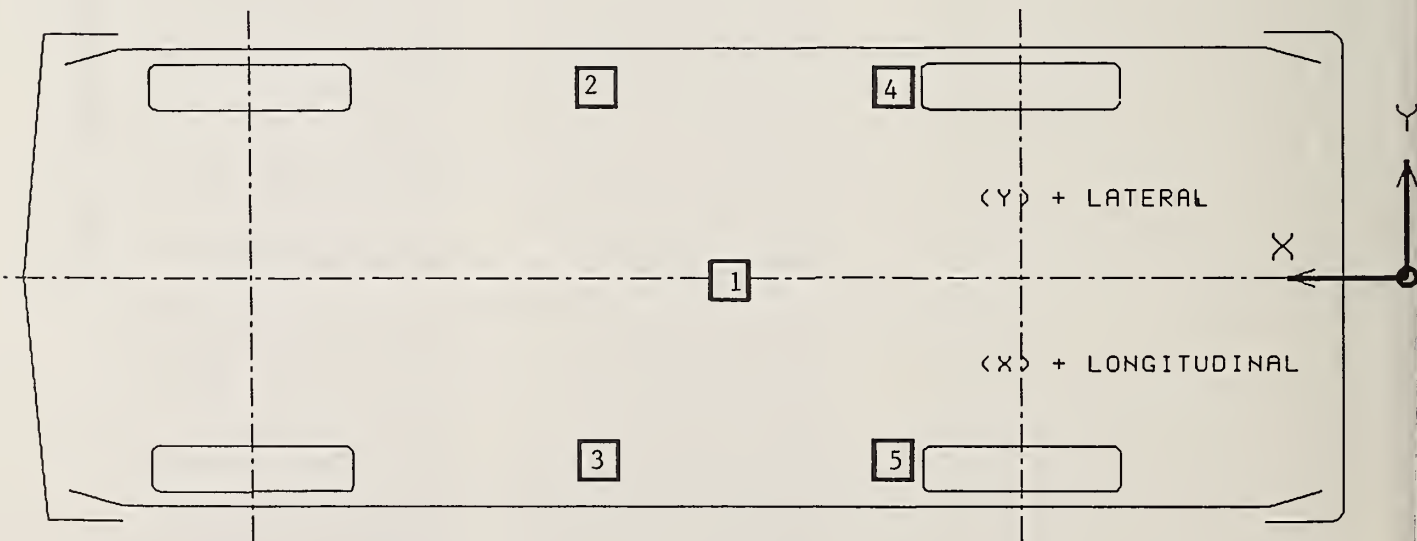
Data Acquisition Explanations

The vehicle's left front sill Y-axis acceleration data channel, LFSYG, exceeded its data channel full scale output between 29 and 31 milliseconds during the fifth impact. This anomaly affected the computations of the vehicle's left front sill Y-axis velocity and displacement during the fifth impact (Test No. 941025-5).

Figure 1 Vehicle Accelerometer Placement

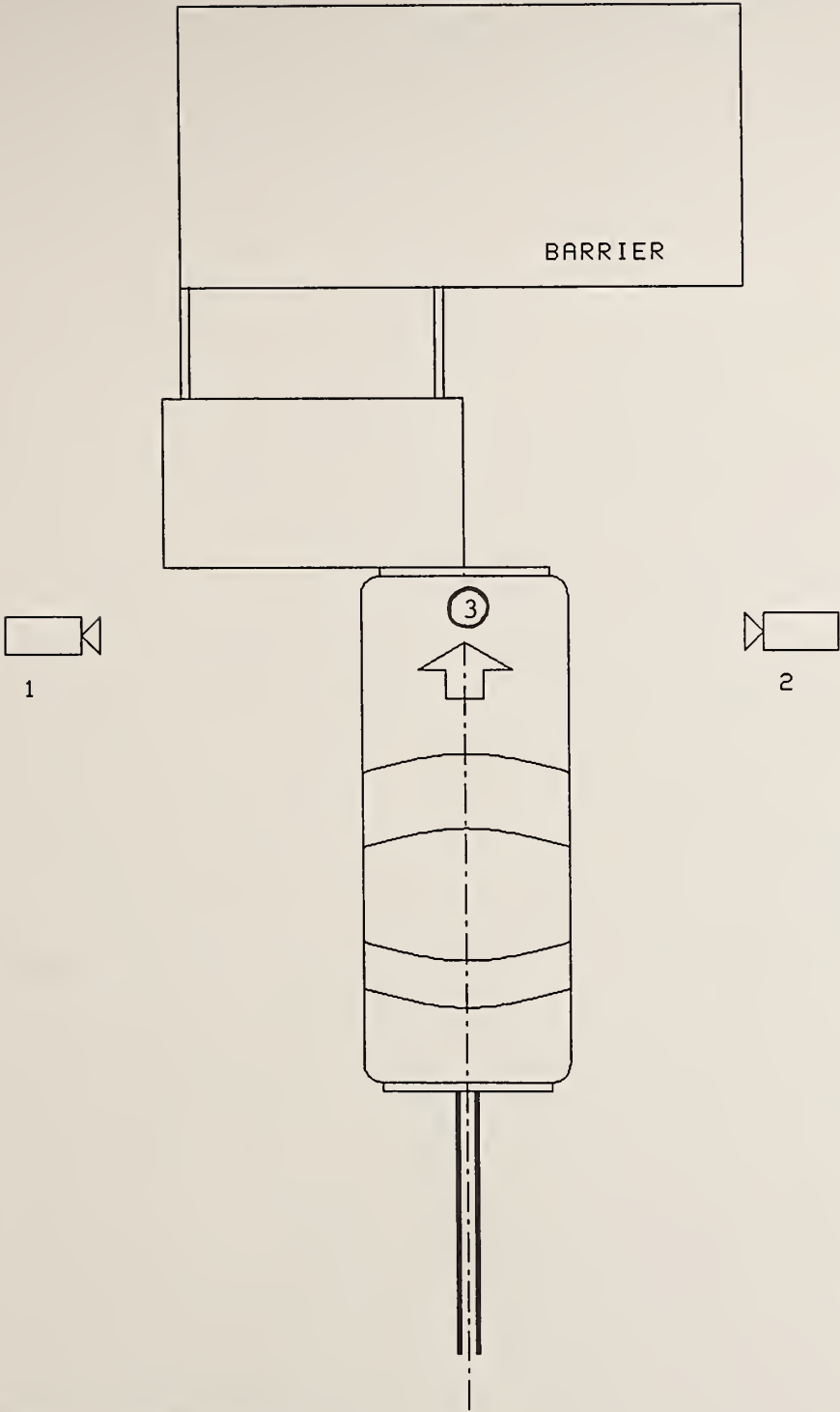


SIDE VIEW



BOTTOM VIEW

Figure 2 Camera Positions



Section 3.0

Test 941025-1 Summary

Table 3 Test Conditions

Test No. 941025-1

Date of Test: 10/25/94

Time of Test: 09:38

Ambient Temperature at Impact Area: 20° C

Intended Impact Velocity: 8.0 kph

Actual Impact Velocity: Primary = 7.7 kph
Secondary = 7.7 kph

Subject Vehicle Data

Length of Direct Contact Damage: 485 mm

Maximum Cumulative Crush at
Vehicle Bumper Height: 25 mm

Vehicle Attitudes:

Post-Test: LF: 771; RF: 770; LR: 778; RR: 773

All distance measurements are in millimeters.

Table 4 Vehicle Crush At Vehicle Bumper Height

Test No. 941025-1

| | | |
|----|---|-----|
| FL | = | 720 |
| C1 | = | 8 |
| C2 | = | 19 |
| C3 | = | 21 |
| C4 | = | 19 |
| C5 | = | 13 |
| C6 | = | 9 |

NOTE: FL is the post-test length of the damaged surface.

Measurements C1 - C6 were spaced equally apart over the post-impact length of the damaged surface. This distance is defined as length "FL" on the vehicle crush profile plot.

All measurements are in millimeters.

FIGURE 3 VEHICLE PROFILE AT BUMPER HEIGHT - TEST 1

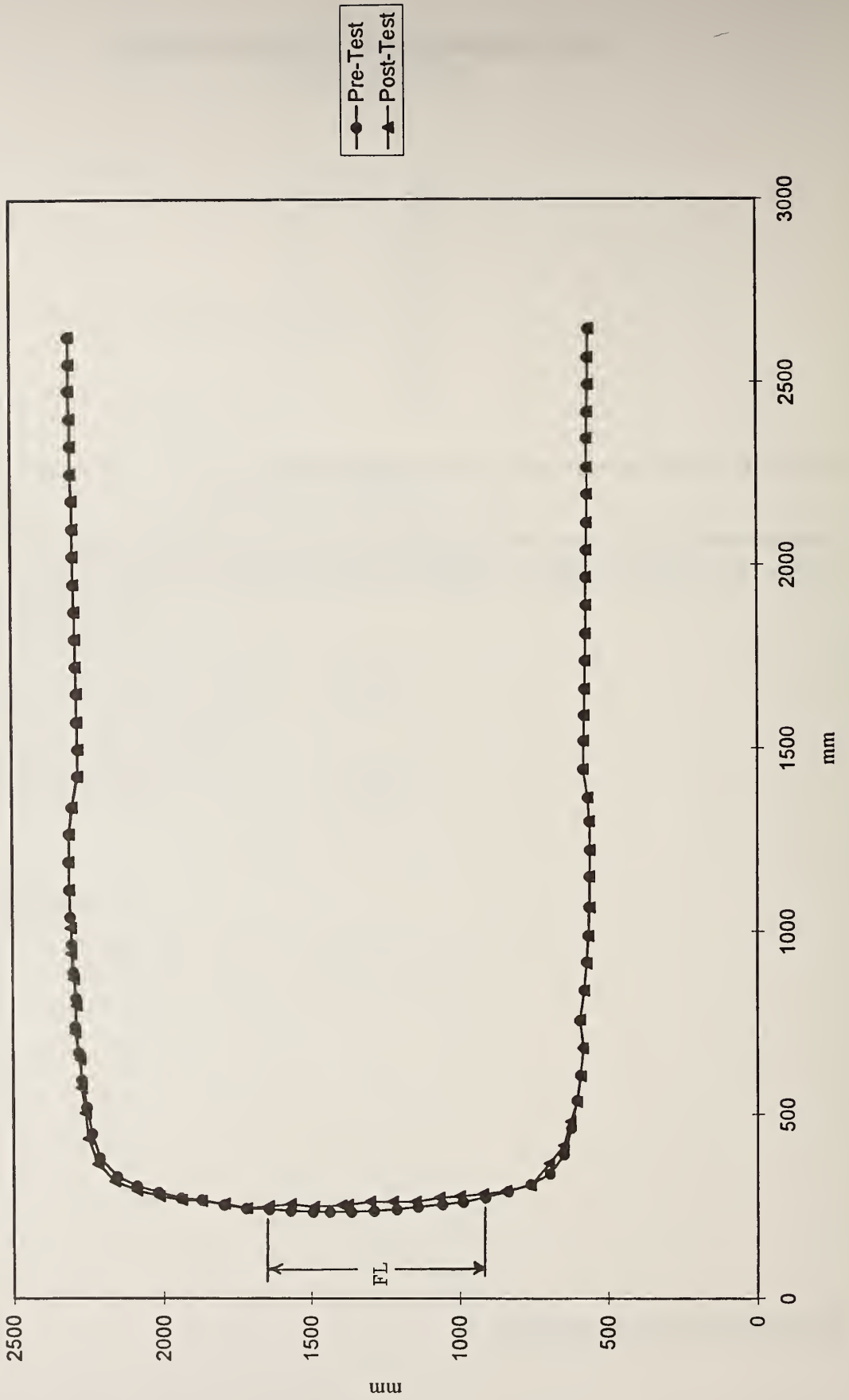


Table 5 Impacted Vehicle Measurements

Test No.: 941025-1

Vehicle Make/Model: Plymouth/Voyager

| No. | Type of measurement | Pre-test | Post-test | Diff. |
|-----|--|----------|-----------|-------|
| X1 | Total length of vehicle at centerline | 4509 | 4492 | 17 |
| X2 | Rear surface of vehicle to front of engine block | 3873 | 3873 | 0 |
| X3 | Rear surface of vehicle to firewall | 3595 | 3595 | 0 |
| X4 | Rear surface of vehicle to upper leading edge of right door | 3272 | 3272 | 0 |
| X5 | Rear surface of vehicle to upper leading edge of left door | 3263 | 3263 | 0 |
| X6 | Rear surface of vehicle to lower leading edge of right door | 3197 | 3197 | 0 |
| X7 | Rear surface of vehicle to lower leading edge of left door | 3191 | 3191 | 0 |
| X8 | Rear surface of vehicle to upper trailing edge of right door | 2190 | 2190 | 0 |
| X9 | Rear surface of vehicle to upper trailing edge of left door | 2182 | 2182 | 0 |
| X10 | Rear surface of vehicle to lower trailing edge of right door | 2183 | 2183 | 0 |
| X11 | Rear surface of vehicle to lower trailing edge of left door | 2177 | 2177 | 0 |
| X12 | Rear surface of vehicle to bottom of "A" post on right side | 3194 | 3194 | 0 |
| X13 | Rear surface of vehicle to bottom of "A" post on left side | 3225 | 3225 | 0 |
| X14 | Rear surface of vehicle to firewall - right side | 3543 | 3543 | 0 |
| X15 | Rear surface of vehicle to firewall - left side | 3554 | 3554 | 0 |
| X16 | Rear surface of vehicle to steering wheel center | 2759 | 2759 | 0 |
| X17 | Center of steering column to "A" post | 308 | 308 | 0 |
| X18 | Center of steering column to headliner | 468 | 468 | 0 |
| X19 | Rear surface of vehicle to right side of front bumper | 4411 | 4411 | 0 |
| X20 | Rear surface of vehicle to left side of front bumper | 4393 | 4393 | 0 |
| X21 | Length of engine block | 490 | 490 | 0 |

All measurements are in millimeters.

Table 6 Vehicle Accelerometer Locations And Data Summary

| TEST NUMBER: No. LOCATION | X | Y | Z | POSITIVE DIRECTION | NEGATIVE DIRECTION |
|--------------------------------|---------|---------|--------|-----------------------|-----------------------|
| 1 VEHICLE CENTER OF GRAVITY | 2502 mm | 0 mm | 466 mm | | |
| LONGITUDINAL | | | | 0.4 g @ 213.0 ms | 4.2 g @ 57.5 ms |
| LATERAL | | | | 1.0 g @ 37.4 ms | 1.1 g @ 85.4 ms |
| VERTICAL | | | | 2.1 g @ 46.7 ms | 1.9 g @ 32.7 ms |
| RESULTANT | | | | 4.5 g @ 33.0 ms | |
| 2 LEFT REAR SILL | 2012 mm | 675 mm | 480 mm | | |
| LONGITUDINAL | | | | 0.5 g @ 262.6 ms | 4.7 g @ 39.6 ms |
| LATERAL | | | | 0.8 g @ 242.6 ms | 1.3 g @ 43.0 ms |
| 3 RIGHT REAR SILL | 1934 mm | -700 mm | 487 mm | | |
| LONGITUDINAL | | | | 0.8 g @ 271.2 ms | 3.3 g @ 73.7 ms |
| LATERAL | | | | 1.0 g @ 144.7 ms | 0.8 g @ 64.5 ms |
| 4 LEFT FRONT SILL | 2917 mm | 633 mm | 435 mm | | |
| LONGITUDINAL | | | | 0.6 g @ 270.2 ms | 4.8 g @ 39.4 ms |
| LATERAL | | | | 1.2 g @ 129.7 ms | 1.2 g @ 82.4 ms |
| 5 RIGHT FRONT SILL | 2914 mm | -633 mm | 435 mm | | |
| LONGITUDINAL | | | | 0.6 g @ 293.5 ms | 3.5 g @ 57.1 ms |
| LATERAL | | | | 1.4 g @ 38.9 ms | 1.1 g @ 86.6 ms |

REFERENCE: X: + FORWARD FROM VEHICLE'S REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE'S LONGITUDINAL CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

Table 7 Camera Information

Test No. 941025-1

| <u>Camera Number</u> | <u>Location</u> | <u>Type</u> | <u>Lens (mm)</u> | <u>Speed (fps)</u> | <u>Purpose of Camera Data</u> |
|--------------------------|-----------------|-------------|----------------------|------------------------|-----------------------------------|
| 1 | Left tight | Photosonic | 13 | 1002 | Impact overall |
| 2 | Right tight | Photosonic | 13 | 1000 | Impact overall |
| 3 | Overhead | Photosonic | 13 | 998 | Impact overall |

Section 4.0

Test 941025-2 Summary

Table 9 Vehicle Crush At Vehicle Bumper Height

Test No. 941025-2

| | | |
|----|---|------|
| FL | = | 1289 |
| C1 | = | 81 |
| C2 | = | 140 |
| C3 | = | 182 |
| C4 | = | 142 |
| C5 | = | 76 |
| C6 | = | 19 |

NOTE: FL is the post-test length of the damaged surface.

Measurements C1 - C6 were spaced equally apart over the post-impact length of the damaged surface. This distance is defined as length "FL" on the vehicle crush profile plot.

All measurements are in millimeters.

FIGURE 4 VEHICLE PROFILE AT BUMPER HEIGHT - TEST 2

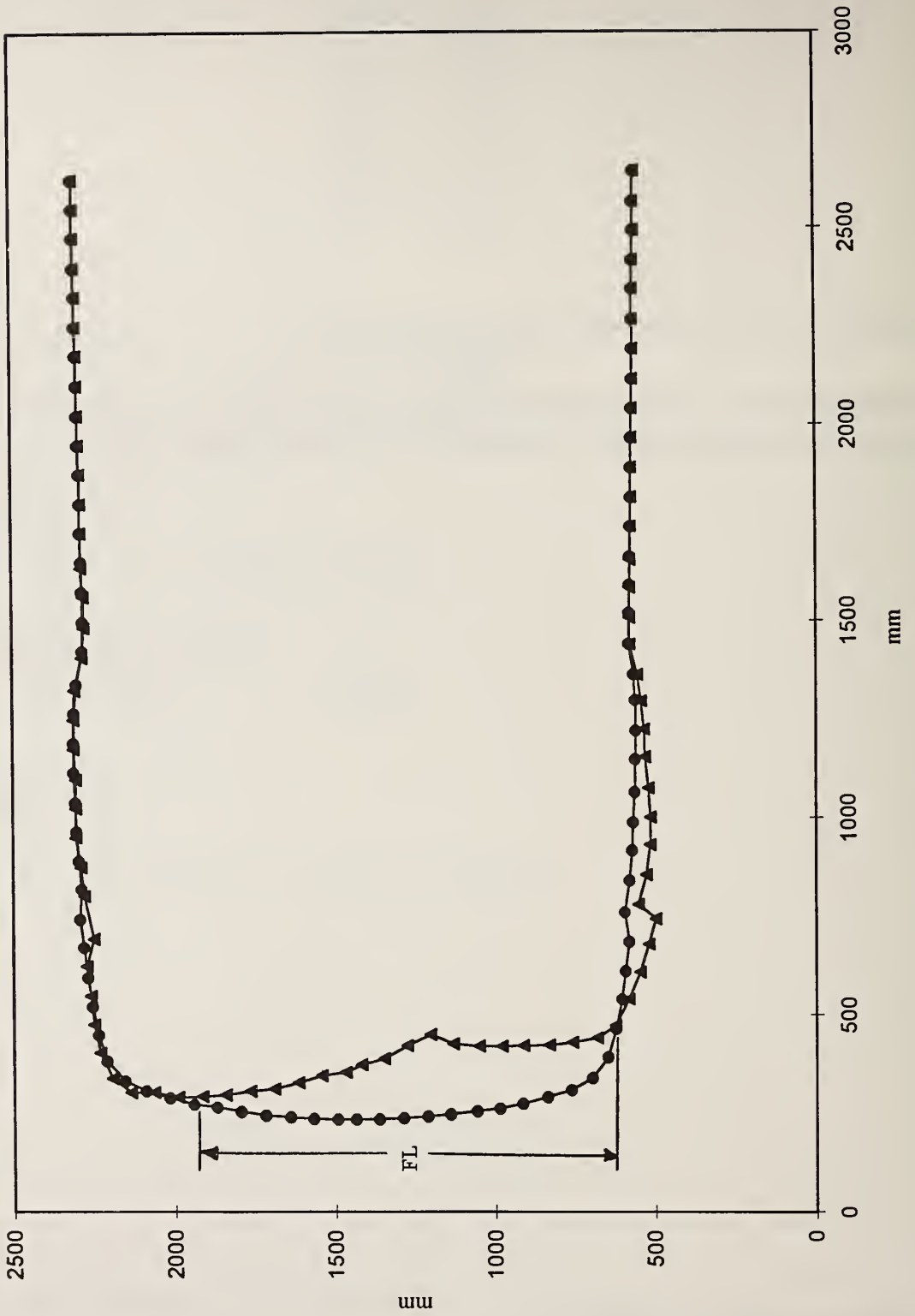


Table 10 Impacted Vehicle Measurements

Test No.: 941025-2

Vehicle Make/Model: Plymouth/Voyager

| No. | Type of measurement | Pre-test | Post-test | Diff. |
|-----|--|----------|-----------------|-----------------|
| X1 | Total length of vehicle at centerline | 4492 | 4379 | 113 |
| X2 | Rear surface of vehicle to front of engine block | 3873 | NA ¹ | NA ¹ |
| X3 | Rear surface of vehicle to firewall | 3595 | NA ¹ | NA ¹ |
| X4 | Rear surface of vehicle to upper leading edge of right door | 3272 | 3268 | 4 |
| X5 | Rear surface of vehicle to upper leading edge of left door | 3263 | 3265 | -2 |
| X6 | Rear surface of vehicle to lower leading edge of right door | 3197 | 3200 | -3 |
| X7 | Rear surface of vehicle to lower leading edge of left door | 3191 | 3185 | 6 |
| X8 | Rear surface of vehicle to upper trailing edge of right door | 2190 | 2205 | -15 |
| X9 | Rear surface of vehicle to upper trailing edge of left door | 2182 | 2180 | 2 |
| X10 | Rear surface of vehicle to lower trailing edge of right door | 2183 | 2185 | -2 |
| X11 | Rear surface of vehicle to lower trailing edge of left door | 2177 | 2180 | -3 |
| X12 | Rear surface of vehicle to bottom of "A" post on right side | 3194 | 3240 | 46 |
| X13 | Rear surface of vehicle to bottom of "A" post on left side | 3225 | NA ¹ | NA ¹ |
| X14 | Rear surface of vehicle to firewall - right side | 3543 | NA ¹ | NA ¹ |
| X15 | Rear surface of vehicle to firewall - left side | 3554 | NA ¹ | NA ¹ |
| X16 | Rear surface of vehicle to steering wheel center | 2759 | 2821 | -62 |
| X17 | Center of steering column to "A" post | 308 | 286 | 22 |
| X18 | Center of steering column to headliner | 468 | 491 | -23 |
| X19 | Rear surface of vehicle to right side of front bumper | 4411 | 4427 | -16 |
| X20 | Rear surface of vehicle to left side of front bumper | 4393 | 4320 | 73 |
| X21 | Length of engine block | 490 | NA ¹ | NA ¹ |

¹ The vehicle's crush obstructed the measurement.

All measurements are in millimeters.

Table 11 Vehicle Accelerometer Locations And Data Summary

| TEST NUMBER: 941025-2 No. LOCATION | X | Y | Z | POSITIVE DIRECTION | NEGATIVE DIRECTION |
|---------------------------------------|---------|---------|--------|-----------------------|-----------------------|
| 1 VEHICLE CENTER OF GRAVITY | 2502 mm | 0 mm | 466 mm | | |
| LONGITUDINAL | | | | 1.8 g @ 21.2 ms | 8.8 g @ 28.8 ms |
| LATERAL | | | | 1.5 g @ 22.1 ms | 1.5 g @ 26.2 ms |
| VERTICAL | | | | 9.4 g @ 21.6 ms | 5.8 g @ 28.4 ms |
| RESULTANT | | | | 10.5 g @ 28.6 ms | |
| 2 LEFT REAR SILL | 2012 mm | 675 mm | 480 mm | | |
| LONGITUDINAL | | | | 1.0 g @ 20.4 ms | 8.7 g @ 28.5 ms |
| LATERAL | | | | 2.7 g @ 22.0 ms | 3.0 g @ 25.1 ms |
| 3 RIGHT REAR SILL | 1934 mm | -700 mm | 487 mm | | |
| LONGITUDINAL | | | | 2.5 g @ 21.0 ms | 8.2 g @ 75.0 ms |
| LATERAL | | | | 1.3 g @ 134.8 ms | 1.8 g @ 27.4 ms |
| 4 LEFT FRONT SILL | 2917 mm | 633 mm | 435 mm | | |
| LONGITUDINAL | | | | 1.1 g @ 19.5 ms | 9.1 g @ 28.0 ms |
| LATERAL | | | | 1.9 g @ 21.3 ms | 2.8 g @ 77.0 ms |
| 5 RIGHT FRONT SILL | 2914 mm | -633 mm | 435 mm | | |
| LONGITUDINAL | | | | 3.4 g @ 21.2 ms | 8.7 g @ 28.7 ms |
| LATERAL | | | | 2.2 g @ 14.5 ms | 1.3 g @ 85.8 ms |

REFERENCE: X: + FORWARD FROM VEHICLE'S REAR BUMPER
Y: + LEFTWARD FROM VEHICLE'S LONGITUDINAL CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

Table 12 Camera Information

Test No. 941025-2

| <u>Camera Number</u> | <u>Location</u> | <u>Type</u> | <u>Lens (mm)</u> | <u>Speed (fps)</u> | <u>Purpose of Camera Data</u> |
|--------------------------|-----------------|-------------|----------------------|------------------------|-----------------------------------|
| 1 | Left tight | Photosonic | 13 | 1002 | Impact overall |
| 2 | Right tight | Photosonic | 13 | 1002 | Impact overall |
| 3 | Overhead | Photosonic | 13 | 998 | Impact overall |

Section 5.0

Test 941025-3 Summary

Table 13 Test Conditions

Test No. 941025-3

Date of Test: 10/25/94

Time of Test: 12:27

Ambient Temperature at Impact Area: 20° C

Intended Impact Velocity: 16.0 kph

Actual Impact Velocity: Primary = 15.8 kph
 Secondary = 15.8 kph

Subject Vehicle Data

Length of Direct Contact Damage: 732 mm

Maximum Cumulative Crush at
Vehicle Bumper Height: 282 mm

Vehicle Attitudes:

Post-Test: LF: 768; RF: 764; LR: 772; RR: 775

All distance measurements are in millimeters.

Table 14 Vehicle Crush At Vehicle Bumper Height

Test No. 941025-3

| | | |
|----|---|------|
| FL | = | 1490 |
| C1 | = | 107 |
| C2 | = | 184 |
| C3 | = | 270 |
| C4 | = | 241 |
| C5 | = | 111 |
| C6 | = | 7 |

NOTE: FL is post-test length of damaged surface.

Measurements C1 - C6 were spaced equally apart over the post-impact length of the damaged surface. This distance is defined as length "FL" on the vehicle crush profile plot.

All measurements are in millimeters.

FIGURE 5 VEHICLE PROFILE AT BUMPER HEIGHT - TEST 3

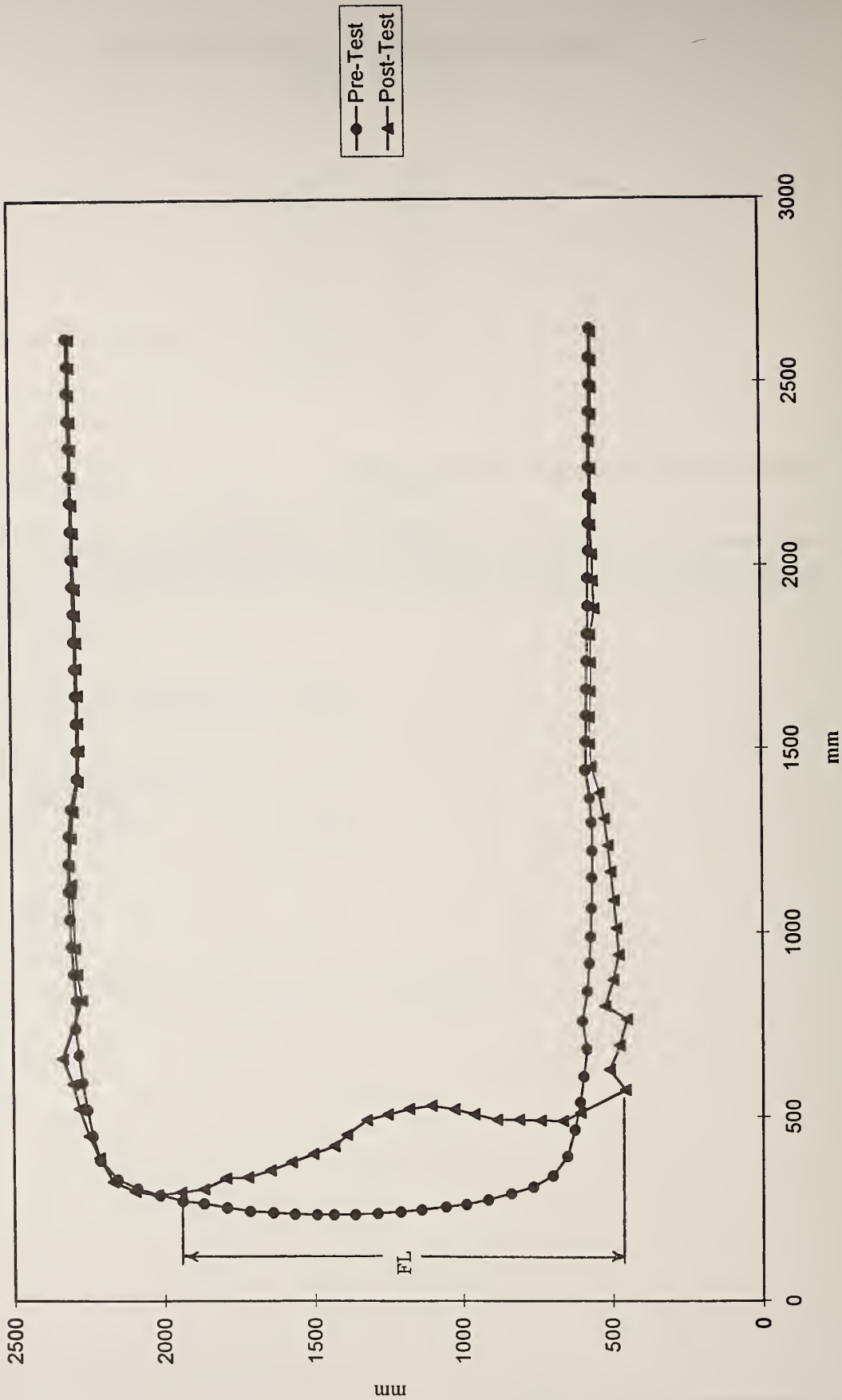


Table 15 Impacted Vehicle Measurements

Test No.: 941025-3

Vehicle Make/Model: Plymouth/Voyager

| No. | Type of measurement | Pre-test | Post-test | Diff. |
|-----|--|-----------------|-----------------|-----------------|
| X1 | Total length of vehicle at centerline | 4379 | 4306 | 73 |
| X2 | Rear surface of vehicle to front of engine block | NA ¹ | NA ¹ | NA ¹ |
| X3 | Rear surface of vehicle to firewall | NA ¹ | NA ¹ | NA ¹ |
| X4 | Rear surface of vehicle to upper leading edge of right door | 3268 | 3270 | -2 |
| X5 | Rear surface of vehicle to upper leading edge of left door | 3265 | 3265 | 0 |
| X6 | Rear surface of vehicle to lower leading edge of right door | 3200 | 3195 | 5 |
| X7 | Rear surface of vehicle to lower leading edge of left door | 3185 | 3187 | -2 |
| X8 | Rear surface of vehicle to upper trailing edge of right door | 2205 | 2190 | 15 |
| X9 | Rear surface of vehicle to upper trailing edge of left door | 2180 | 2185 | -5 |
| X10 | Rear surface of vehicle to lower trailing edge of right door | 2185 | 2185 | 0 |
| X11 | Rear surface of vehicle to lower trailing edge of left door | 2180 | 2180 | 0 |
| X12 | Rear surface of vehicle to bottom of "A" post on right side | 3240 | 3209 | 31 |
| X13 | Rear surface of vehicle to bottom of "A" post on left side | NA ¹ | NA ¹ | NA ¹ |
| X14 | Rear surface of vehicle to firewall - right side | NA ¹ | NA ¹ | NA ¹ |
| X15 | Rear surface of vehicle to firewall - left side | NA ¹ | NA ¹ | NA ¹ |
| X16 | Rear surface of vehicle to steering wheel center | 2821 | 2815 | 6 |
| X17 | Center of steering column to "A" post | 286 | 284 | 2 |
| X18 | Center of steering column to headliner | 491 | 450 | 41 |
| X19 | Rear surface of vehicle to right side of front bumper | 4427 | 4431 | -4 |
| X20 | Rear surface of vehicle to left side of front bumper | 4466 | 4419 | 47 |
| X21 | Length of engine block | NA ¹ | NA ¹ | NA ¹ |

¹ The vehicle's crush obstructed the measurement.

All measurements are in millimeters.

Table 16 Vehicle Accelerometer Locations And Data Summary

| TEST NUMBER: No. LOCATION | X | Y | Z | POSITIVE DIRECTION | NEGATIVE DIRECTION |
|--------------------------------|---------|---------|--------|-----------------------|-----------------------|
| 1 VEHICLE CENTER OF GRAVITY | 2502 mm | 0 mm | 466 mm | | |
| LONGITUDINAL | | | | 1.2 g @ 287.4 ms | 12.0 g @ 39.4 ms |
| LATERAL | | | | 1.0 g @ 191.1 ms | 1.2 g @ 77.5 ms |
| VERTICAL | | | | 5.1 g @ 33.9 ms | 4.7 g @ 91.0 ms |
| RESULTANT | | | | 12.3 g @ 39.1 ms | |
| 2 LEFT REAR SILL | 2012 mm | 675 mm | 480 mm | | |
| LONGITUDINAL | | | | 1.1 g @ 287.2 ms | 11.9 g @ 39.0 ms |
| LATERAL | | | | 1.3 g @ 125.0 ms | 4.4 g @ 40.7 ms |
| 3 RIGHT REAR SILL | 1934 mm | -700 mm | 487 mm | | |
| LONGITUDINAL | | | | 1.4 g @ 190.7 ms | 12.0 g @ 39.3 ms |
| LATERAL | | | | 1.2 g @ 170.1 ms | 2.3 g @ 41.7 ms |
| 4 LEFT FRONT SILL | 2917 mm | 633 mm | 435 mm | | |
| LONGITUDINAL | | | | 1.1 g @ 191.8 ms | 11.5 g @ 37.7 ms |
| LATERAL | | | | 1.1 g @ 48.6 ms | 2.2 g @ 39.7 ms |
| 5 RIGHT FRONT SILL | 2914 mm | -633 mm | 435 mm | | |
| LONGITUDINAL | | | | 1.0 g @ 131.8 ms | 11.7 g @ 39.2 ms |
| LATERAL | | | | 1.4 g @ 56.9 ms | 1.6 g @ 84.8 ms |

REFERENCE: X: + FORWARD FROM VEHICLE'S REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE'S LONGITUDINAL CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

Table 17 Camera Information

Test No. 941025-3

| <u>Camera Number</u> | <u>Location</u> | <u>Type</u> | <u>Lens (mm)</u> | <u>Speed (fps)</u> | <u>Purpose of Camera Data</u> |
|--------------------------|-----------------|-------------|----------------------|------------------------|-----------------------------------|
| 1 | Left tight | Photosonic | 13 | 1005 | Impact overall |
| 2 | Right tight | Photosonic | 13 | 1002 | Impact overall |
| 3 | Overhead | Photosonic | 13 | 998 | Impact overall |

Section 6.0

Test 941025-4 Summary

Table 19 Vehicle Crush At Vehicle Bumper Height

Test No. 941025-4

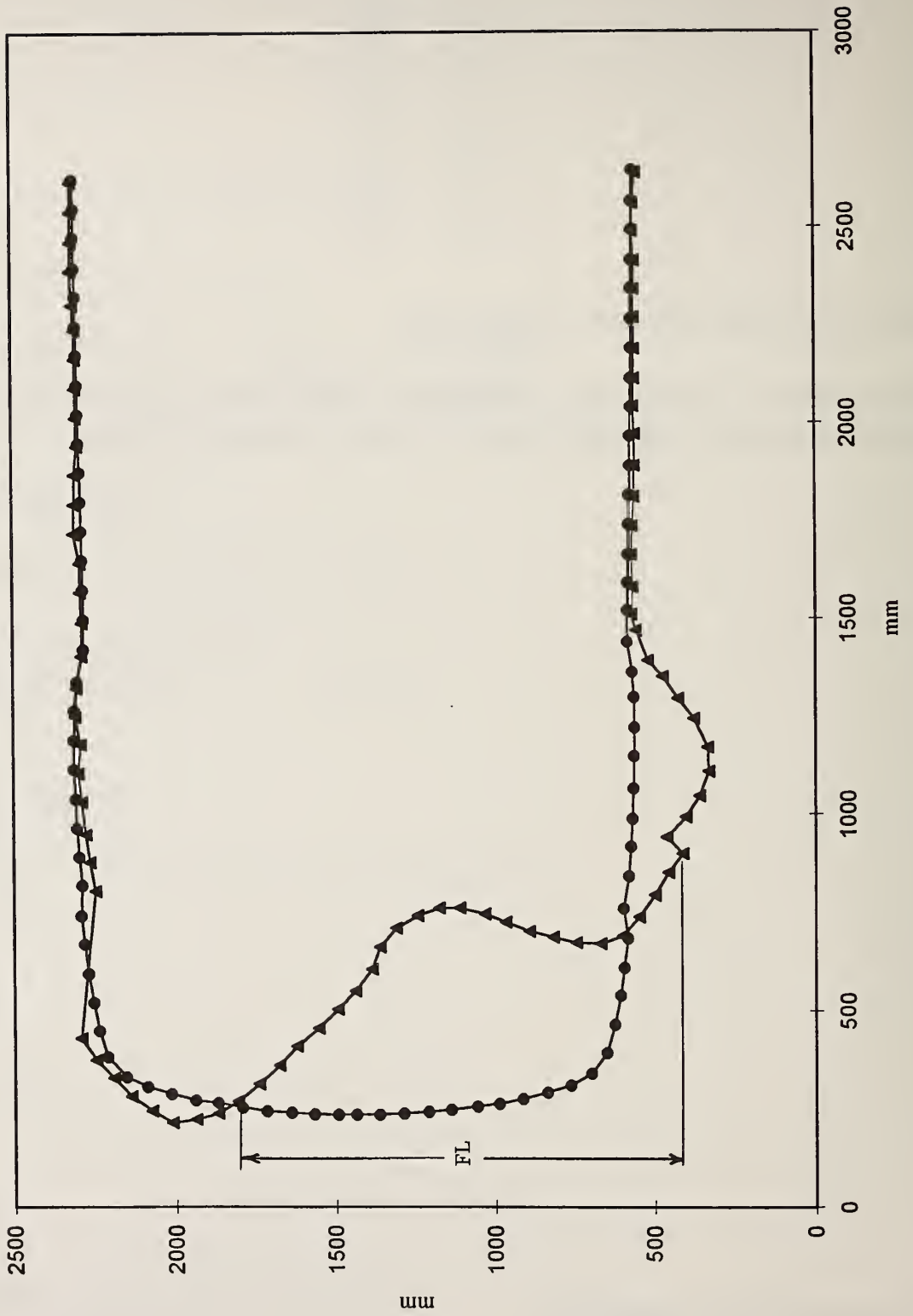
| | | |
|----|---|------|
| FL | = | 1882 |
| C1 | = | 215 |
| C2 | = | 382 |
| C3 | = | 518 |
| C4 | = | 220 |
| C5 | = | -96 |
| C6 | = | -312 |

NOTE: FL is post-test length of damaged surface.

Measurements C1 - C6 were spaced equally apart over the post-impact length of the damaged surface. This distance is defined as length "FL" on the vehicle crush profile plot.

All measurements are in millimeters.

FIGURE 6 VEHICLE PROFILE AT BUMPER HEIGHT - TEST 4



● Pre-Test
▲ Post-Test

Table 20 Impacted Vehicle Measurements

Test No.: 941025-4

Vehicle Make/Model: Plymouth/Voyager

| No. | Type of measurement | Pre-test | Post-test | Diff. |
|-----|--|-----------------|-----------------|-----------------|
| X1 | Total length of vehicle at centerline | 4306 | 4110 | 196 |
| X2 | Rear surface of vehicle to front of engine block | NA ¹ | NA ¹ | NA ¹ |
| X3 | Rear surface of vehicle to firewall | NA ¹ | NA ¹ | NA ¹ |
| X4 | Rear surface of vehicle to upper leading edge of right door | 3270 | 3261 | 9 |
| X5 | Rear surface of vehicle to upper leading edge of left door | 3265 | 3259 | 6 |
| X6 | Rear surface of vehicle to lower leading edge of right door | 3195 | 3198 | -3 |
| X7 | Rear surface of vehicle to lower leading edge of left door | 3187 | 3183 | 4 |
| X8 | Rear surface of vehicle to upper trailing edge of right door | 2190 | 2185 | 5 |
| X9 | Rear surface of vehicle to upper trailing edge of left door | 2185 | 2174 | 11 |
| X10 | Rear surface of vehicle to lower trailing edge of right door | 2185 | 2177 | 8 |
| X11 | Rear surface of vehicle to lower trailing edge of left door | 2180 | 2177 | 3 |
| X12 | Rear surface of vehicle to bottom of "A" post on right side | 3209 | 3176 | 33 |
| X13 | Rear surface of vehicle to bottom of "A" post on left side | NA ¹ | NA ¹ | NA ¹ |
| X14 | Rear surface of vehicle to firewall - right side | NA ¹ | NA ¹ | NA ¹ |
| X15 | Rear surface of vehicle to firewall - left side | NA ¹ | NA ¹ | NA ¹ |
| X16 | Rear surface of vehicle to steering wheel center | 2815 | 2776 | 39 |
| X17 | Center of steering column to "A" post | 284 | 358 | -74 |
| X18 | Center of steering column to headliner | 450 | 422 | 28 |
| X19 | Rear surface of vehicle to right side of front bumper | 4431 | 4507 | -76 |
| X20 | Rear surface of vehicle to left side of front bumper | 4419 | 4237 | 182 |
| X21 | Length of engine block | NA ¹ | NA ¹ | NA ¹ |

¹ The vehicle's crush obstructed the measurement.

All measurements are in millimeters.

Table 21 Vehicle Accelerometer Locations And Data Summary

| TEST NUMBER: 941025-4 No. LOCATION | X | Y | Z | POSITIVE DIRECTION | NEGATIVE DIRECTION |
|--|---------|---------|--------|--|--|
| 1 VEHICLE CENTER OF GRAVITY LONGITUDINAL LATERAL VERTICAL RESULTANT | 2502 mm | 0 mm | 466 mm | 1.1 g @ 127.2 ms 6.9 g @ 32.7 ms 5.7 g @ 51.6 ms 19.7 g @ 39.4 ms | 18.0 g @ 38.8 ms 7.8 g @ 39.7 ms 8.3 g @ 11.1 ms |
| 2 LEFT REAR SILL LONGITUDINAL LATERAL | 2012 mm | 675 mm | 480 mm | 1.3 g @ 128.1 ms 4.3 g @ 32.8 ms | 16.2 g @ 61.5 ms 9.7 g @ 39.3 ms |
| 3 RIGHT REAR SILL LONGITUDINAL LATERAL | 1934 mm | -700 mm | 487 mm | 2.0 g @ 126.4 ms 3.9 g @ 32.8 ms | 18.9 g @ 38.5 ms 7.0 g @ 39.0 ms |
| 4 LEFT FRONT SILL LONGITUDINAL LATERAL | 2917 mm | 633 mm | 435 mm | 0.7 g @ 143.0 ms 10.6 g @ 32.6 ms | 18.5 g @ 58.6 ms 11.3 g @ 39.5 ms |
| 5 RIGHT FRONT SILL LONGITUDINAL LATERAL | 2914 mm | -633 mm | 435 mm | 1.4 g @ 127.6 ms 7.1 g @ 30.2 ms | 20.0 g @ 38.0 ms 6.5 g @ 37.9 ms |

REFERENCE: X: + FORWARD FROM VEHICLE'S REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE'S LONGITUDINAL CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

Table 22 Camera Information

Test No. 941025-4

| Camera Number | Location | Type | Lens (mm) | Speed (fps) | Purpose of Camera Data |
|--------------------------|-----------------|-------------|----------------------|------------------------|-----------------------------------|
| 1 | Left tight | Photosonic | 13 | 1005 | Impact overall |
| 2 | Right tight | Photosonic | 13 | 1002 | Impact overall |
| 3 | Overhead | Photosonic | 13 | 998 | Impact overall |

Section 7.0

Test 941025-5 Summary

Table 24 Vehicle Crush At Vehicle Bumper Height

Test No. 941025-5

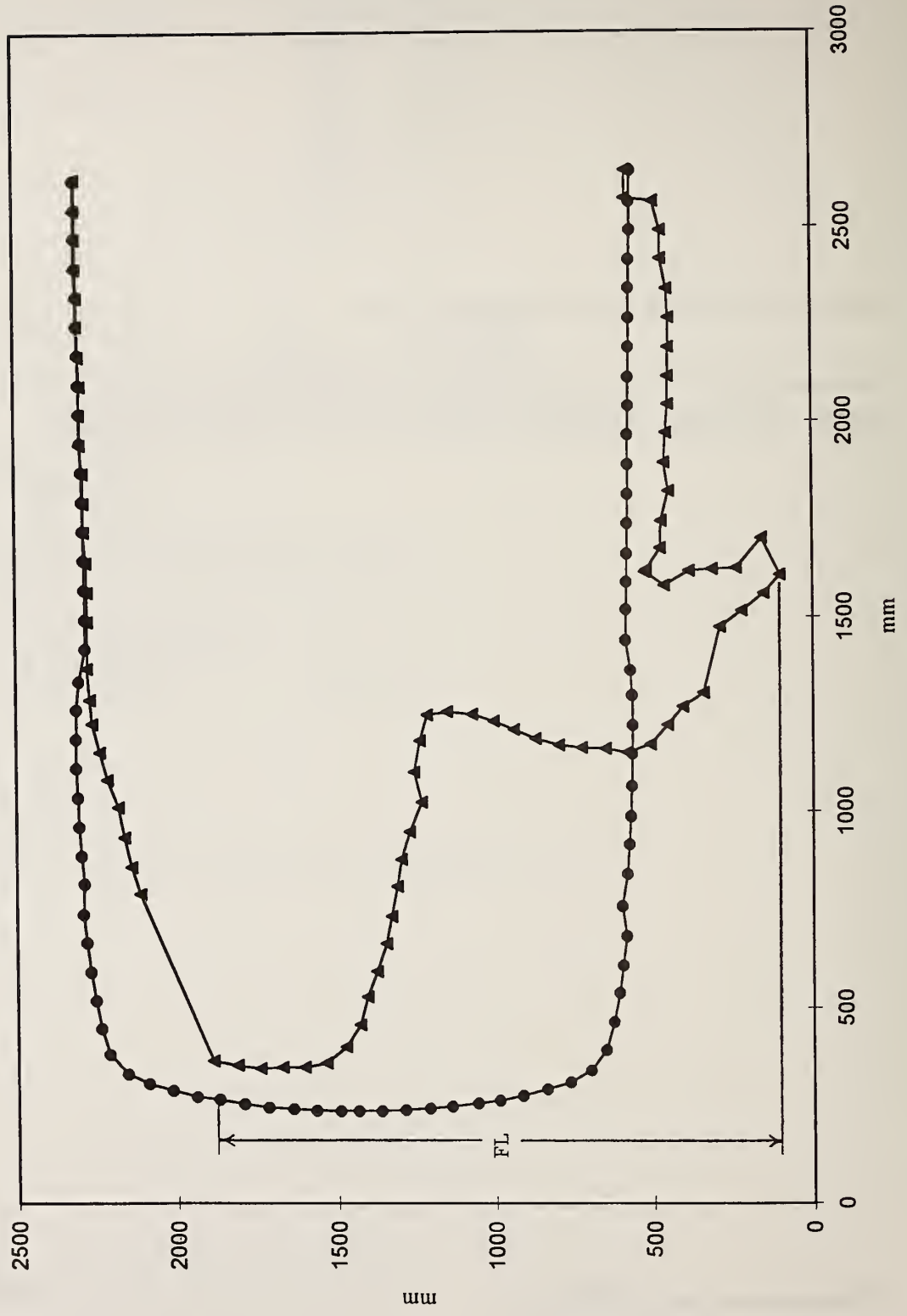
| | | |
|----|---|------|
| FL | = | 1655 |
| C1 | = | 635 |
| C2 | = | 701 |
| C3 | = | 891 |
| C4 | = | 1016 |
| C5 | = | 58 |
| C6 | = | -316 |

NOTE: FL is post-test length of damaged surface.

Measurements C1 - C6 were spaced equally apart over the post-impact length of the damaged surface. This distance is defined as length "FL" on the vehicle crush profile plot.

All measurements are in millimeters.

FIGURE 7 VEHICLE PROFILE AT BUMPER HEIGHT - TEST 5



● Pre-Test
▲ Post-Test

Table 25 Impacted Vehicle Measurements

Test No.: 941025-5

Vehicle Make/Model: Plymouth/Voyager

| No. | Type of measurement | Pre-test | Post-test | Diff. |
|-----|--|-----------------|-----------------|-----------------|
| X1 | Total length of vehicle at centerline | 4110 | 3755 | 355 |
| X2 | Rear surface of vehicle to front of engine block | NA ¹ | NA ¹ | NA ¹ |
| X3 | Rear surface of vehicle to firewall | NA ¹ | NA ¹ | NA ¹ |
| X4 | Rear surface of vehicle to upper leading edge of right door | 3261 | 3286 | -25 |
| X5 | Rear surface of vehicle to upper leading edge of left door | 3259 | 3087 | 172 |
| X6 | Rear surface of vehicle to lower leading edge of right door | 3198 | 3213 | -15 |
| X7 | Rear surface of vehicle to lower leading edge of left door | 3183 | 3141 | 42 |
| X8 | Rear surface of vehicle to upper trailing edge of right door | 2185 | 2204 | -19 |
| X9 | Rear surface of vehicle to upper trailing edge of left door | 2174 | 2131 | 43 |
| X10 | Rear surface of vehicle to lower trailing edge of right door | 2177 | 2200 | -23 |
| X11 | Rear surface of vehicle to lower trailing edge of left door | 2177 | 2137 | 40 |
| X12 | Rear surface of vehicle to bottom of "A" post on right side | 3176 | NA ¹ | NA ¹ |
| X13 | Rear surface of vehicle to bottom of "A" post on left side | NA ¹ | NA ¹ | NA ¹ |
| X14 | Rear surface of vehicle to firewall - right side | NA ¹ | NA ¹ | NA ¹ |
| X15 | Rear surface of vehicle to firewall - left side | NA ¹ | NA ¹ | NA ¹ |
| X16 | Rear surface of vehicle to steering wheel center | 2776 | 2448 | 328 |
| X17 | Center of steering column to "A" post | 358 | 379 | -21 |
| X18 | Center of steering column to headliner | 422 | 534 | -112 |
| X19 | Rear surface of vehicle to right side of front bumper | 4507 | 4329 | 178 |
| X20 | Rear surface of vehicle to left side of front bumper | 4237 | 3745 | 492 |
| X21 | Length of engine block | NA ¹ | 490 | NA ¹ |

¹ The vehicle's crush obstructed the measurement.

All measurements are in millimeters.

Table 26 Vehicle Accelerometer Locations And Data Summary

| TEST NUMBER: 941025-5 No. LOCATION | X | Y | Z | POSITIVE DIRECTION | NEGATIVE DIRECTION |
|---------------------------------------|---------|---------|--------|-----------------------|-----------------------|
| 1 VEHICLE CENTER OF GRAVITY | 2502 mm | 0 mm | 466 mm | | |
| LONGITUDINAL | | | | 2.6 g @ 152.1 ms | 32.7 g @ 36.3 ms |
| LATERAL | | | | 8.9 g @ 43.6 ms | 11.2 g @ 21.8 ms |
| VERTICAL | | | | 21.5 g @ 39.4 ms | 44.3 g @ 36.5 ms |
| RESULTANT | | | | 55.0 g @ 36.5 ms | |
| 2 LEFT REAR SILL | 2012 mm | 675 mm | 480 mm | | |
| LONGITUDINAL | | | | 2.8 g @ 157.3 ms | 31.3 g @ 45.0 ms |
| LATERAL | | | | 12.8 g @ 37.0 ms | 18.7 g @ 21.5 ms |
| 3 RIGHT REAR SILL | 1934 mm | -700 mm | 487 mm | | |
| LONGITUDINAL | | | | 2.5 g @ 153.3 ms | 29.0 g @ 35.2 ms |
| LATERAL | | | | 3.2 g @ 73.9 ms | 10.9 g @ 23.2 ms |
| 4 LEFT FRONT SILL | 2917 mm | 633 mm | 435 mm | | |
| LONGITUDINAL | | | | 3.2 g @ 154.1 ms | 52.0 g @ 55.0 ms |
| LATERAL ¹ | | | | 26.2 g @ 53.7 ms | 45.7 g @ 37.7 ms |
| 5 RIGHT FRONT SILL | 2914 mm | -633 mm | 435 mm | | |
| LONGITUDINAL | | | | 2.2 g @ 194.8 ms | 28.8 g @ 34.3 ms |
| LATERAL | | | | 8.8 g @ 41.4 ms | 10.3 g @ 21.8 ms |

REFERENCE: X: + FORWARD FROM VEHICLE'S REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE'S LONGITUDINAL CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

¹ See Data Acquisition Explanations

Table 27 Camera Information

Test No. 941025-5

| <u>Camera Number</u> | <u>Location</u> | <u>Type</u> | <u>Lens (mm)</u> | <u>Speed (fps)</u> | <u>Purpose of Camera Data</u> |
|----------------------|-----------------|-------------|------------------|--------------------|-------------------------------|
| 1 | Left tight | Photosonic | 13 | 1000 | Impact overall |
| 2 | Right tight | Photosonic | 13 | 998 | Impact overall |
| 3 | Overhead | Photosonic | 13 | 998 | Impact overall |

List of Photographs

Photographs

Test No. 941025-1

- A-1. Pre-Test Left Side View
- A-2. Post-Test Left Side View
- A-3. Pre-Test Left Front Three-Quarter View
- A-4. Post-Test Left Front Three-Quarter View
- A-5. Pre-Test Front View
- A-6. Post-Test Front View
- A-7. Pre-Test Right Front Three-Quarter View
- A-8. Post-Test Right Front Three-Quarter View
- A-9. Pre-Test Right Side View
- A-10. Post-Test Right Side View
- A-11. Pre-Test Overhead View





Figure A-1. Pre-Test Left Side View



Figure A-2. Post-Test Left Side View



Figure A-3. Pre-Test Left Front Three-Quarter View



Figure A-4. Post-Test Left Front Three-Quarter View



Figure A-5. Pre-Test Front View



Figure A-6. Post-Test Front View



Figure A-7. Pre-Test Right Front Three-Quarter View



Figure A-8. Post-Test Right Front Three-Quarter View



Figure A-9. Pre-Test Right Side View



Figure A-10. Post-Test Right Side View



Figure A-11. Pre-Test Overhead View

List of Photographs

Test No. 941025-2

- A-12. Pre-Test Overhead View
- A-13. Post-Test Left Side View
- A-14. Post-Test Left Front Three-Quarter View
- A-15. Post-Test Front View
- A-16. Post-Test Right Front Three-Quarter View
- A-17. Post-Test Right Side View

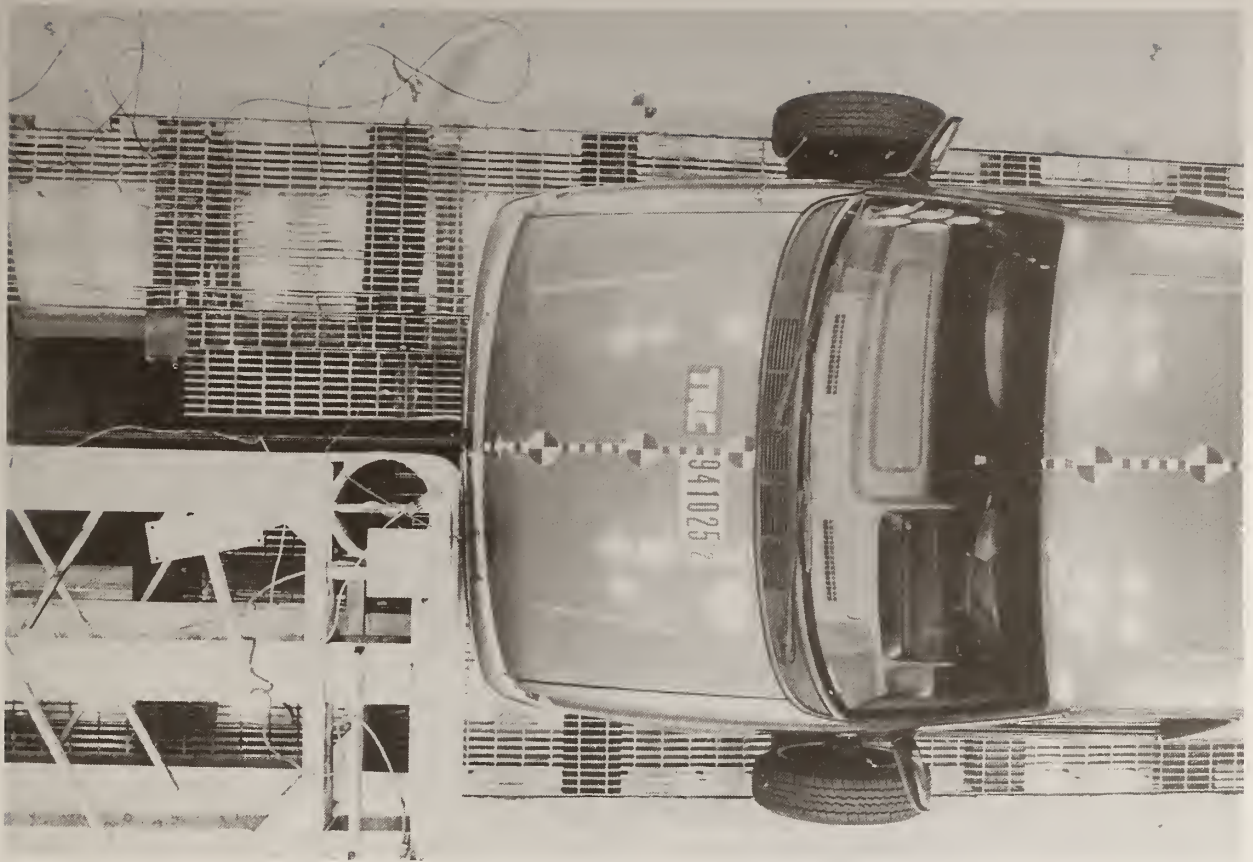


Figure A-12. Pre-Test Overhead View



Figure A-13. Post-Test Left Side View



Figure A-14. Post-Test Left Front Three-Quarter View



Figure A-15. Post-Test Front View



Figure A-16. Post-Test Right Front Three-Quarter View



Figure A-17. Post-Test Right Side View

List of Photographs

Test No. 941025-3

A-18. Pre-Test Overhead View

A-19. Post-Test Left Side View

A-20. Post-Test Left Front Three-Quarter View

A-21. Post-Test Front View

A-22. Post-Test Right Front Three-Quarter View

A-23. Post-Test Right Side View

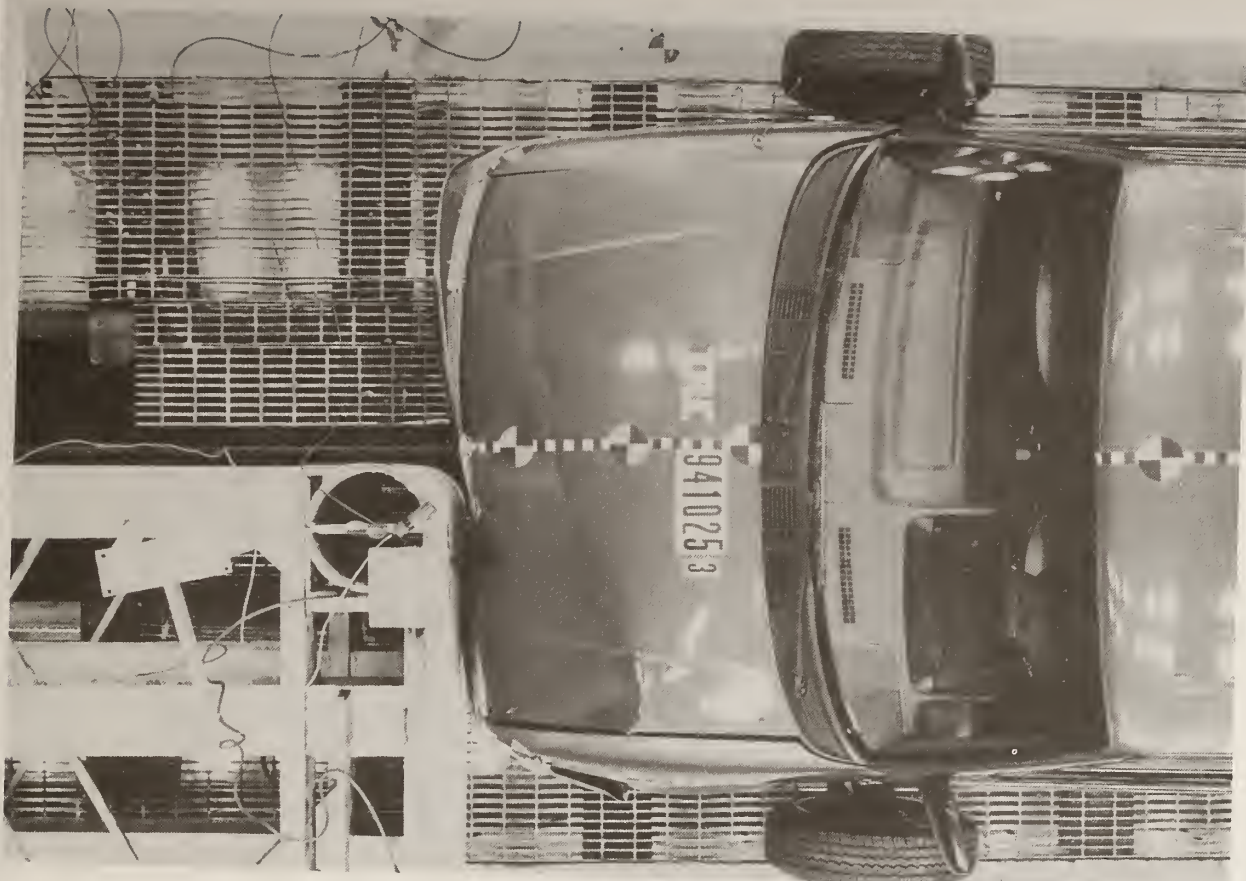


Figure A-18. Pre-Test Overhead View



Figure A-19. Post-Test Left Side View



Figure A-20. Post-Test Left Front Three-Quarter View



Figure A-21. Post-Test Front View



Figure A-22. Post-Test Right Front Three-Quarter View



Figure A-23. Post-Test Right Side View

List of Photographs

Test No. 941025-4

A-24. Pre-Test Overhead View

A-25. Post-Test Left Side View

A-26. Post-Test Left Front Three-Quarter View

A-27. Post-Test Front View

A-28. Post-Test Right Front Three-Quarter View

A-29. Post-Test Right Side View

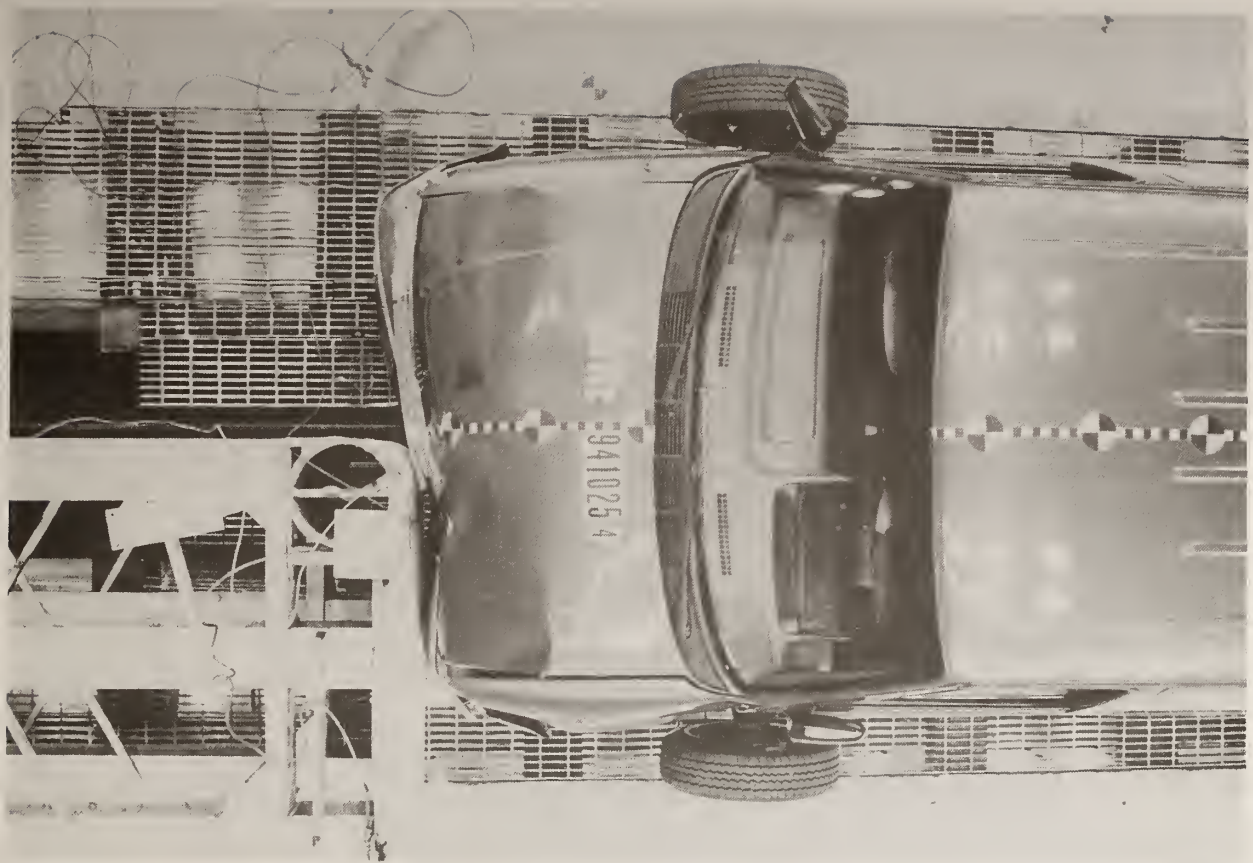


Figure A-24. Pre-Test Overhead View



Figure A-25. Post-Test Left Side View



Figure A-26. Post-Test Left Front Three-Quarter View



Figure A-27. Post-Test Front View



Figure A-28. Post-Test Right Front Three-Quarter View



Figure A-29. Post-Test Right Side View

List of Photographs

Test No. 941025-5

- A-30. Pre-Test Overhead View
- A-31. Post-Test Left Side View
- A-32. Post-Test Left Front Three-Quarter View
- A-33. Post-Test Front View
- A-34. Post-Test Right Front Three-Quarter View
- A-35. Post-Test Right Side View

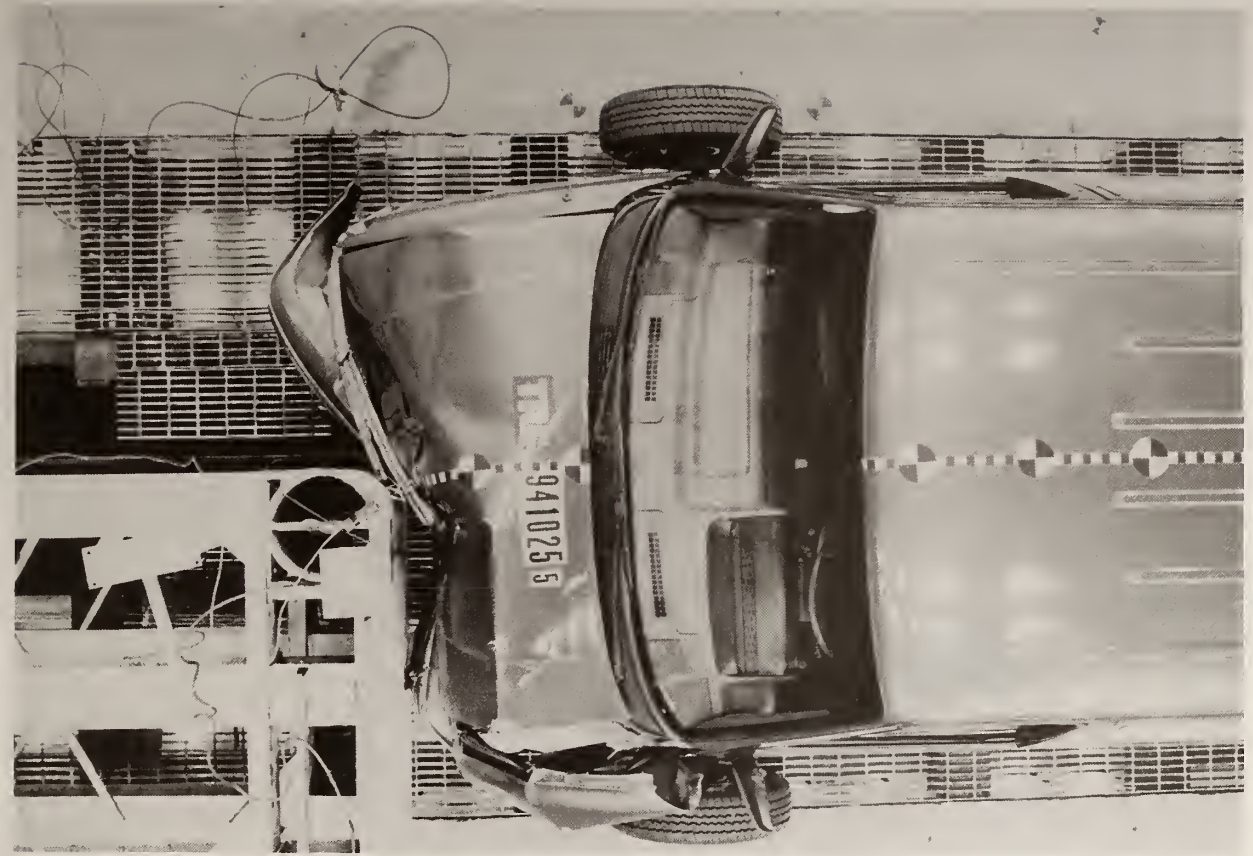


Figure A-30. Pre-Test Overhead View



Figure A-31. Post-Test Left Side View



Figure A-32. Post-Test Left Front Three-Quarter View



Figure A-33. Post-Test Front View



Figure A-34. Post-Test Right Front Three-Quarter View



Figure A-35. Post-Test Right Side View

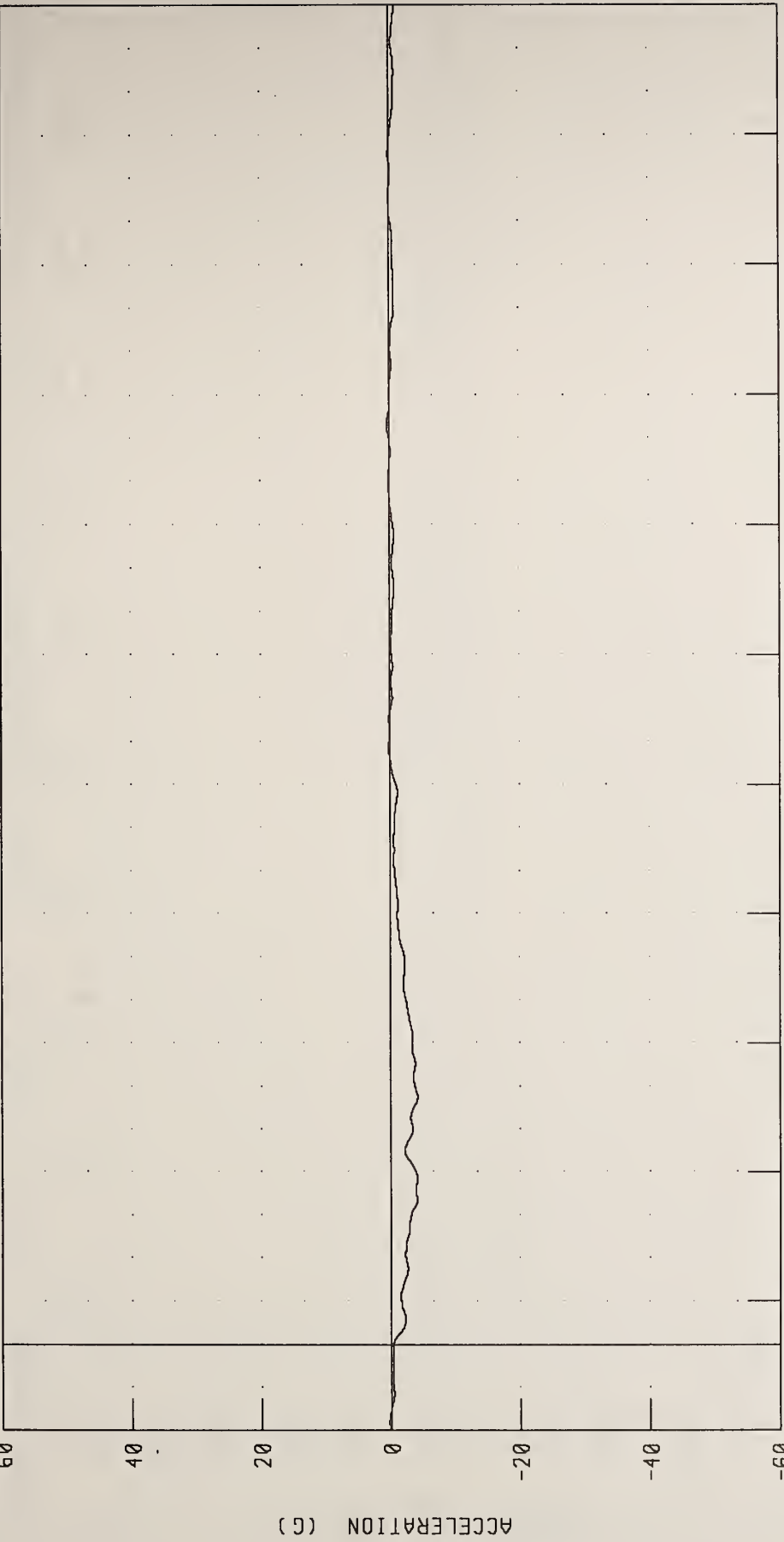
Data Plots

Test No. 941025-1

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CC X-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1

TRC INC.



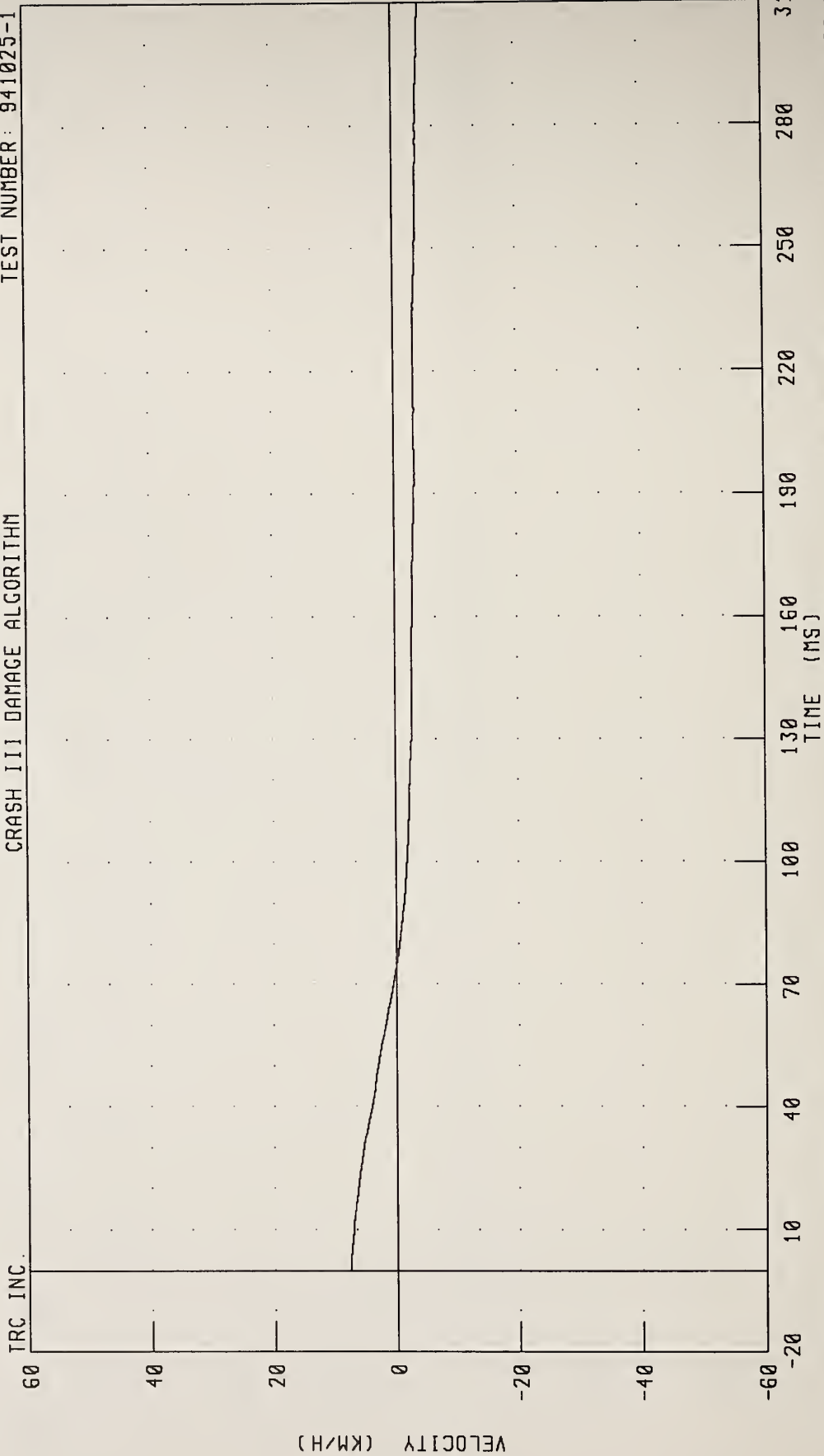
CHANNEL: VCGXG FILTER: CH. CLASS 60
PEAK DATA: 0.38 G @ 212.96 MS; -4.18 G @ 57.52 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

VEHICLE CG X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



CHANNEL: VCGXV FILTER: CH. CLASS 180

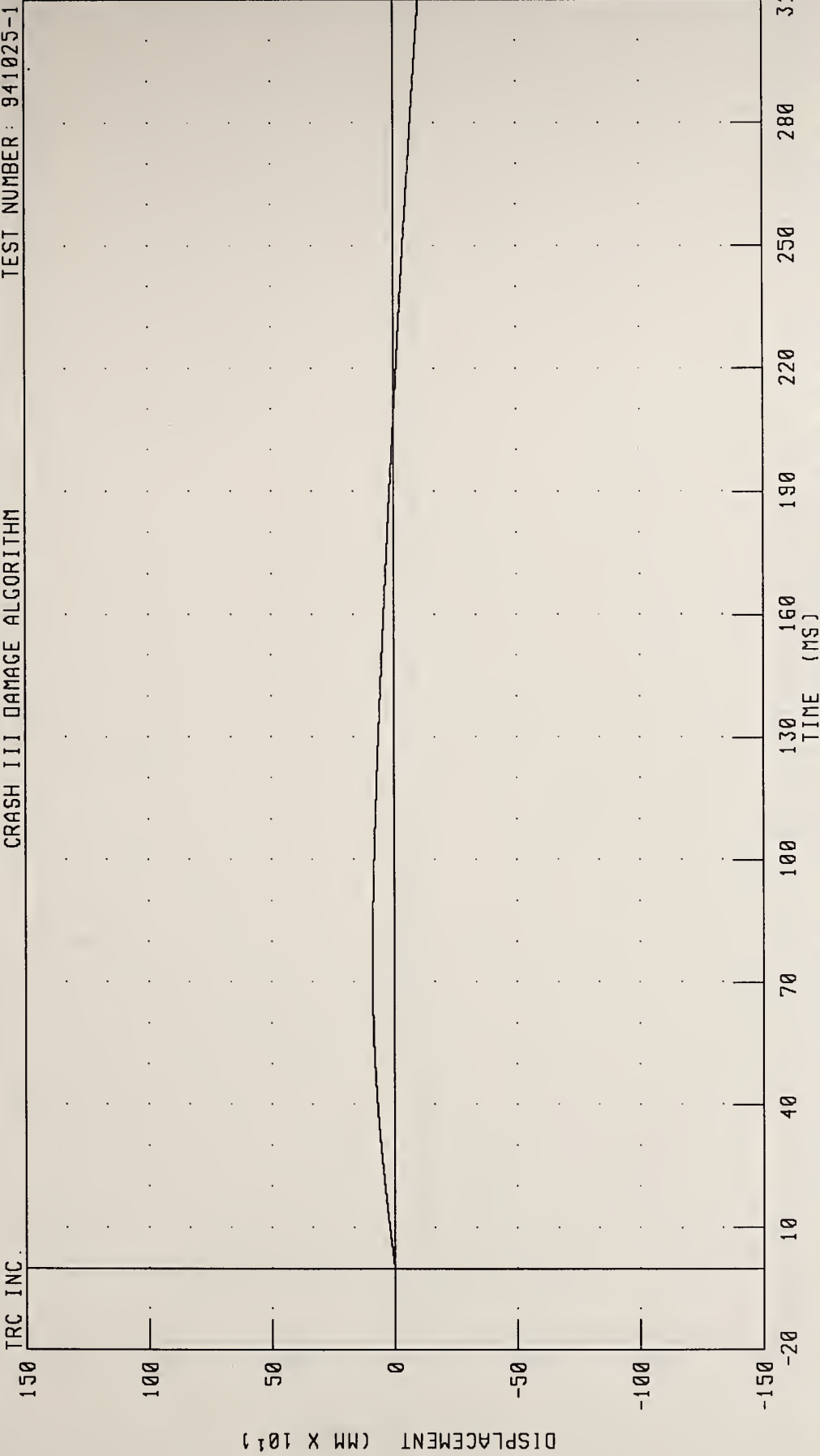
PEAK DATA: 7.70 KM/H @ 0.00 MS; -4.41 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

VEHICLE CG X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

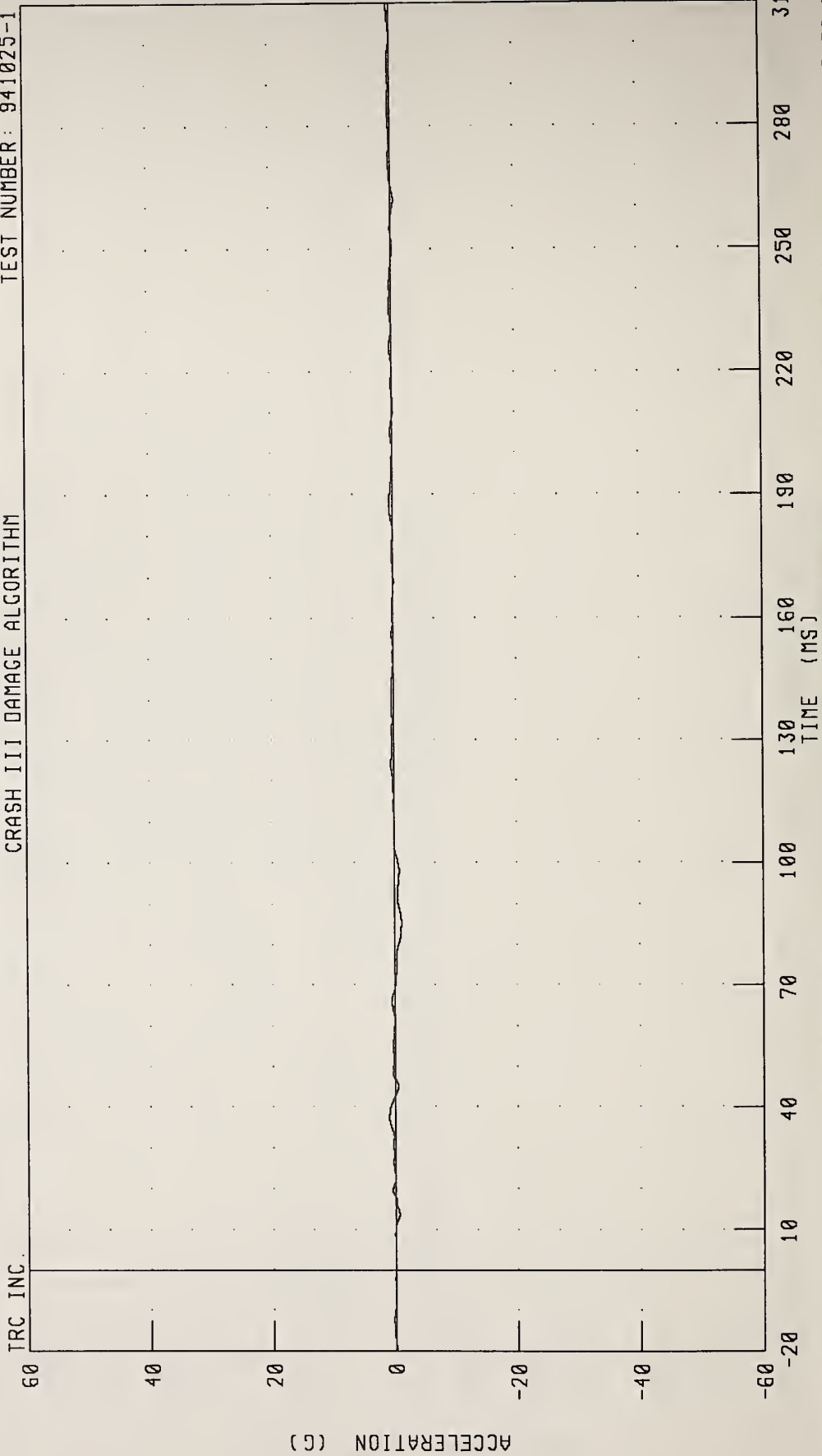
TEST NUMBER: 941025-1



CHANNEL: VCGXD FILTER: CH. CLASS 180

PEAK DATA: 89.88 MM @ 74.64 MS; -103.63 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CG Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1



TRC INC.

CHANNEL: VCGYG FILTER: CH. CLASS 60
PEAK DATA: 1.01 G @ 37.44 MS; -1.13 G @ 85.36 MS

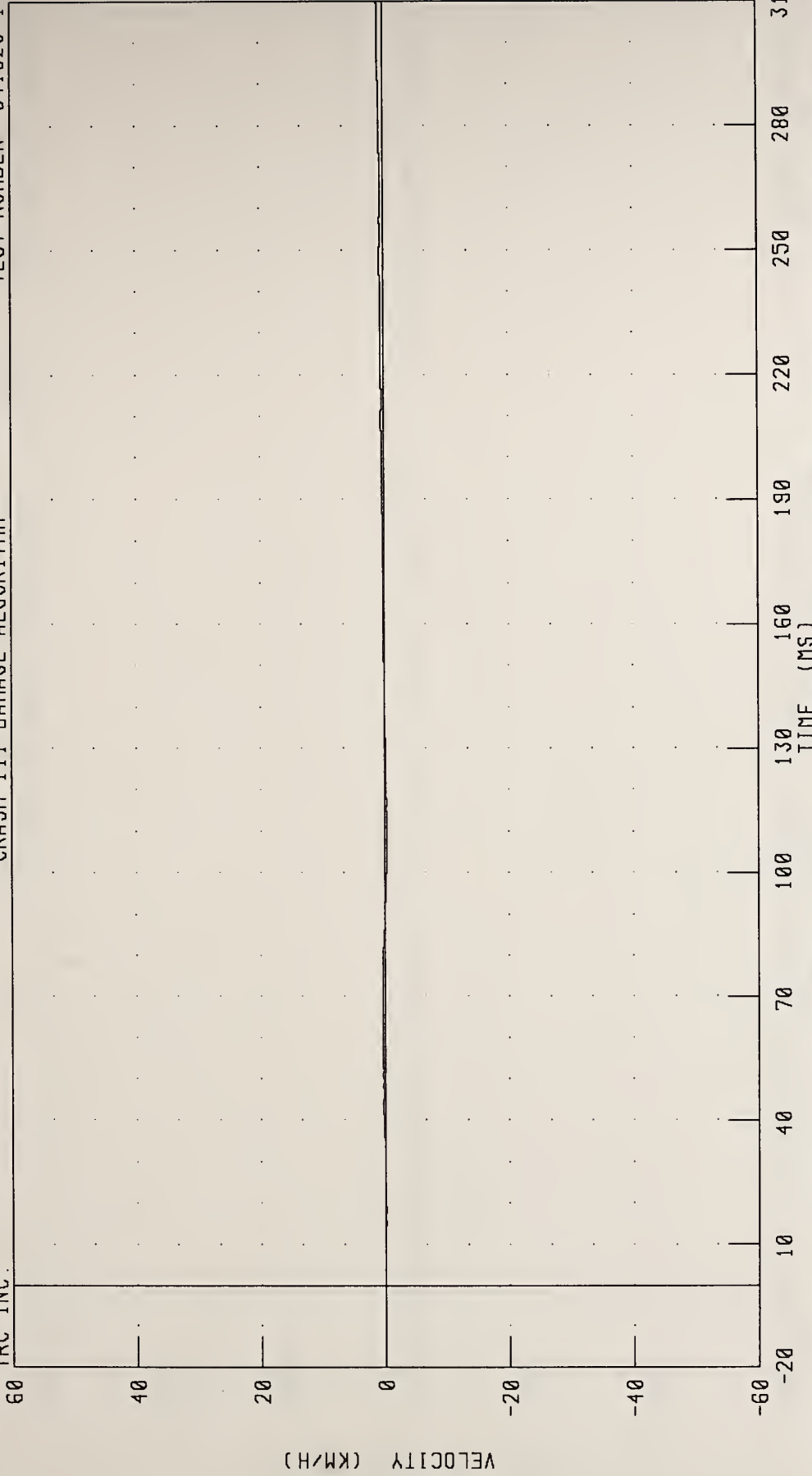
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

VEHICLE CG Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1

TRC INC.

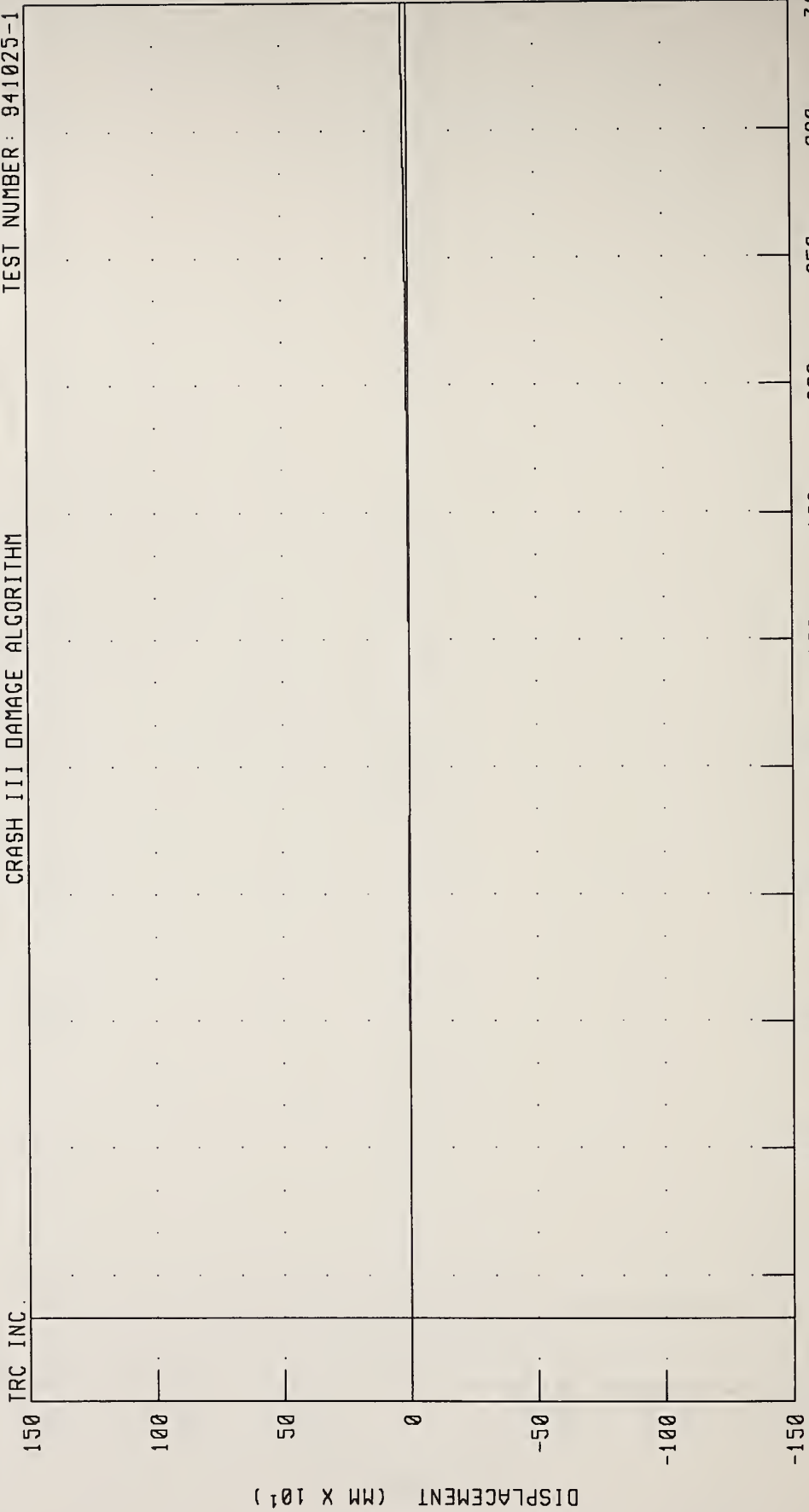


PEAK DATA: 0.95 KM/H @ 310.00 MS; -0.28 KM/H @ 110.16 MS

CHANNEL: VCGYV FILTER: CH. CLASS 180

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CG Y-AXIS DISPLACEMENT
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



CHANNEL: VCGYD FILTER: CH. CLASS 180

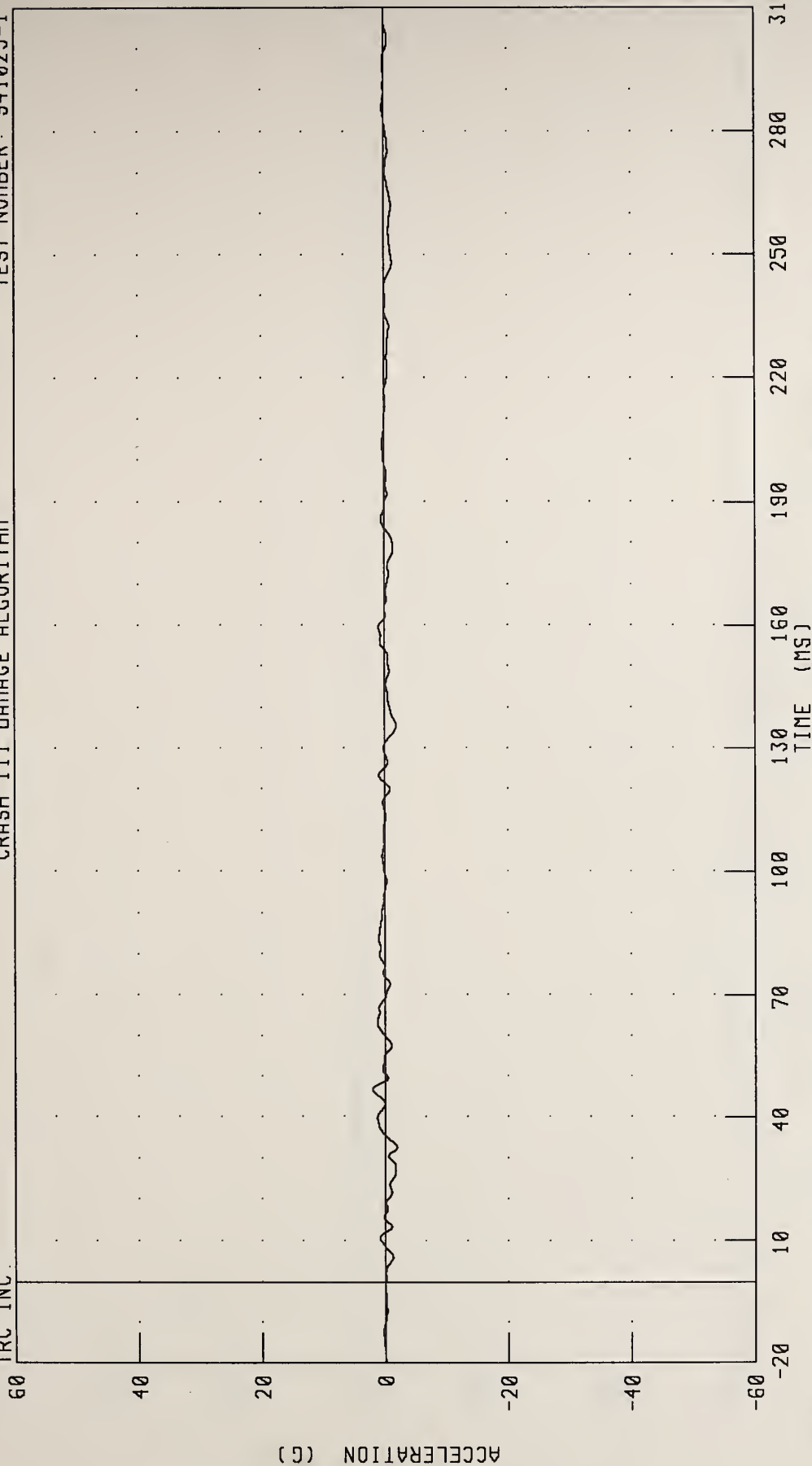
PEAK DATA: 23.33 MM @ 310.00 MS; -0.19 MM @ 27.12 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CG Z-AXIS ACCELERATION

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: VCGZG FILTER: CH. CLASS 60

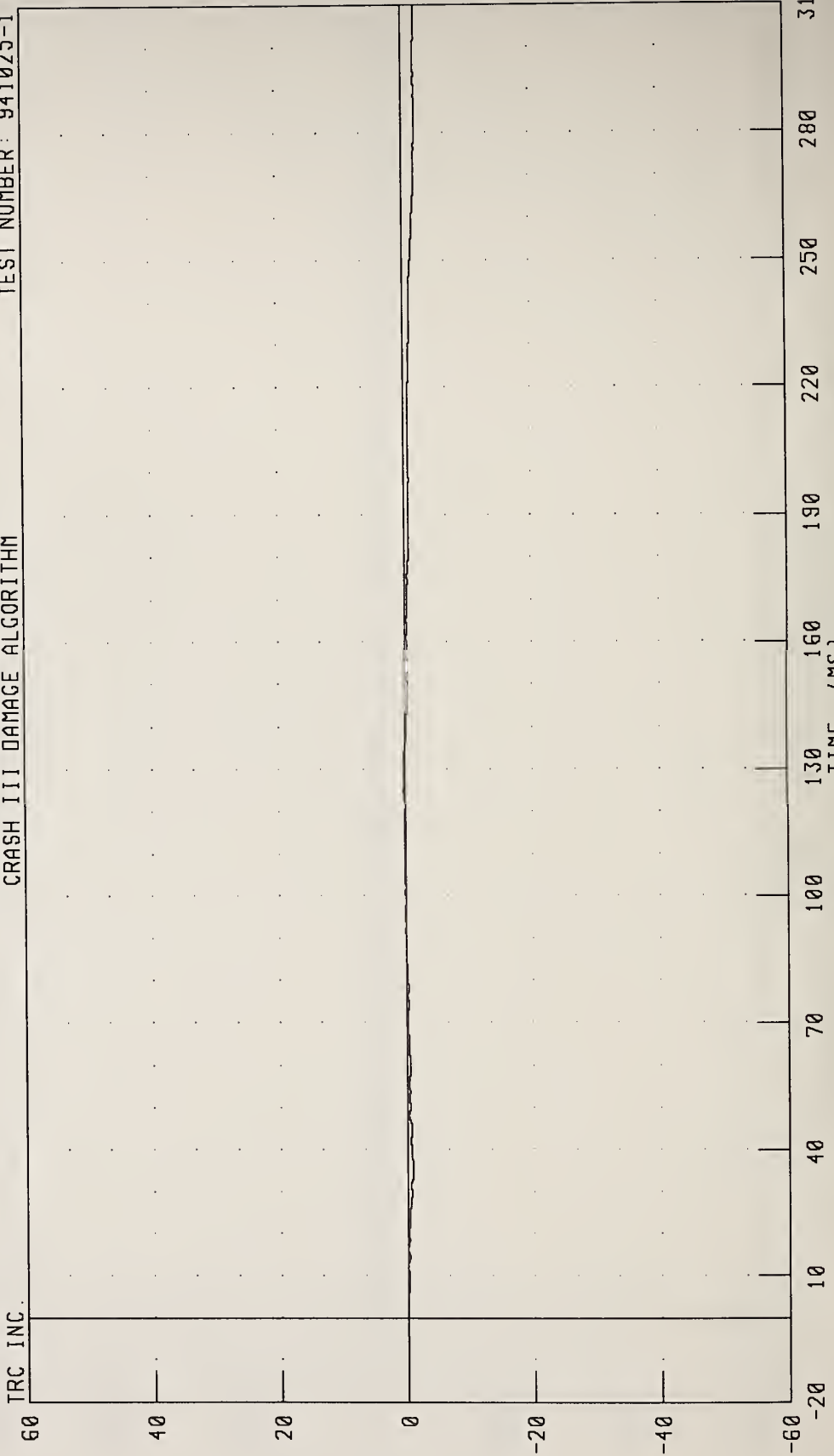
PEAK DATA: 2.06 G @ 46.72 MS; -1.94 G @ 32.72 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

VEHICLE CG Z-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



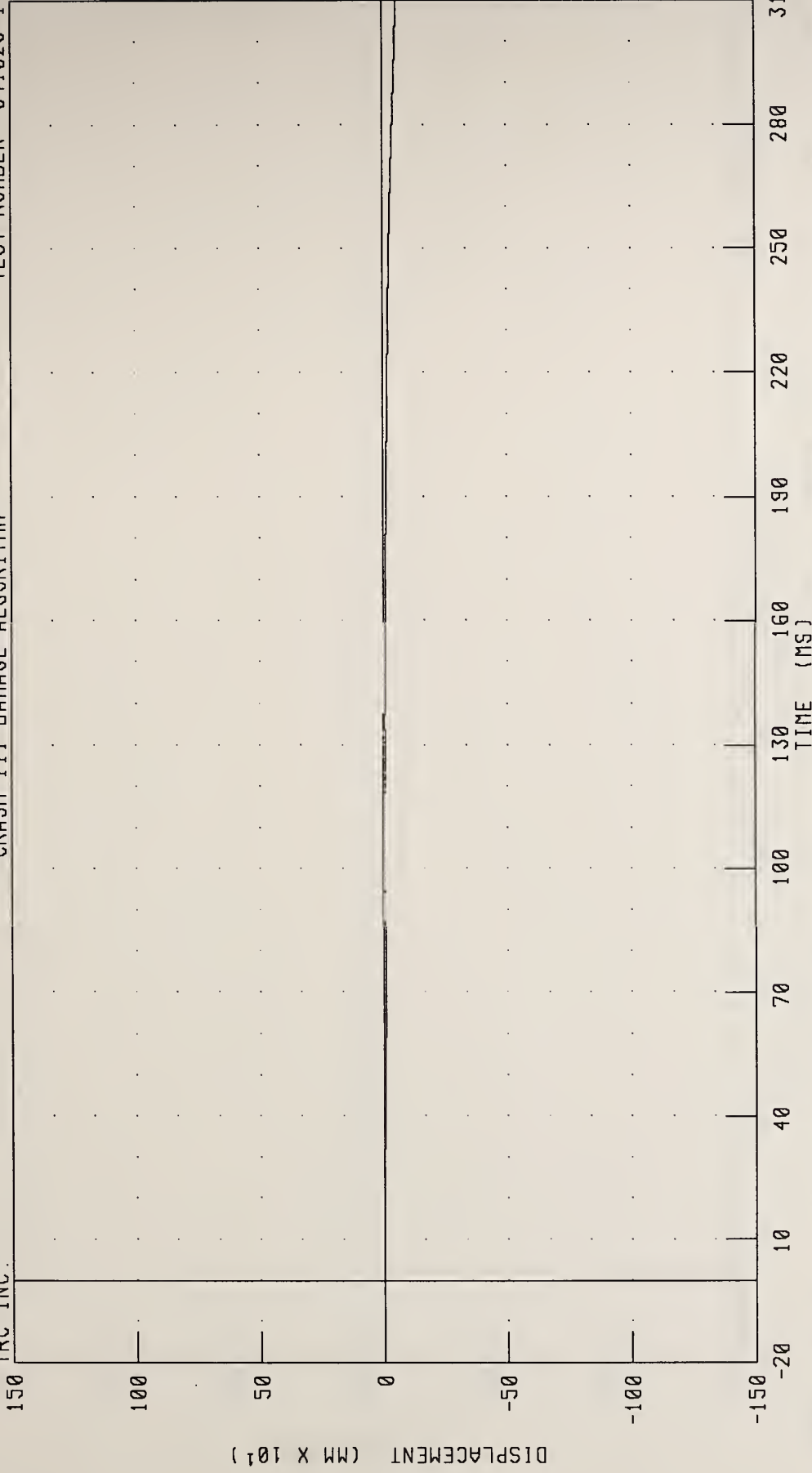
CHANNEL: VCGZY FILTER: CH. CLASS 180

PEAK DATA: 0.27 KM/H @ 124.80 MS; -2.01 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CG Z-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1

TRC INC.

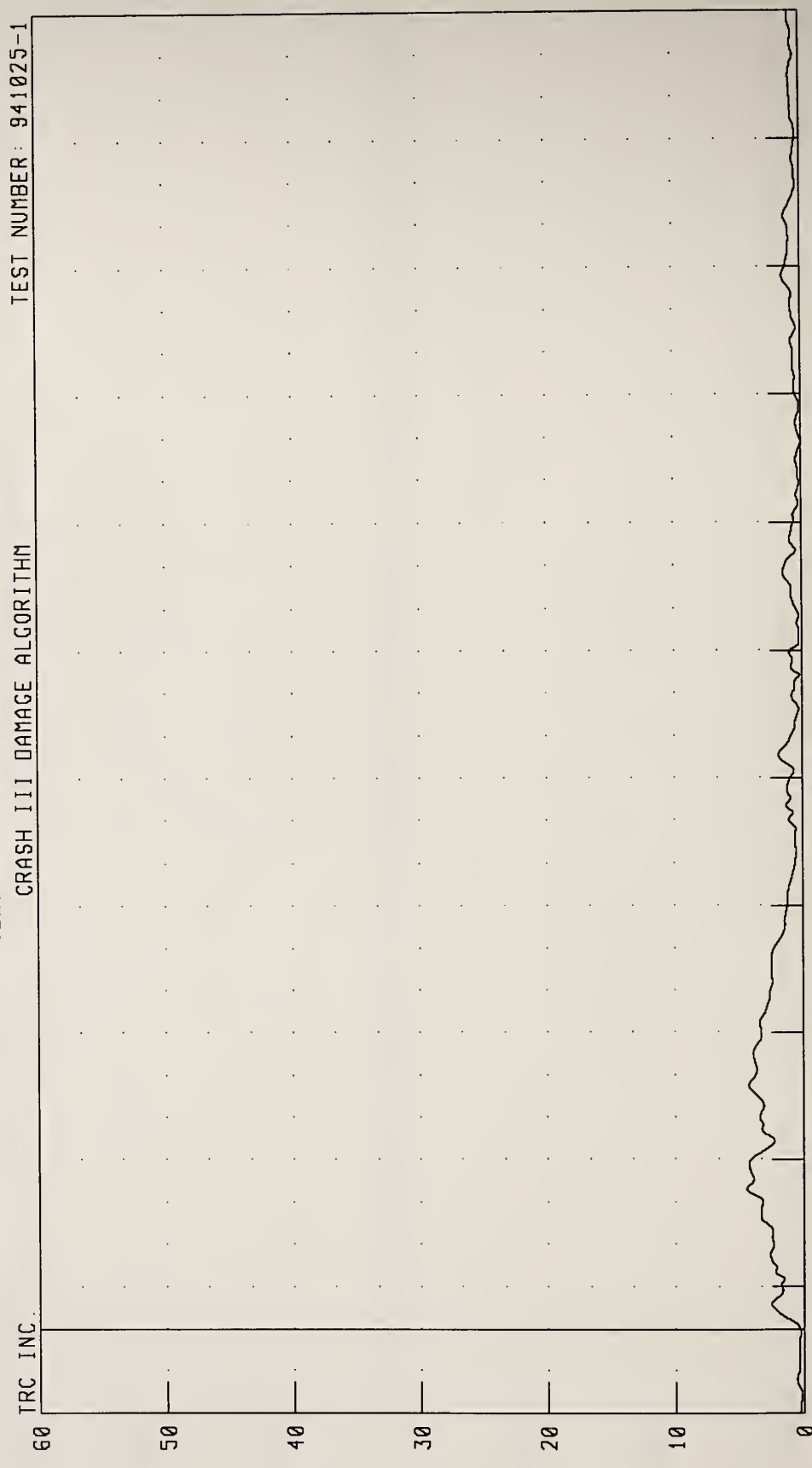


CHANNEL: VCGZD FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 0.56 MS; -56.23 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CG RESULTANT ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



TRC INC.

ACCELERATION (G)

TIME (MS)

CHANNEL: VCGRG FILTER: CH. CLASS 60 PEAK DATA: 4.49 G @ 33.04 MS; 0.03 G @ 208.88 MS

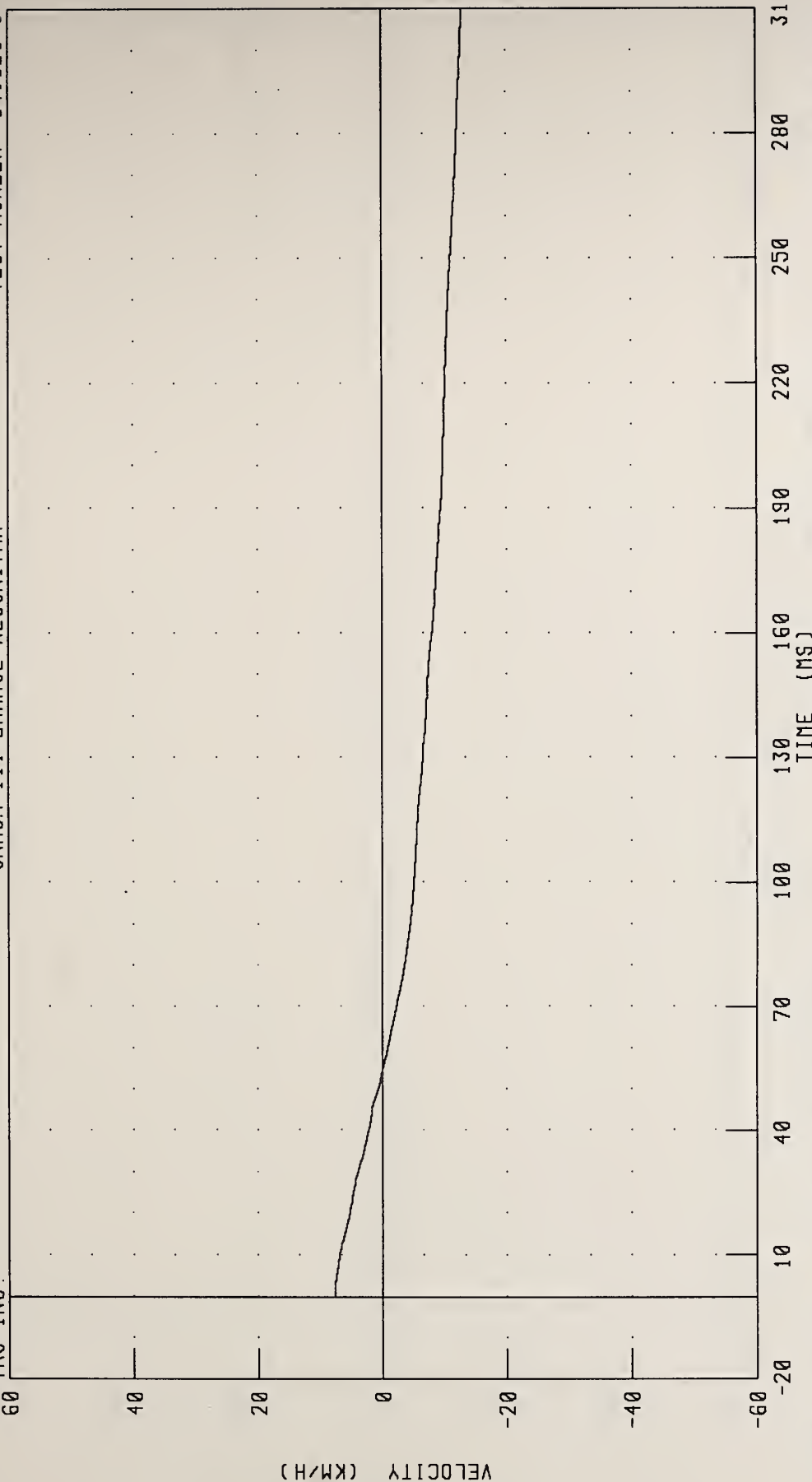
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

VEHICLE CG RESULTANT VELOCITY

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.



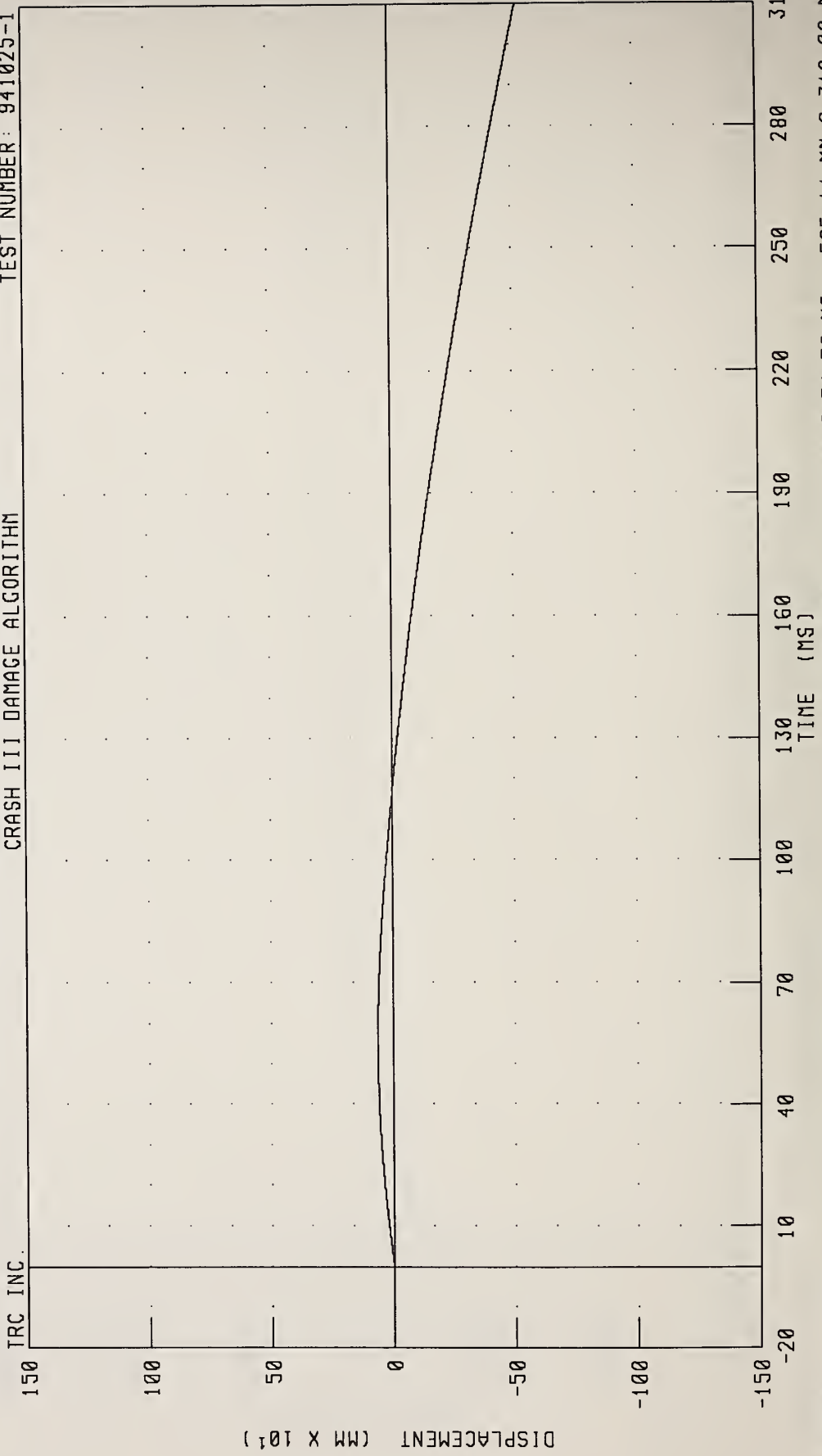
CHANNEL: VCGRV FILTER: CH. CLASS 180

TIME (MS)

PEAK DATA: 7.70 KM/H @ 0.00 MS; -12.93 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
VEHICLE CG RESULTANT DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1



TRC INC.

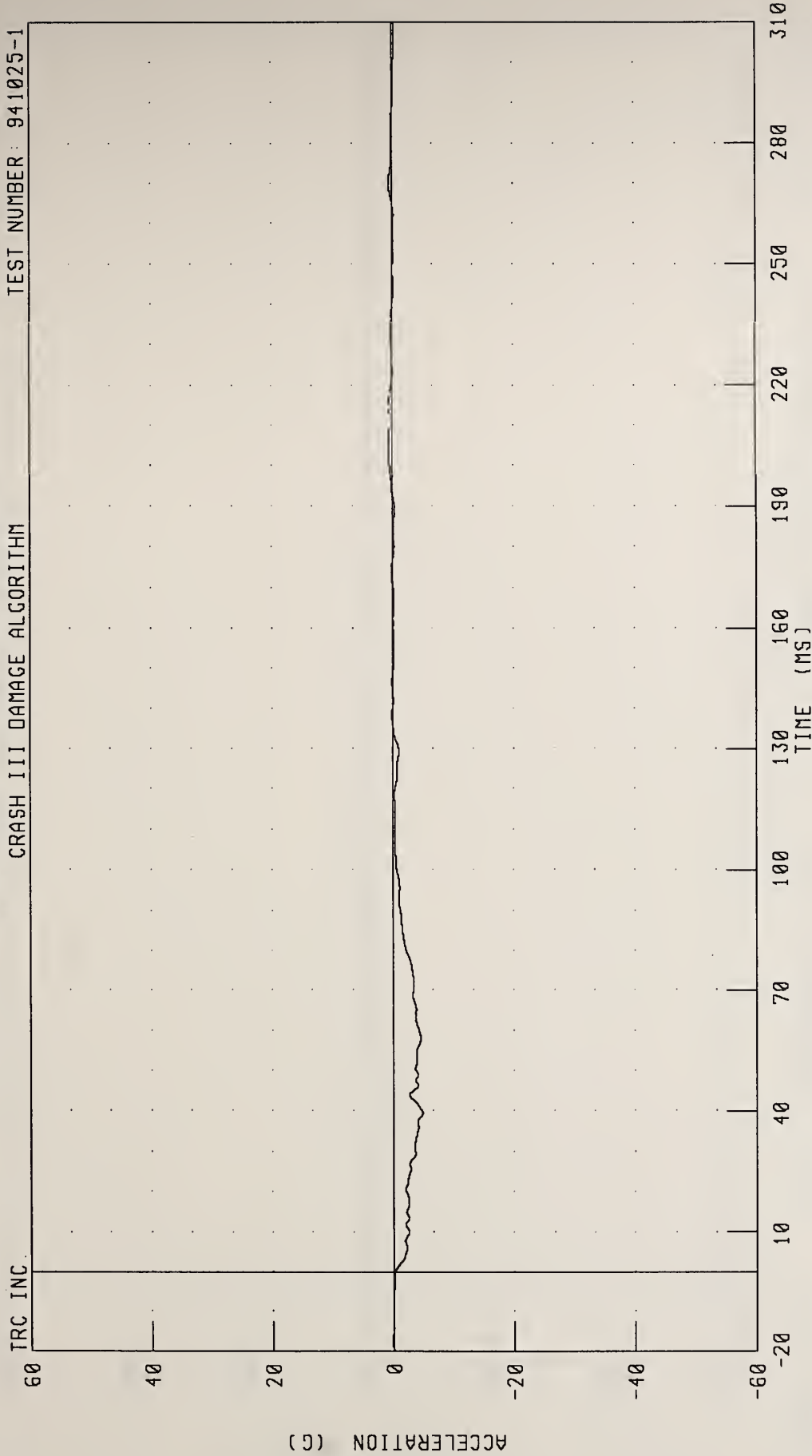
CHANNEL: VCGD FILTER: CH. CLASS 180

PEAK DATA: 63.84 MM @ 54.72 MS; -525.14 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT FRONT SILL X-AXIS ACCELERATION

TRC INC. TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

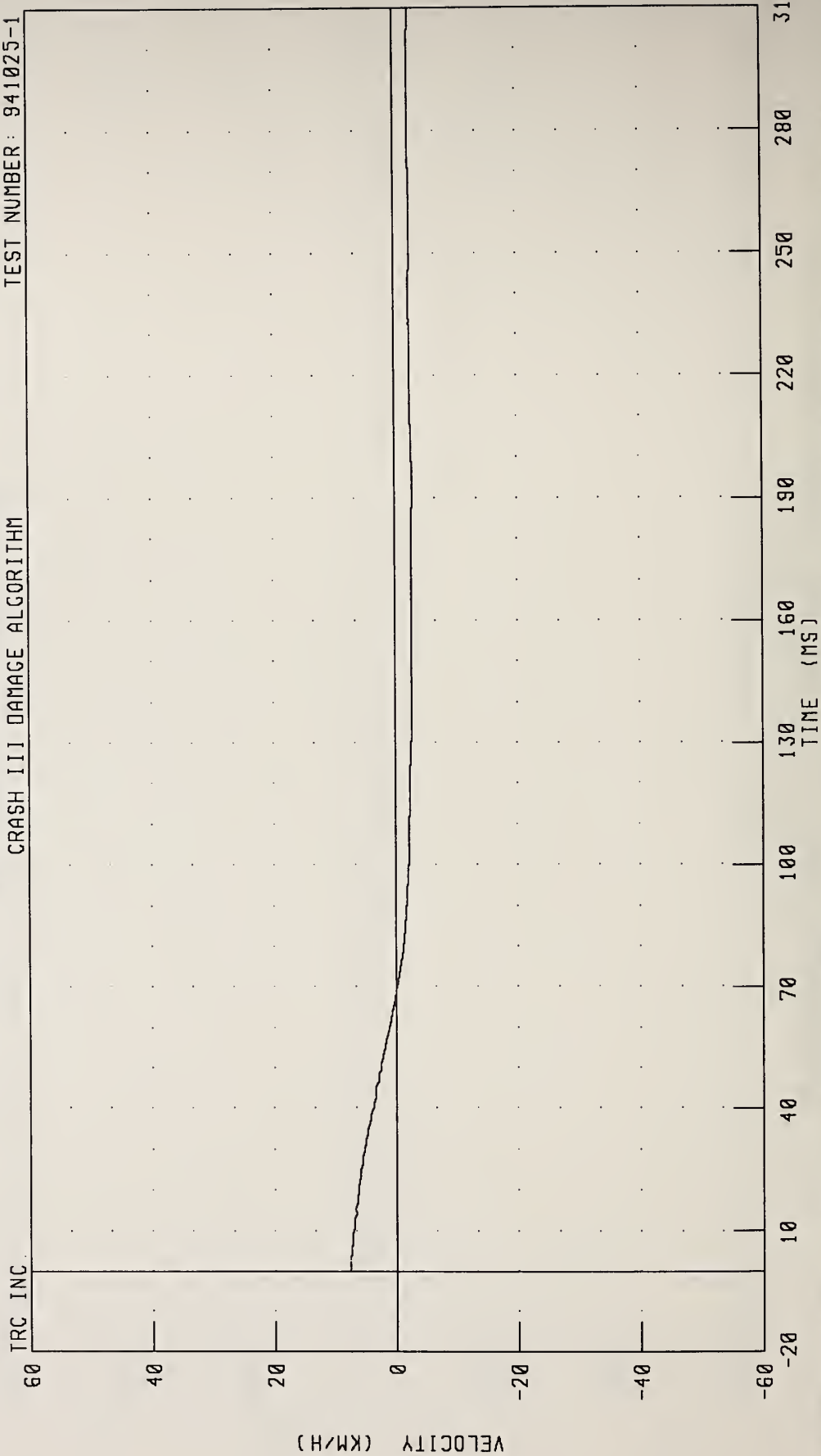


CHANNEL: LFSXG FILTER: CH. CLASS 60

PEAK DATA: 0.58 G @ 270.24 MS; -4.84 G @ 39.36 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT FRONT SILL X-AXIS VELOCITY

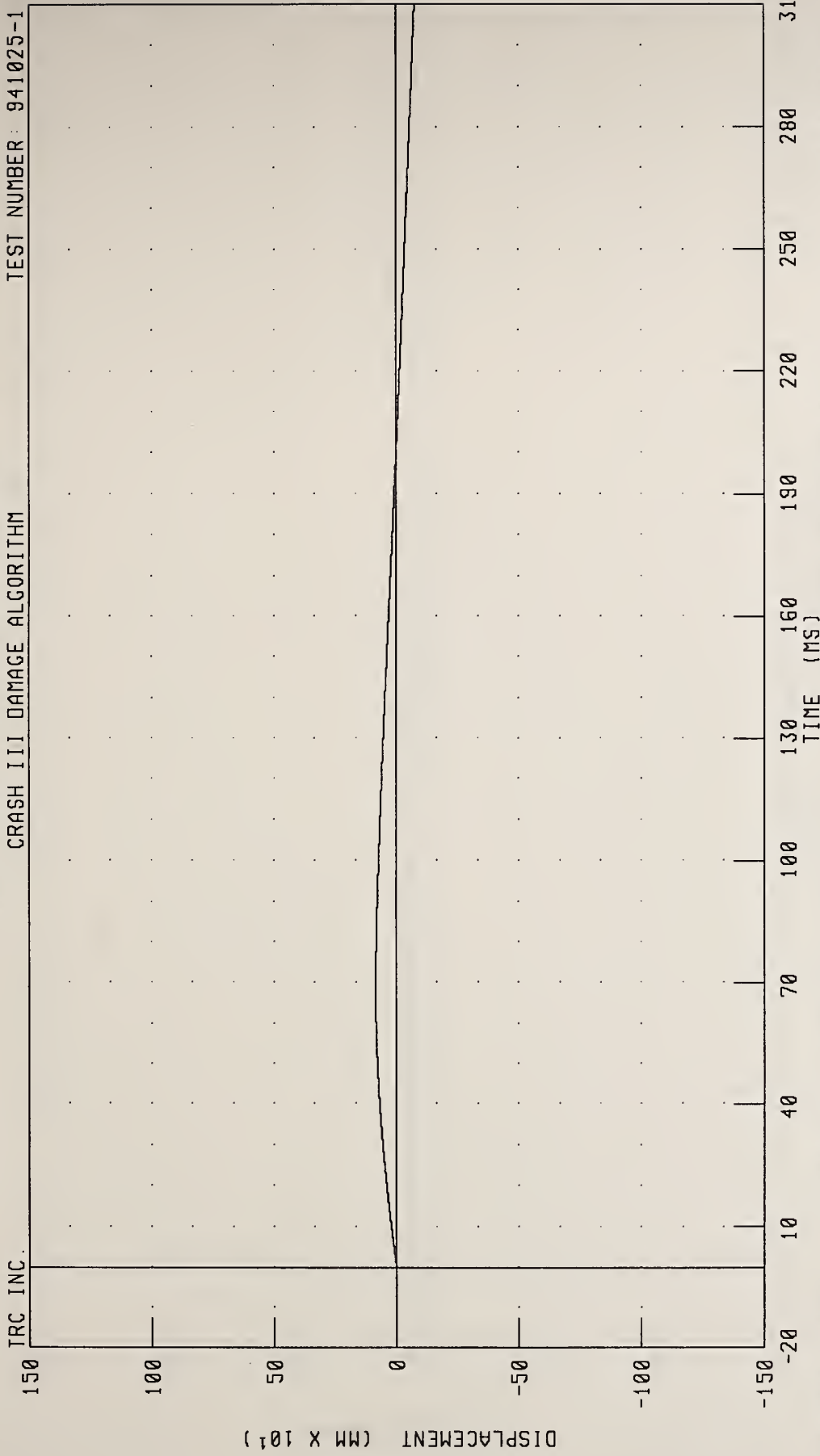
CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1



CHANNEL: LFSXY FILTER: CH. CLASS 180 PEAK DATA: 7.70 KM/H @ 0.00 MS; -2.84 KM/H @ 192.16 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT FRONT SILL X-AXIS DISPLACEMENT

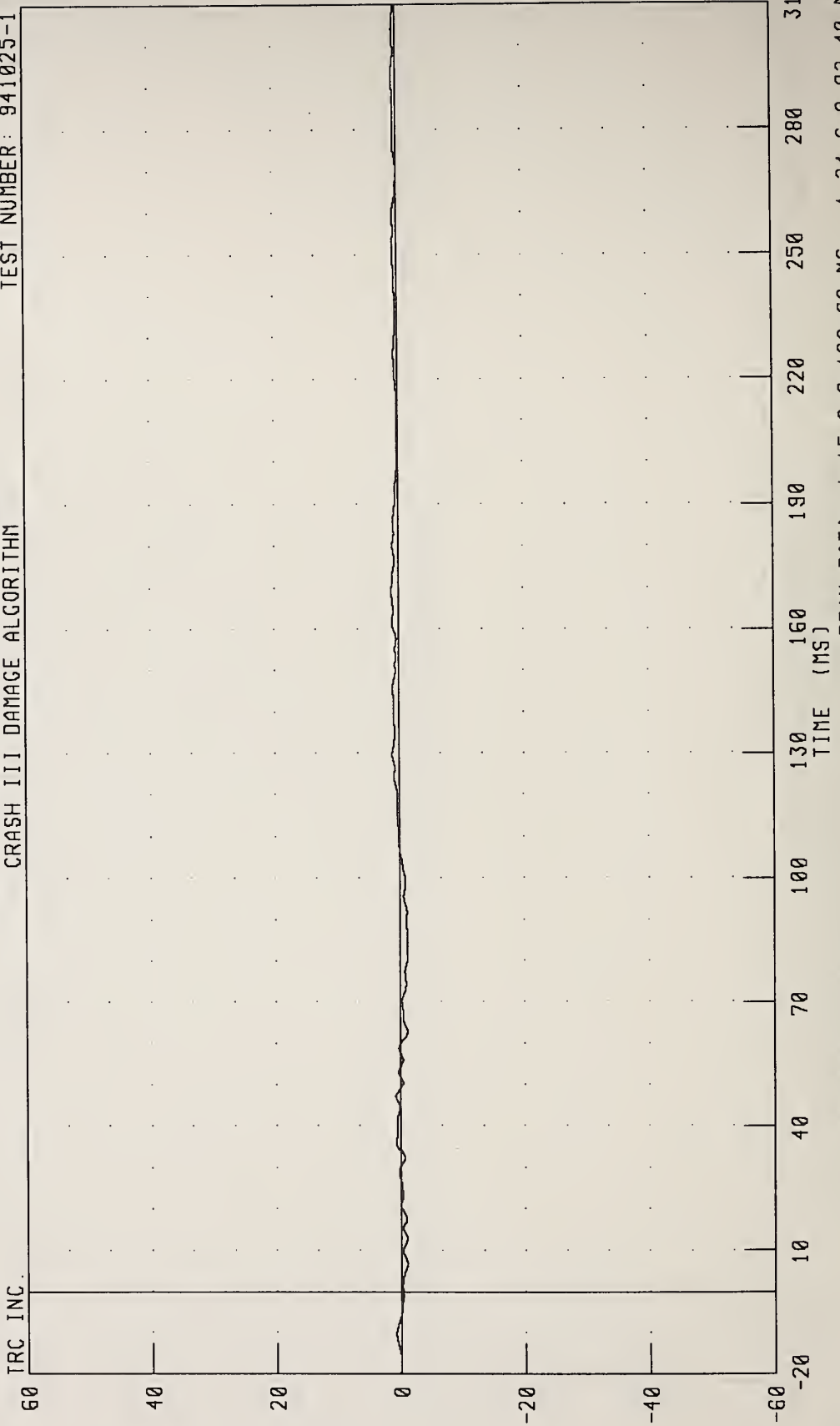
CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1



TRC INC. CHANNEL: LFSXD FILTER: CH. CLASS 180 PEAK DATA: 84.03 MM @ 68.96 MS; -74.96 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT FRONT SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



CHANNEL: LFSYG FILTER: CH. CLASS 60

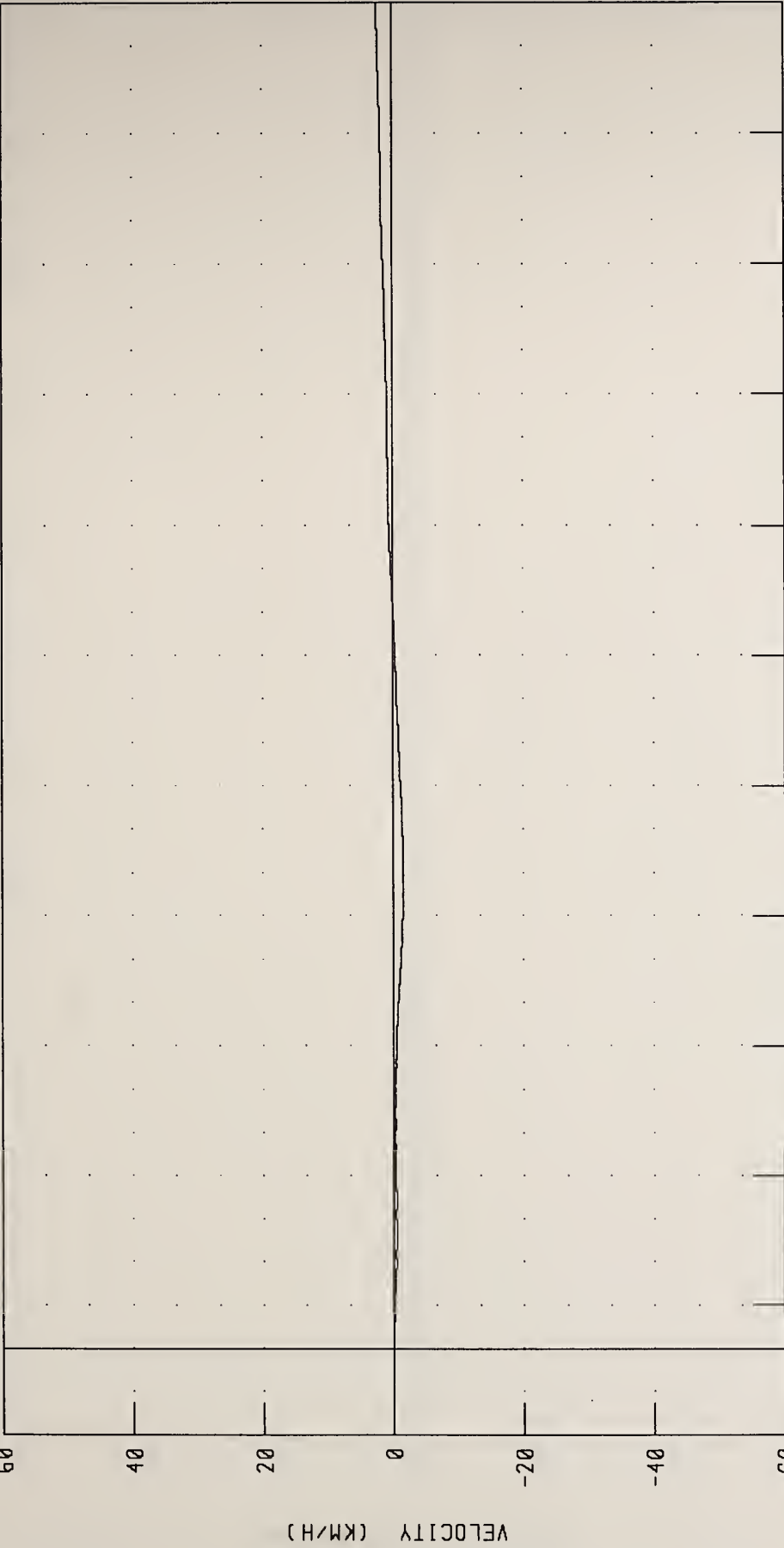
PEAK DATA: 1.15 G @ 129.68 MS; -1.24 G @ 82.40 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT FRONT SILL Y-AXIS VELOCITY

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.



PEAK DATA: 2.39 KM/H @ 310.00 MS; -1.54 KM/H @ 105.92 MS

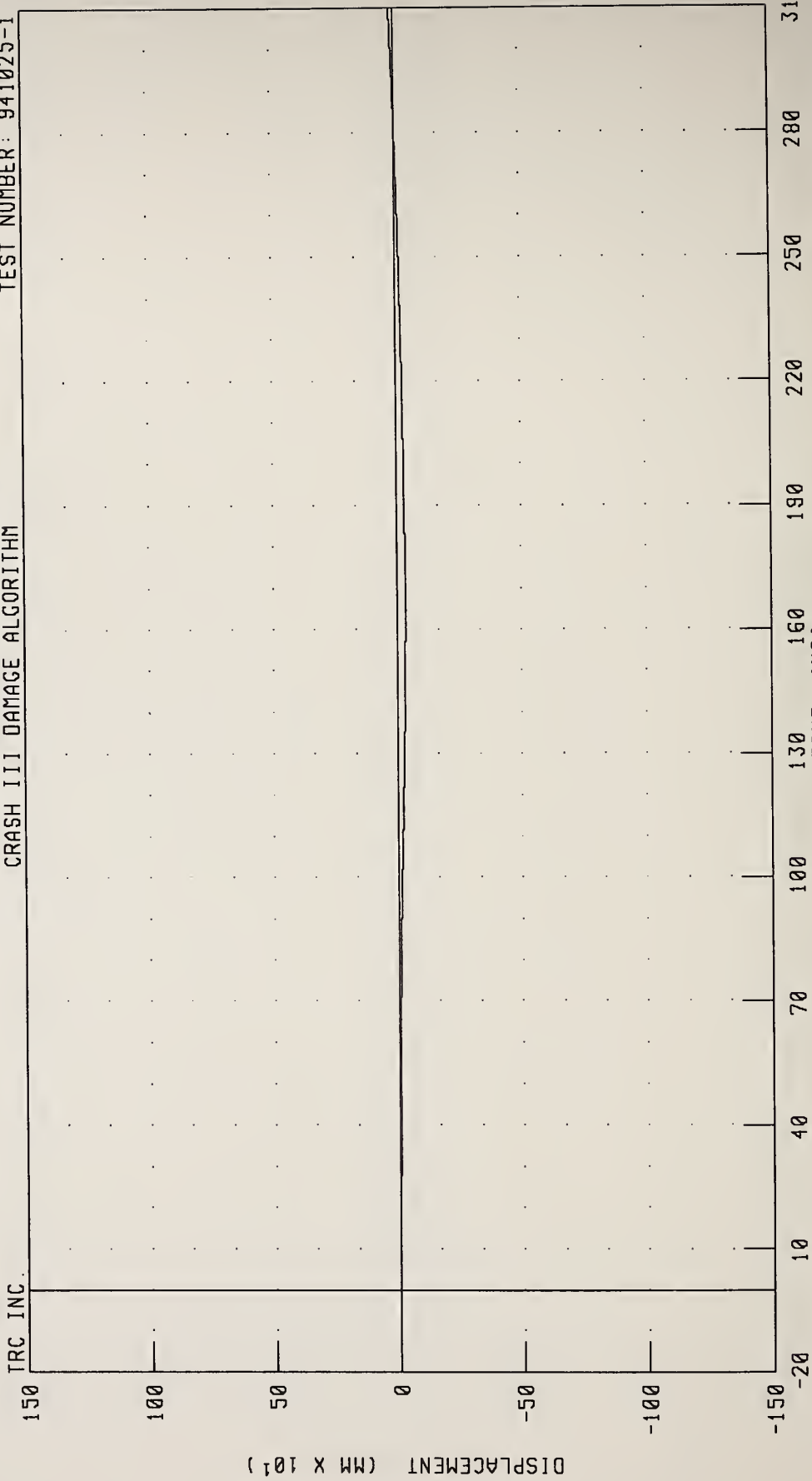
CHANNEL: LFSYV FILTER: CH. CLASS 180

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

LEFT FRONT SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



CHANNEL: LFSYD FILTER: CH. CLASS 180

PEAK DATA: 17.04 MM @ 310.00 MS; -32.30 MM @ 169.92 MS

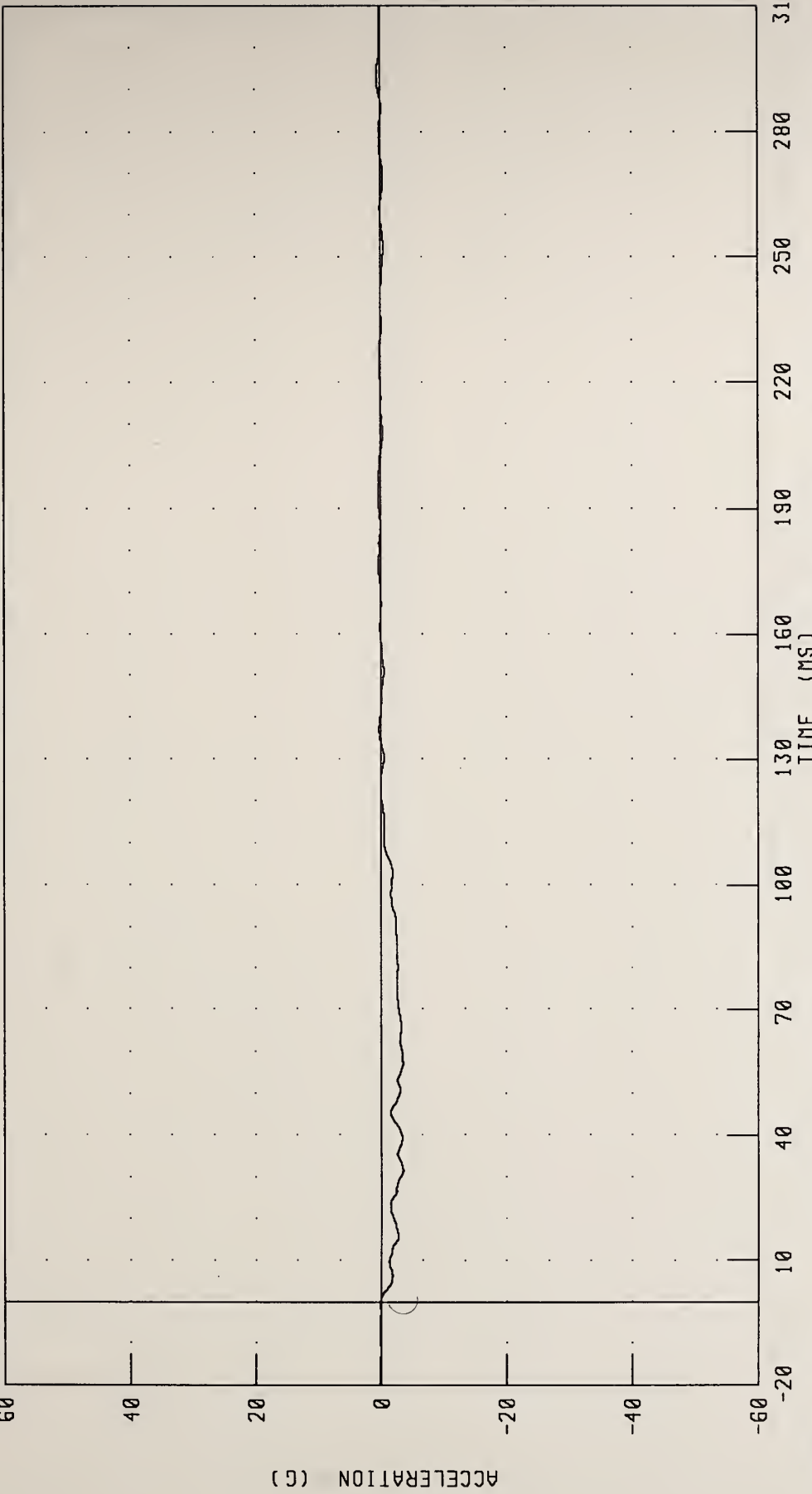
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT FRONT SILL X-AXIS ACCELERATION

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.



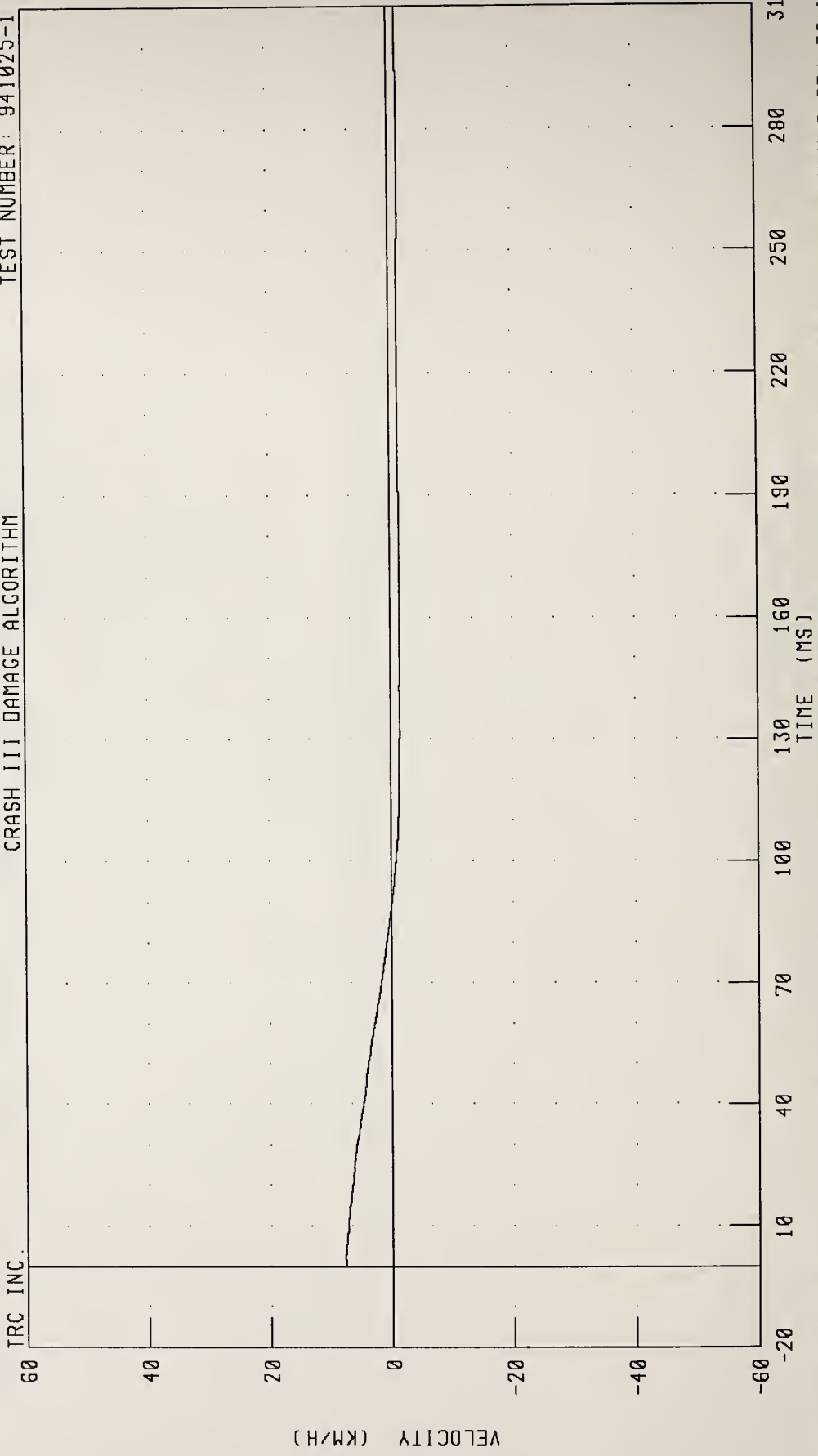
CHANNEL: RFSXG FILTER: CH. CLASS 60

PEAK DATA: 0.57 G @ 293.52 MS; -3.49 G @ 57.12 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT FRONT SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1



TRC INC. CHANNEL: RFSXY FILTER: CH. CLASS 180 PEAK DATA: 7.72 KM/H @ 2.24 MS; -1.56 KM/H @ 274.32 MS

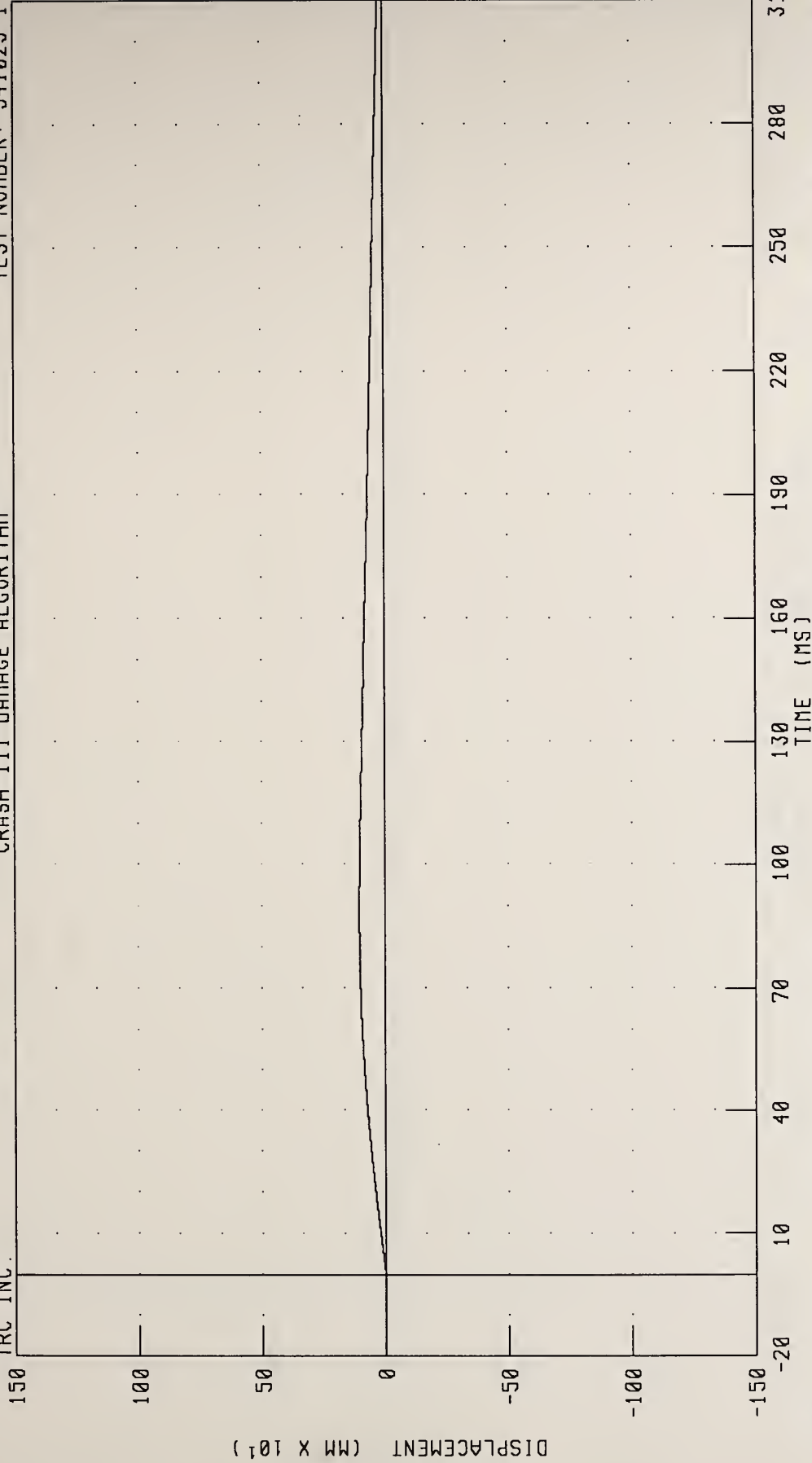
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1

TRC INC.

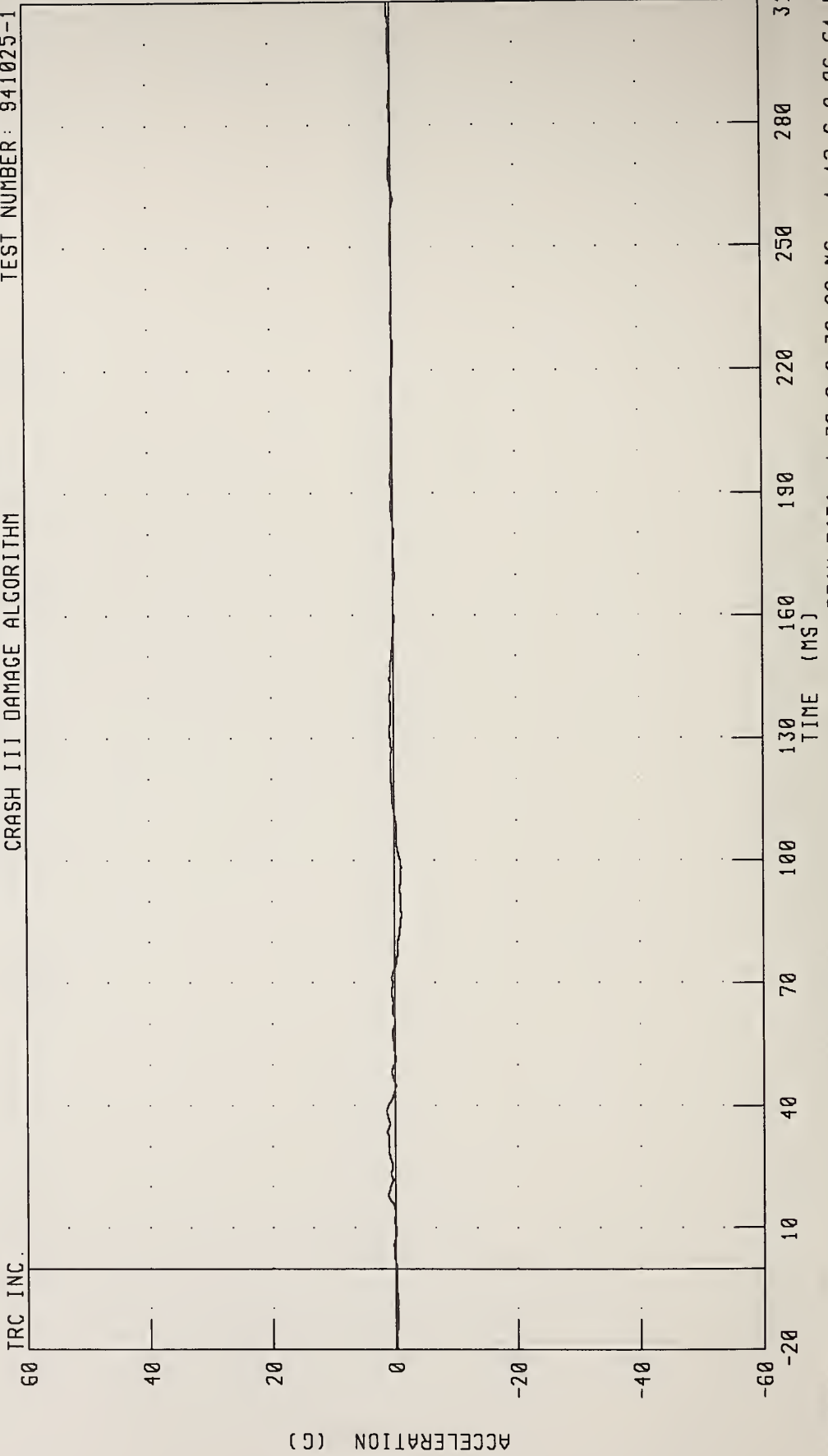


CHANNEL: RFSXD FILTER: CH. CLASS 180

PEAK DATA: 104.36 MM @ 88.96 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
RIGHT FRONT SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



TRC INC.

CHANNEL: RFSYG FILTER: CH. CLASS 60

PEAK DATA: 1.38 G @ 38.88 MS; -1.12 G @ 86.64 MS

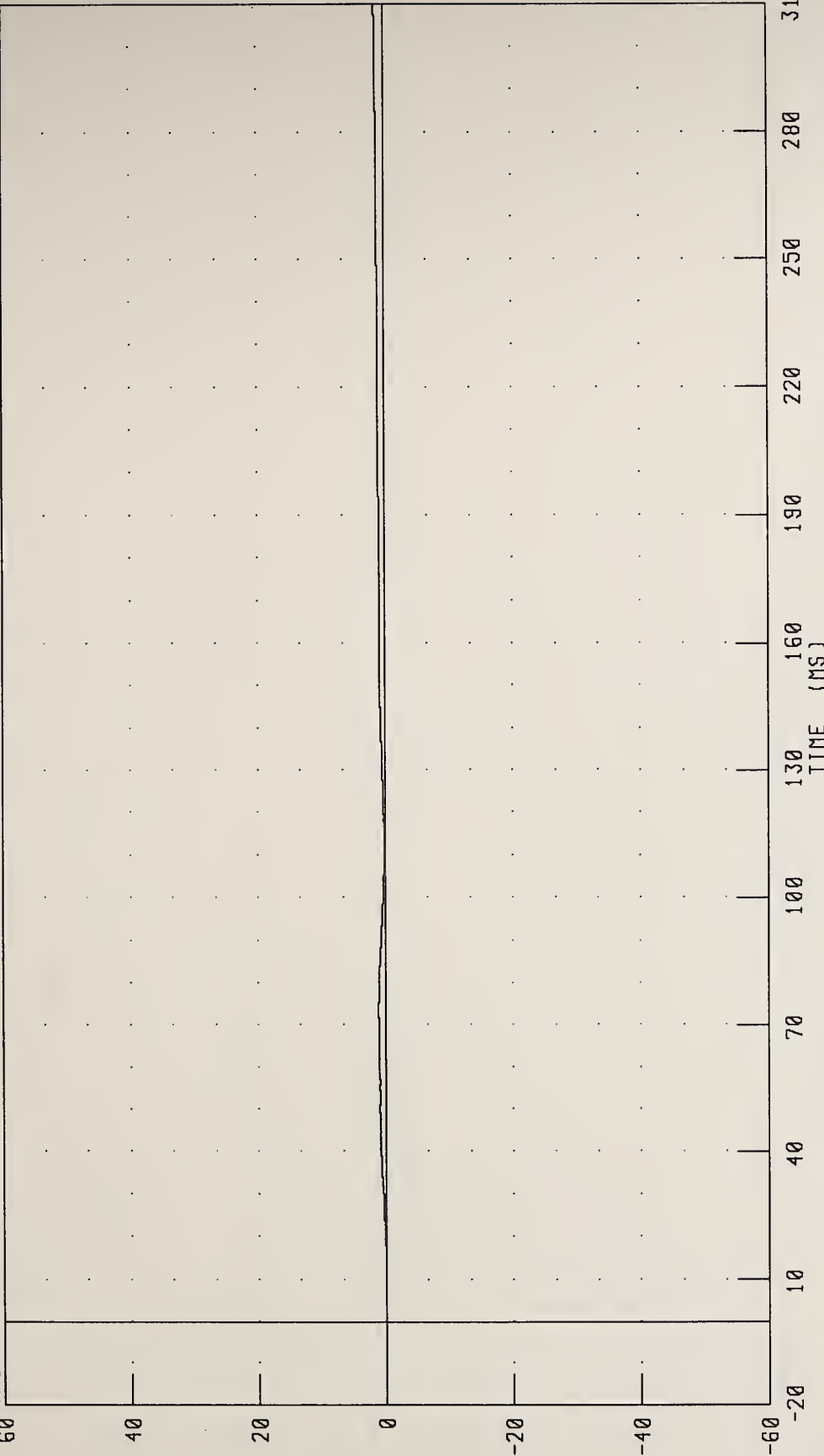
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT FRONT SILL Y-AXIS VELOCITY

TRC INC.

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM



CHANNEL: RFSYV FILTER: CH. CLASS 180

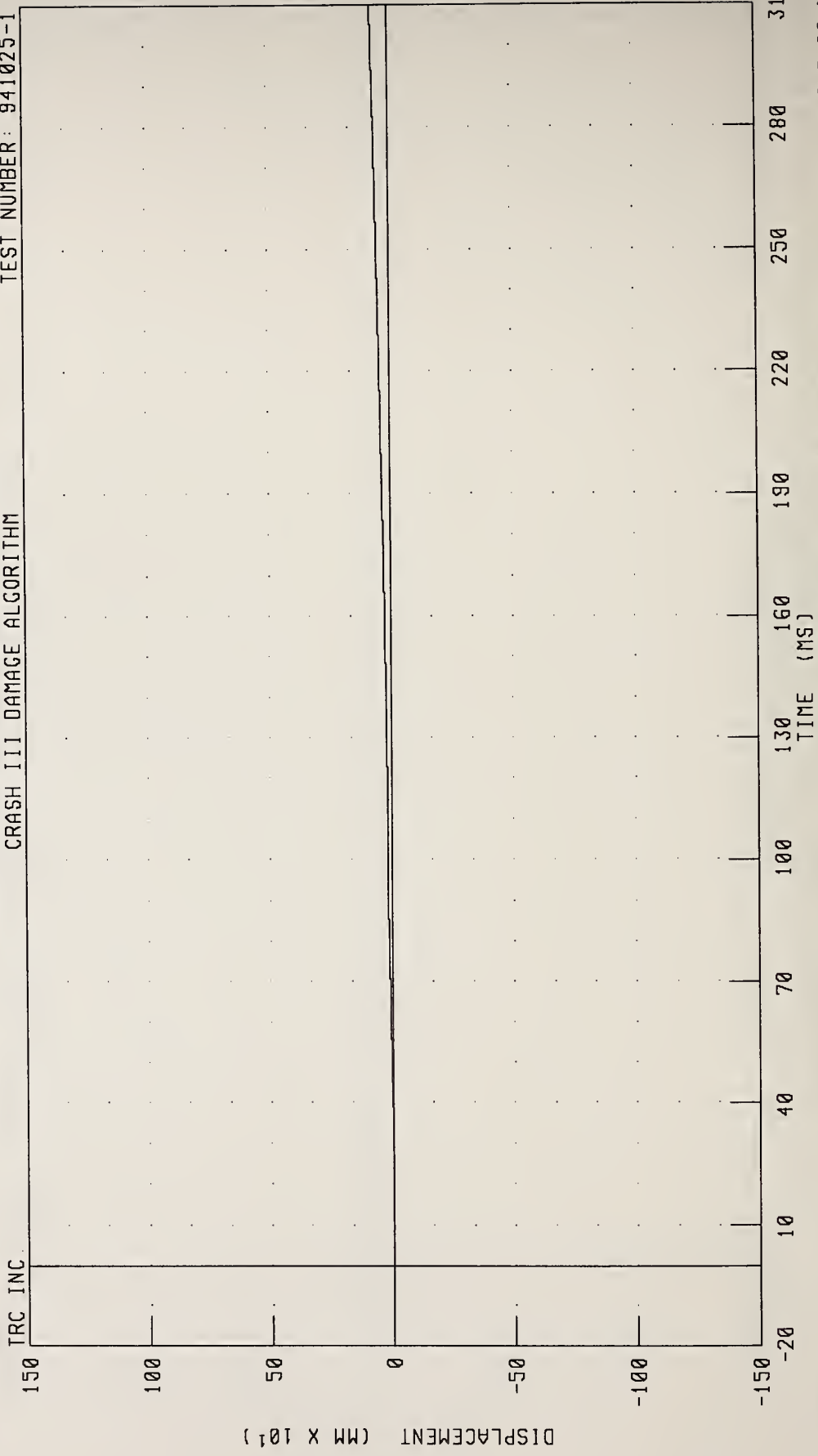
PEAK DATA: 1.50 KM/H @ 310.00 MS; -0.02 KM/H @ 10.72 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT FRONT SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



CHANNEL: RFSYD FILTER: CH. CLASS 180

PEAK DATA: 72.01 MM @ 310.00 MS; -0.01 MM @ 3.28 MS

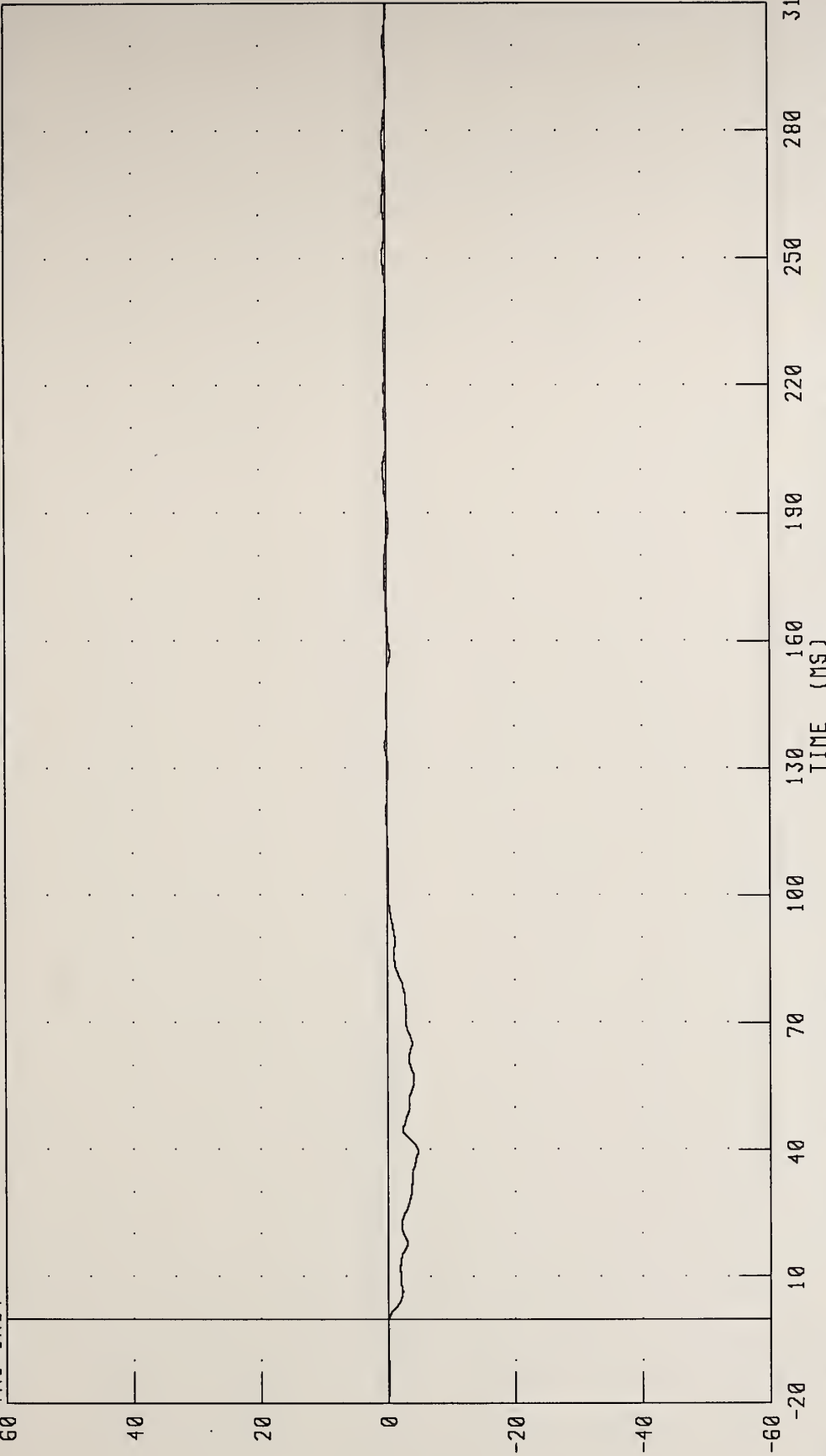
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

LEFT REAR SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1

TRC INC.



CHANNEL: LRSXG FILTER: CH. CLASS 60

PEAK DATA: 0.53 G @ 262.56 MS; -4.70 G @ 39.60 MS

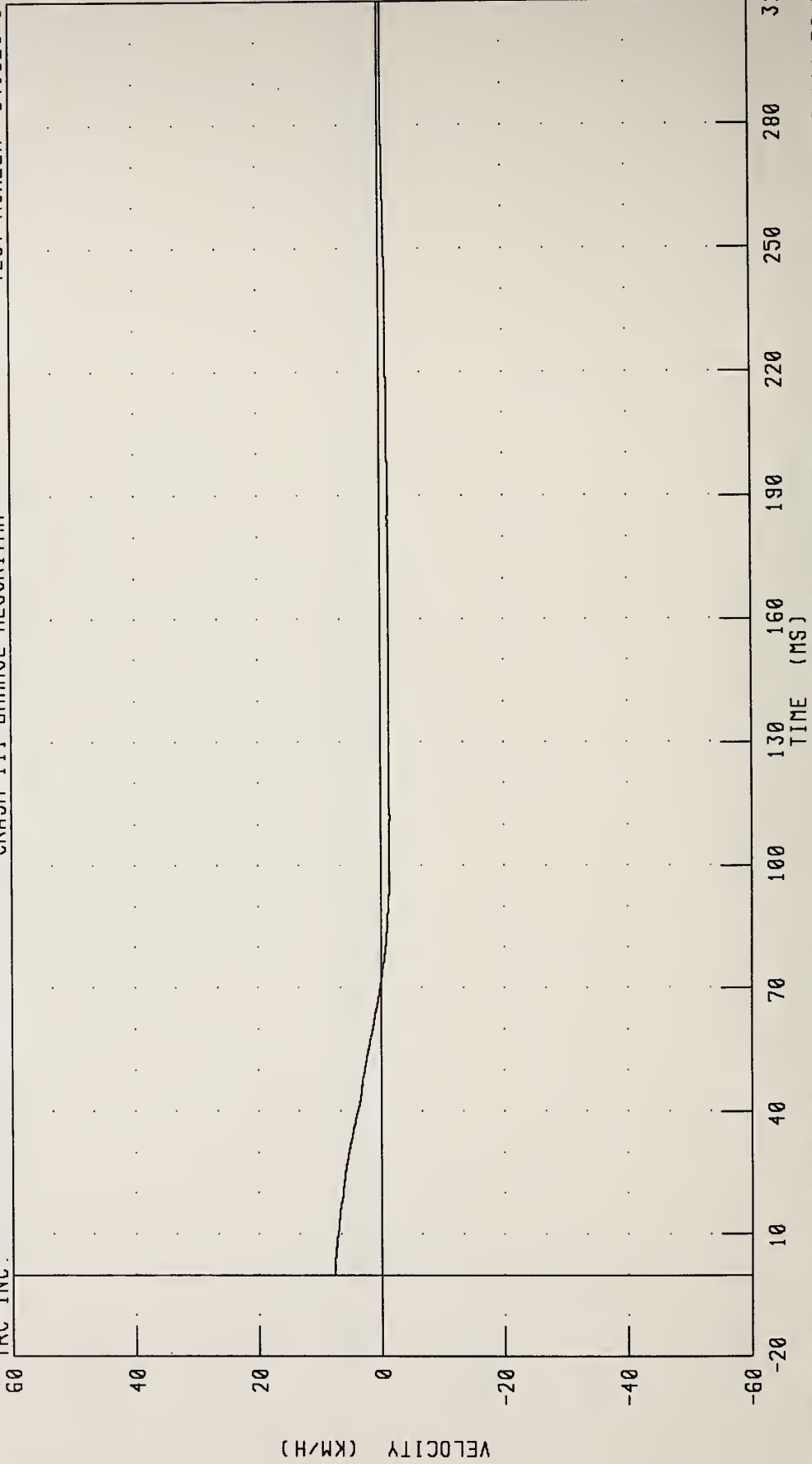
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

LEFT REAR SILL X-AXIS VELOCITY

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LRSXY FILTER: CH. CLASS 180

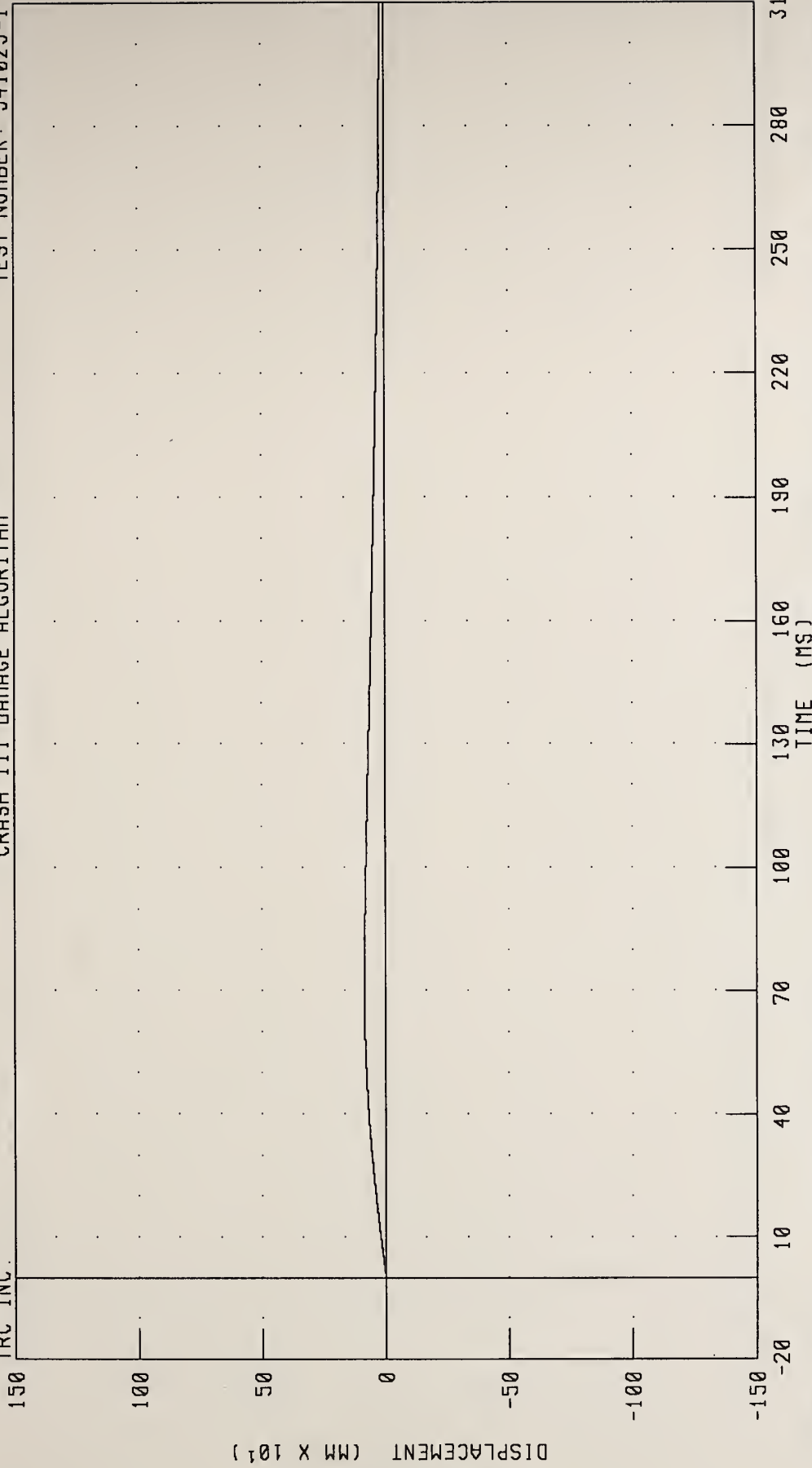
PEAK DATA: 7.70 KM/H @ 1.76 MS; -1.43 KM/H @ 111.76 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT REAR SILL X-AXIS DISPLACEMENT

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.

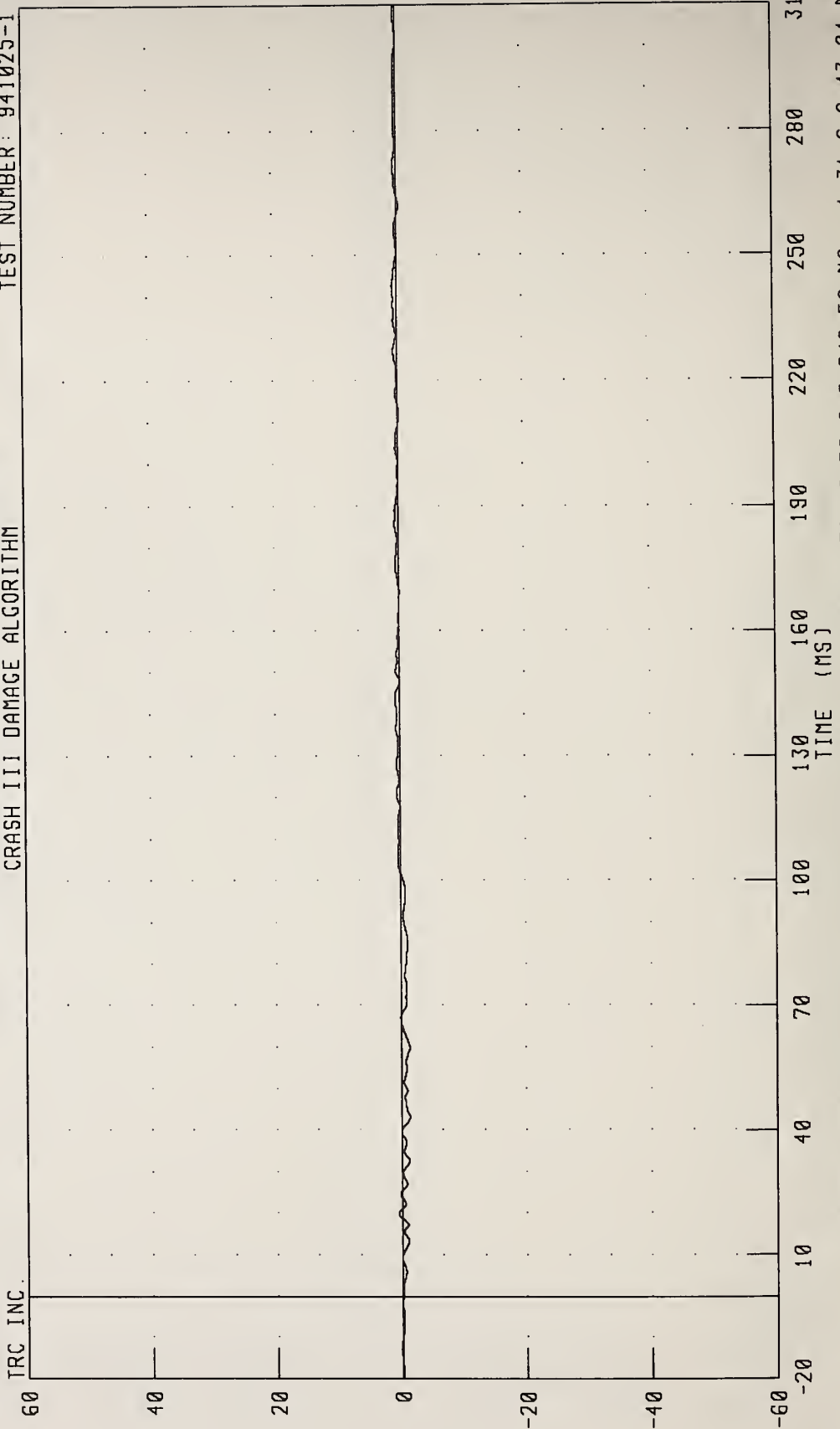


CHANNEL: LRSXD FILTER: CH. CLASS 180

PEAK DATA: 85.92 MM @ 72.08 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT REAR SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



TRC INC.

ACCELERATION (G)

CHANNEL: LRSYG FILTER: CH. CLASS 60

PEAK DATA: 0.78 G @ 242.56 MS; -1.31 G @ 43.04 MS

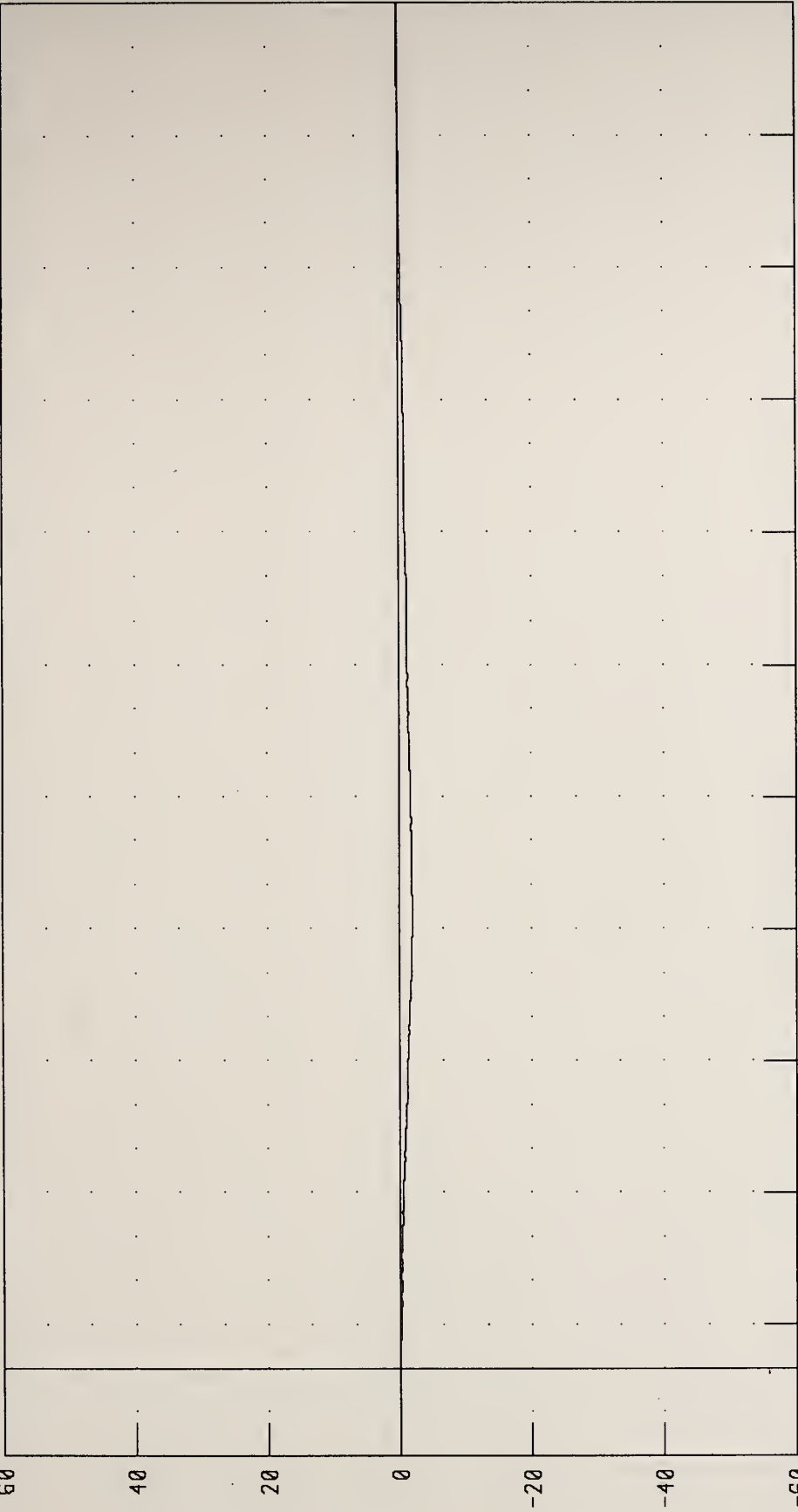
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

LEFT REAR SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TRC INC.

TEST NUMBER: 941025-1



PEAK DATA: 0.25 KM/H @ 308.72 MS; -2.01 KM/H @ 101.52 MS

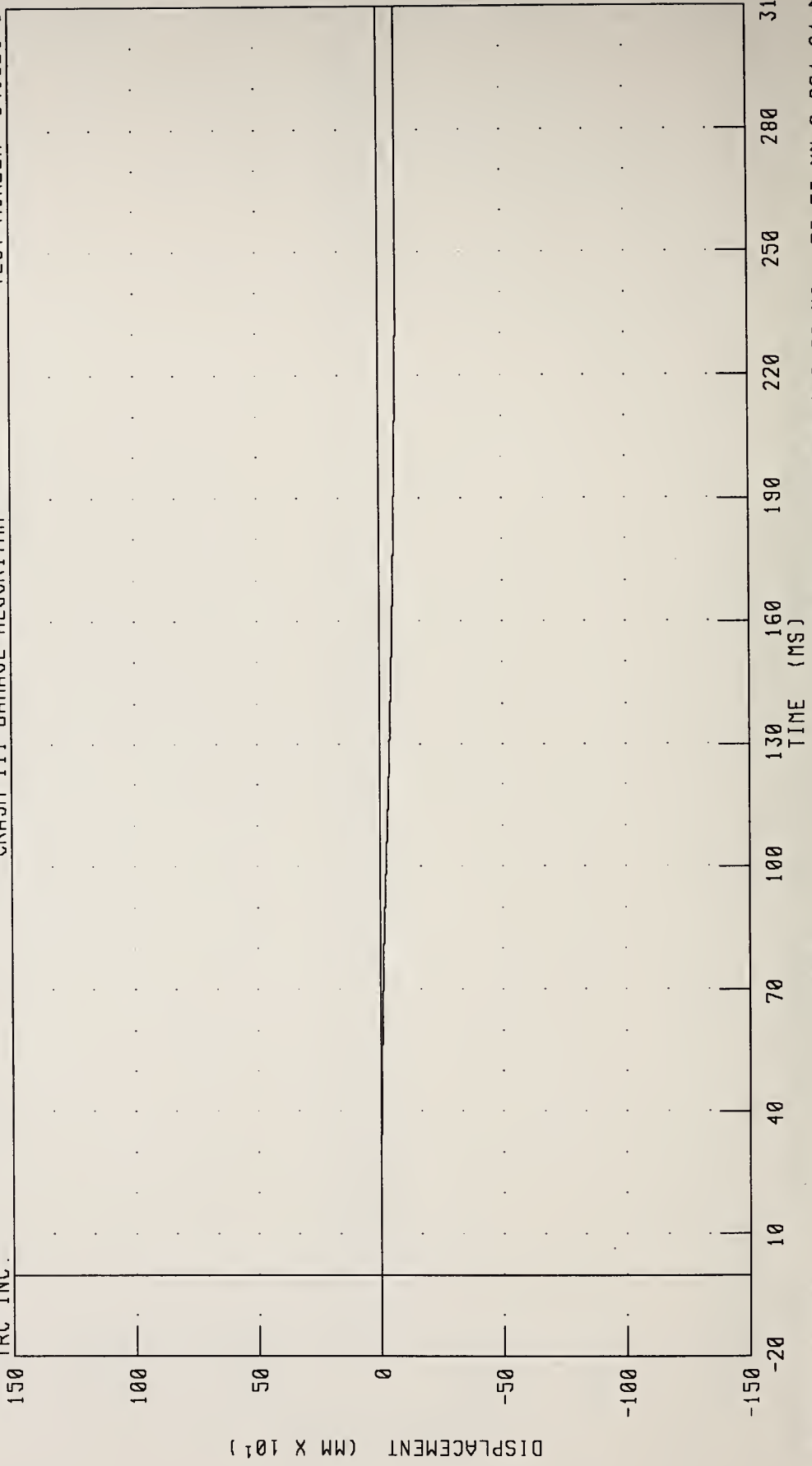
CHANNEL: LRSYV FILTER: CH. CLASS 180

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
LEFT REAR SILL Y-AXIS DISPLACEMENT

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.

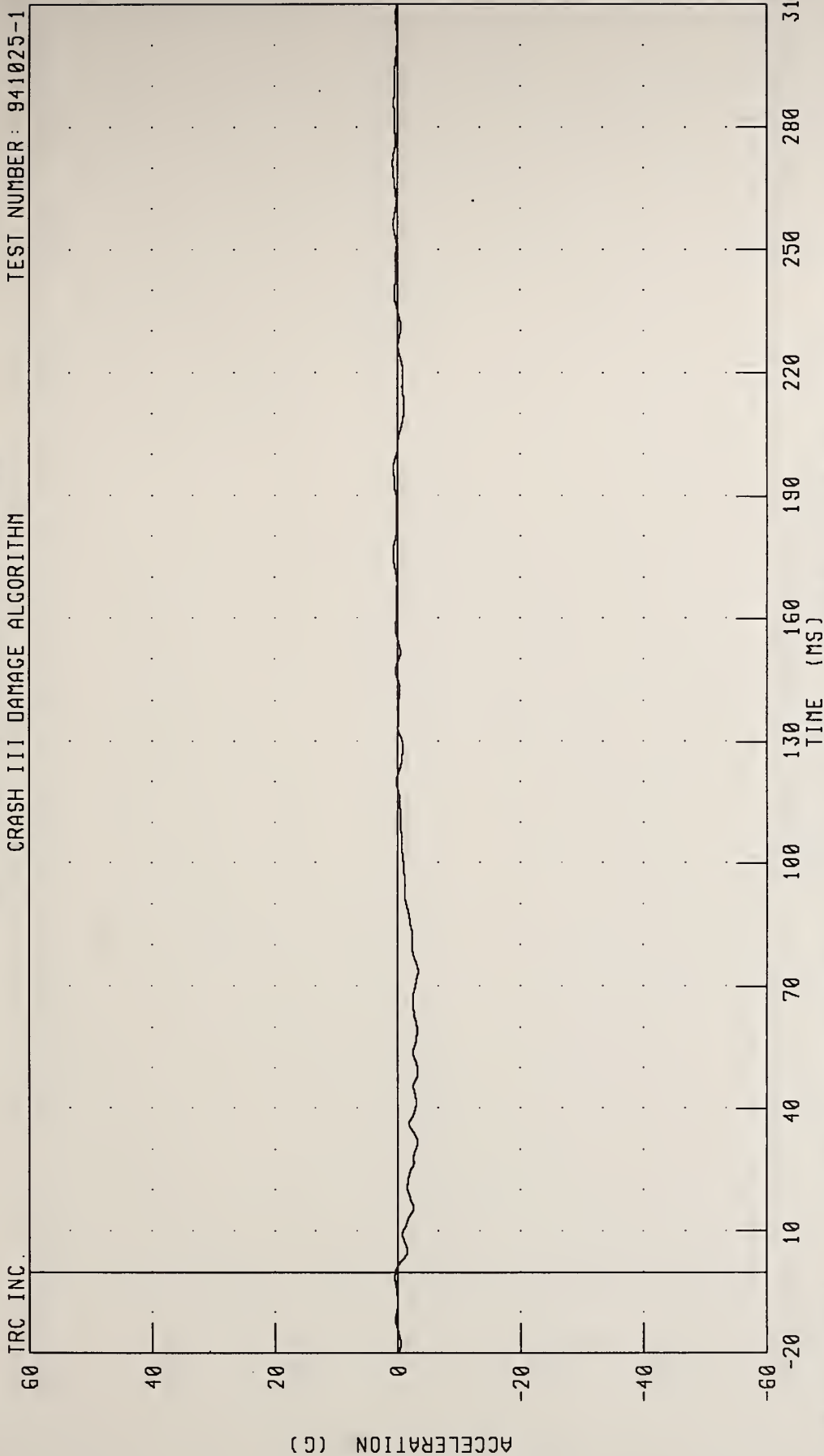


CHANNEL: LRSYD FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 0.00 MS; -73.53 MM @ 284.24 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
RIGHT REAR SILL X-AXIS ACCELERATION

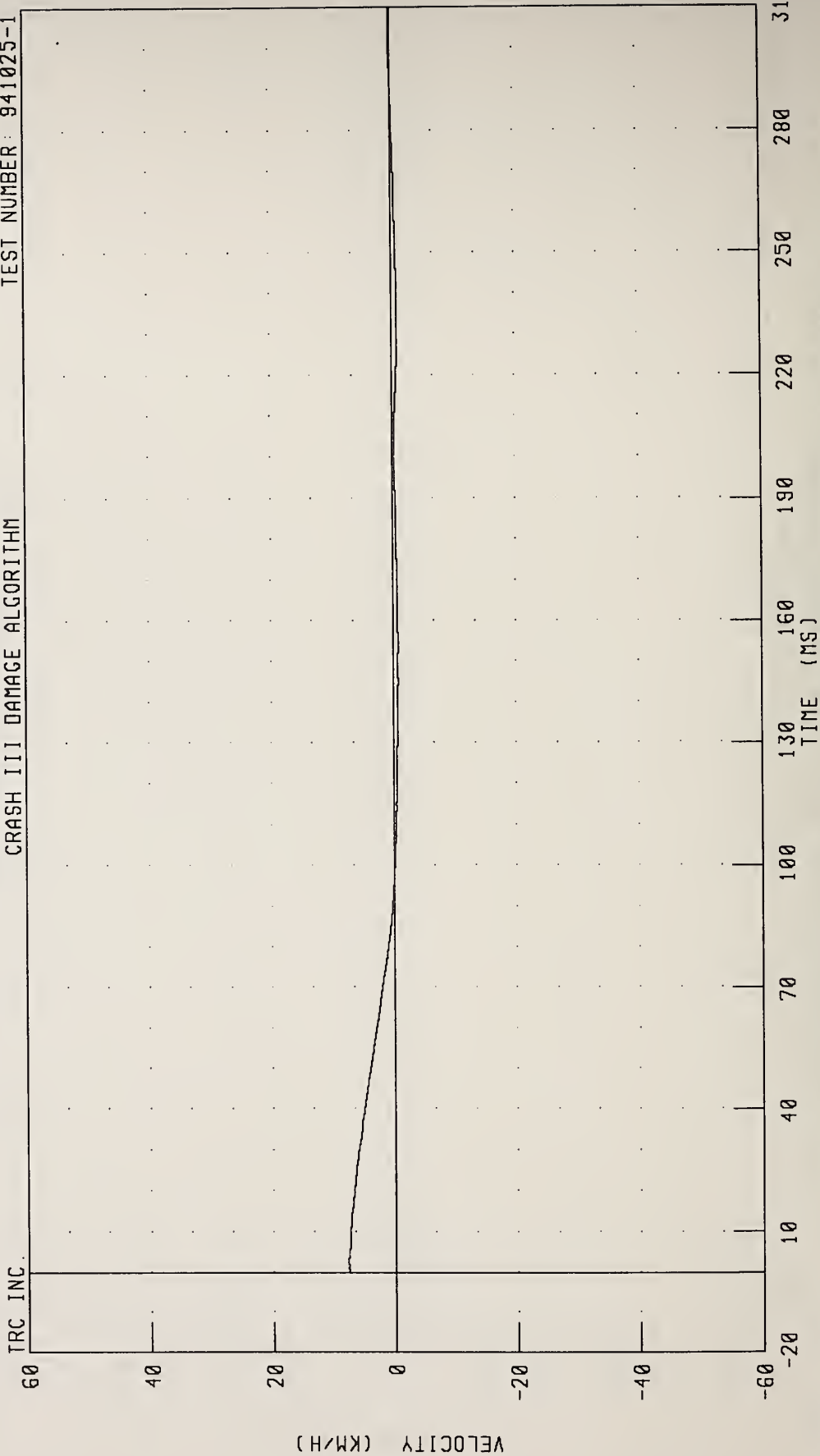
CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-1



CHANNEL: RRSXG FILTER: CH. CLASS 60 PEAK DATA: 0.79 G @ 271.20 MS; -3.33 G @ 73.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
RIGHT REAR SILL X-AXIS VELOCITY
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



TRC INC.

CHANNEL: RRSXY FILTER: CH. CLASS 180

PEAK DATA: 7.73 KM/H @ 2.80 MS; -0.90 KM/H @ 233.52 MS

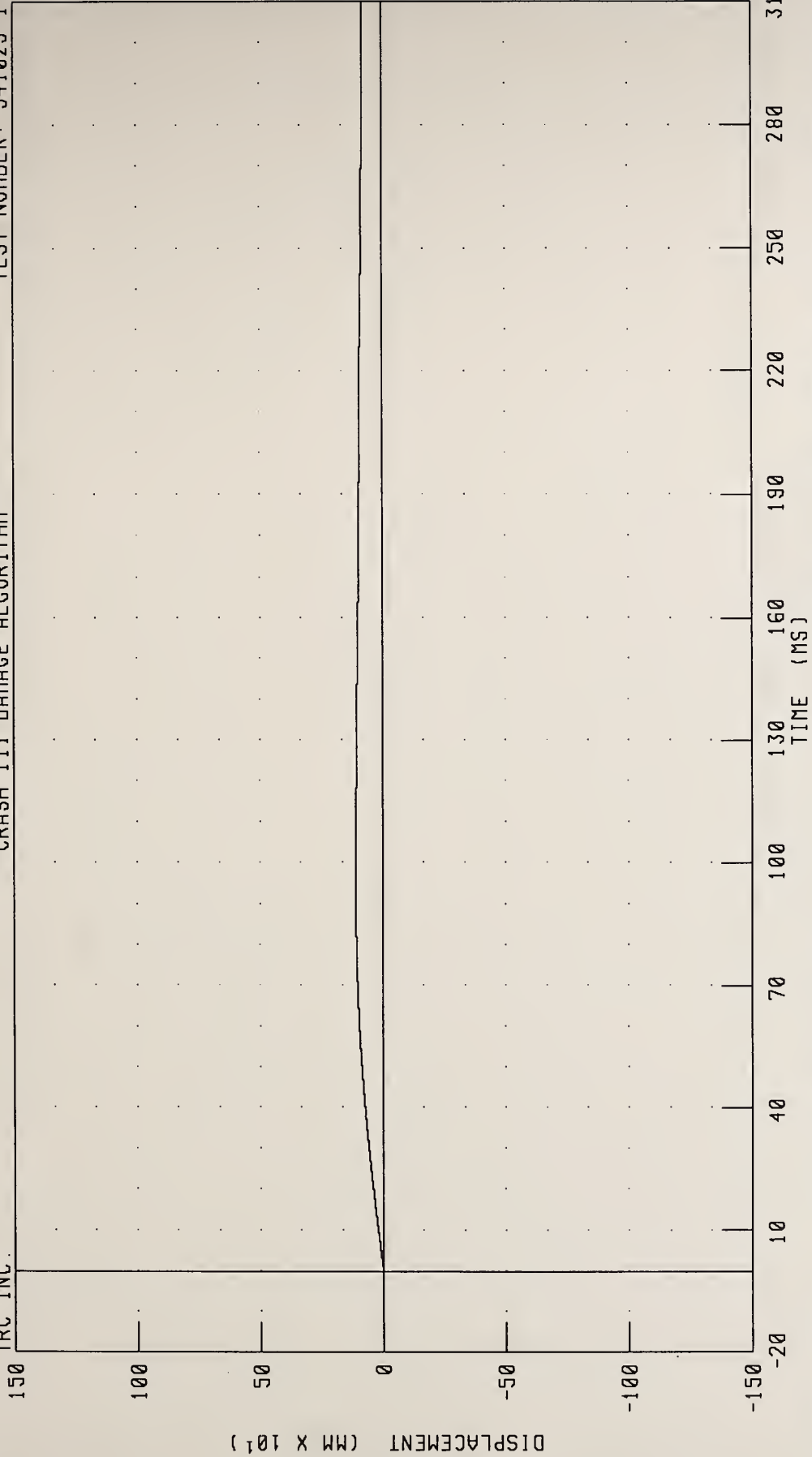
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT REAR SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1

TRC INC.

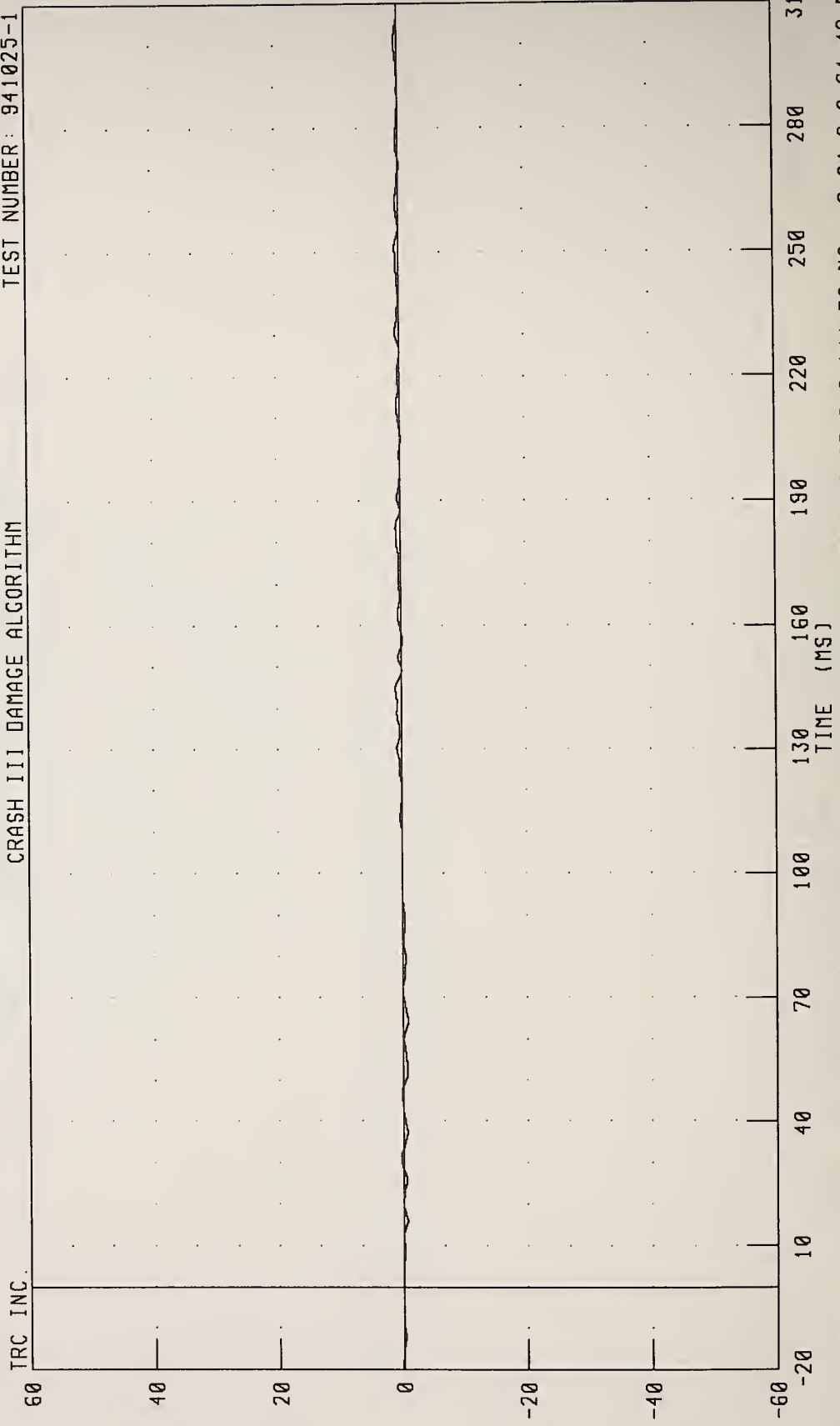


CHANNEL: RRSXD FILTER: CH. CLASS 180

PEAK DATA: 109.77 MM @ 97.60 MS, 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5
RIGHT REAR SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-1



TRC INC.

ACCELERATION (G)

TIME (MS)

CHANNEL: RRSYG FILTER: CH. CLASS 60 PEAK DATA: 0.97 G @ 144.72 MS; -0.84 G @ 64.48 MS

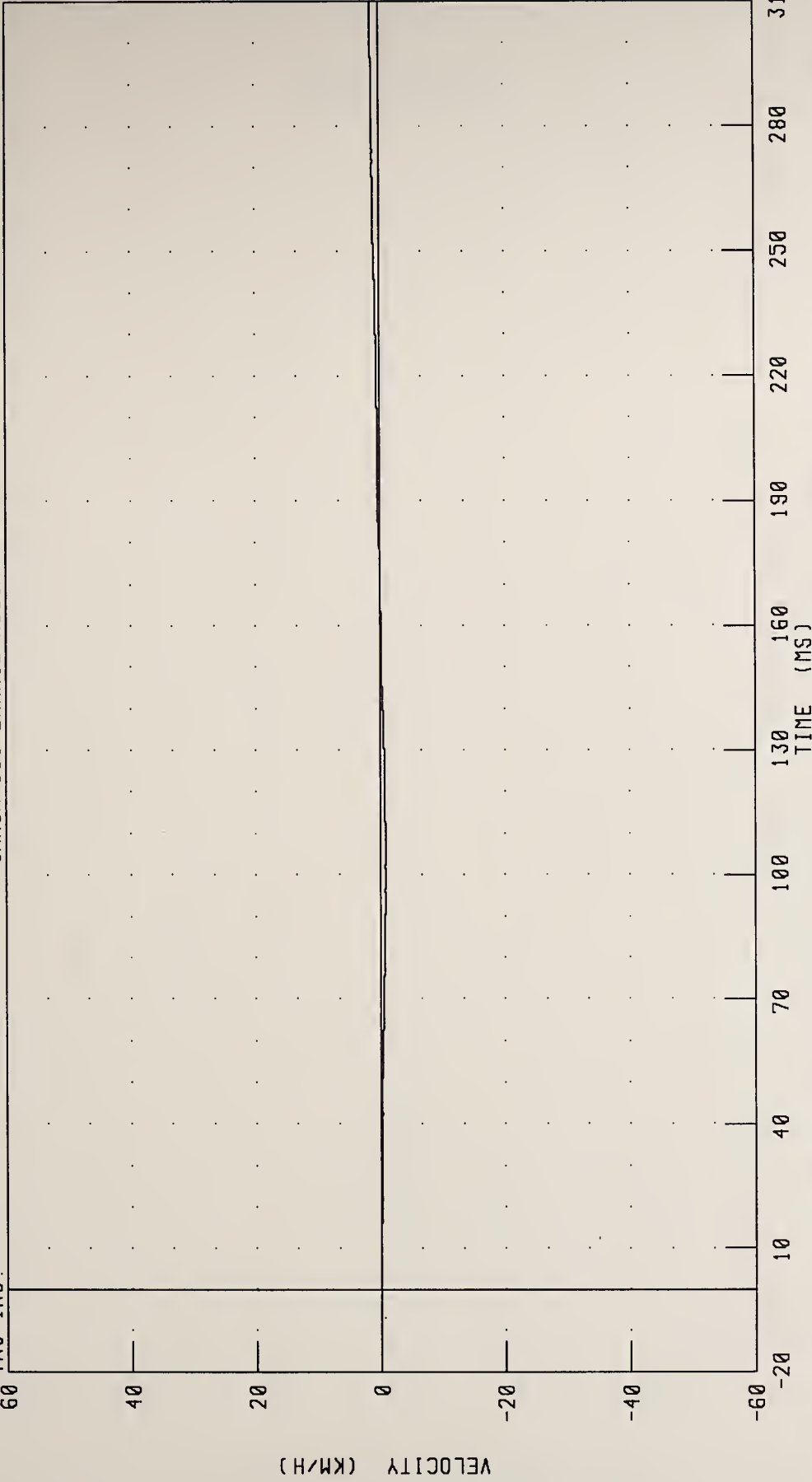
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT REAR SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TRC INC.

TEST NUMBER: 941025-1



CHANNEL: RRSYV FILTER: CH. CLASS 180

PEAK DATA: 1.42 KM/H @ 306.40 MS; -0.77 KM/H @ 94.24 MS

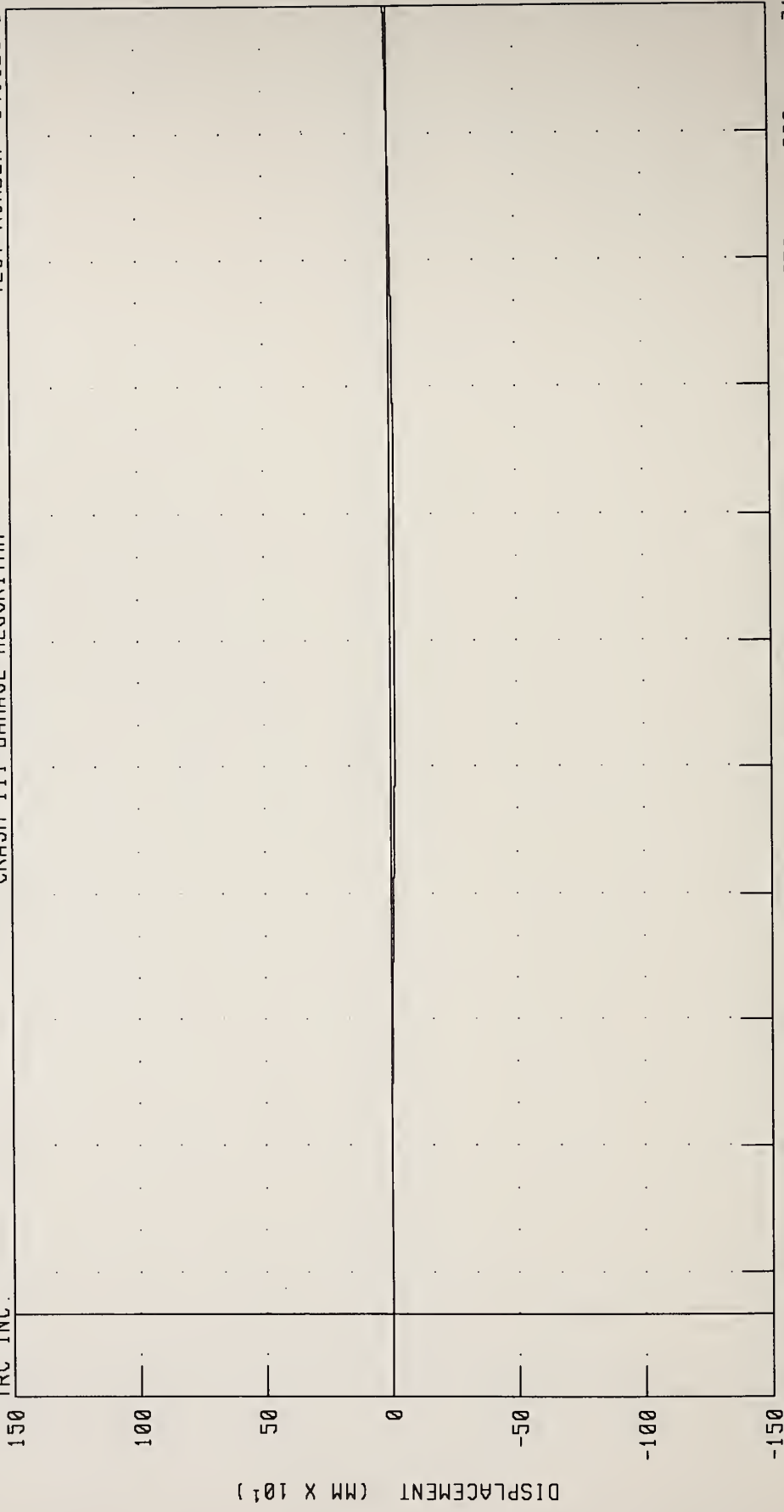
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 1 OF 5

RIGHT REAR SILL Y-AXIS DISPLACEMENT

TEST NUMBER: 941025-1

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: RRSYD FILTER: CH. CLASS 180

PEAK DATA: 11.35 MM @ 310.00 MS; -18.23 MM @ 170.64 MS

Data Plots

Test No. 941025-2

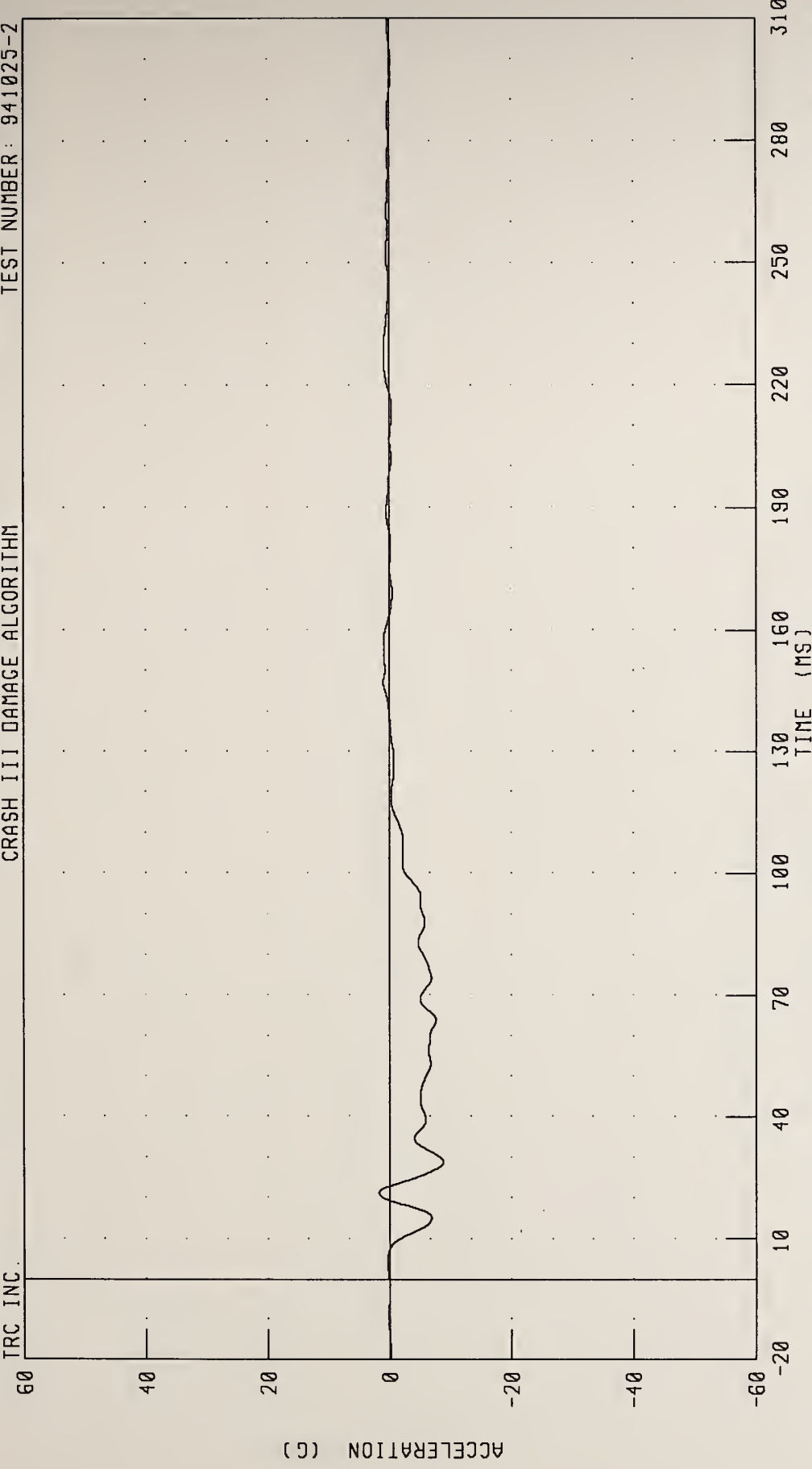
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

TRC INC.



CHANNEL: VCGXG FILTER: CH. CLASS 60

TIME (MS)

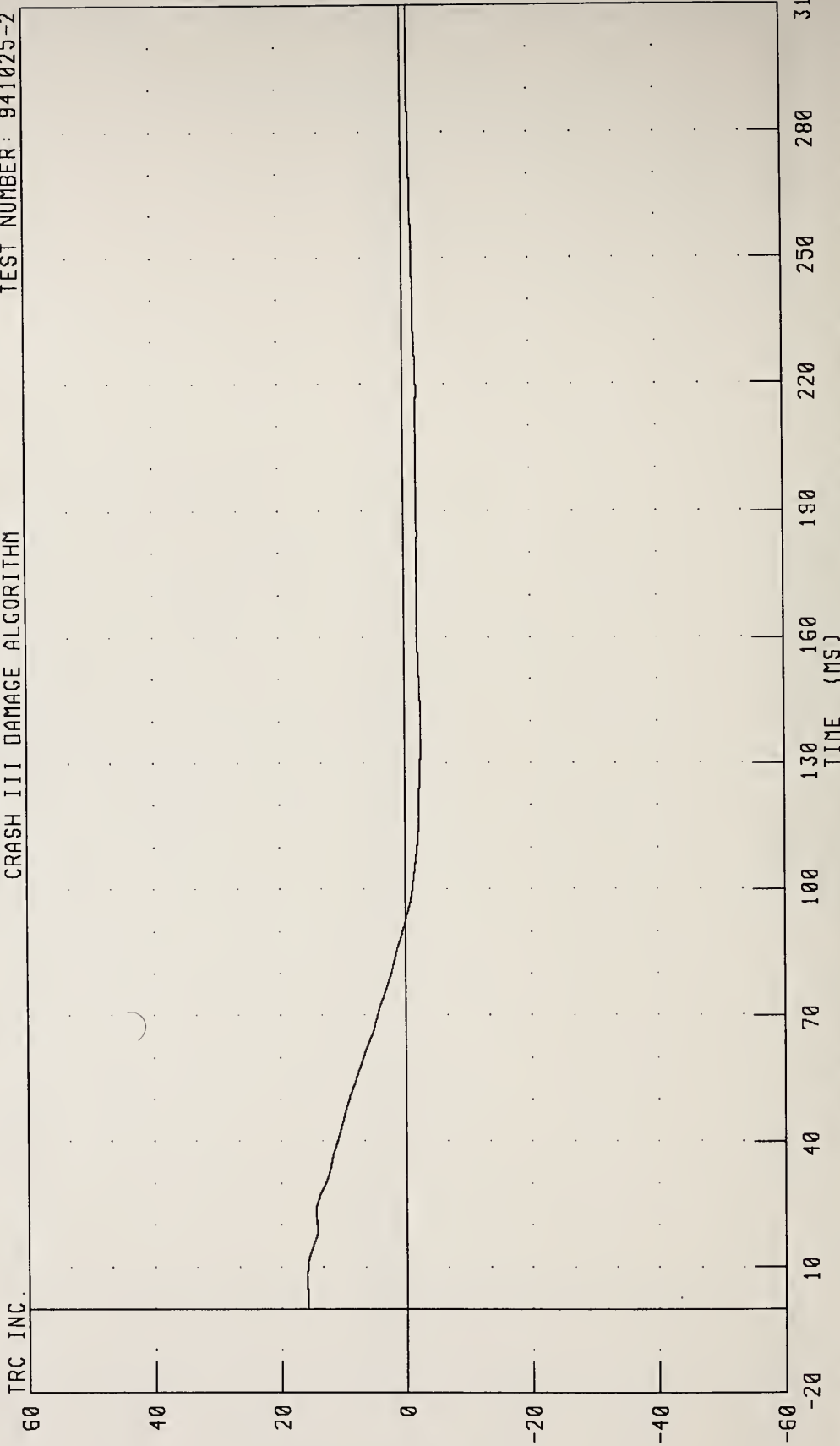
PEAK DATA: 1.79 G @ 21.20 MS; -8.81 G @ 28.80 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



TRC INC.

VELOCITY (KM/H)

TIME (MS)

CHANNEL: VCCXV FILTER: CH. CLASS 180

PEAK DATA: 15.86 KM/H @ 6.08 MS; -2.51 KM/H @ 138.64 MS

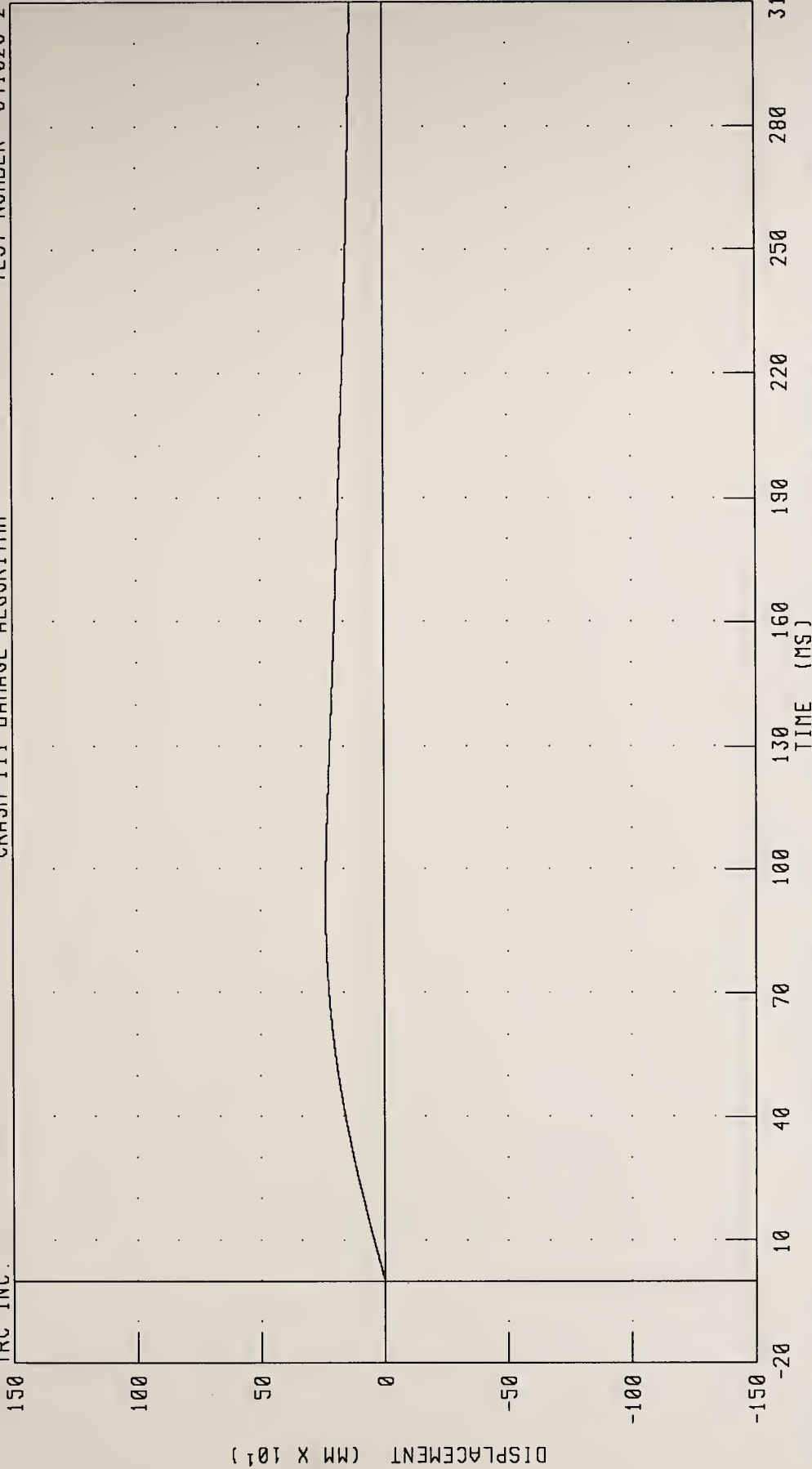
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

TRC INC.



CHANNEL: VCGXD FILTER: CH. CLASS 180

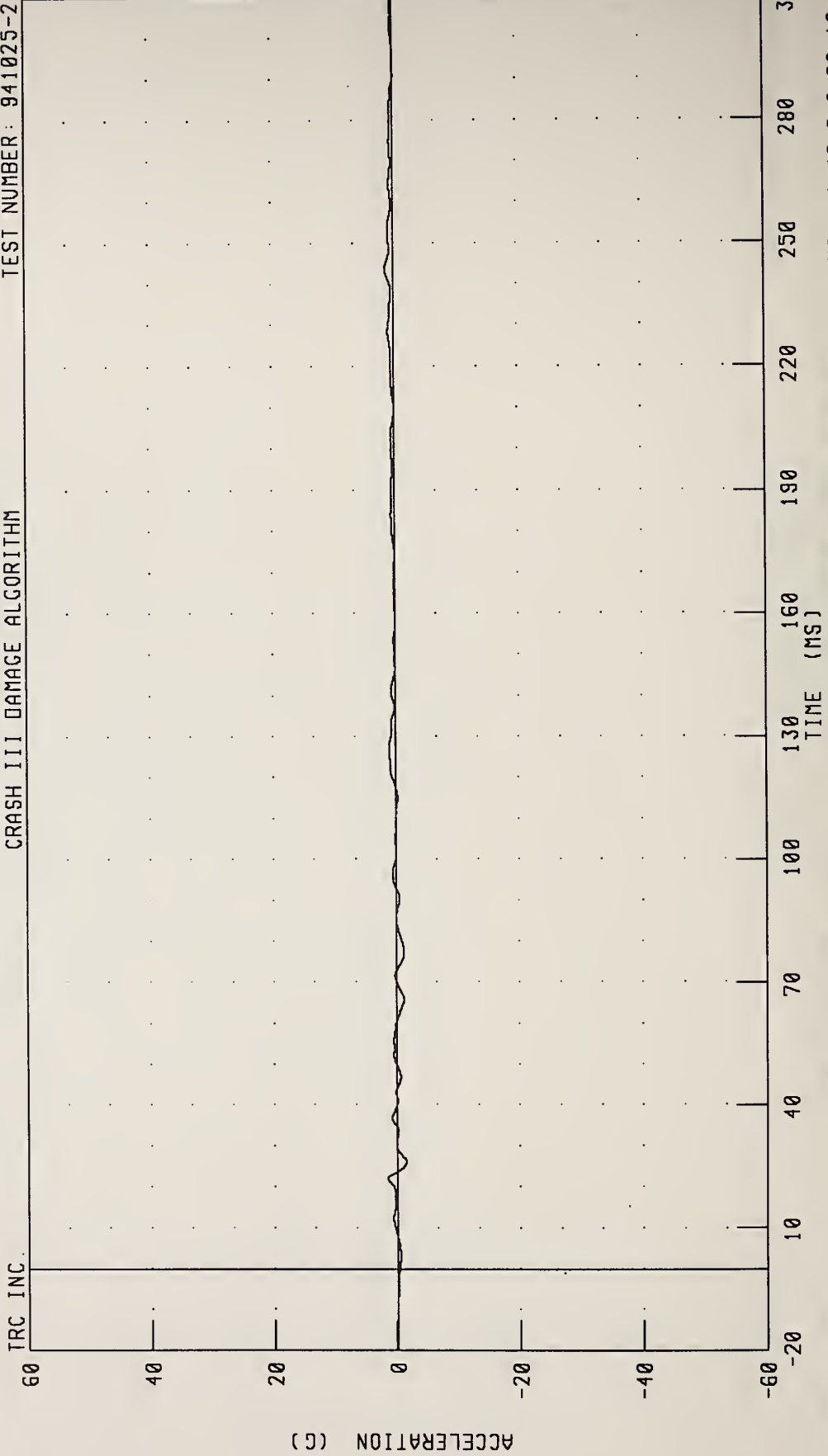
PEAK DATA: 237.06 MM @ 92.72 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: VCGYG FILTER: CH. CLASS 60

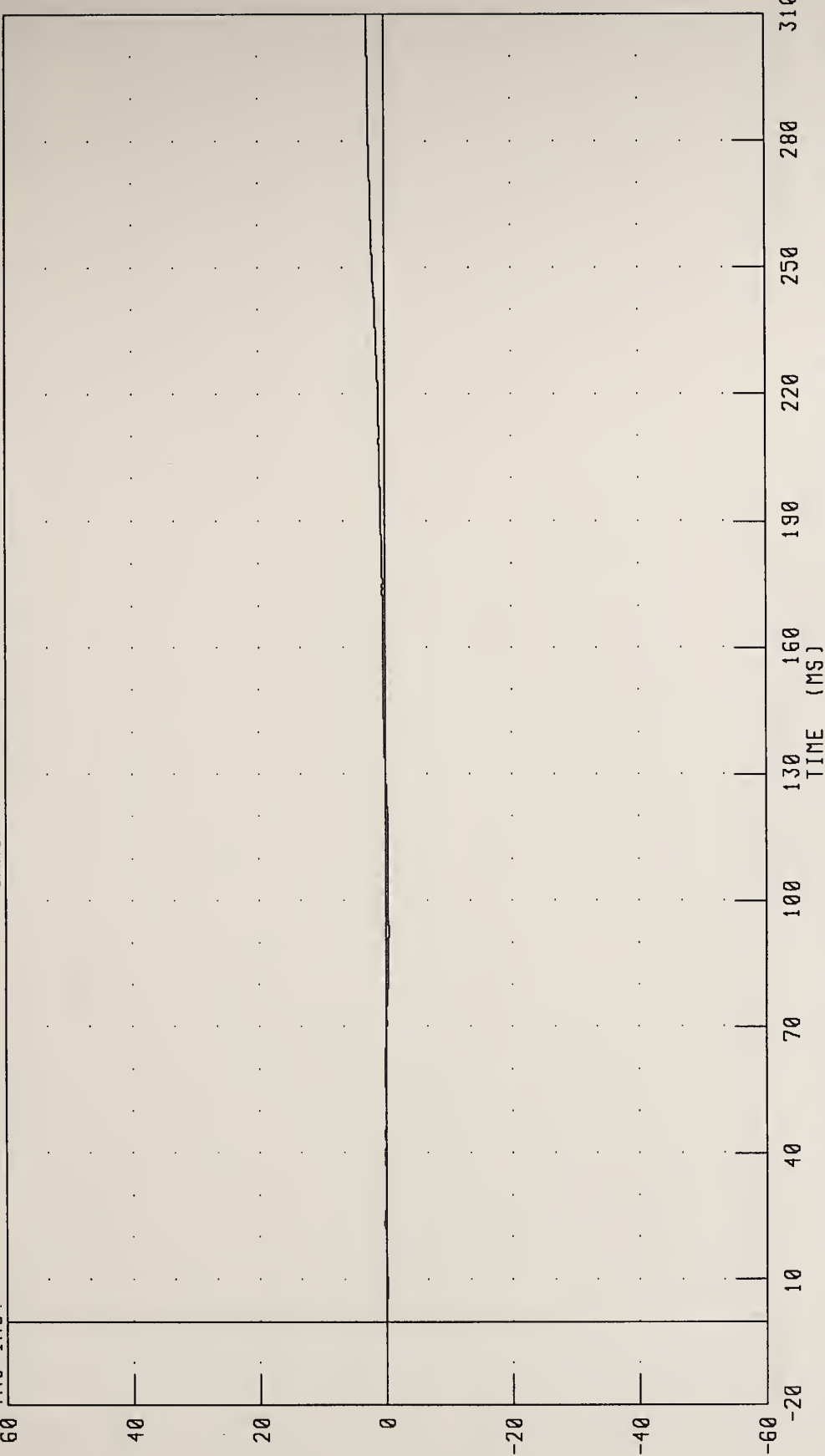
PEAK DATA: 1.50 G @ 22.08 MS; -1.49 G @ 26.16 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG Y-AXIS VELOCITY
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

TRC INC.

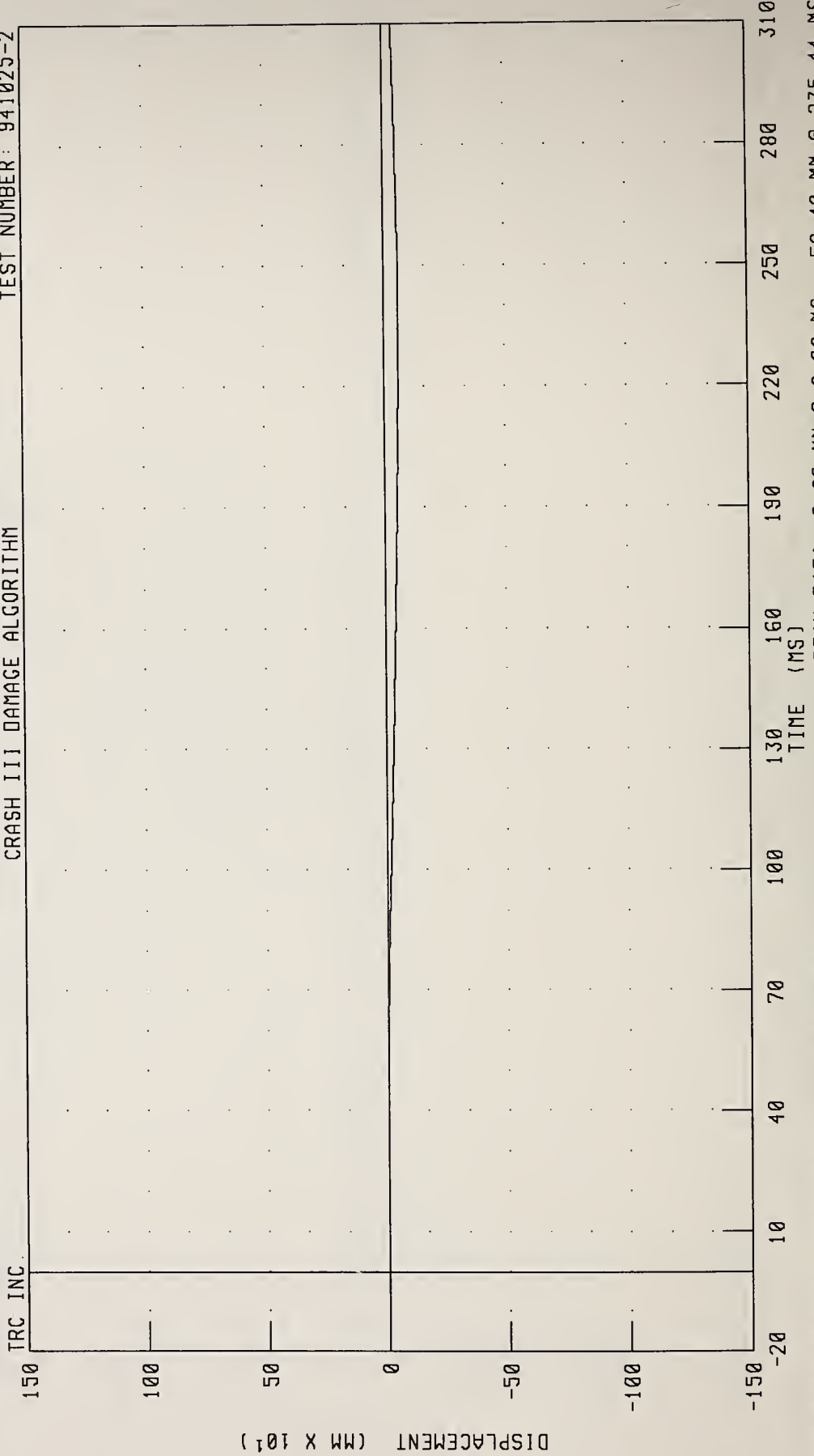


CHANNEL: VCGYV FILTER: CH. CLASS 180

PEAK DATA: 2.74 KM/H @ 310.00 MS; -0.43 KM/H @ 92.16 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT FRONT SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2



CHANNEL: LFSYD FILTER: CH. CLASS 180 PEAK DATA: 0.00 MM @ 0.00 MS; -59.40 MM @ 235.44 MS

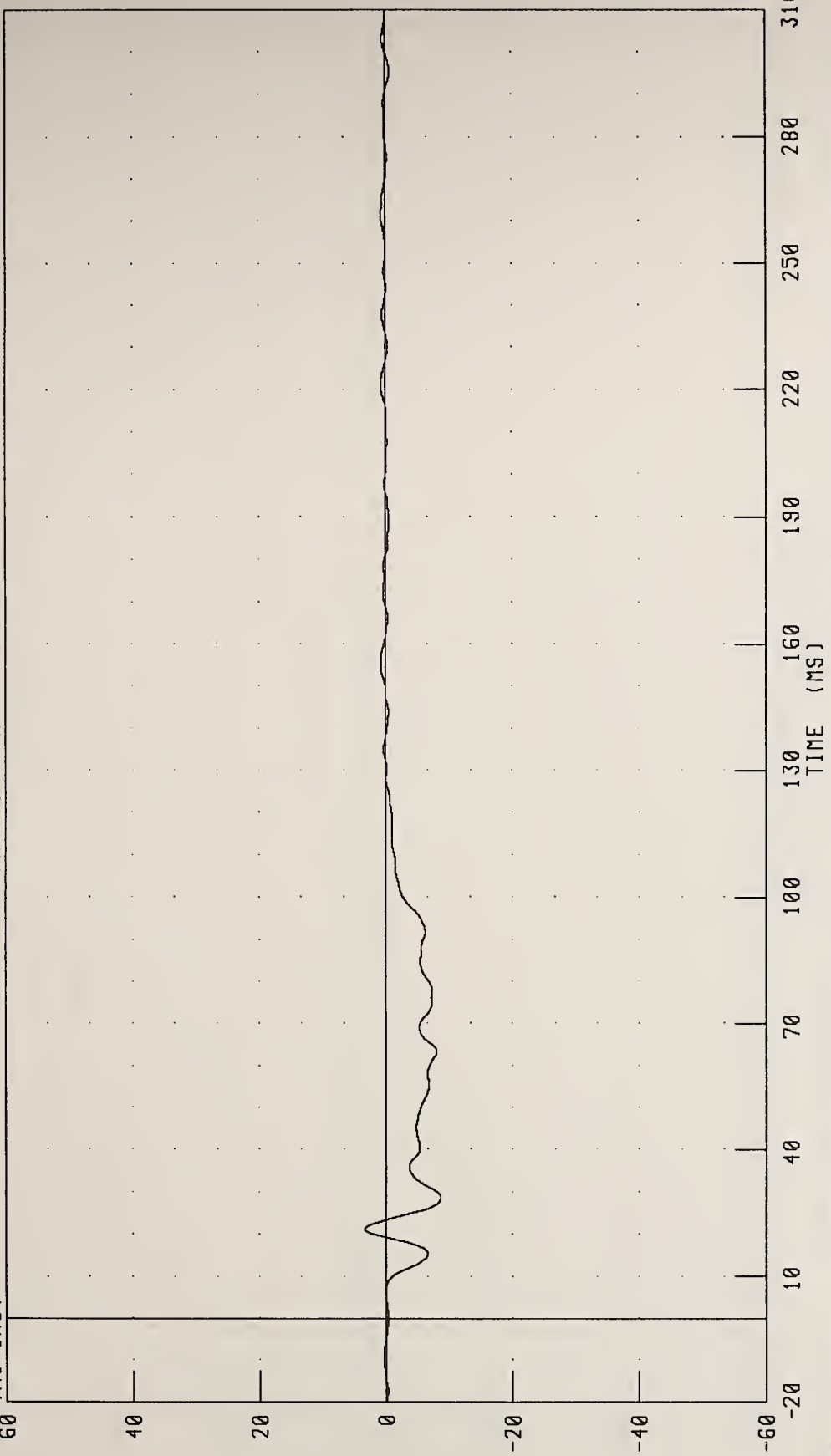
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

RIGHT FRONT SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

TRC INC.

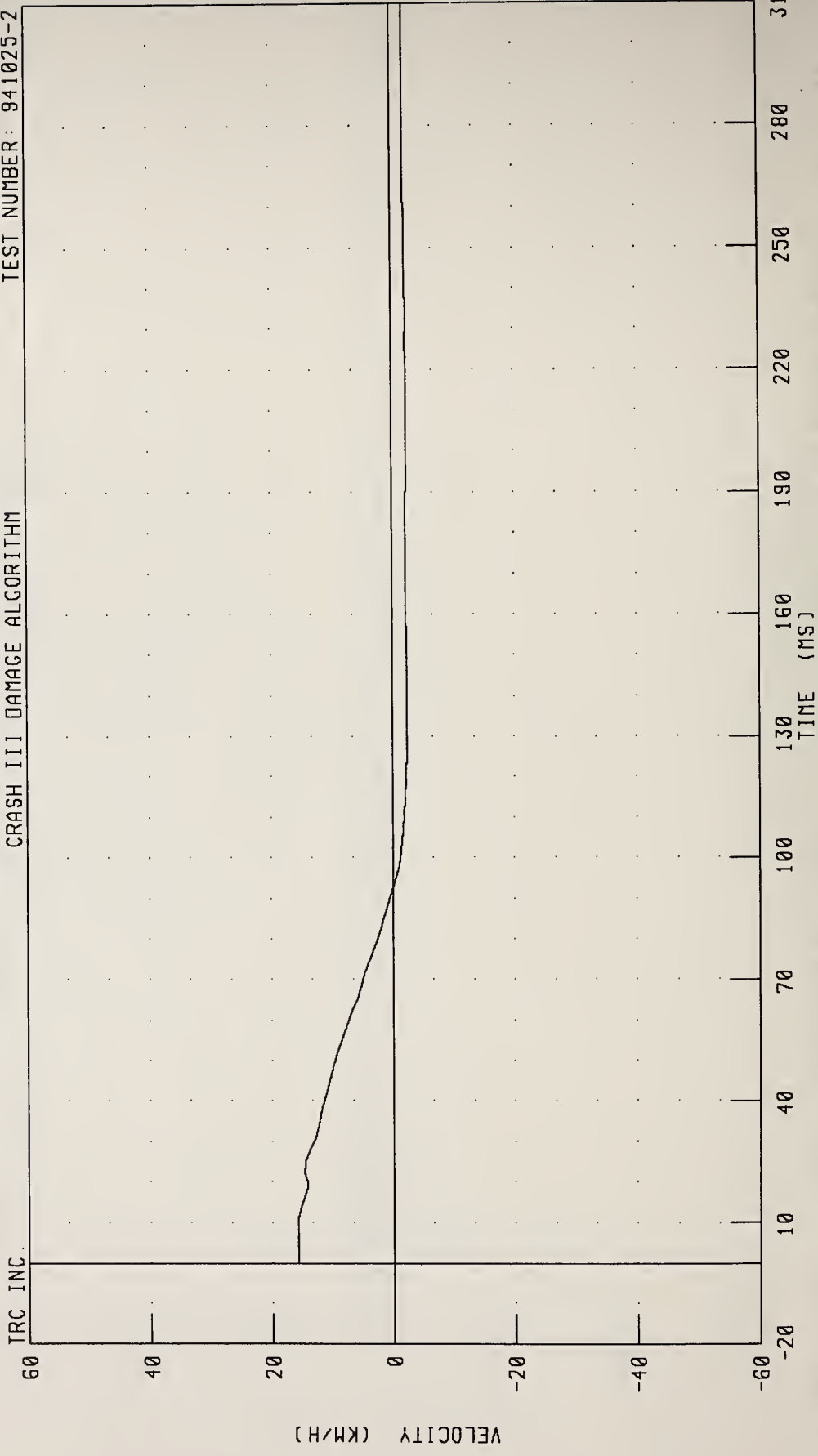


CHANNEL: RFSXG FILTER: CH. CLASS 60

PEAK DATA: 3.41 G @ 21.20 MS; -8.69 G @ 28.72 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
RIGHT FRONT SILL X-AXIS VELOCITY
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: RFSXY FILTER: CH. CLASS 180

PEAK DATA: 15.80 KM/H @ 0.00 MS; -2.43 KM/H @ 146.56 MS

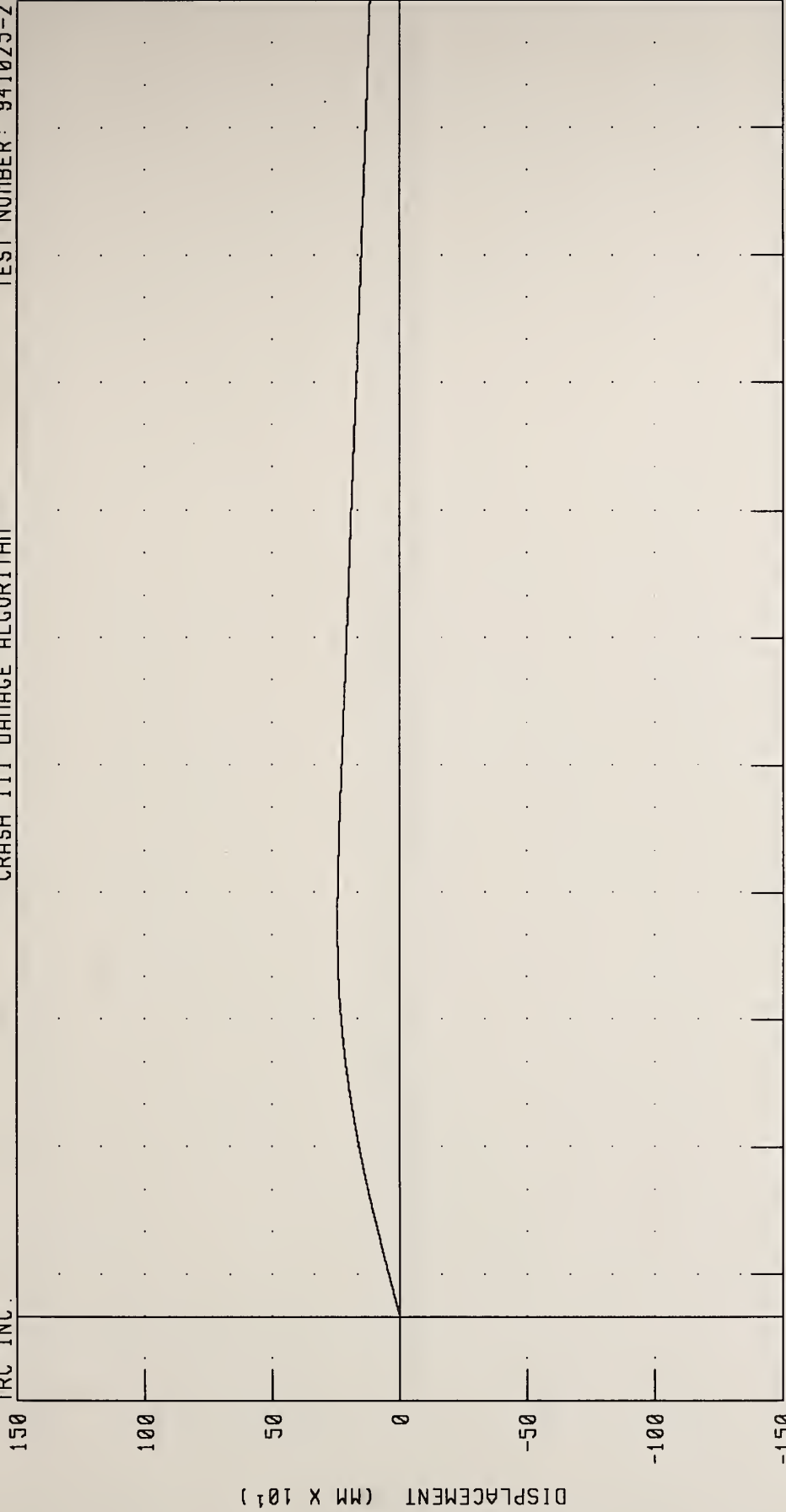
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

RIGHT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

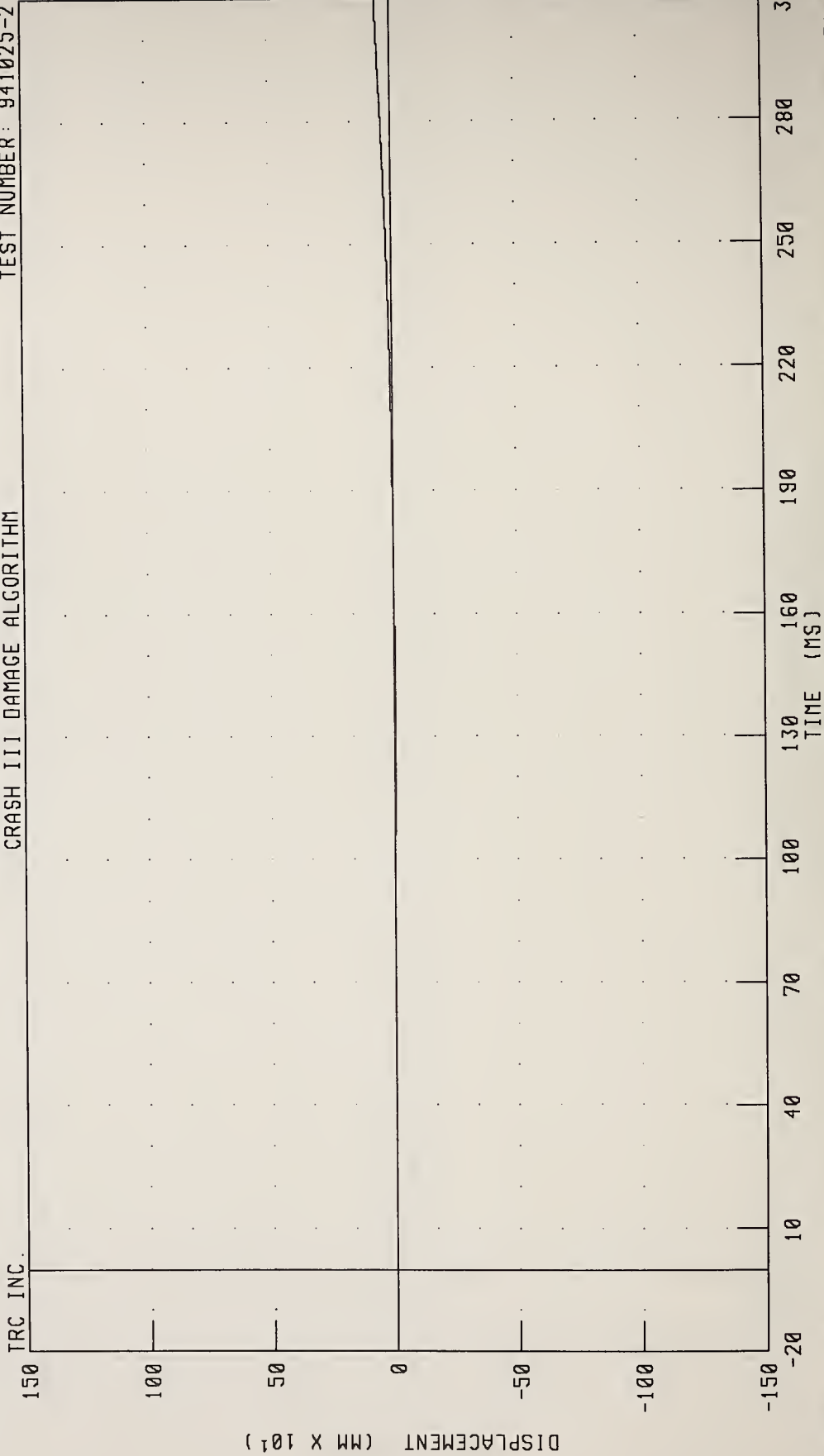
TRC INC.



CHANNEL: RFSXD FILTER: CH. CLASS 180
PEAK DATA: 244.58 MM @ 92.72 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
VEHICLE CG Y-AXIS DISPLACEMENT
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: VCGYD FILTER: CH. CLASS 180

PEAK DATA: 61.59 MM @ 310.00 MS; -3.62 MM @ 129.52 MS

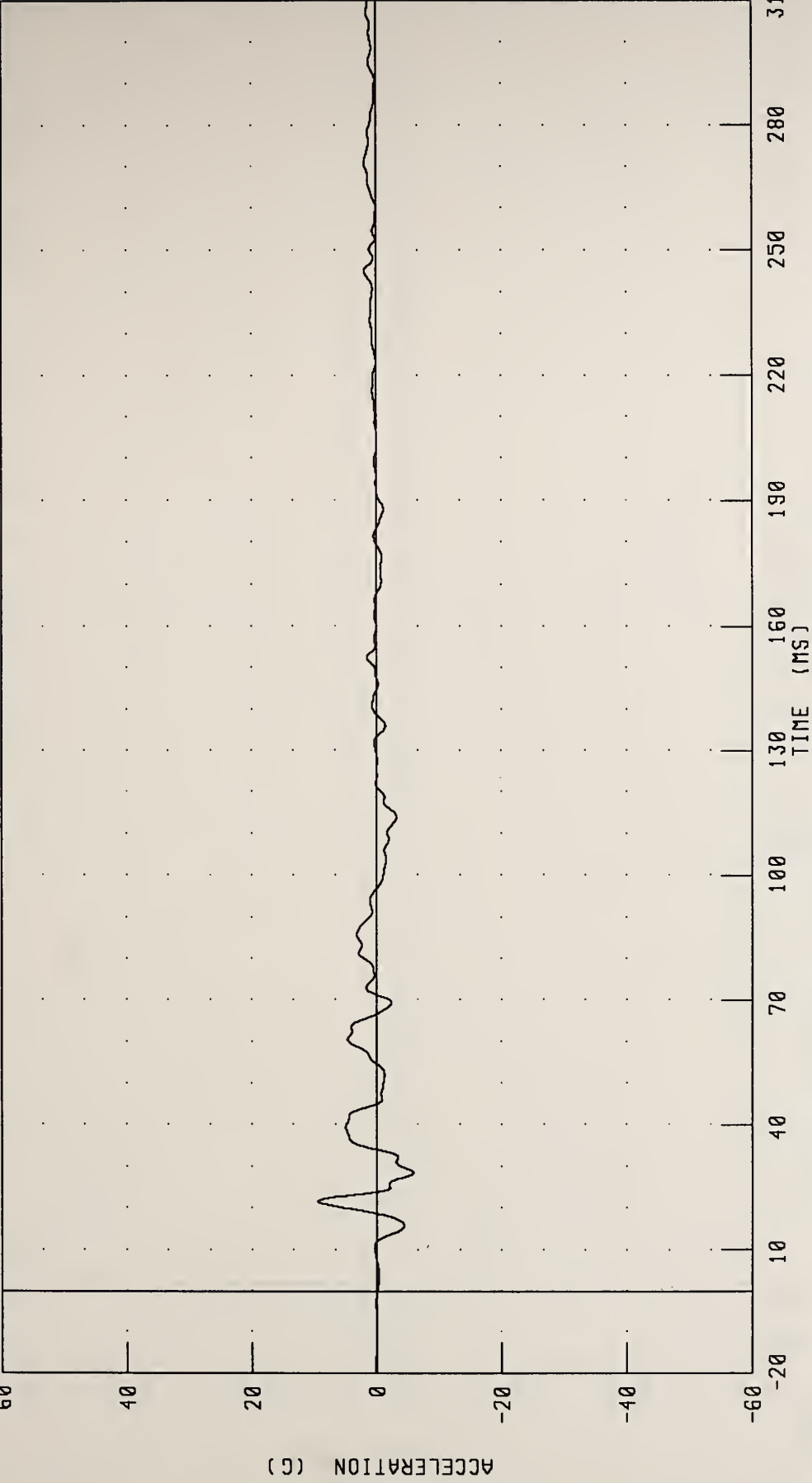
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG Z-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TRC INC.

TEST NUMBER: 941025-2



CHANNEL: VCGZG FILTER: CH. CLASS 60

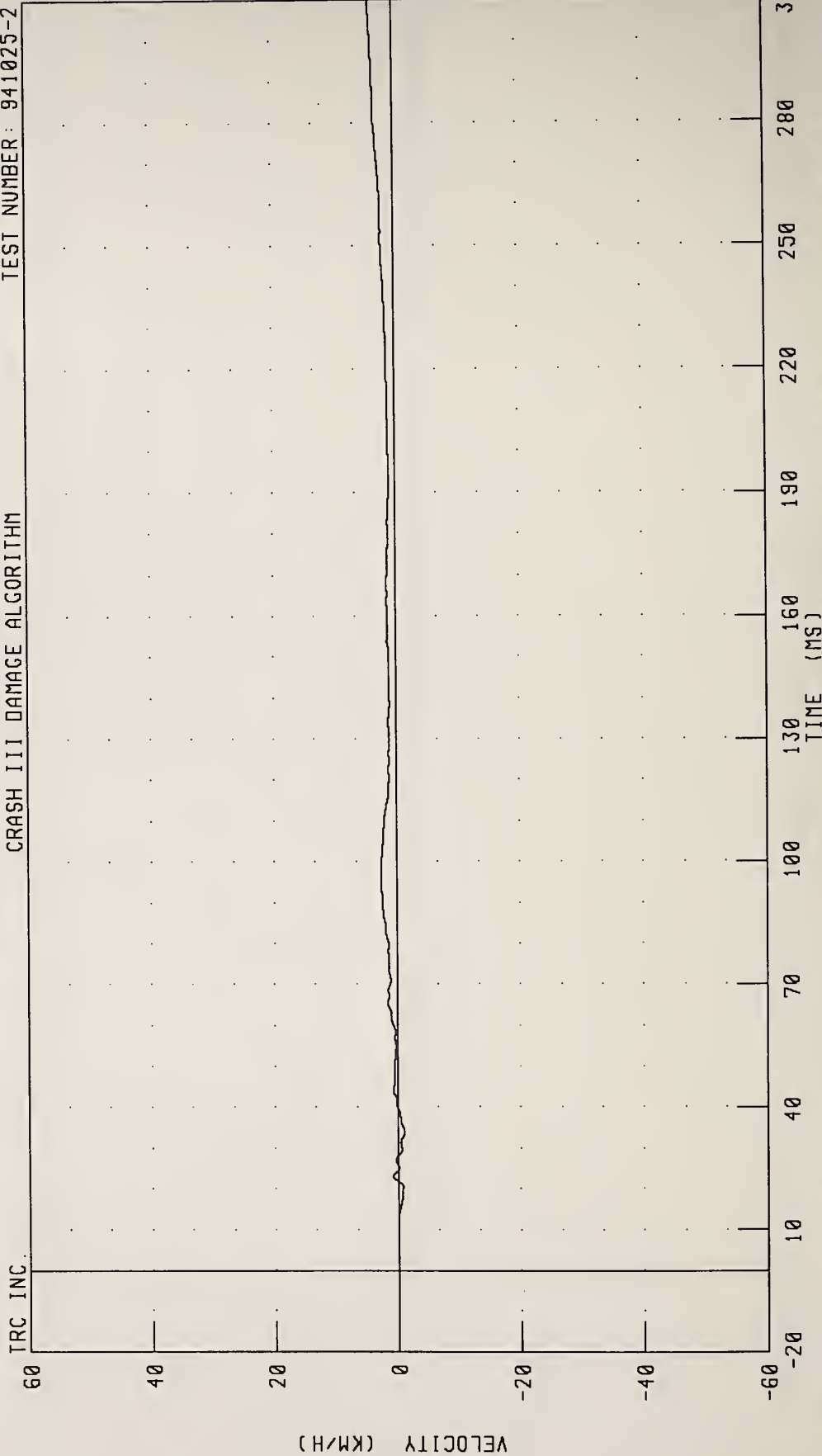
PEAK DATA: 9.44 G @ 21.60 MS; -5.84 G @ 28.40 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG Z-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: VCGZV FILTER: CH. CLASS 180

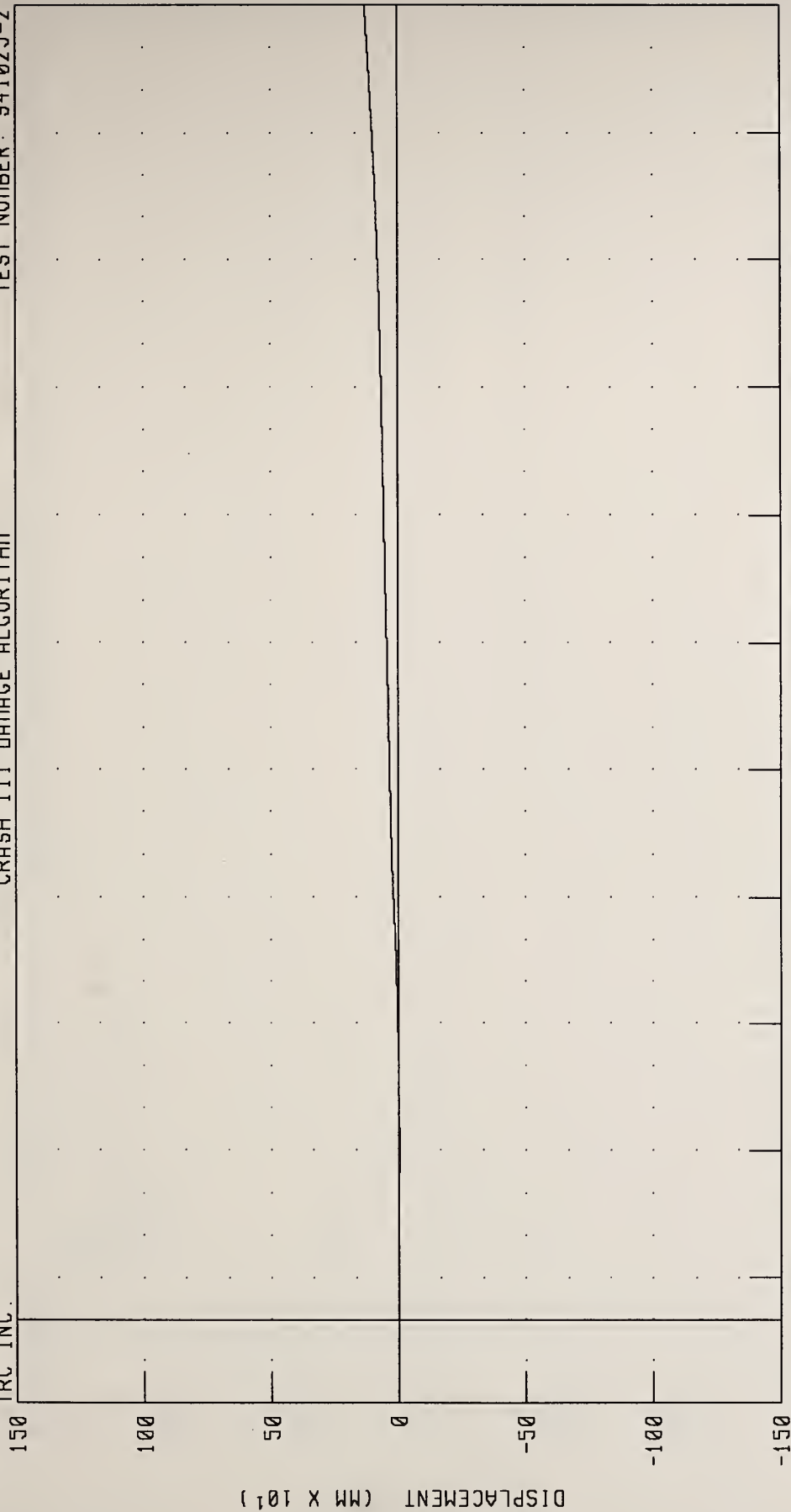
PEAK DATA: 3.99 KM/H @ 308.64 MS; -1.04 KM/H @ 34.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG Z-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2

TRC INC.



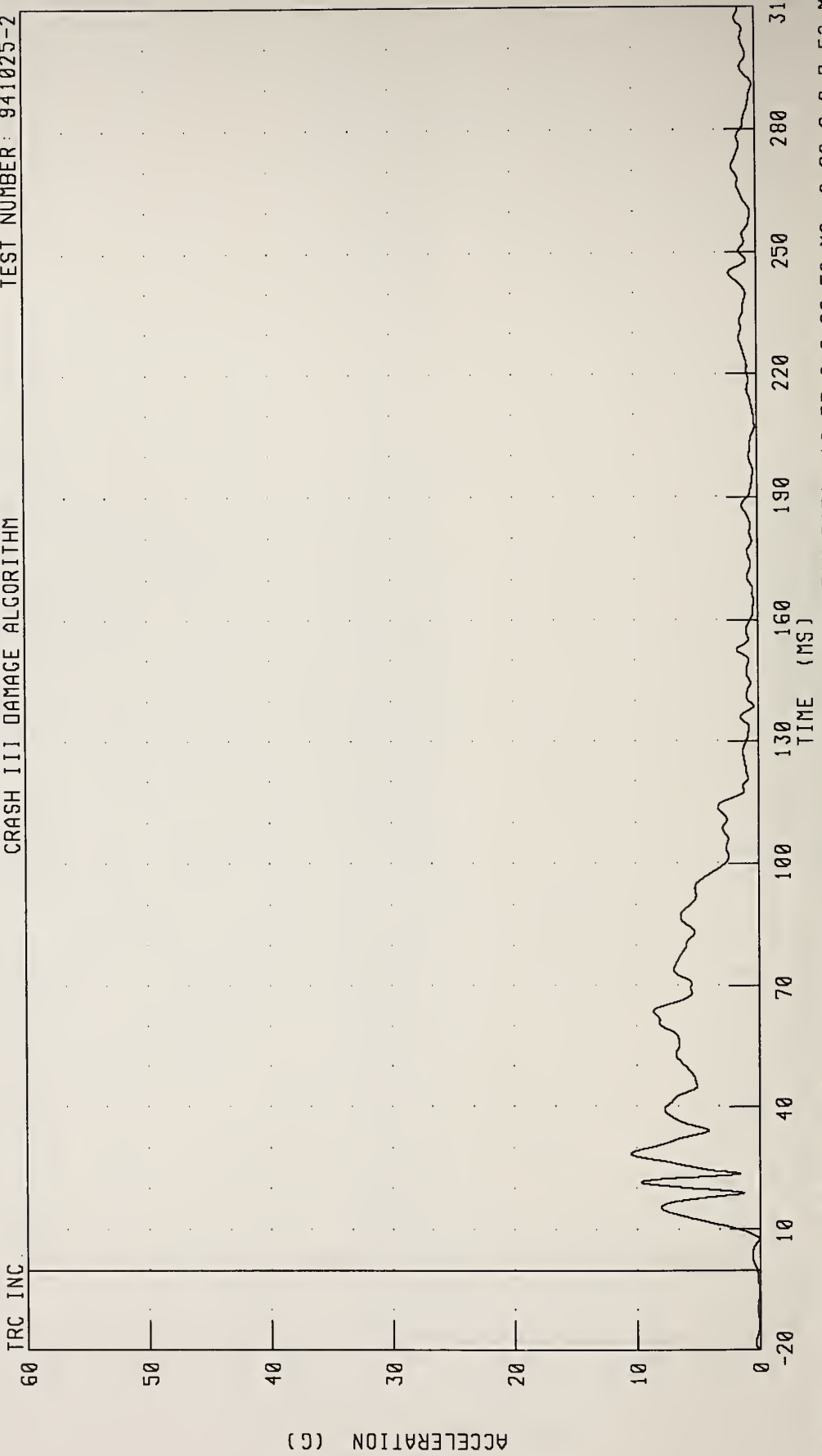
DISPLACEMENT (MM X 10¹)

TIME (MS)

CHANNEL: VCGZD FILTER: CH. CLASS 180 PEAK DATA: 128.46 MM @ 310.00 MS; -2.51 MM @ 39.84 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
VEHICLE CG RESULTANT ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: VCGRG FILTER: CH. CLASS 60

PEAK DATA: 10.53 G @ 28.56 MS; 0.06 G @ 7.52 MS

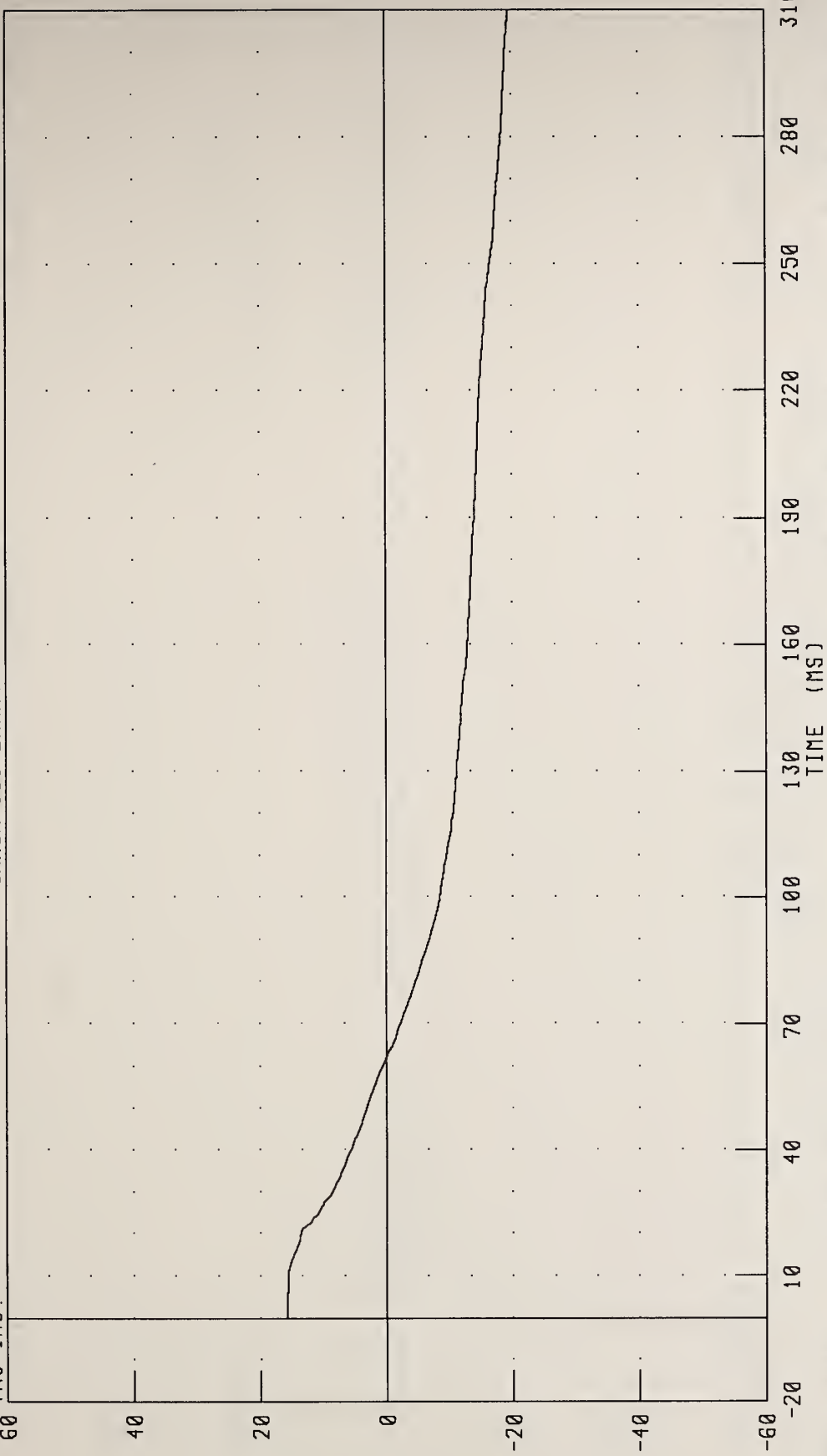
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

VEHICLE CG RESULTANT VELOCITY

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



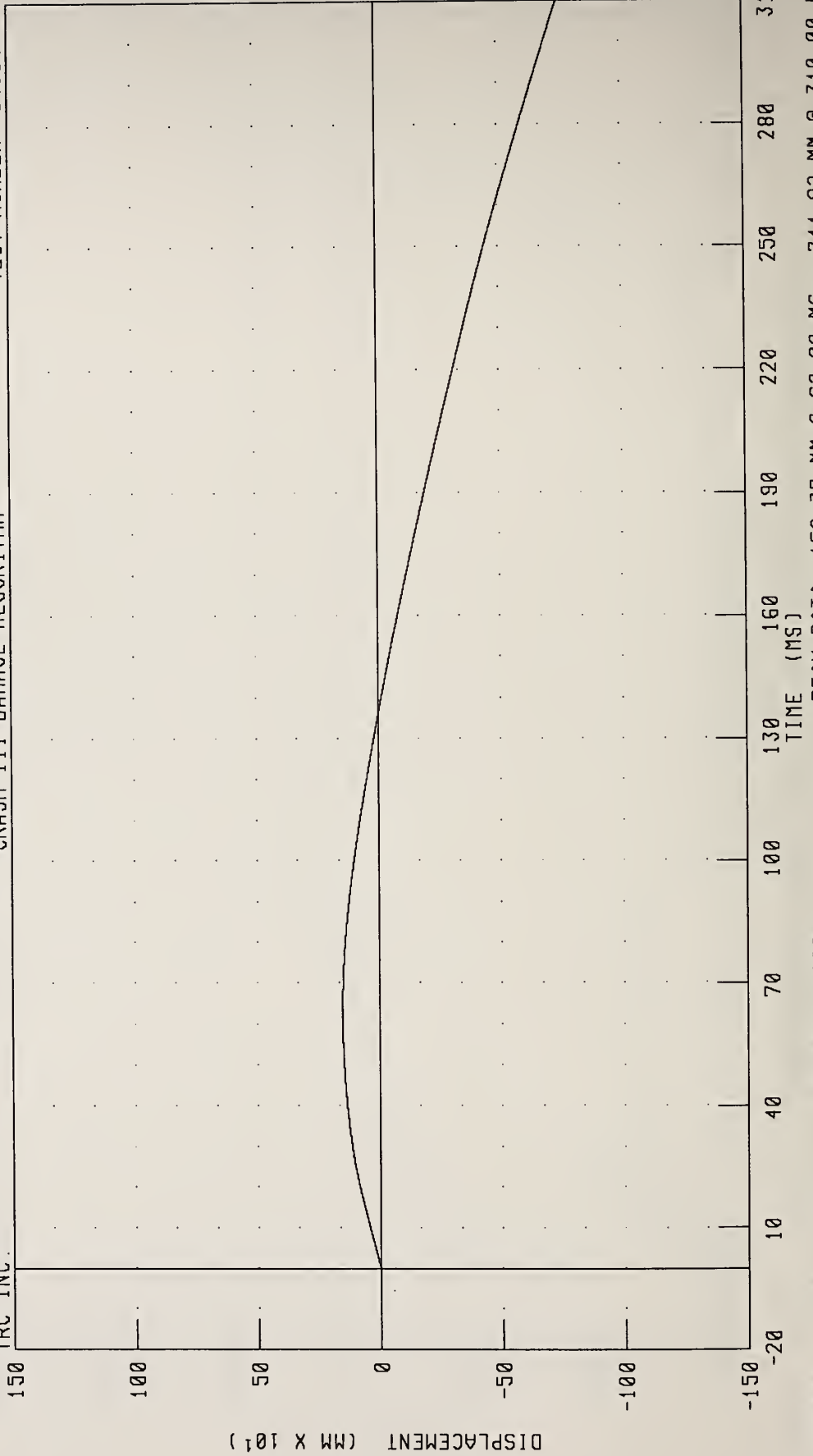
CHANNEL: VCGRV FILTER: CH. CLASS 180

PEAK DATA: 15.80 KM/H @ 0.00 MS; -19.48 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
VEHICLE CG RESULTANT DISPLACEMENT
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

TRC INC.



CHANNEL: VCGRD FILTER: CH. CLASS 180

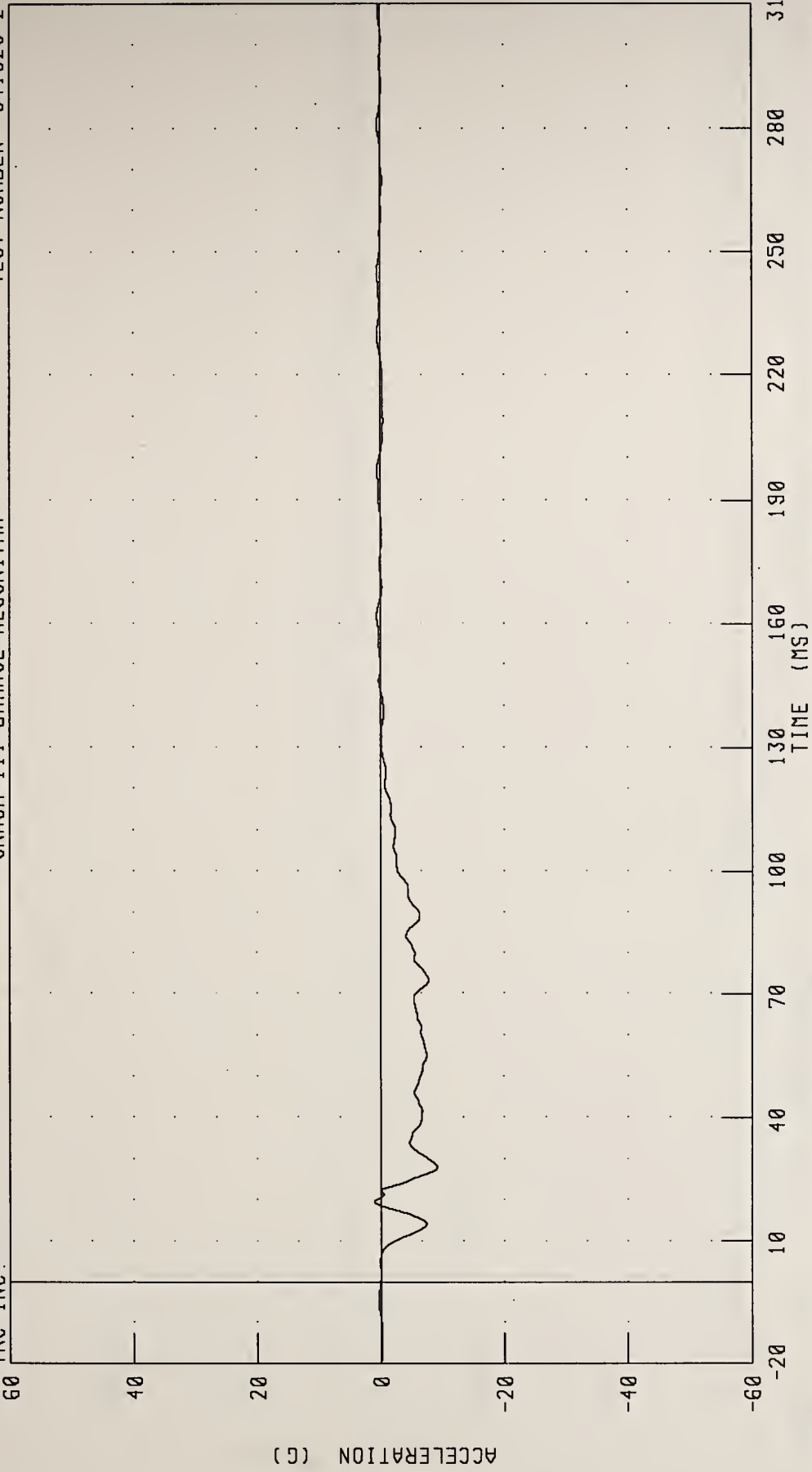
PEAK DATA: 152.37 MM @ 62.08 MS; -744.92 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT FRONT SILL X-AXIS ACCELERATION

TEST NUMBER: 941025-2

CRASH III DAMAGE ALGORITHM

TRC INC.

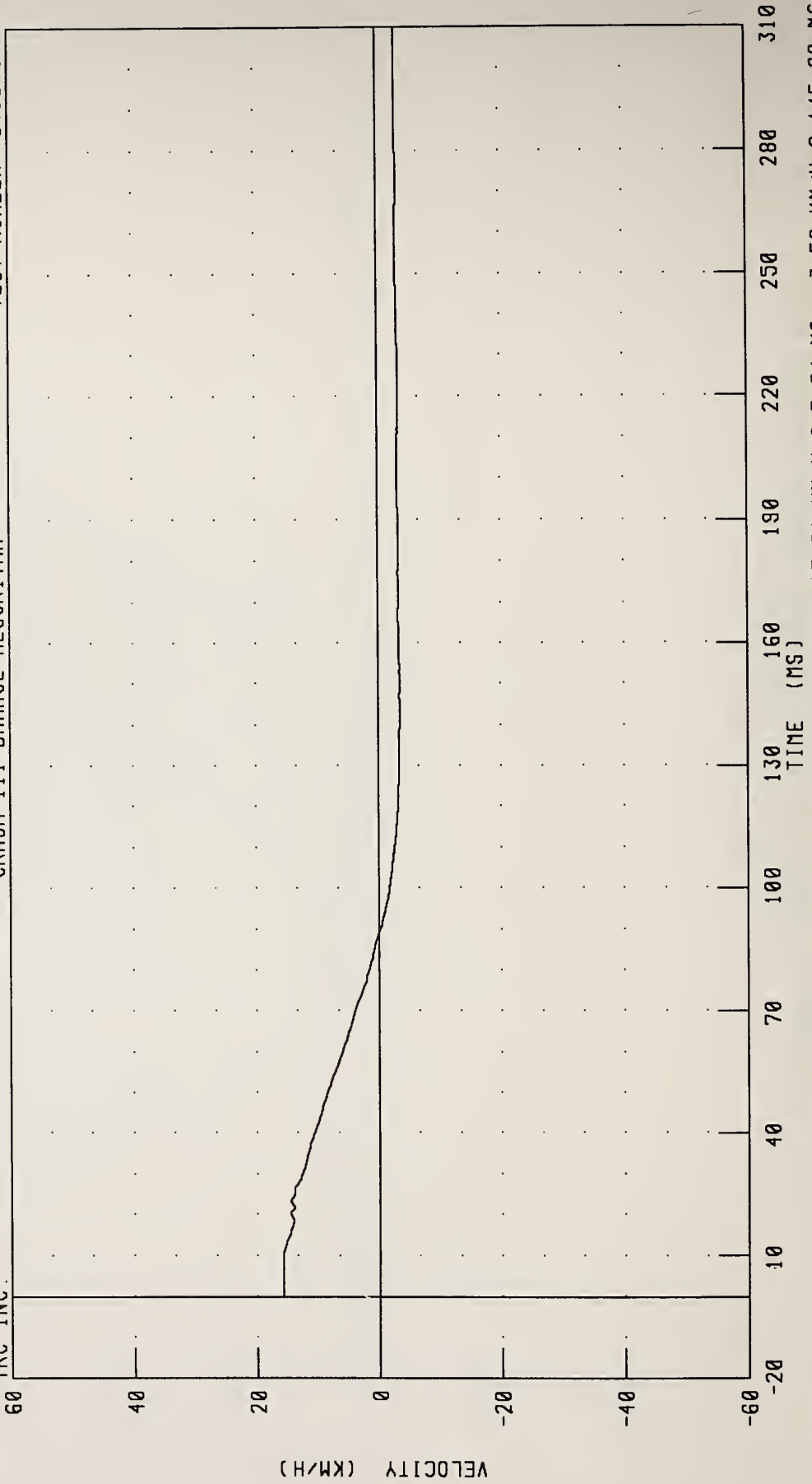


CHANNEL: LFSXG FILTER: CH. CLASS 60

PEAK DATA: 1.07 G @ 19.52 MS; -9.08 G @ 28.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT FRONT SILL X-AXIS VELOCITY

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2

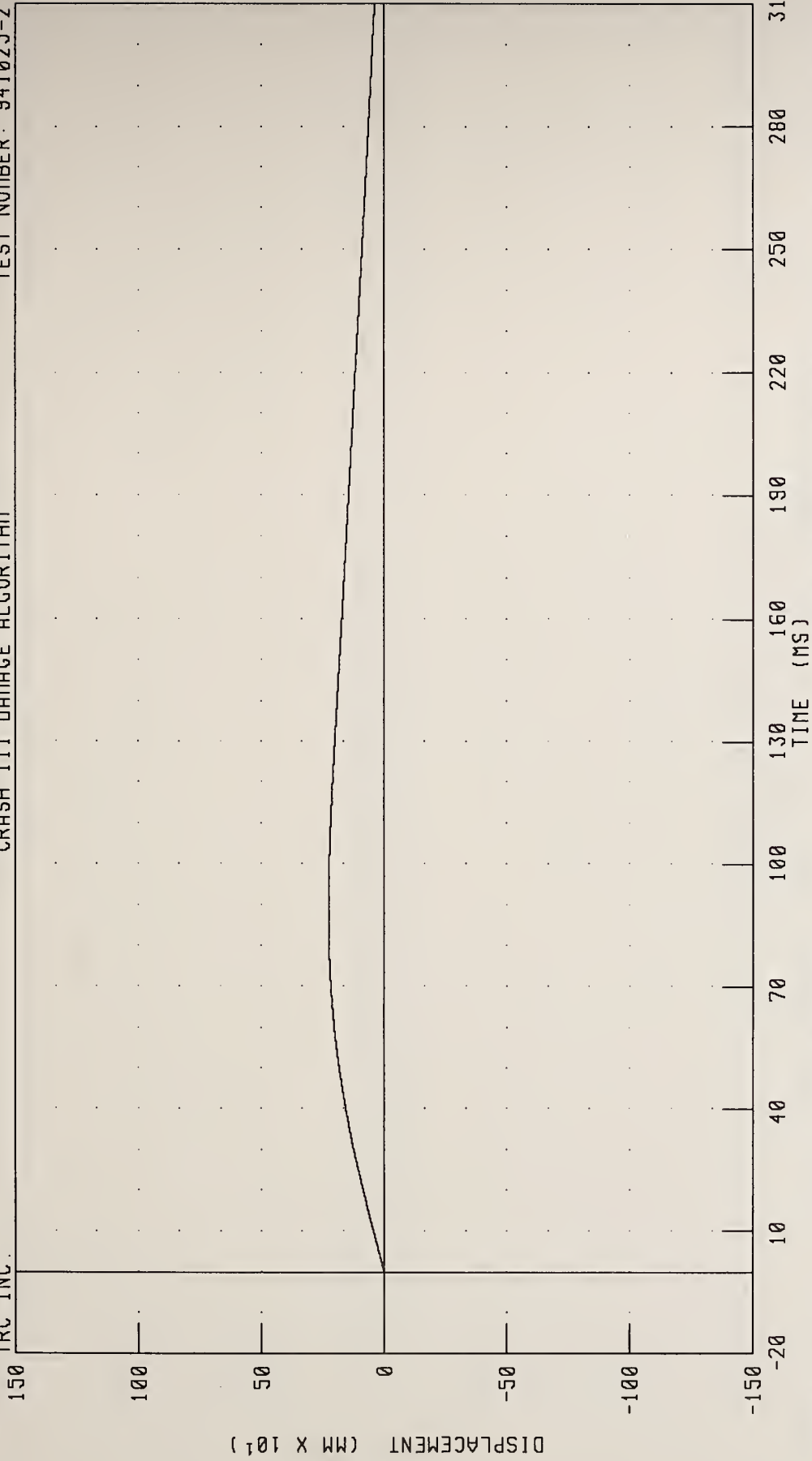


CHANNEL: LFSXV FILTER: CH. CLASS 180 PEAK DATA: 15.81 KM/H @ 5.04 MS; -3.50 KM/H @ 145.20 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2

TRC INC.



CHANNEL: LFSXD FILTER: CH. CLASS 180

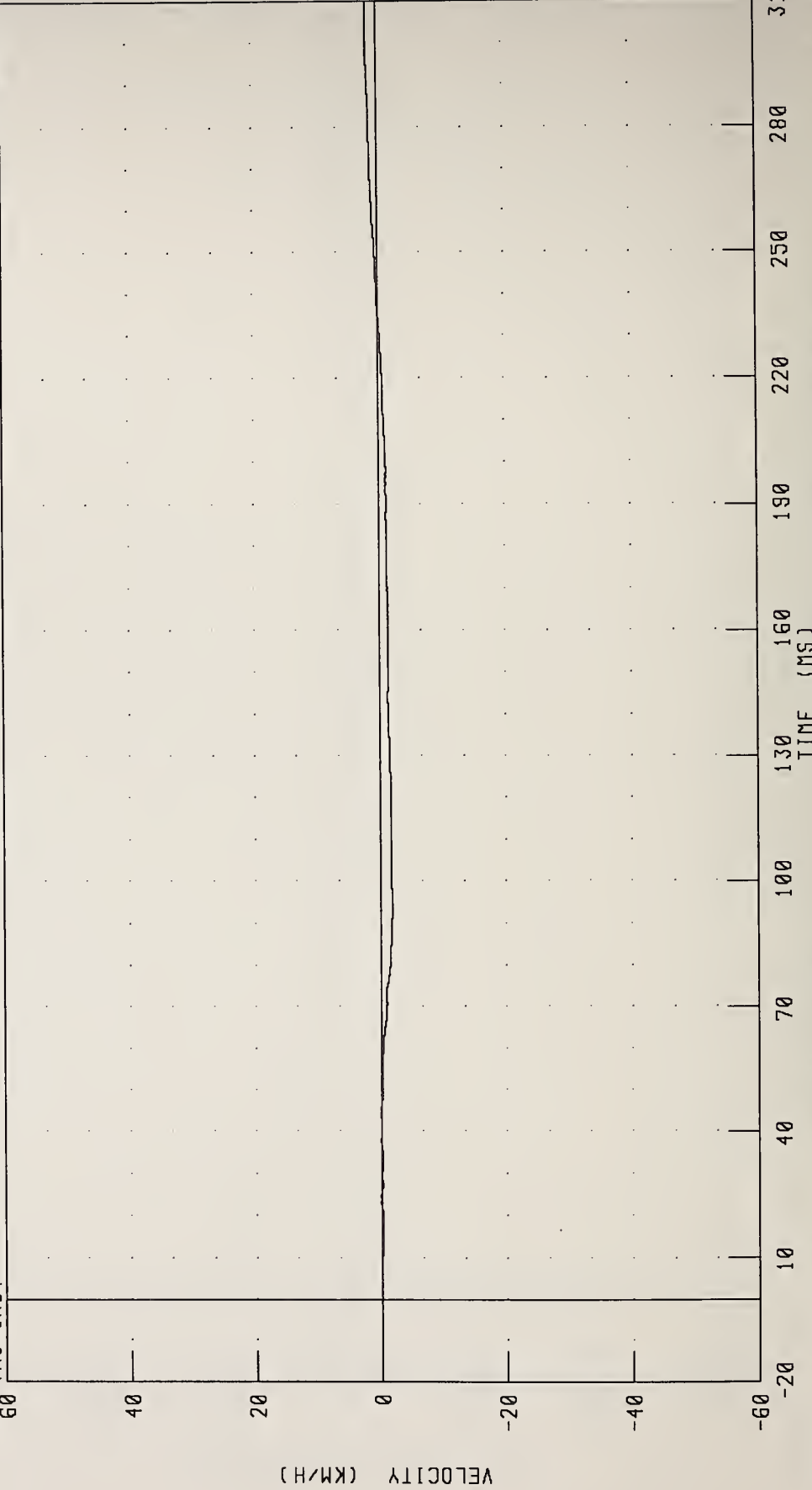
PEAK DATA: 226.46 MM @ 89.28 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT FRONT SILL Y-AXIS VELOCITY

TEST NUMBER: 941025-2

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LFSYV FILTER: CH. CLASS 180

PEAK DATA: 1.76 KM/H @ 310.00 MS; -1.88 KM/H @ 95.44 MS

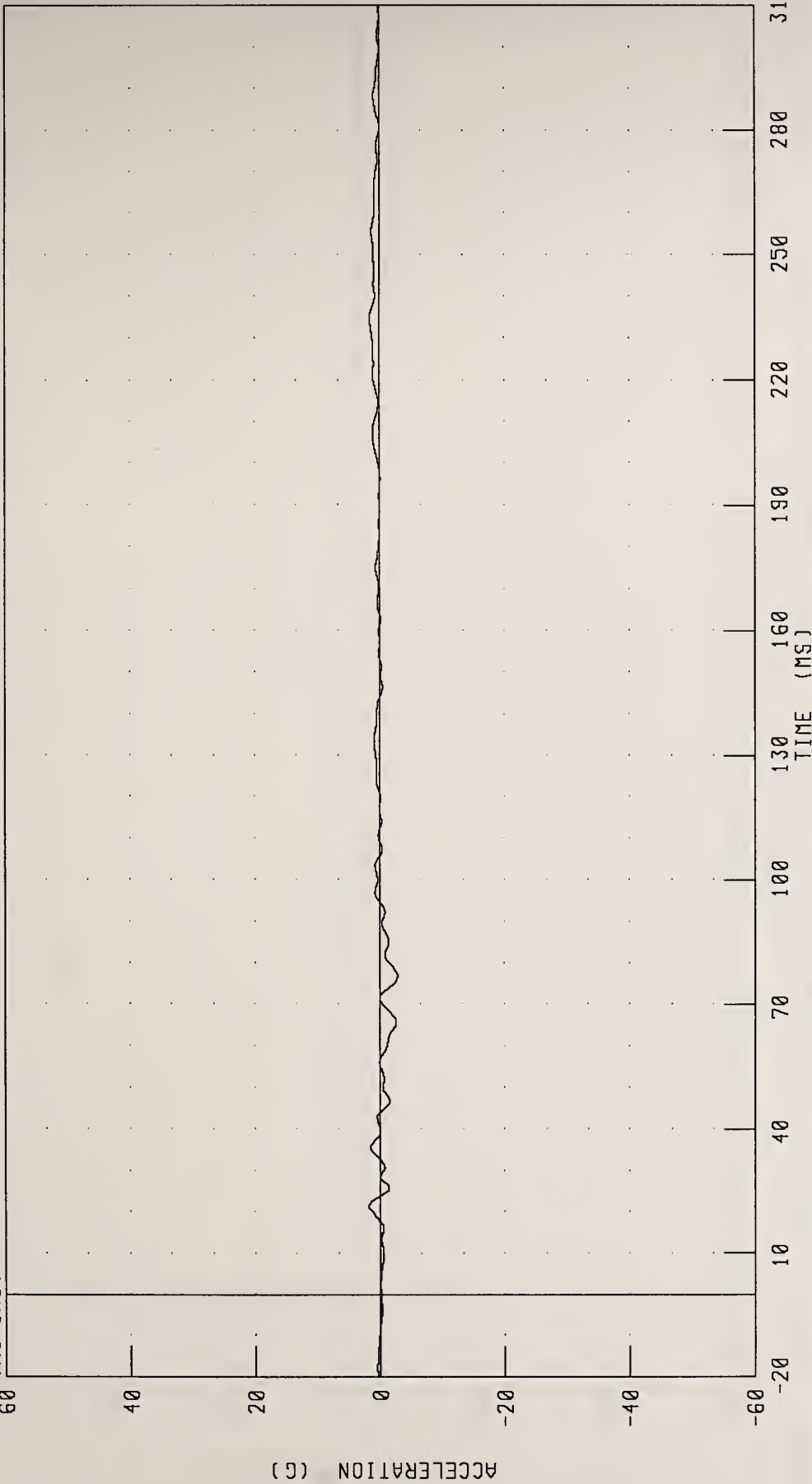
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

LEFT FRONT SILL Y-AXIS ACCELERATION

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

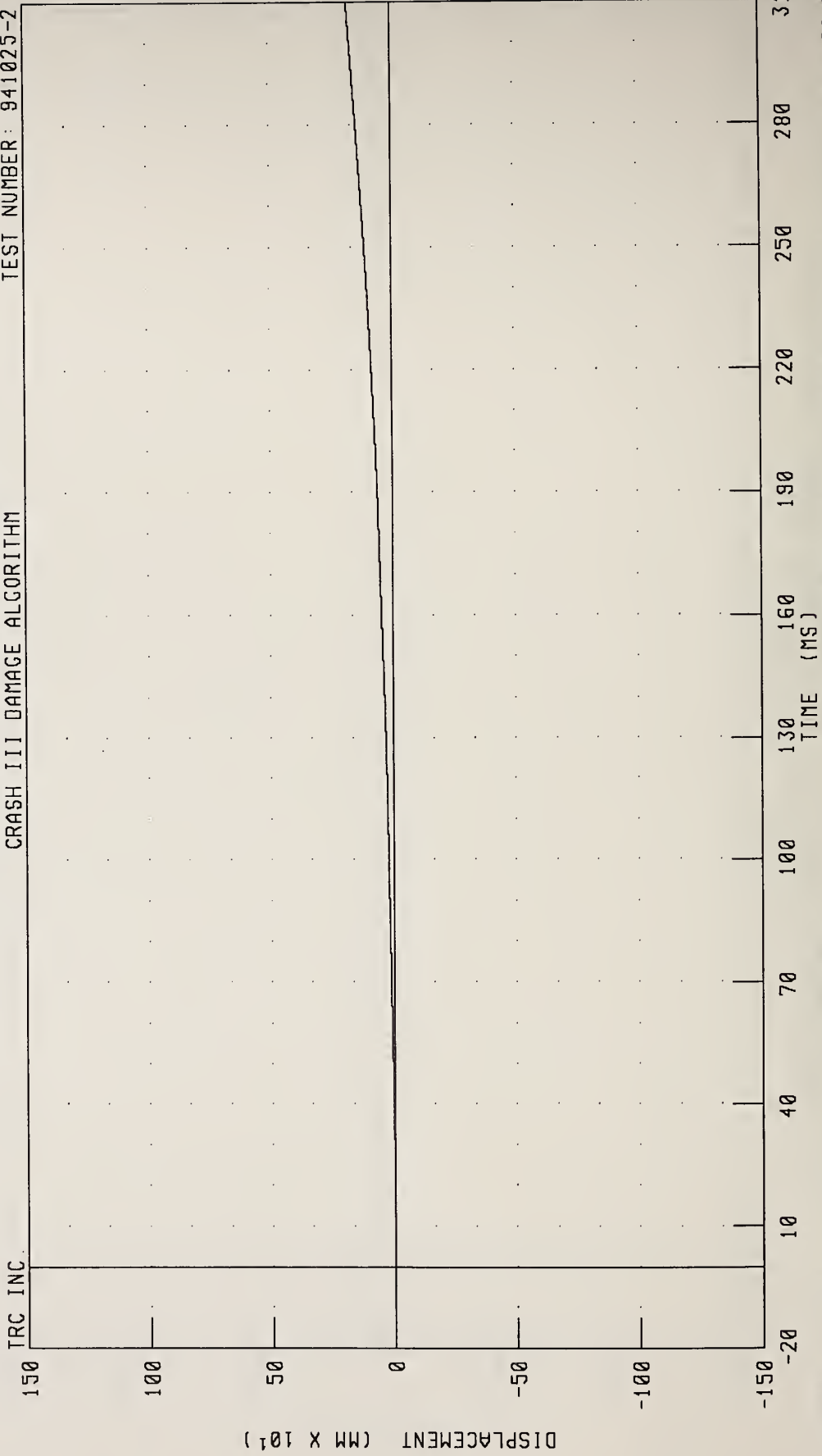


CHANNEL: LFSYG FILTER: CH. CLASS 60

PEAK DATA: 1.86 G @ 21.28 MS, -2.83 G @ 76.96 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
RIGHT FRONT SILL Y-AXIS DISPLACEMENT
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: RFSYD FILTER: CH. CLASS 180

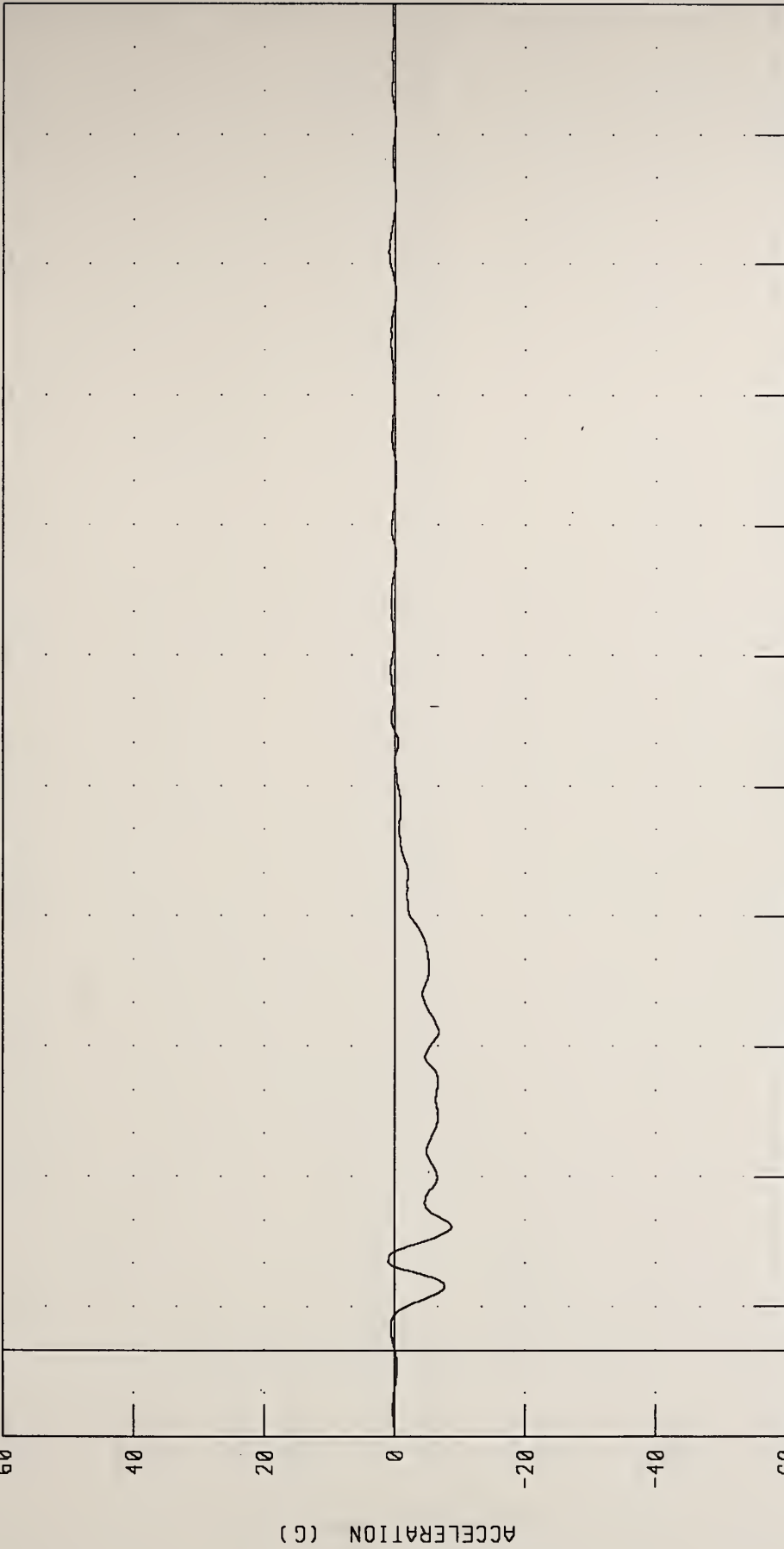
PEAK DATA: 178.89 MM @ 310.00 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT REAR SILL X-AXIS ACCELERATION

TEST NUMBER: 941025-2

CRASH III DAMAGE ALGORITHM

TRC INC.



60
40
20
0
-20
-40
-60

60
40
20
0
-20
-40
-60

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310

TIME (MS)

CHANNEL: LRSXG FILTER: CH. CLASS 60

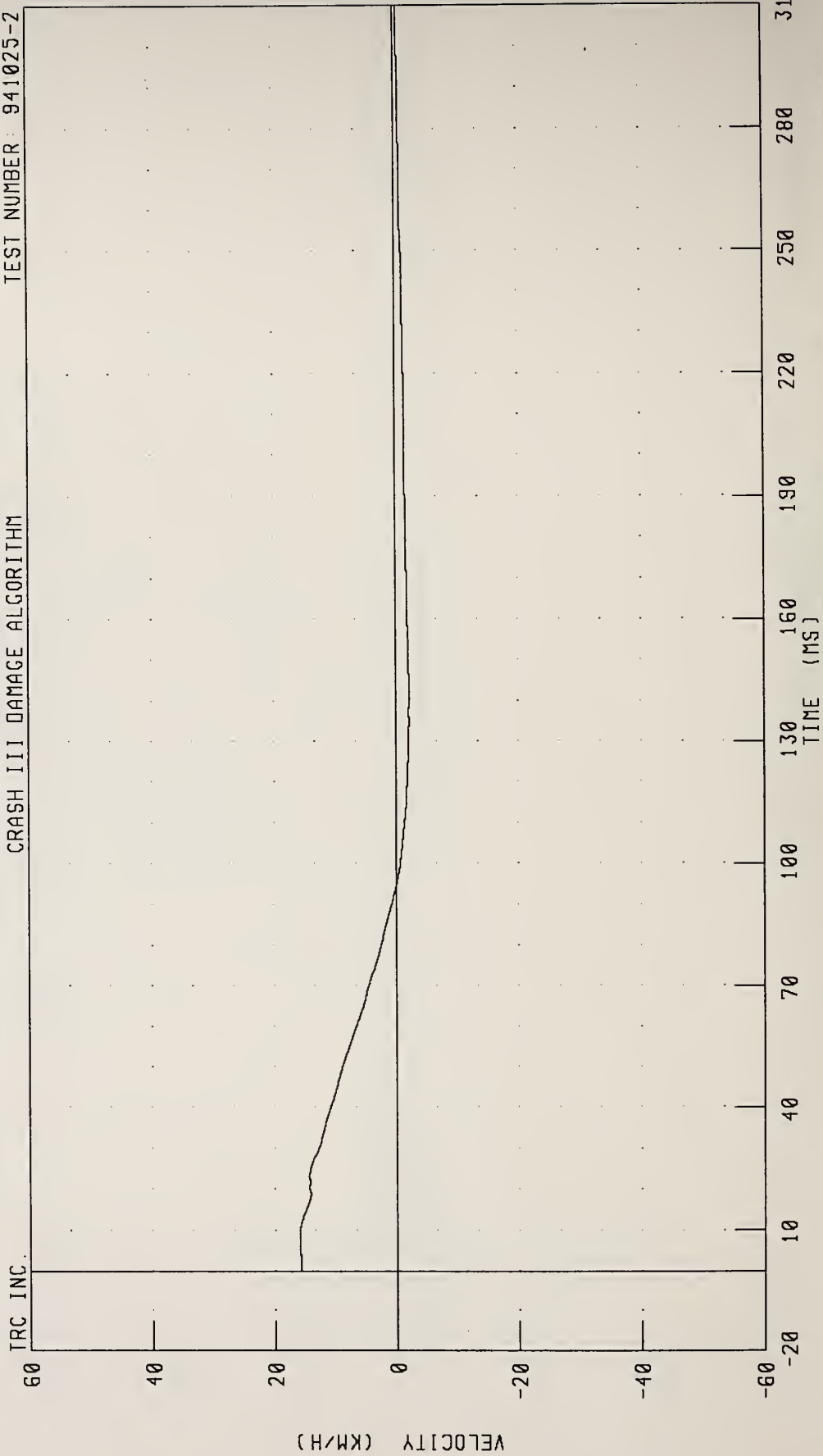
PEAK DATA: 0.96 G @ 20.40 MS; -8.74 G @ 28.48 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

LEFT REAR SILL X-AXIS VELOCITY

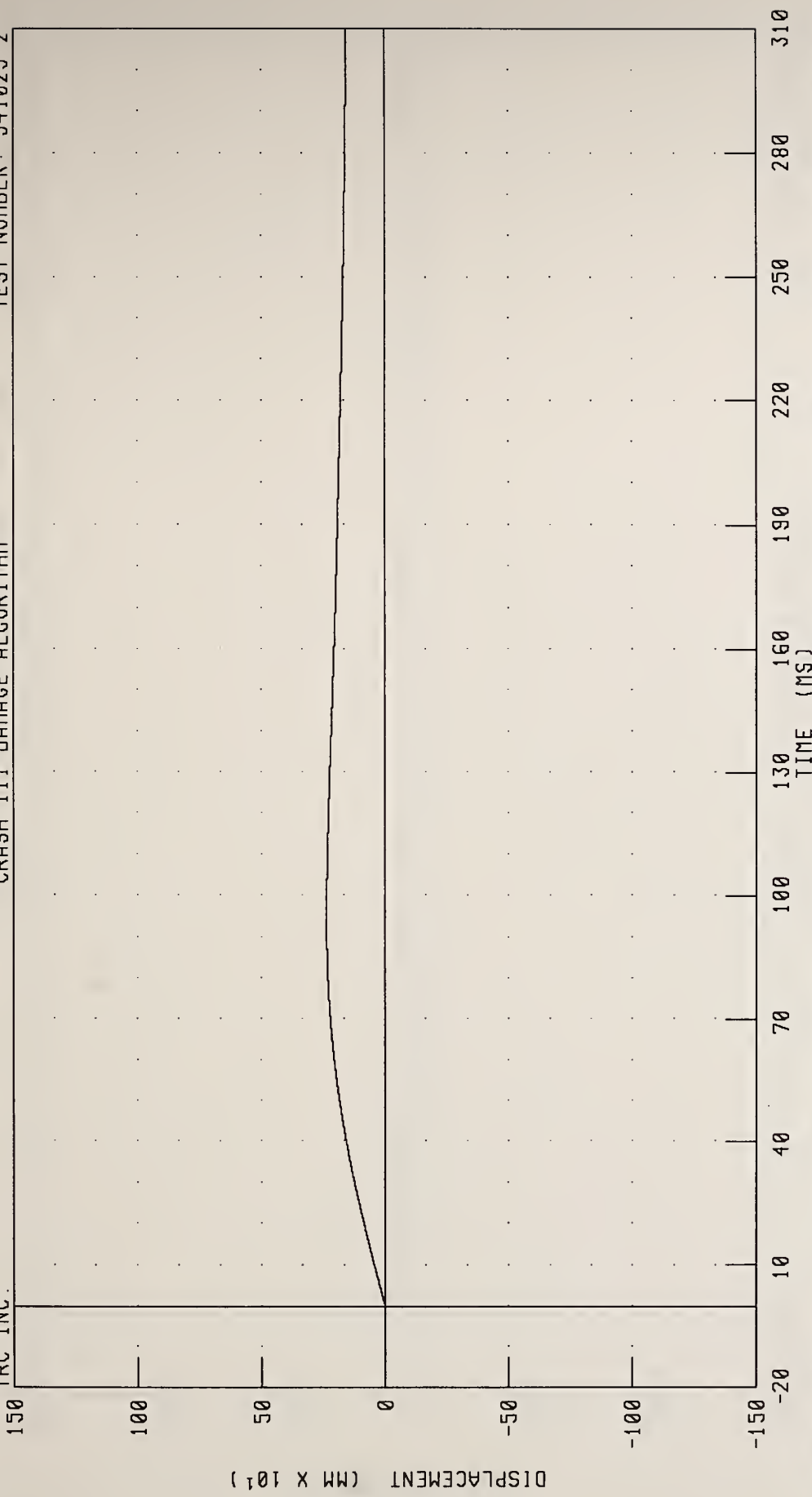
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: LRSXV FILTER: CH. CLASS 180

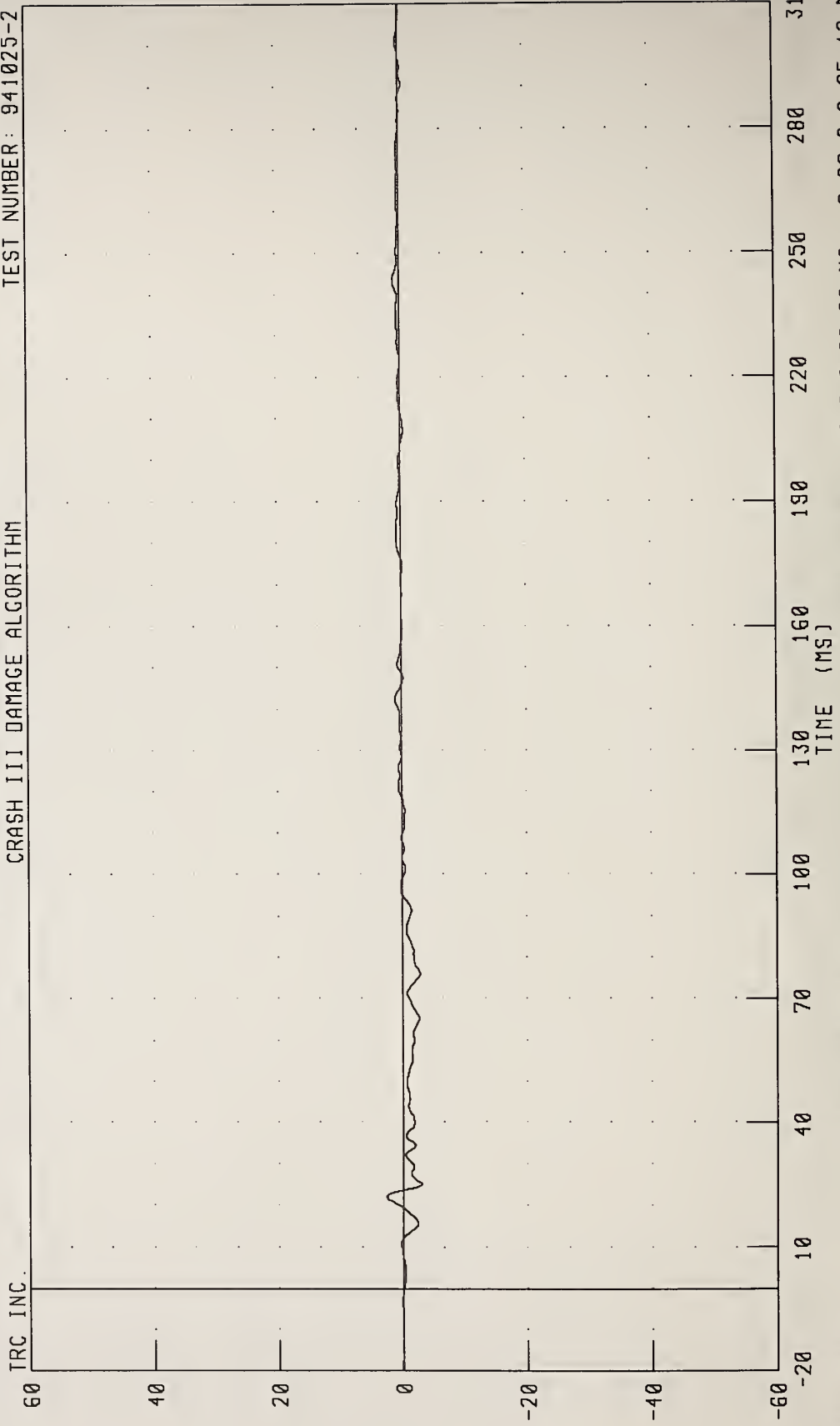
PEAK DATA: 15.90 KM/H @ 8.16 MS; -2.19 KM/H @ 141.68 MS



CHANNEL: LRSXD FILTER: CH. CLASS 180 PEAK DATA: 236.57 MM @ 94.64 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT REAR SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

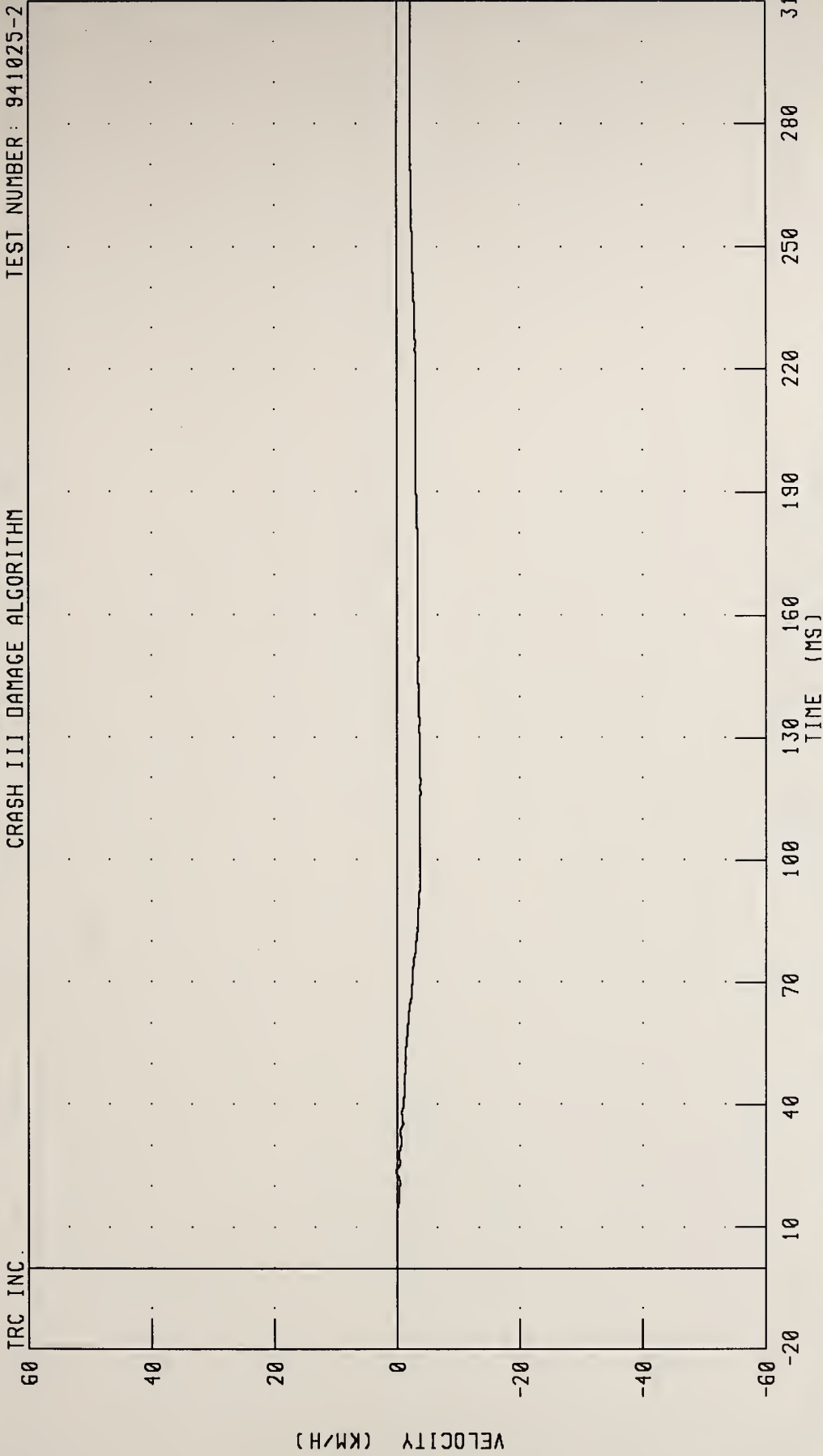
TEST NUMBER: 941025-2



CHANNEL: LRSYG FILTER: CH. CLASS 60 PEAK DATA: 2.66 G @ 22.00 MS; -2.96 G @ 25.12 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT REAR SILL Y-AXIS VELOCITY

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2

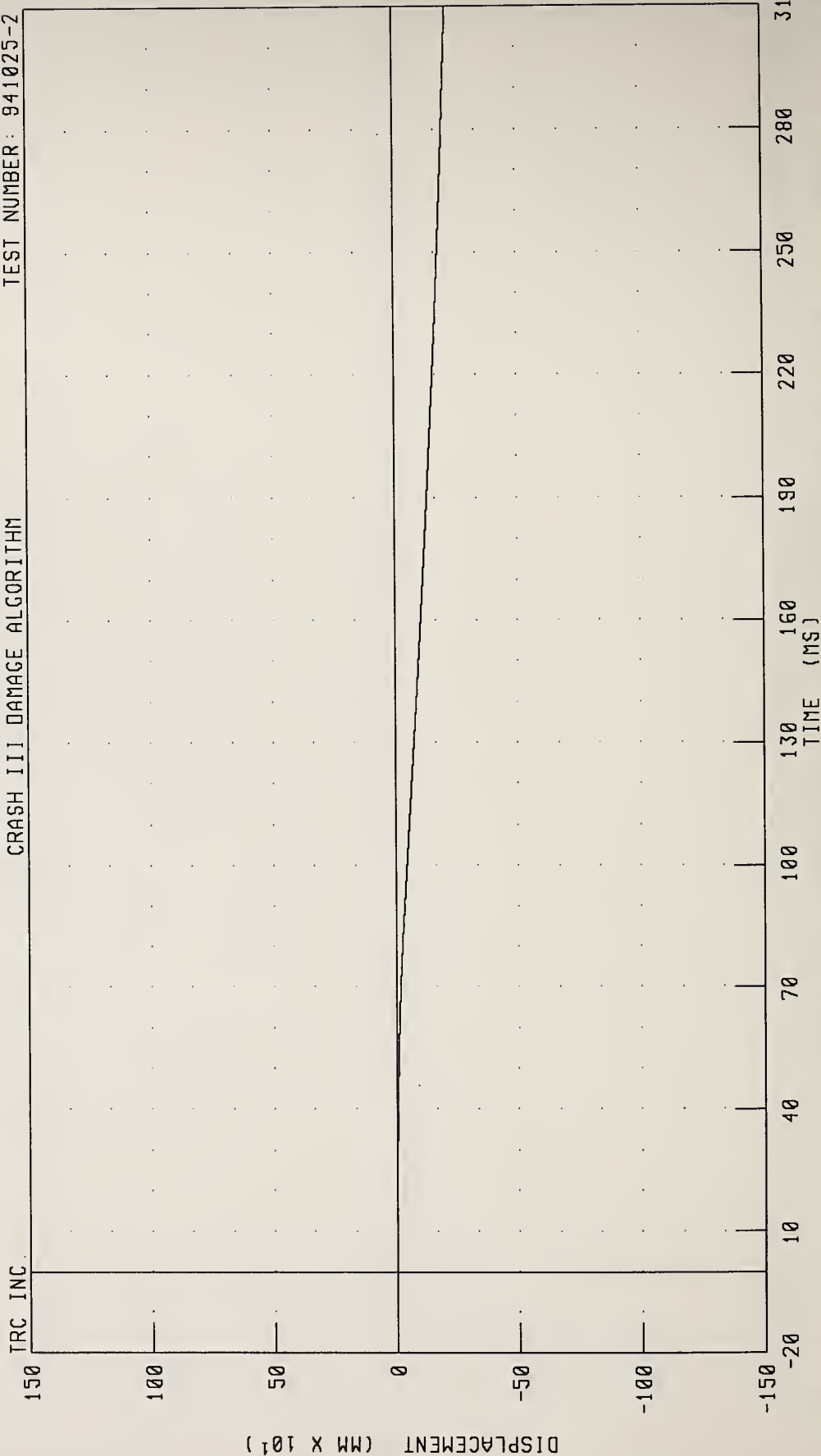


CHANNEL: LRSYV FILTER: CH. CLASS 180

PEAK DATA: 0.21 KM/H @ 23.68 MS; -3.83 KM/H @ 119.28 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
LEFT REAR SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2



CHANNEL: LRSYD FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 0.48 MS; -217.66 MM @ 310.00 MS

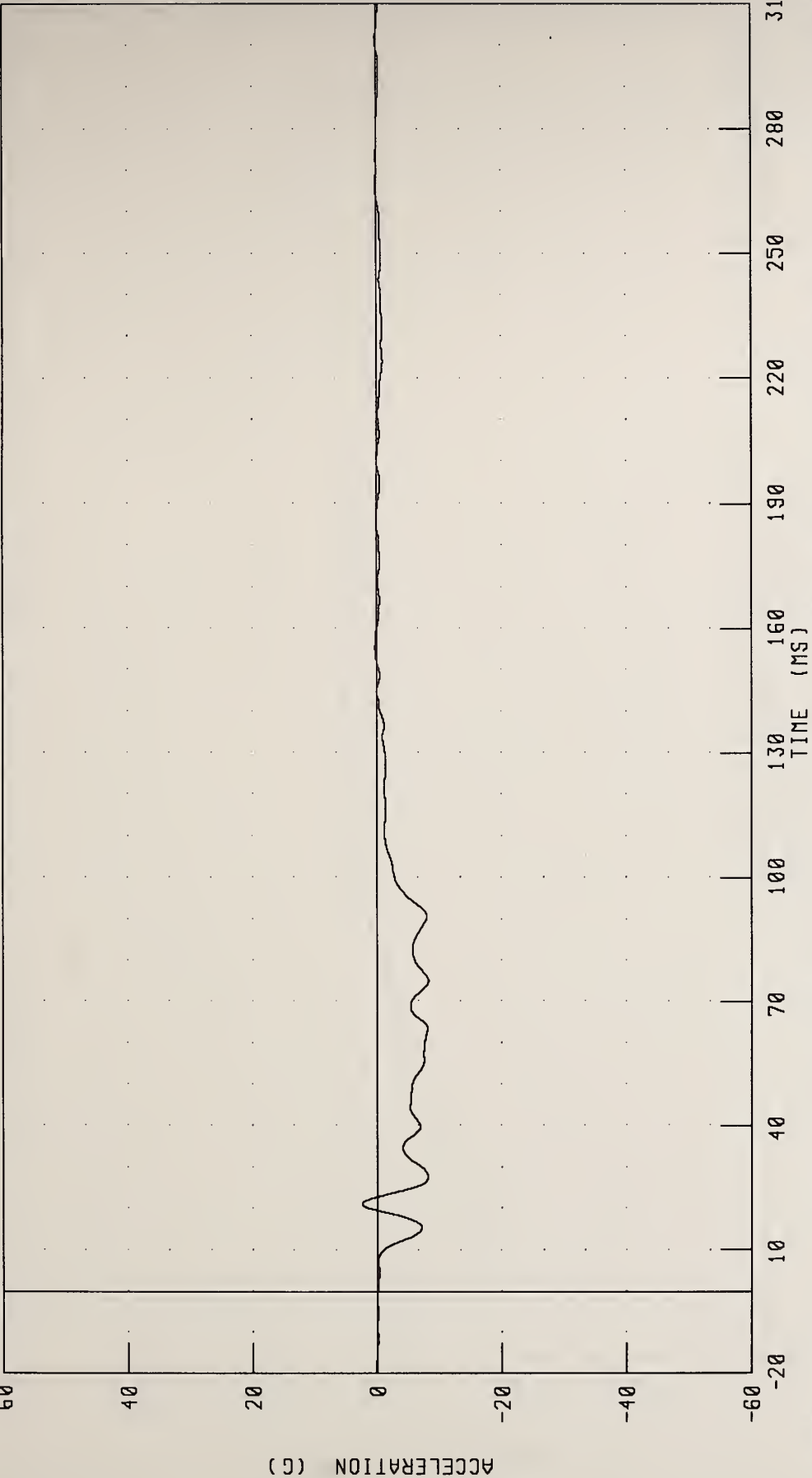
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

RIGHT REAR SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

TRC INC



CHANNEL: RRSXG FILTER: CH. CLASS 60

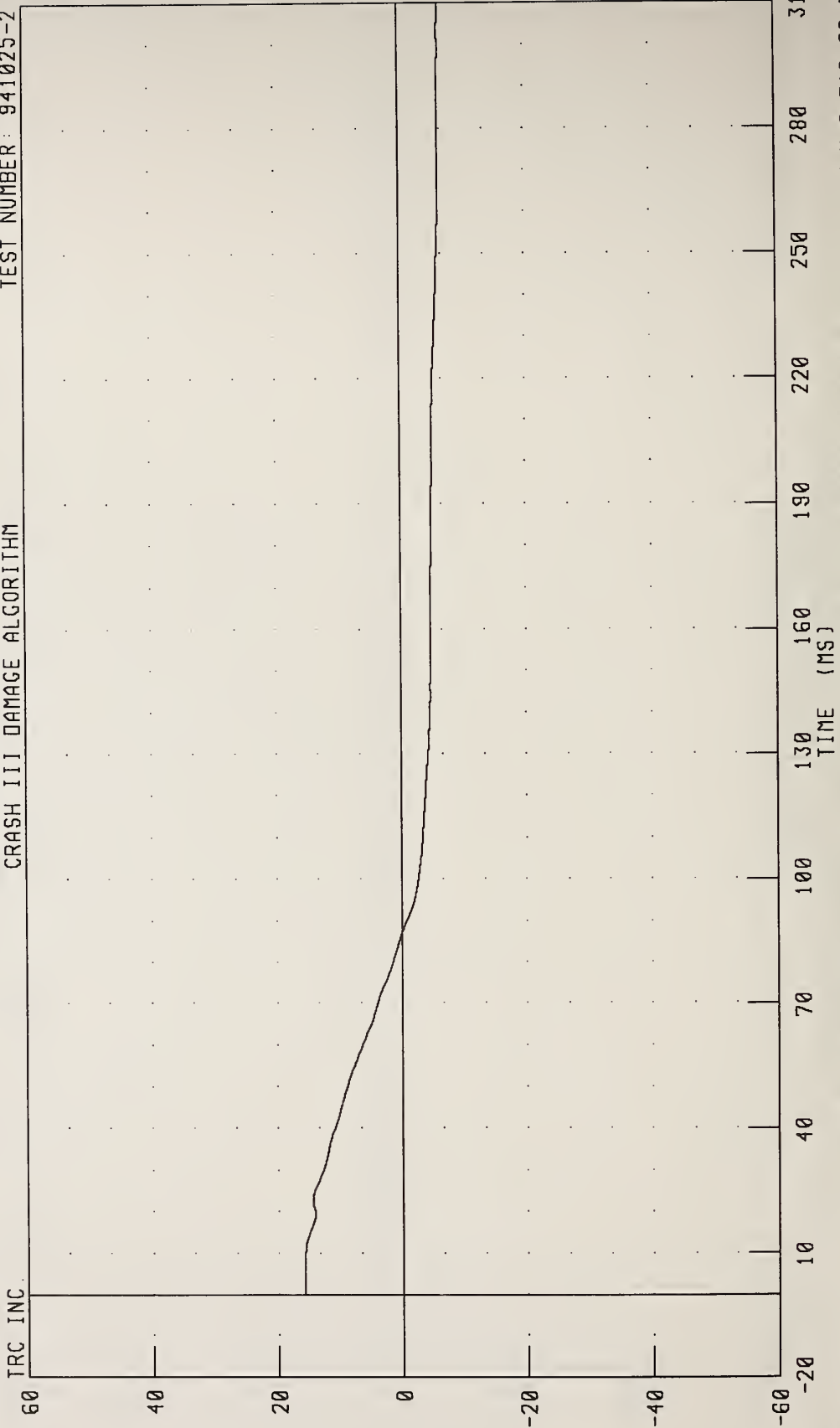
PEAK DATA: 2.46 G @ 21.04 MS; -8.23 G @ 74.96 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

RIGHT REAR SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: RRSXY FILTER: CH. CLASS 180

PEAK DATA: 15.80 KM/H @ 0.00 MS; -6.38 KM/H @ 310.00 MS

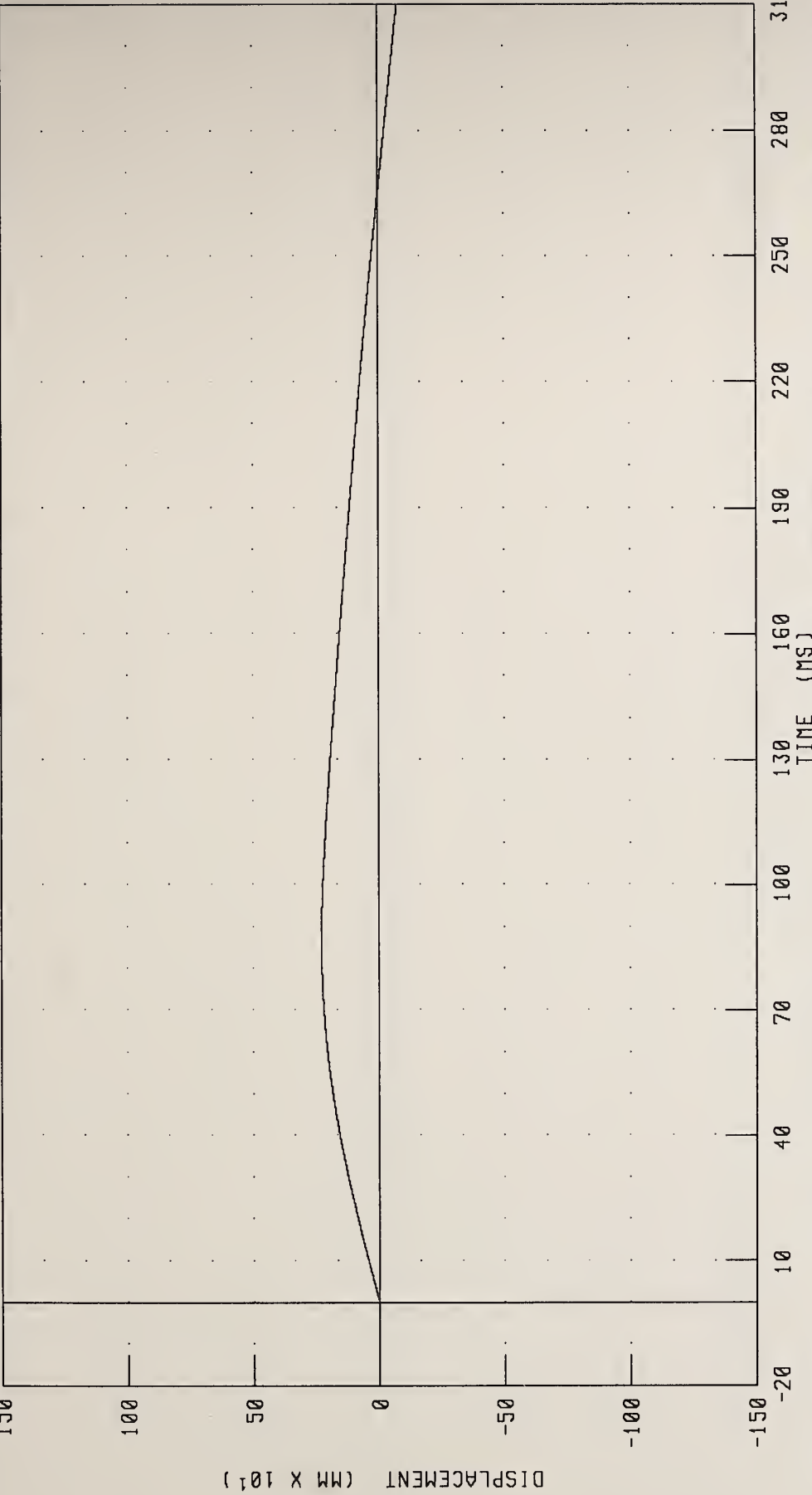
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

RIGHT REAR SILL X-AXIS DISPLACEMENT

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2

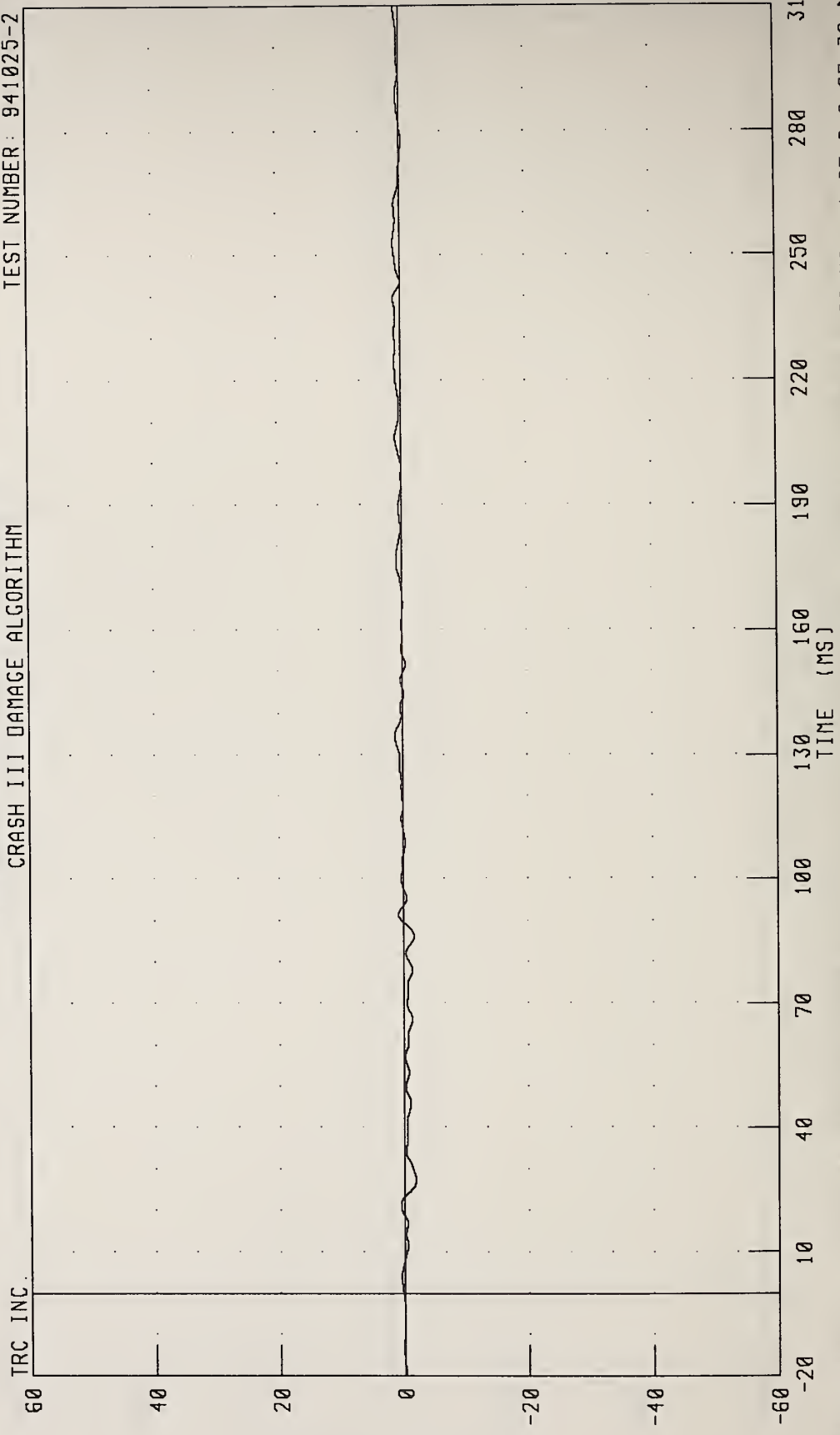


CHANNEL: RRSXD FILTER: CH. CLASS 180

PEAK DATA: 228.91 MM @ 87.04 MS; -78.24 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
RIGHT REAR SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-2



CHANNEL: RRSYG FILTER: CH. CLASS 60
PEAK DATA: 1.26 G @ 134.80 MS; -1.85 G @ 27.36 MS

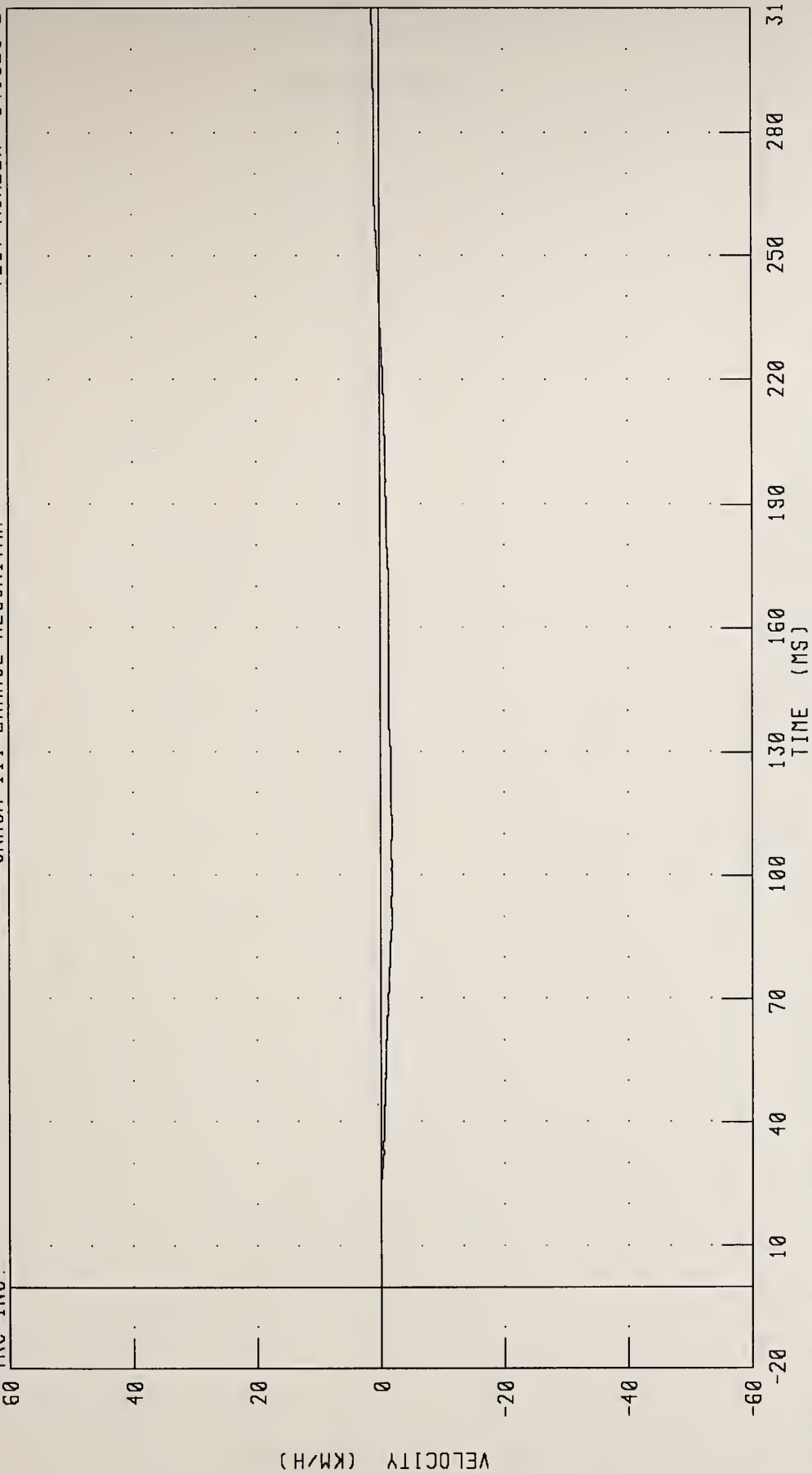
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5

RIGHT REAR SILL Y-AXIS VELOCITY

TEST NUMBER: 941025-2

CRASH III DAMAGE ALGORITHM

TRC INC.

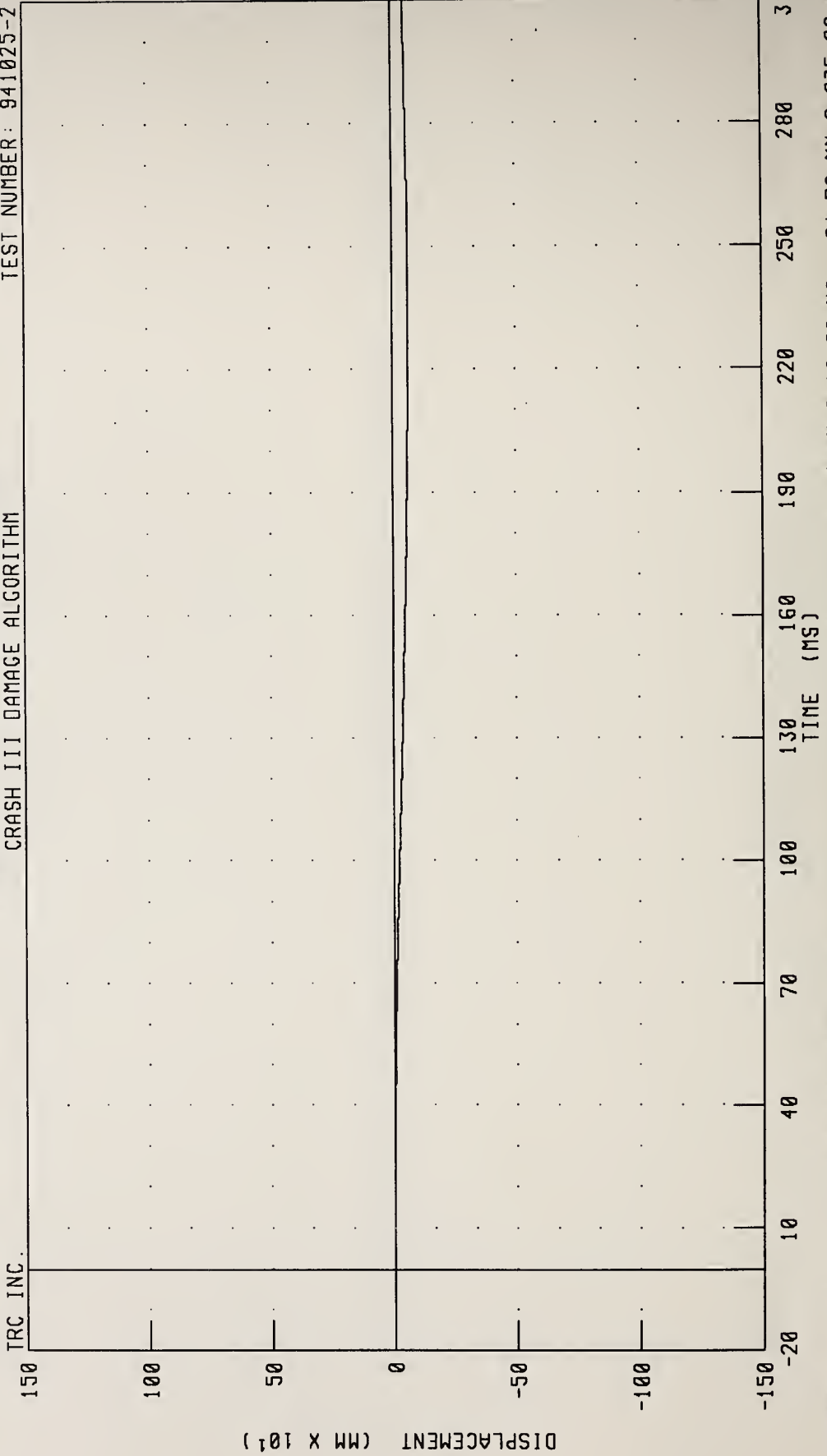


CHANNEL: RRSYV FILTER: CH. CLASS 180

PEAK DATA: 1.22 KM/H @ 310.00 MS; -1.88 KM/H @ 89.20 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 2 OF 5
RIGHT REAR SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-2



TRC INC.

CHANNEL: ARSYD FILTER: CH. CLASS 180

PEAK DATA: 0.25 MM @ 16.96 MS; -64.76 MM @ 235.28 MS

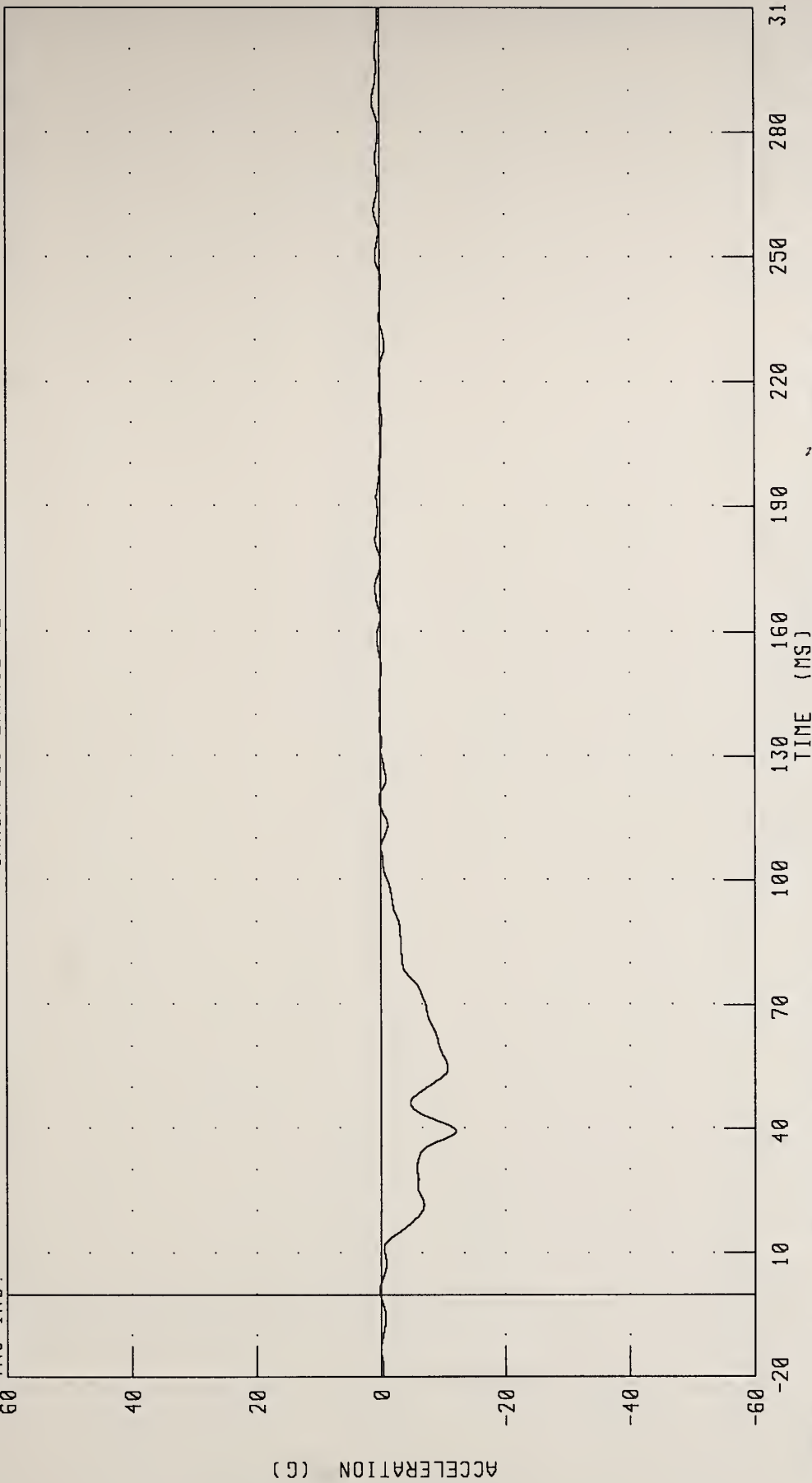
Data Plots

Test No. 941025-3

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
VEHICLE CG X-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

TRC INC.



CHANNEL: VCGXG FILTER: CH. CLASS 60

PEAK DATA: 1.24 G @ 287.44 MS; -12.01 G @ 39.36 MS

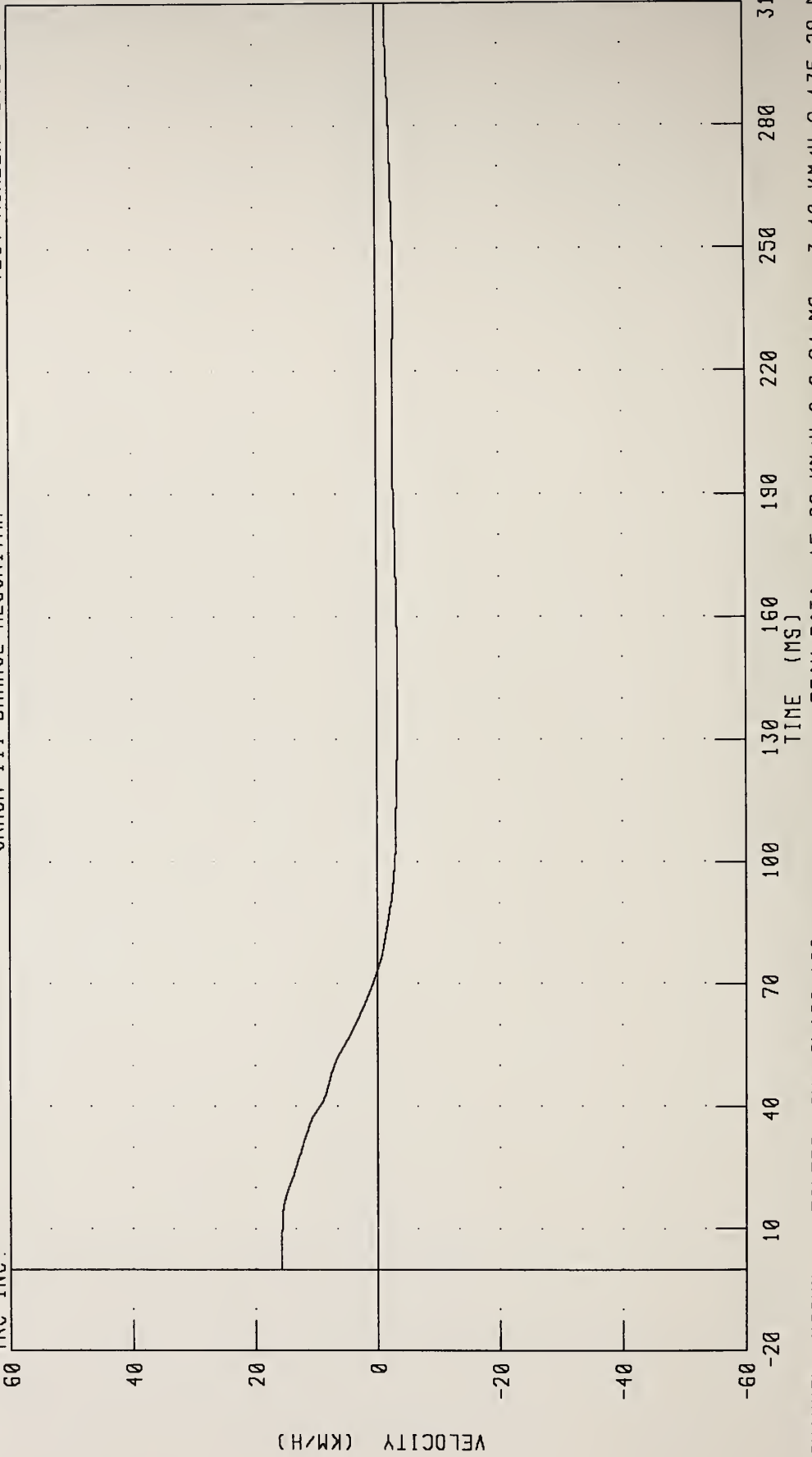
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CC X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

TRC INC.



CHANNEL: VCGXV FILTER: CH. CLASS 180

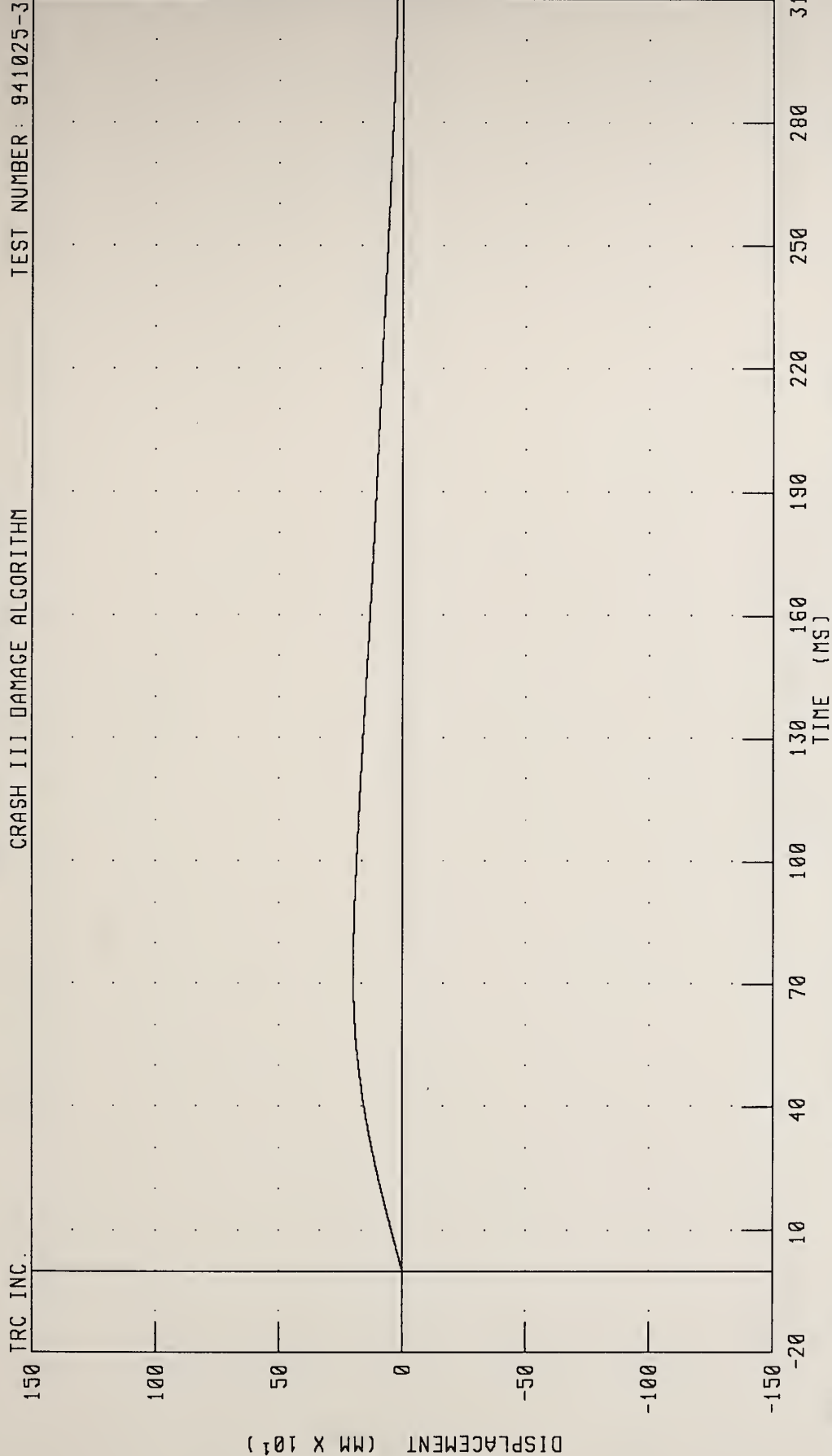
PEAK DATA: 15.82 KM/H @ 2.24 MS; -3.40 KM/H @ 135.28 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

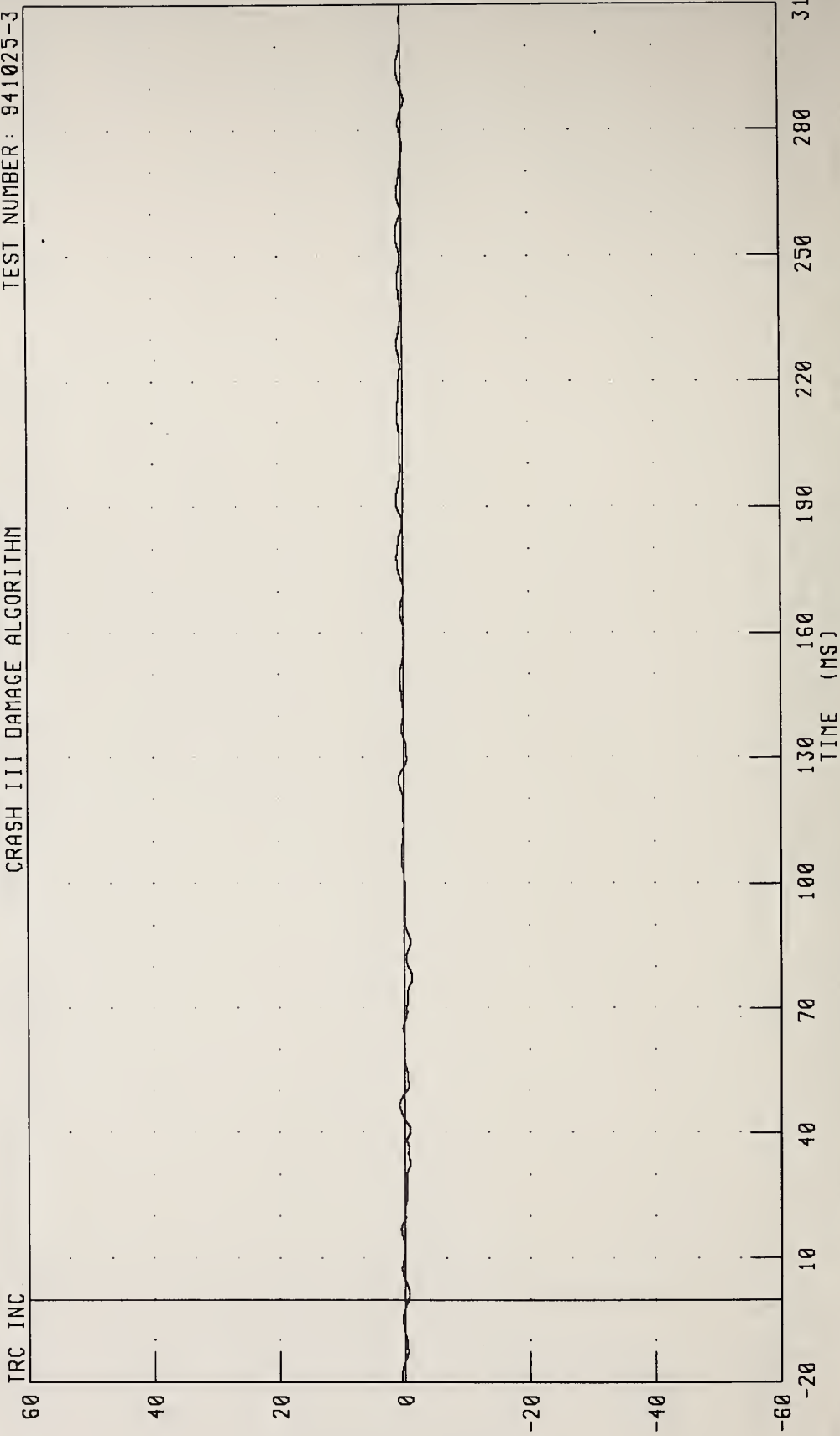


CHANNEL: VCGXD FILTER: CH. CLASS 180

PEAK DATA: 199.07 MM @ 73.36 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
VEHICLE CG Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: VCGYG FILTER: CH. CLASS 60

PEAK DATA: 1.03 G @ 191.12 MS; -1.23 G @ 77.52 MS

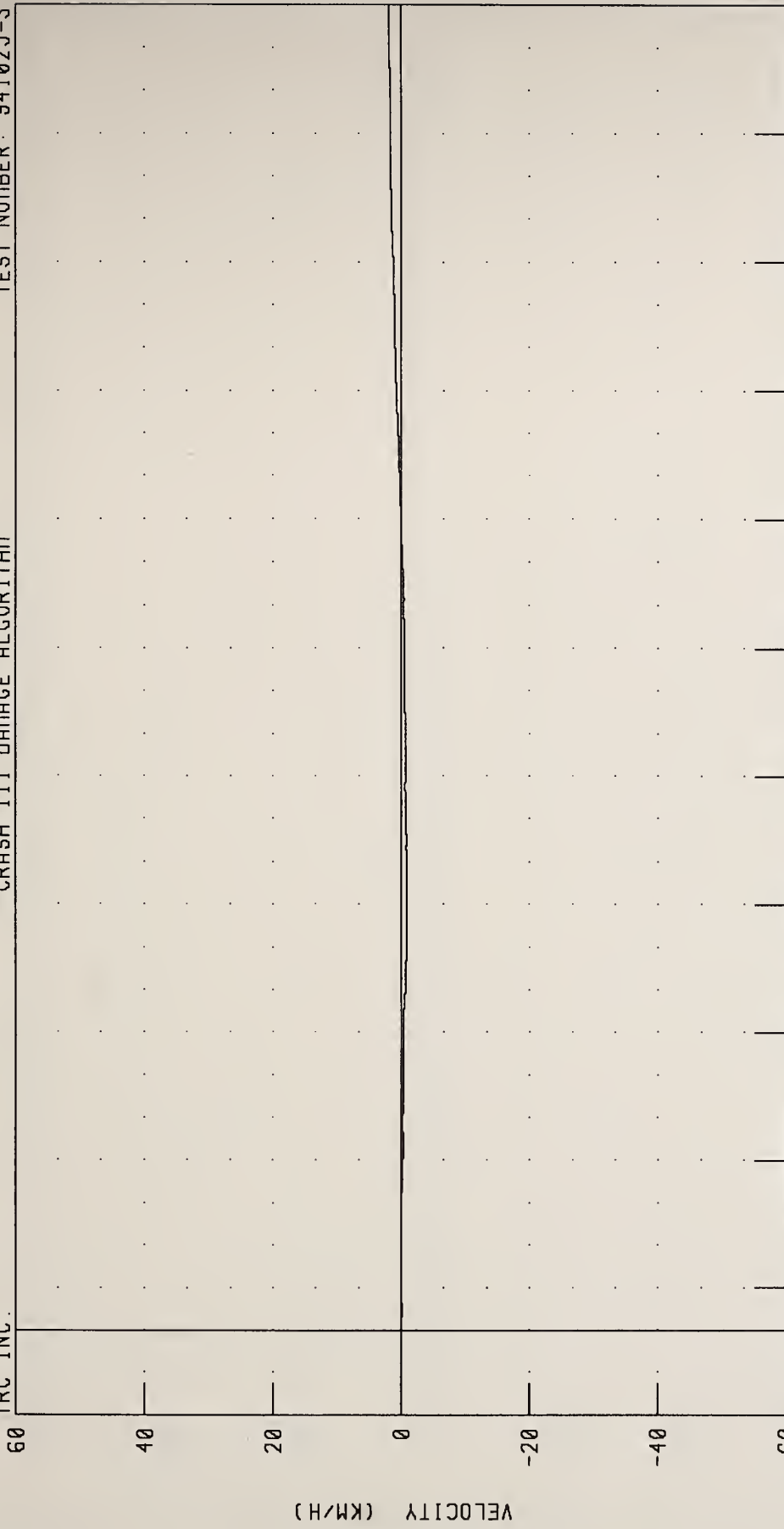
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG Y-AXIS VELOCITY

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



PEAK DATA: 1.90 KM/H @ 310.00 MS; -0.87 KM/H @ 103.92 MS

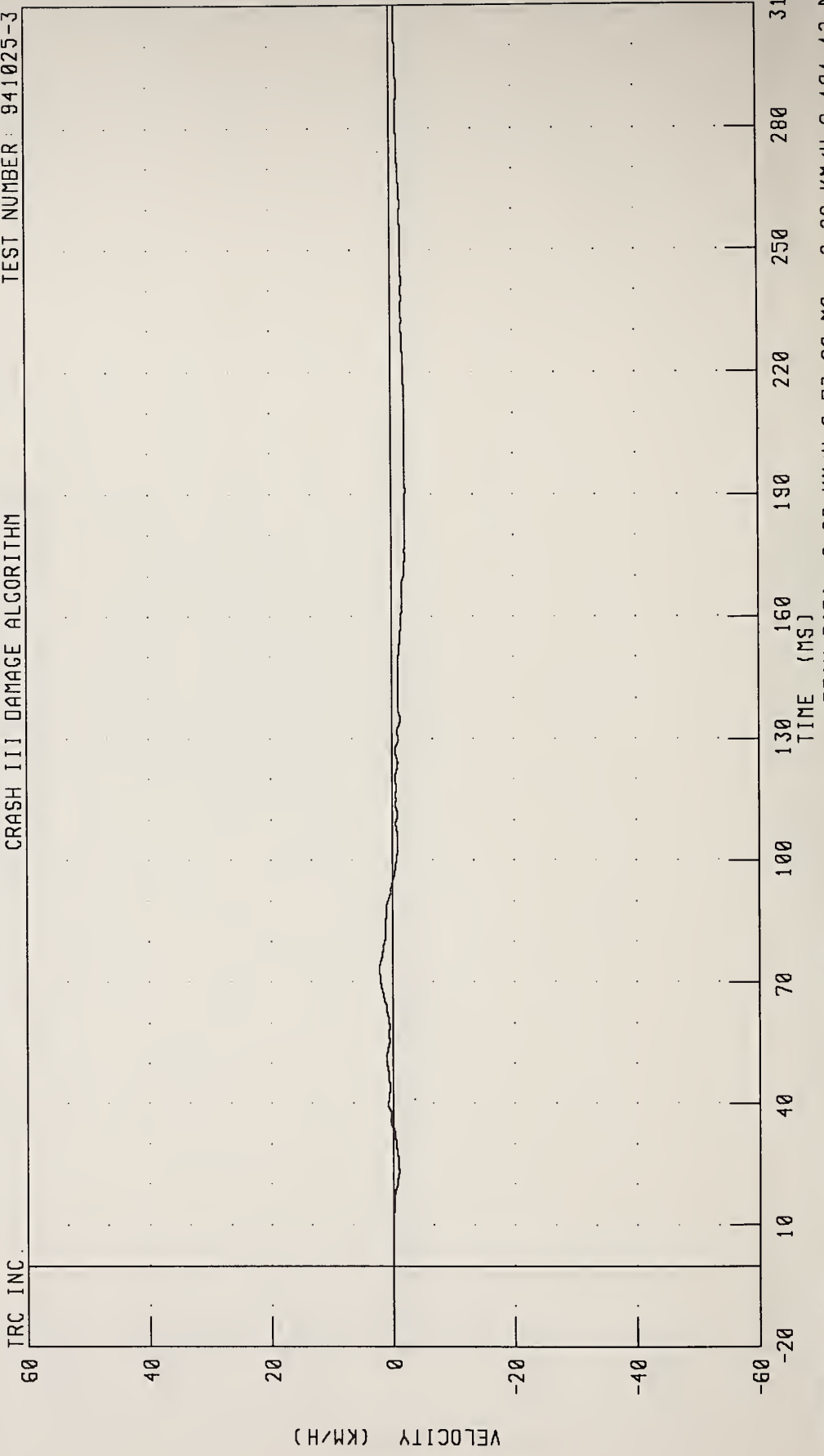
CHANNEL: VCGYV FILTER: CH. CLASS 180

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG Z-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: VCGZV FILTER: CH. CLASS 180

PEAK DATA: 2.20 KM/H @ 73.28 MS, -2.29 KM/H @ 191.12 MS

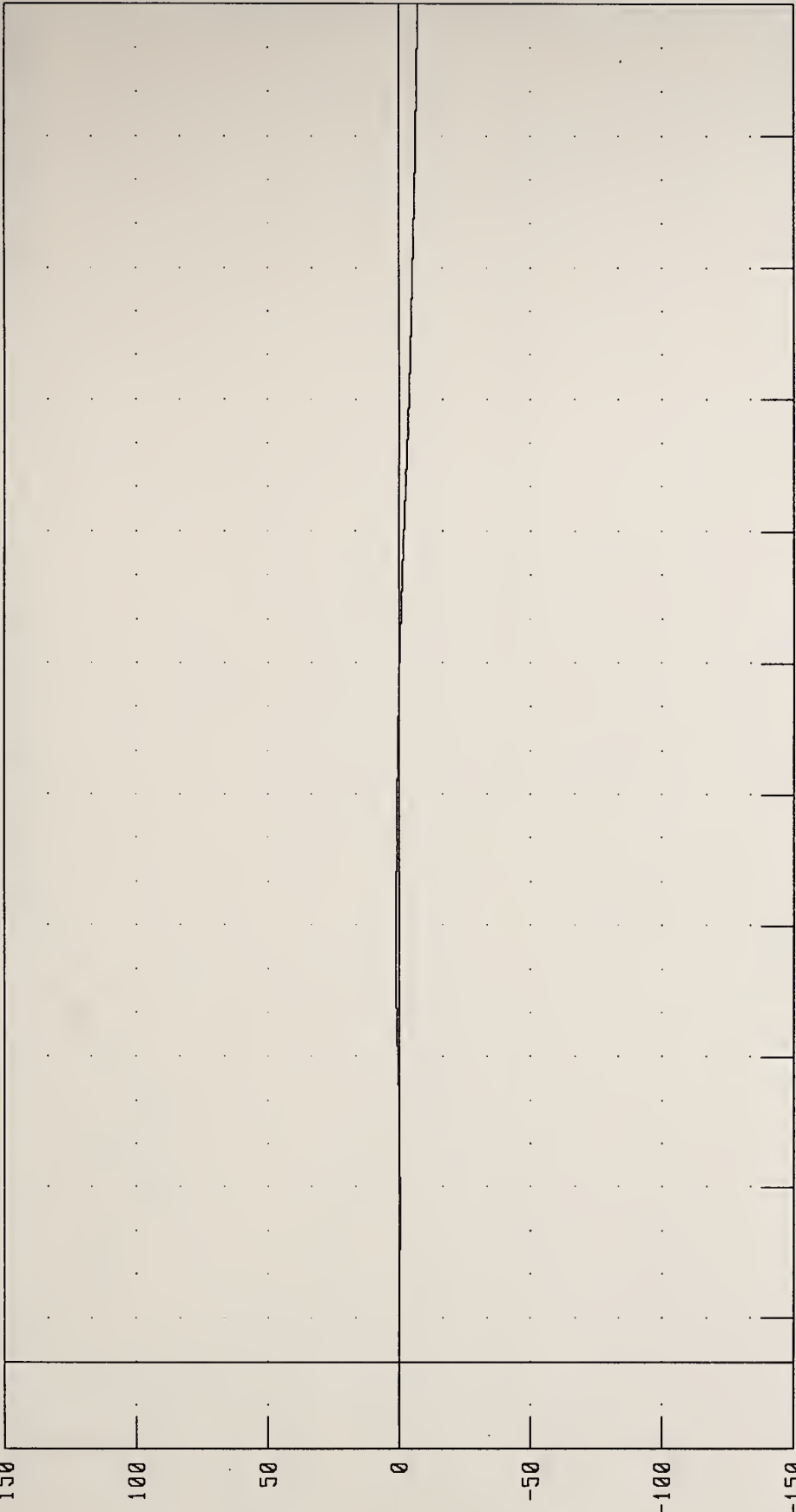
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG Z-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

TRC INC.



TIME (MS) 130 160 190 220 250 280 310

PEAK DATA: 13.92 MM @ 94.96 MS; -71.91 MM @ 310.00 MS

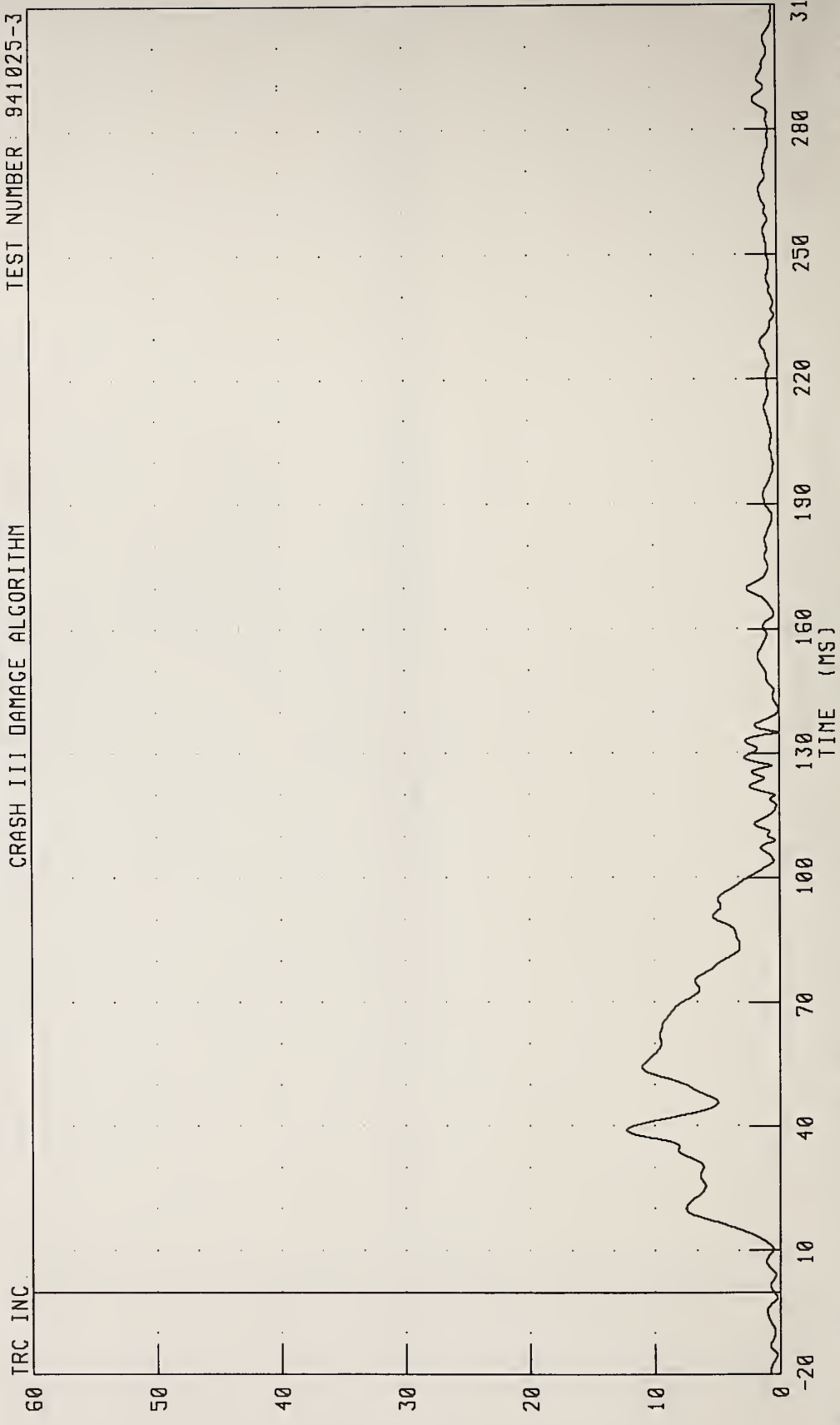
CHANNEL: VCGZD FILTER: CH. CLASS 180

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG RESULTANT ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



TRC INC.

ACCELERATION (G)

TIME (MS)

CHANNEL: VCGRG FILTER: CH. CLASS 60 PEAK DATA: 12.28 G @ 39.12 MS; 0.09 G @ 140.40 MS

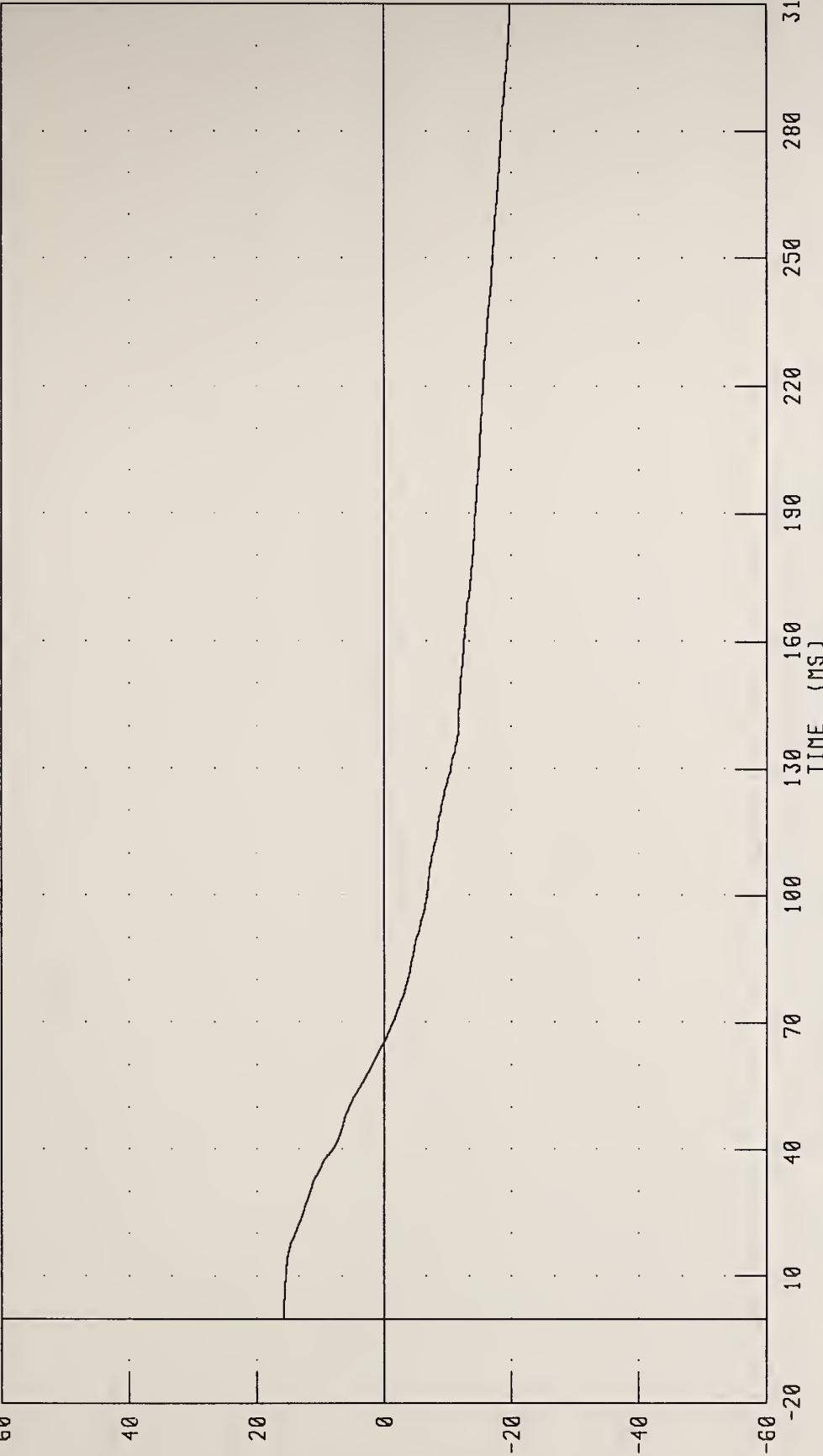
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG RESULTANT VELOCITY

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



TIME (MS)

PEAK DATA: 15.80 KM/H @ 0.00 MS; -19.82 KM/H @ 310.00 MS

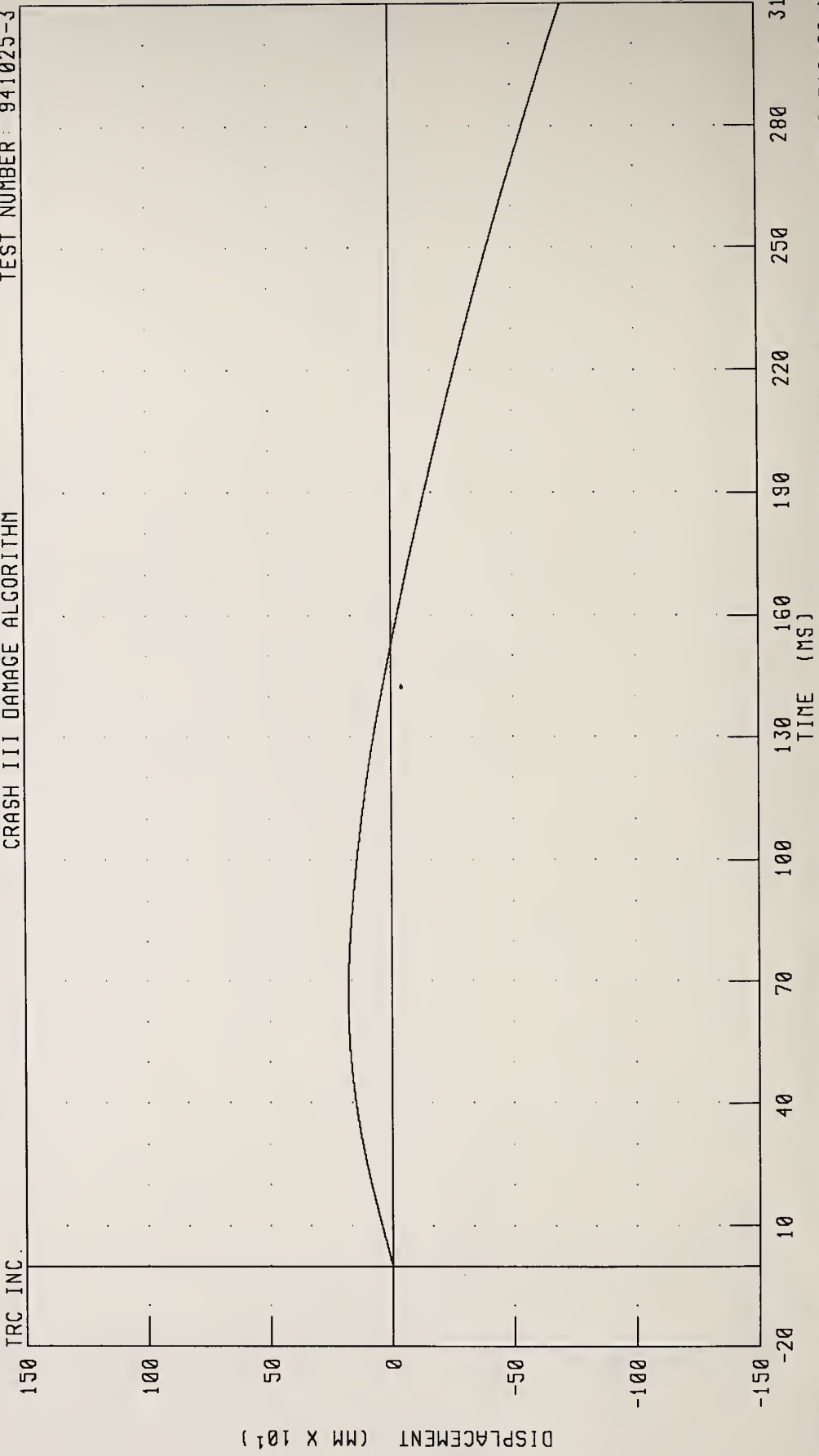
CHANNEL: VCGRV FILTER: CH. CLASS 180

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

VEHICLE CG RESULTANT DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



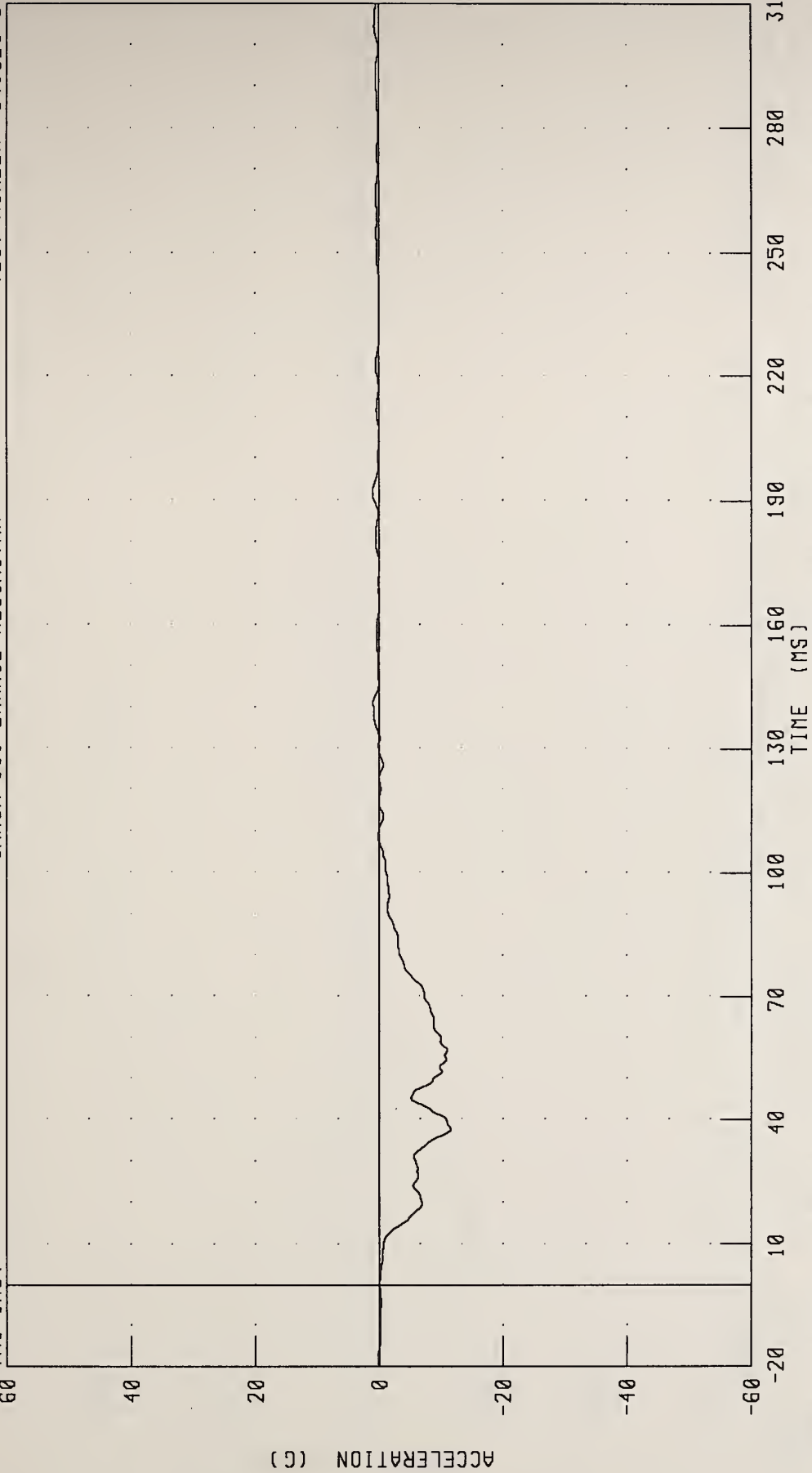
CHANNEL: VCGRD FILTER: CH. CLASS 180

PEAK DATA: 179.40 MM @ 65.44 MS; -707.07 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT FRONT SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-3

TRC INC.



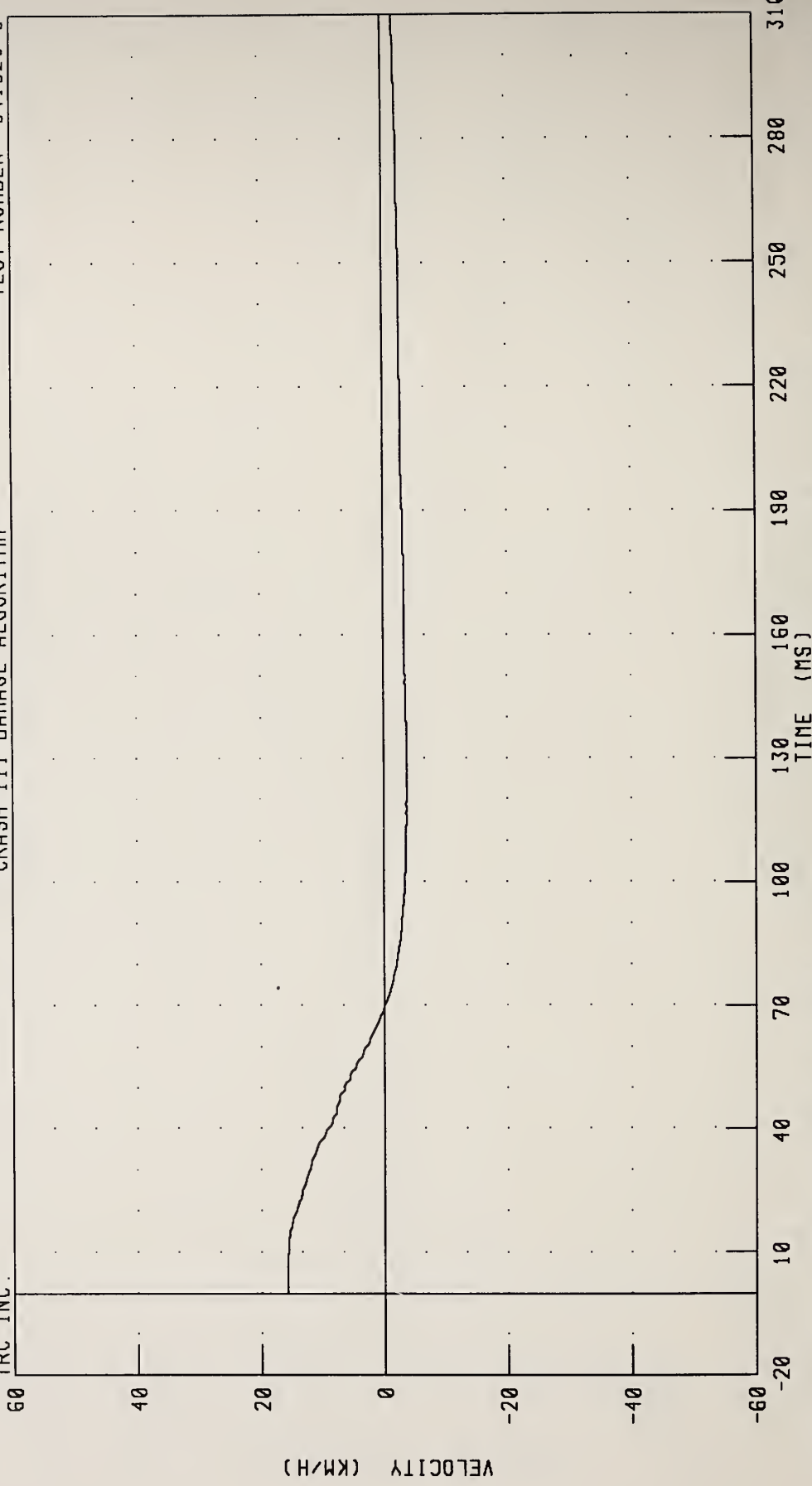
CHANNEL: LFSXG FILTER: CH. CLASS 60

PEAK DATA: 1.06 G @ 191.84 MS; -11.52 G @ 37.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT FRONT SILL X-AXIS VELOCITY

TRC INC. TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM



CHANNEL: LFSXV FILTER: CH. CLASS 180

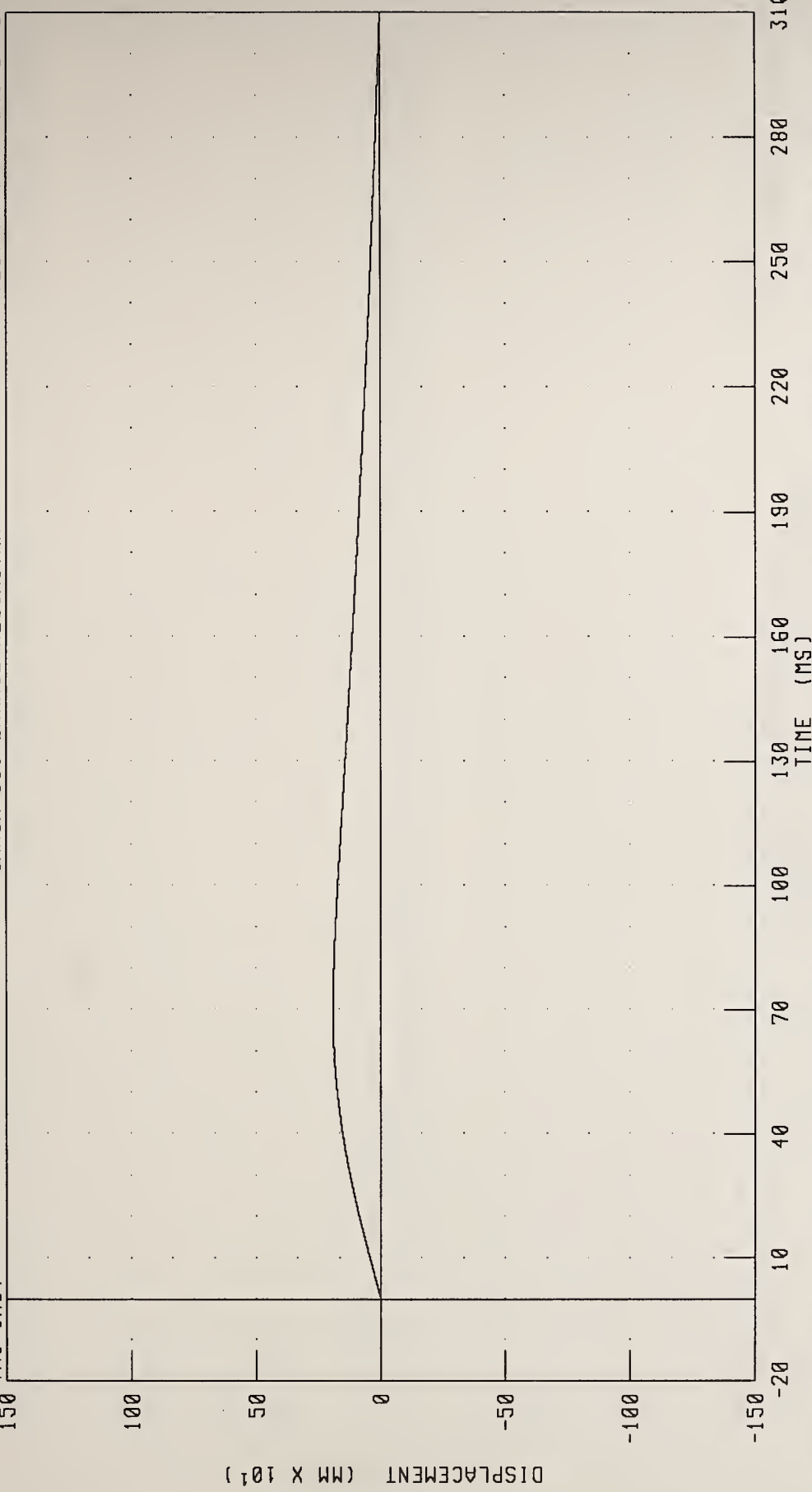
PEAK DATA: 15.80 KM/H @ 0.40 MS; -3.78 KM/H @ 133.04 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT FRONT SILL X-AXIS DISPLACEMENT

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LFSXD FILTER: CH. CLASS 180

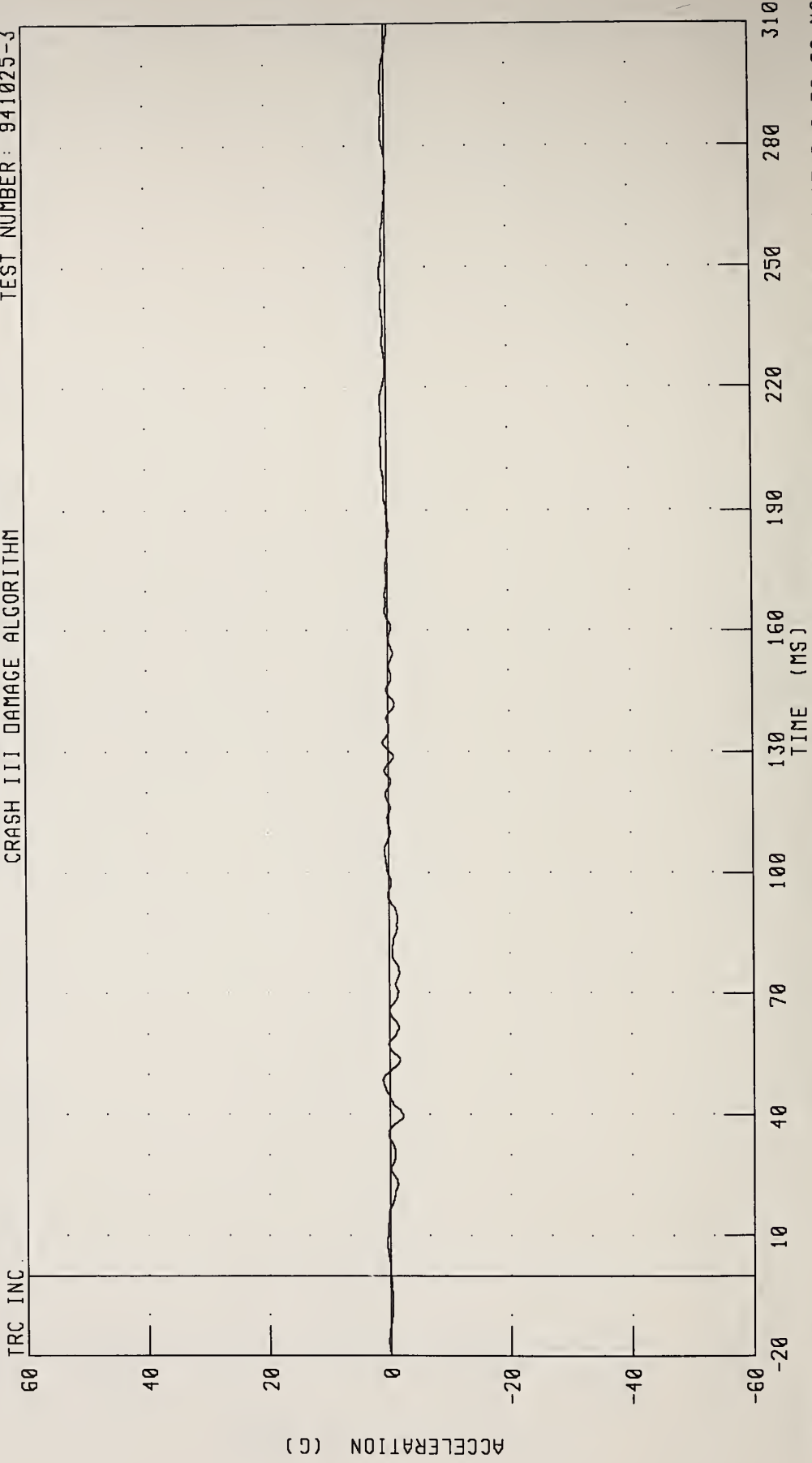
PEAK DATA: 191.91 MM @ 69.84 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

LEFT FRONT SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: LFSYG FILTER: CH. CLASS 60

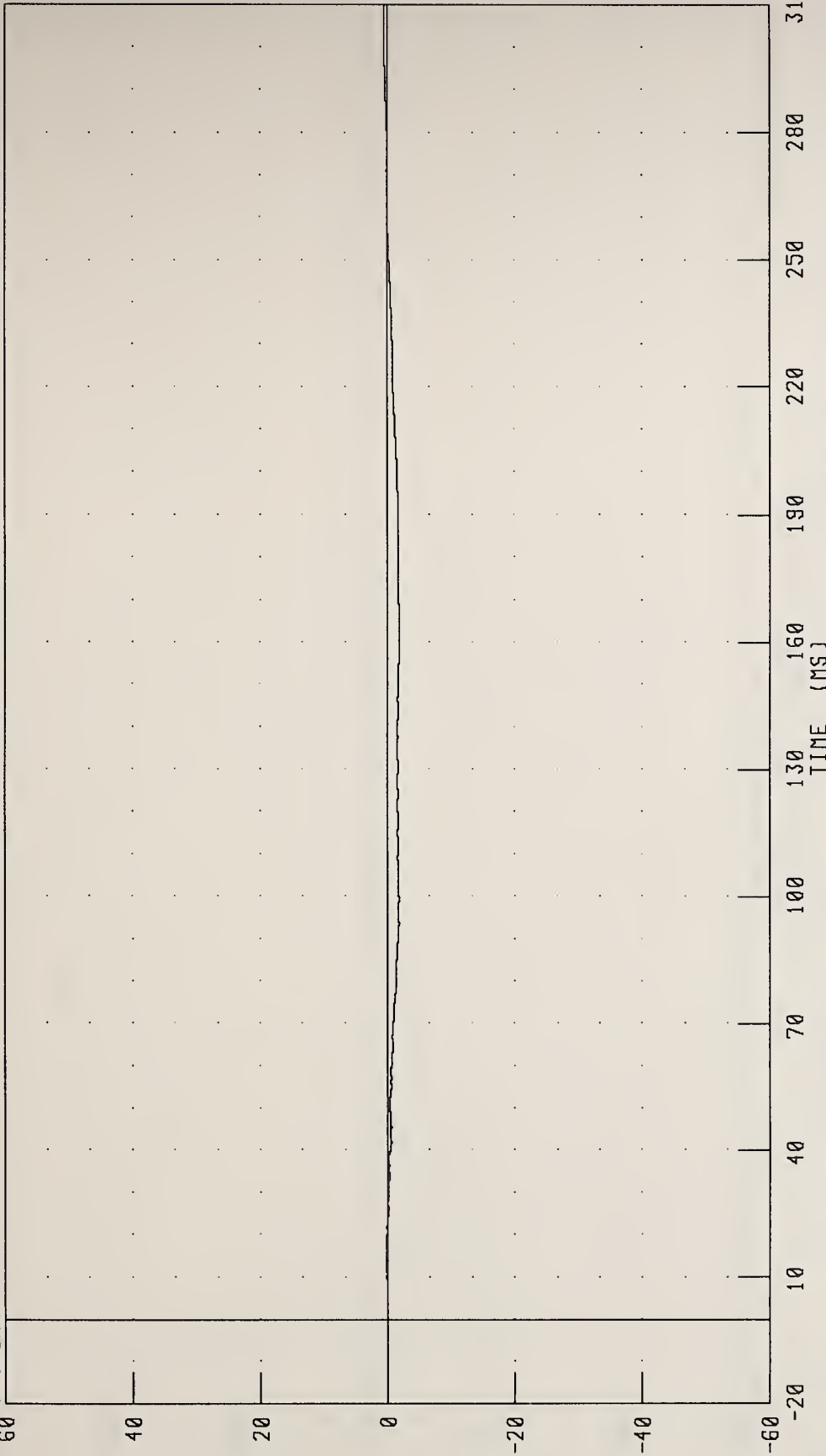
PEAK DATA: 1.12 G @ 48.56 MS, -2.17 G @ 39.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT FRONT SILL Y-AXIS VELOCITY

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



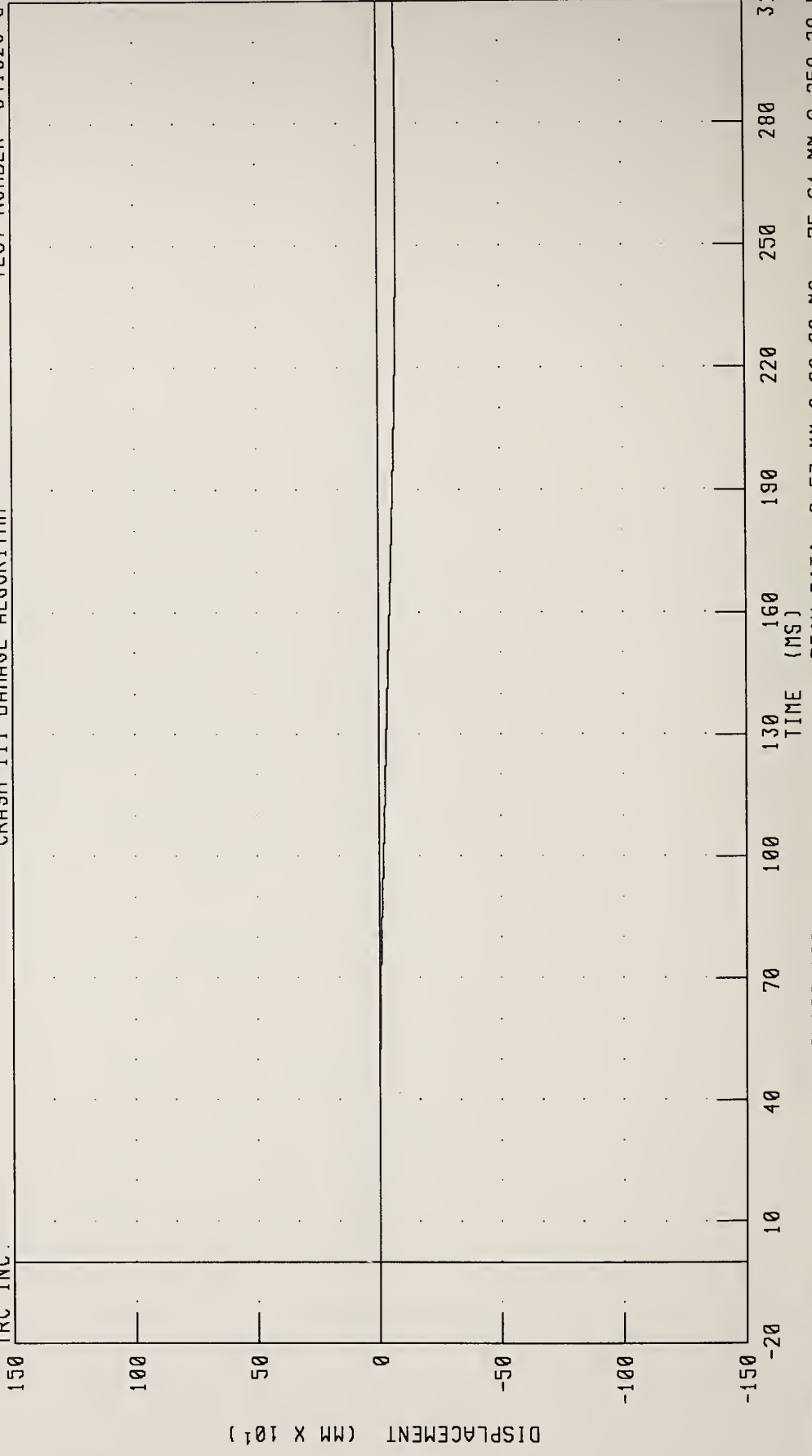
CHANNEL: LFSYV FILTER: CH. CLASS 180

TIME (MS)

PEAK DATA: 0.54 KM/H @ 302.00 MS; -1.88 KM/H @ 162.24 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT FRONT SILL Y-AXIS DISPLACEMENT

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-3



CHANNEL: LFSYD FILTER: CH. CLASS 180

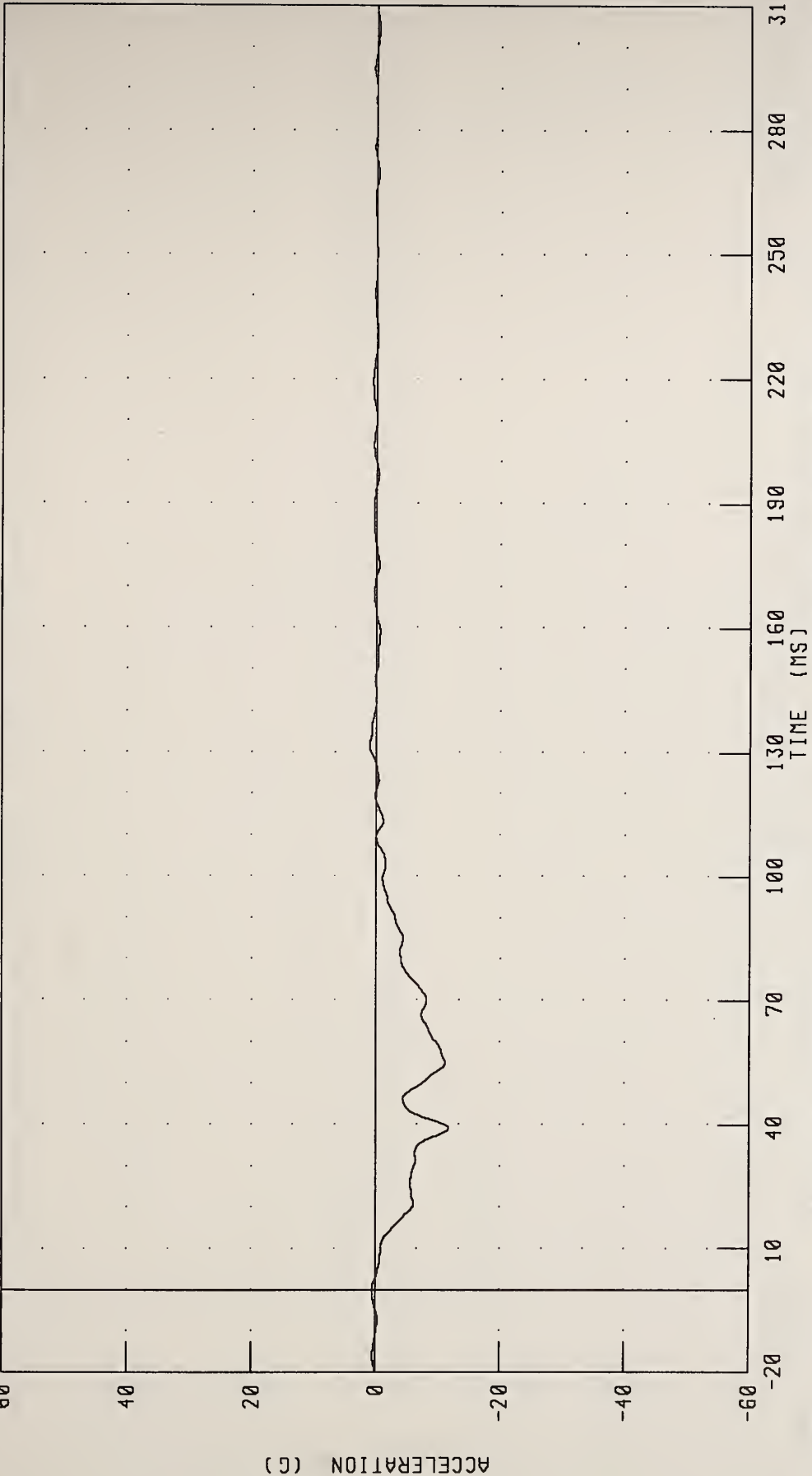
PEAK DATA: 0.53 MM @ 22.80 MS; -75.64 MM @ 259.28 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
RIGHT FRONT SILL X-AXIS ACCELERATION

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



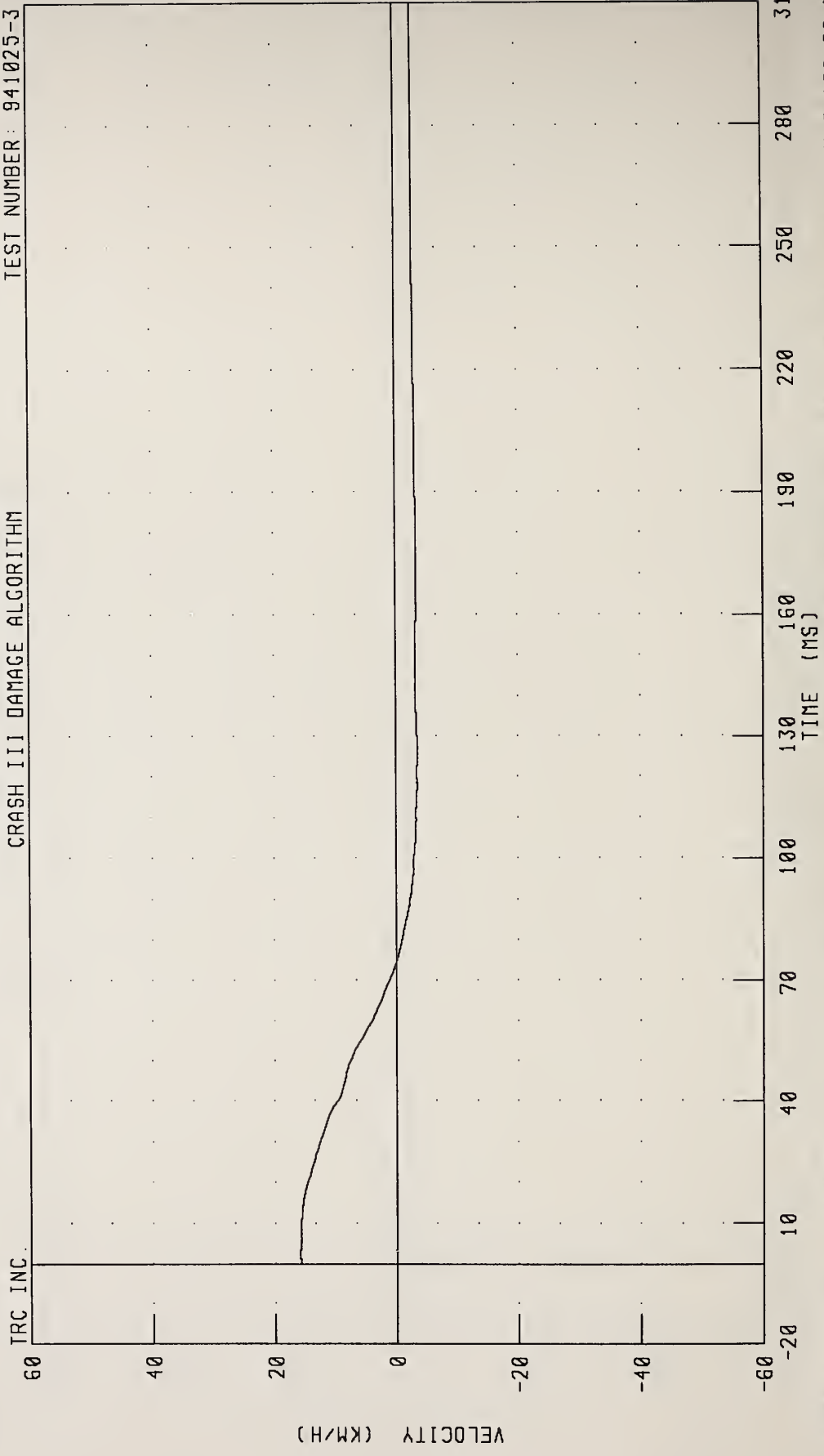
CHANNEL: RFSXG FILTER: CH. CLASS 60

PEAK DATA: 1.03 G @ 131.84 MS; -11.75 G @ 39.20 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT FRONT SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-3

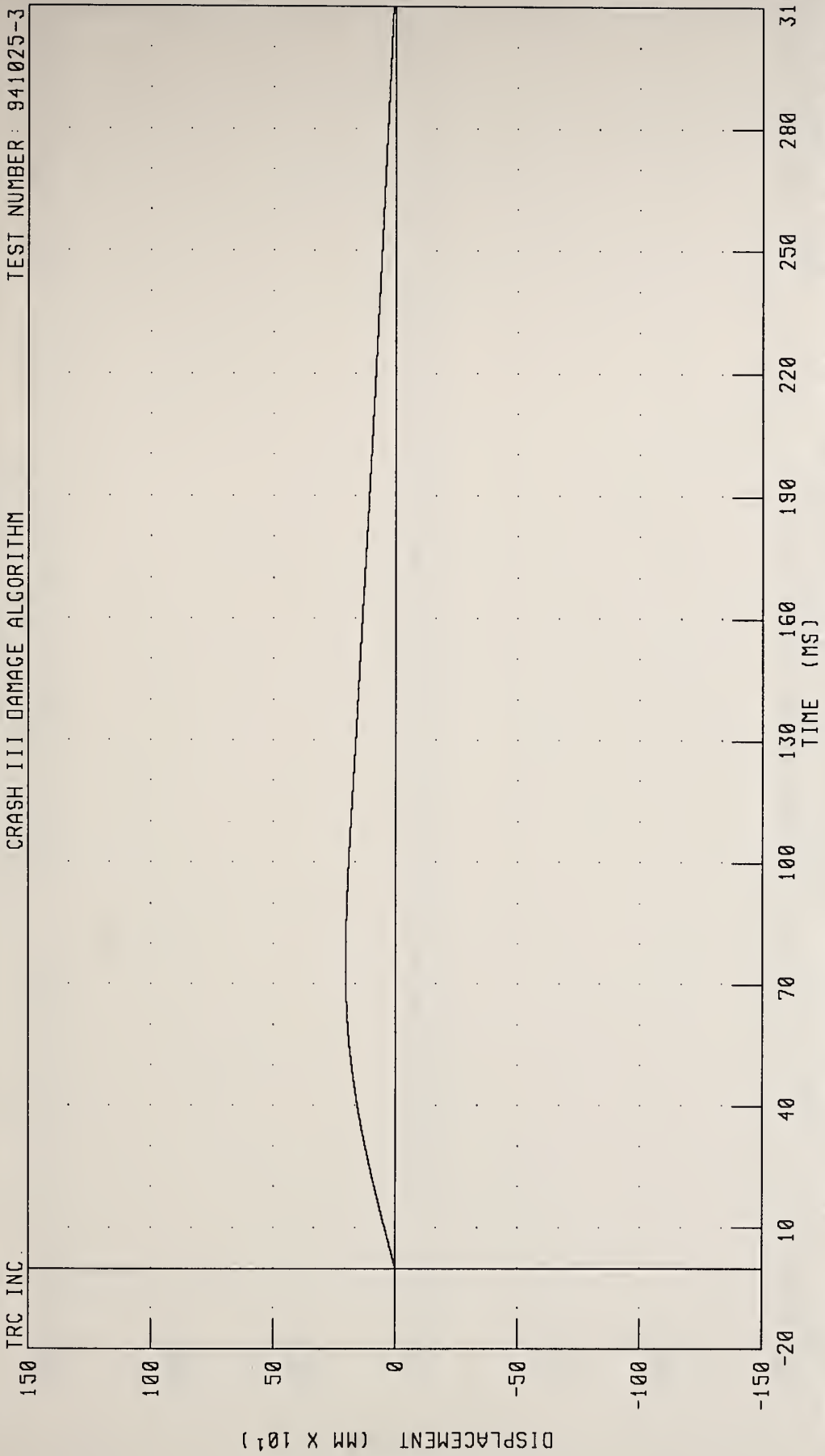


CHANNEL: RFSXY FILTER: CH. CLASS 180

PEAK DATA: 15.86 KM/H @ 2.24 MS; -3.51 KM/H @ 126.96 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
RIGHT FRONT SILL X-AXIS DISPLACEMENT

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-3



CHANNEL: RFSXD FILTER: CH. CLASS 180

PEAK DATA: 204.38 MM @ 74.56 MS; 0.00 MM @ 0.00 MS

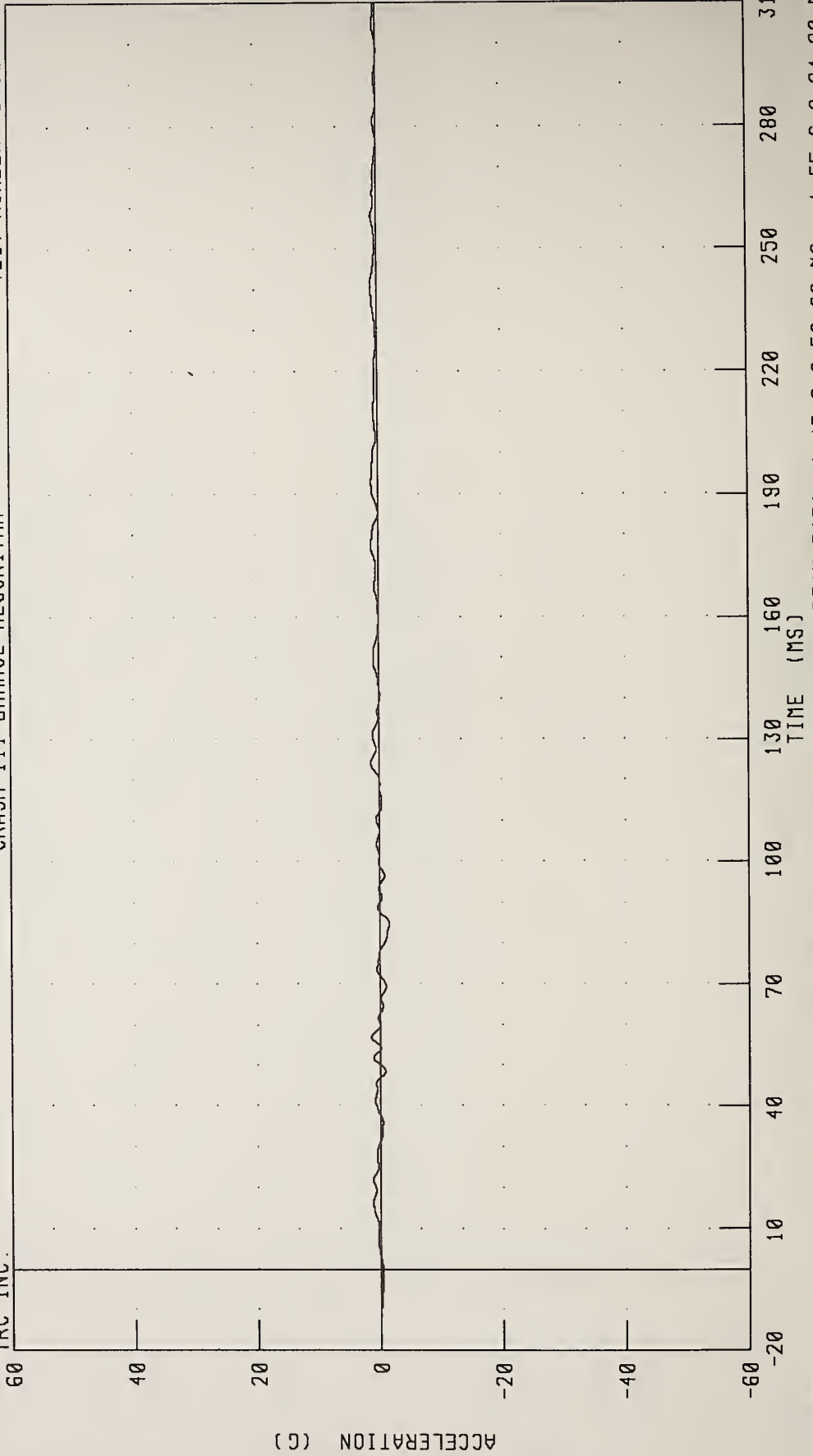
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT FRONT SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

TRC INC.



CHANNEL: RFSYC FILTER: CH. CLASS 60

PEAK DATA: 1.45 G @ 56.88 MS; -1.55 G @ 84.80 MS

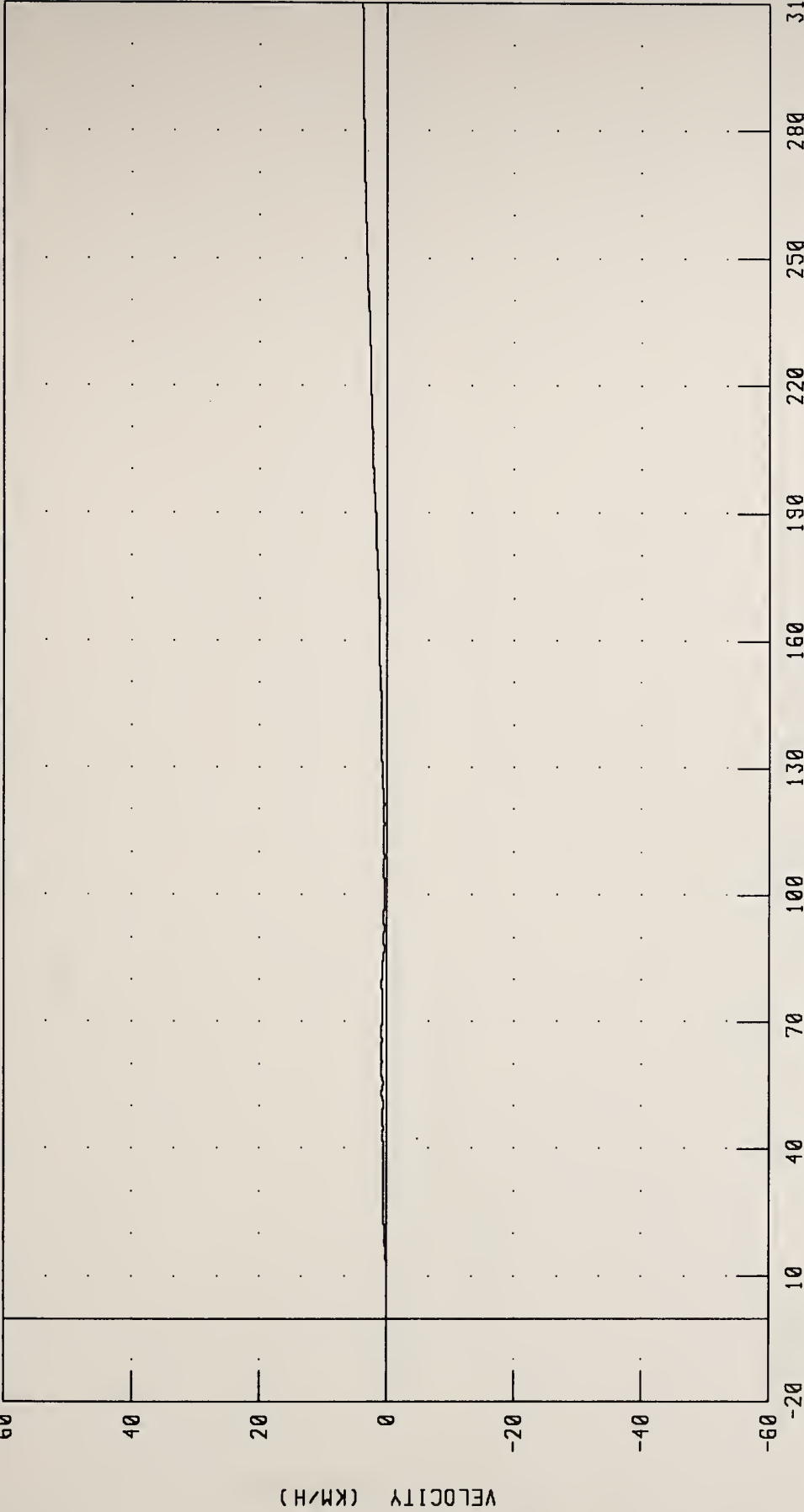
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT FRONT SILL Y-AXIS VELOCITY

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



TIME (MS)

CHANNEL: RFSYV FILTER: CH. CLASS 180

PEAK DATA: 3.83 KM/H @ 310.00 MS; -0.03 KM/H @ 2.16 MS

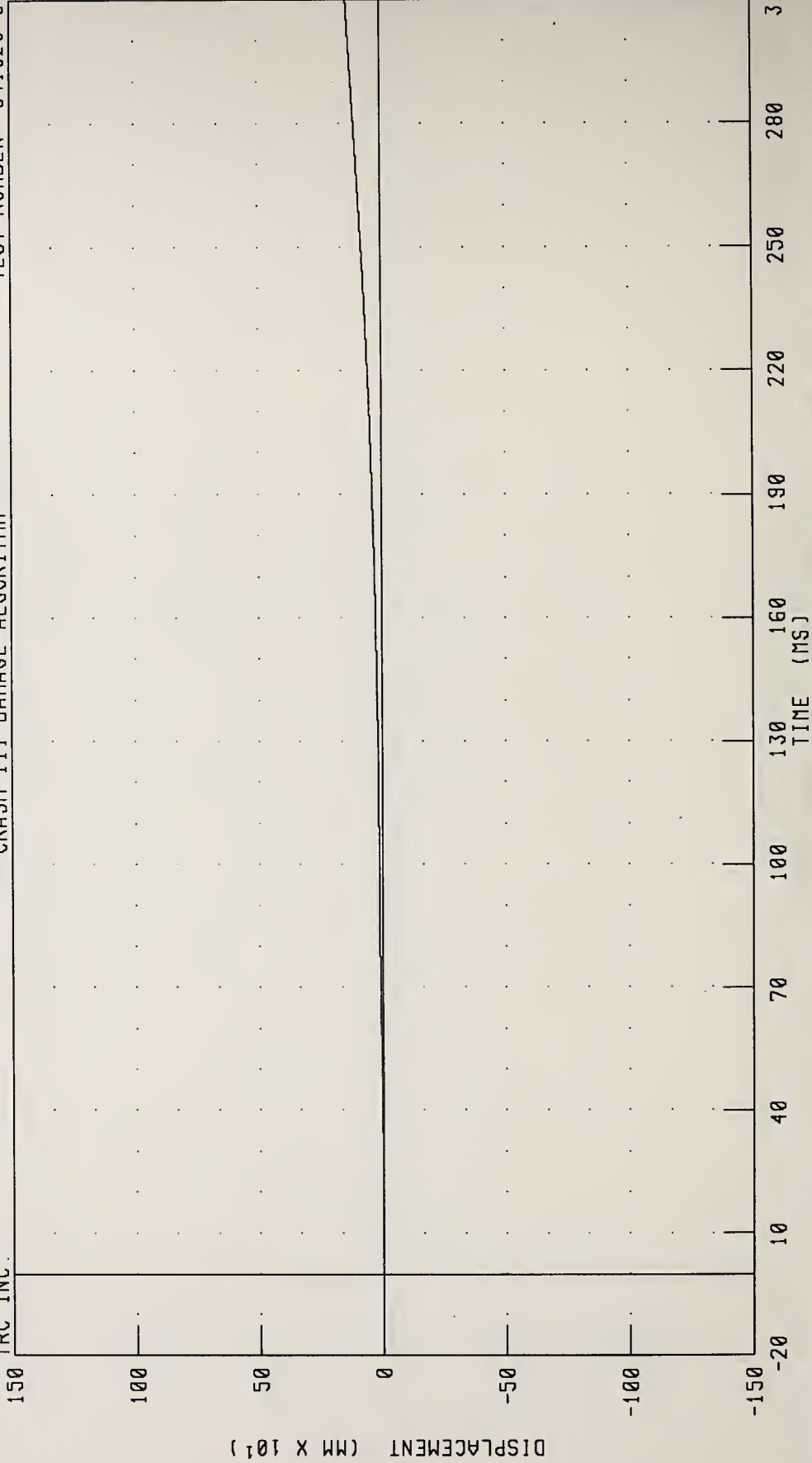
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT FRONT SILL Y-AXIS DISPLACEMENT

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: RFSYD FILTER: CH. CLASS 180

PEAK DATA: 138.66 MM @ 130.00 MS; -0.03 MM @ 6.64 MS

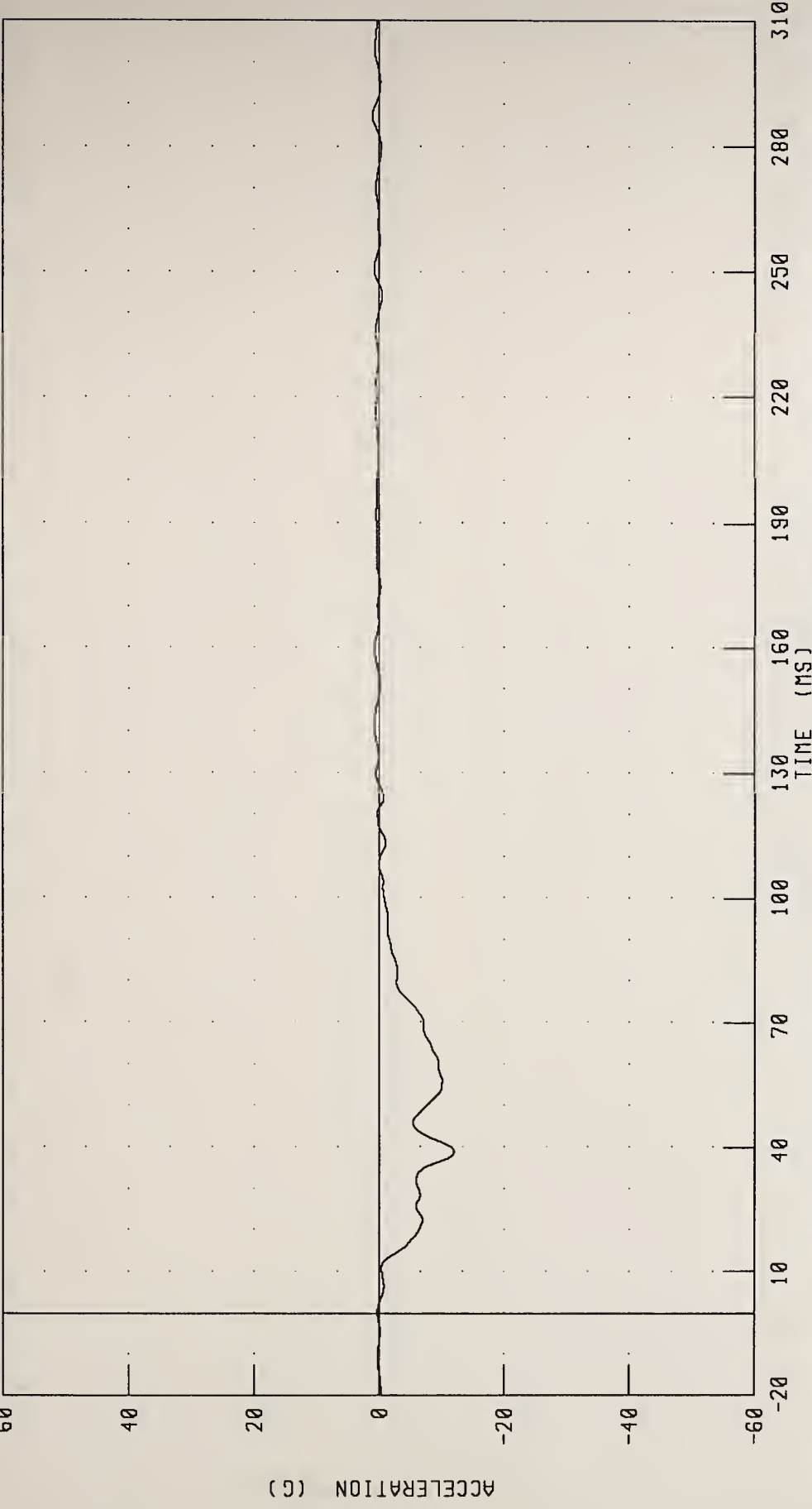
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

LEFT REAR SILL X-AXIS ACCELERATION

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: LRSXG FILTER: CH. CLASS 60

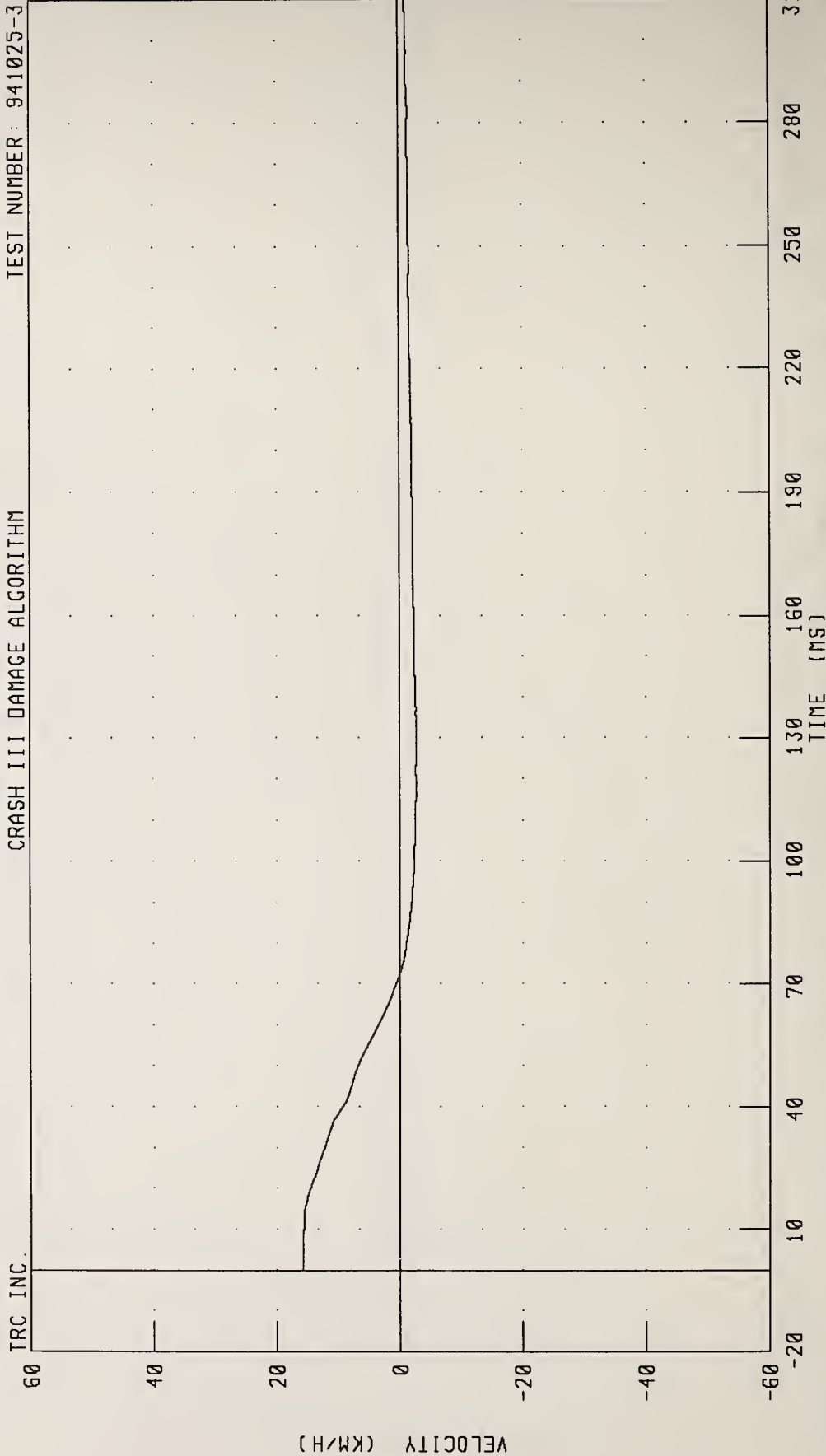
PEAK DATA: 1.09 G @ 287.20 MS; -11.94 G @ 38.96 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

LEFT REAR SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: LRSXY FILTER: CH. CLASS 180

PEAK DATA: 15.83 KM/H @ 2.32 MS; -2.71 KM/H @ 126.48 MS

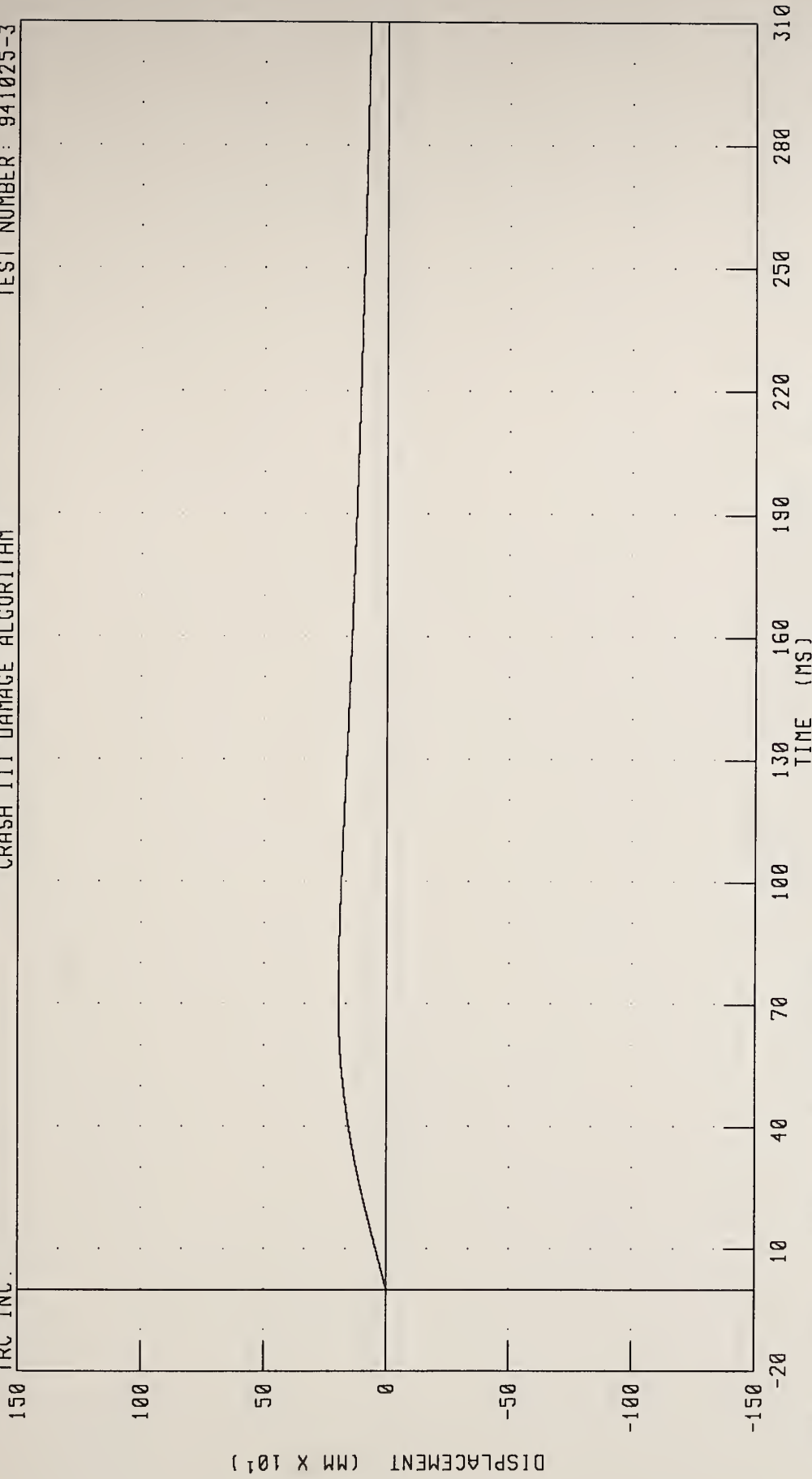
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

LEFT REAR SILL X-AXIS DISPLACEMENT

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

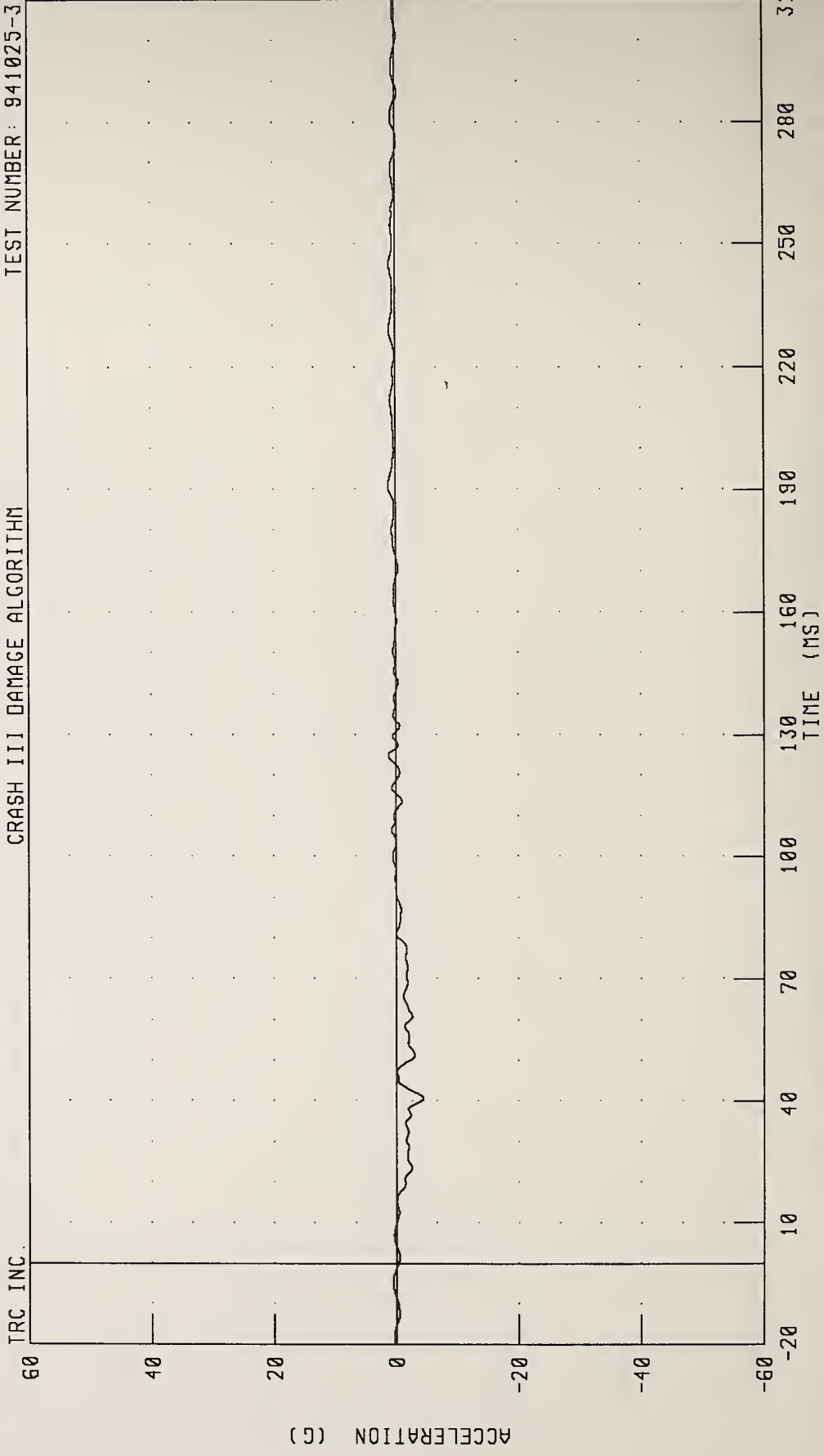


CHANNEL: LRSXD FILTER: CH. CLASS 180

PEAK DATA: 196.82 MM @ 72.64 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT REAR SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: LRSYG FILTER: CH. CLASS 60

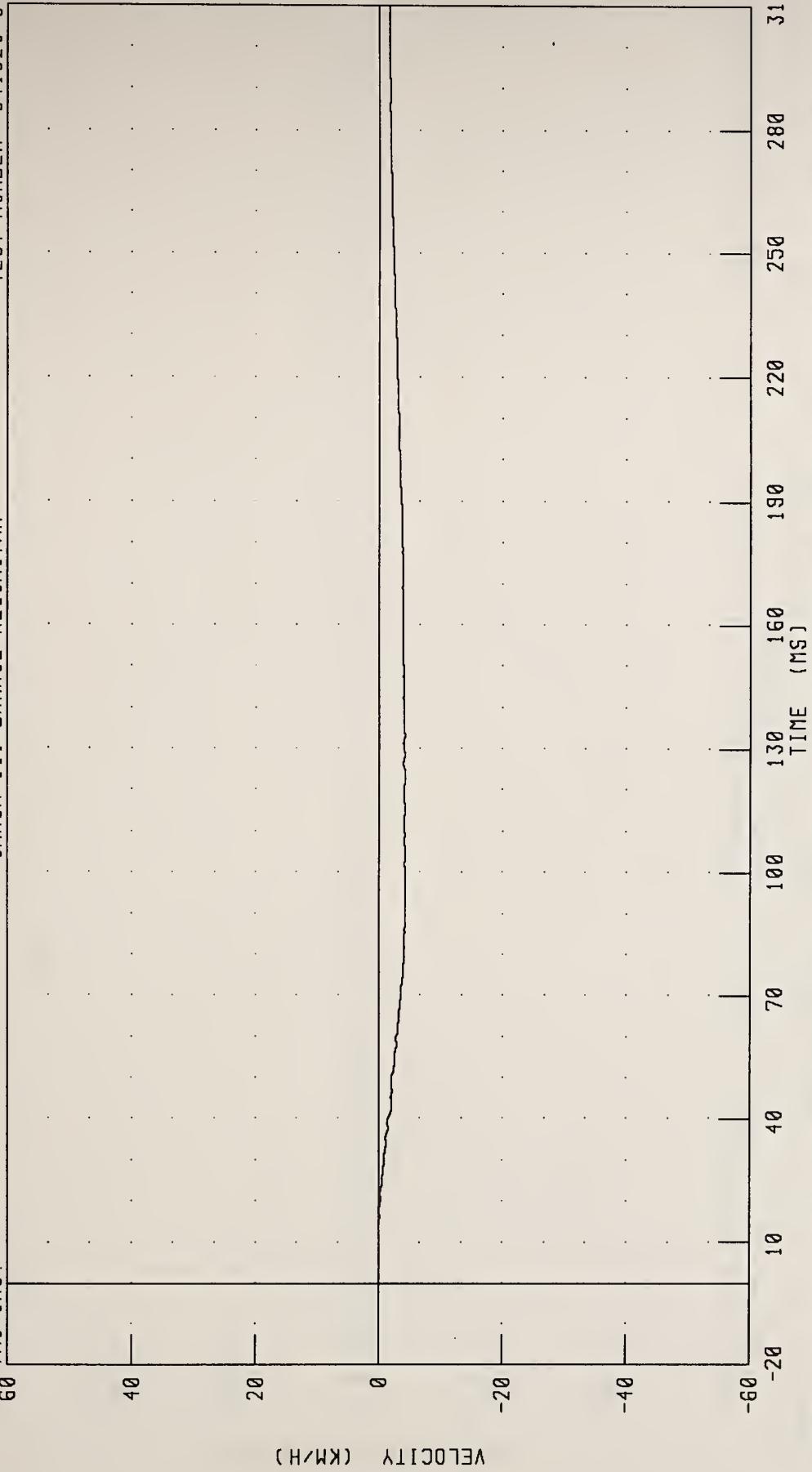
PEAK DATA: 1.27 G @ 125.04 MS; -4.42 G @ 40.72 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
LEFT REAR SILL Y-AXIS VELOCITY

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LRSYV FILTER: CH. CLASS 180

PEAK DATA: 0.01 KM/H @ 11.28 MS; -4.27 KM/H @ 97.92 MS

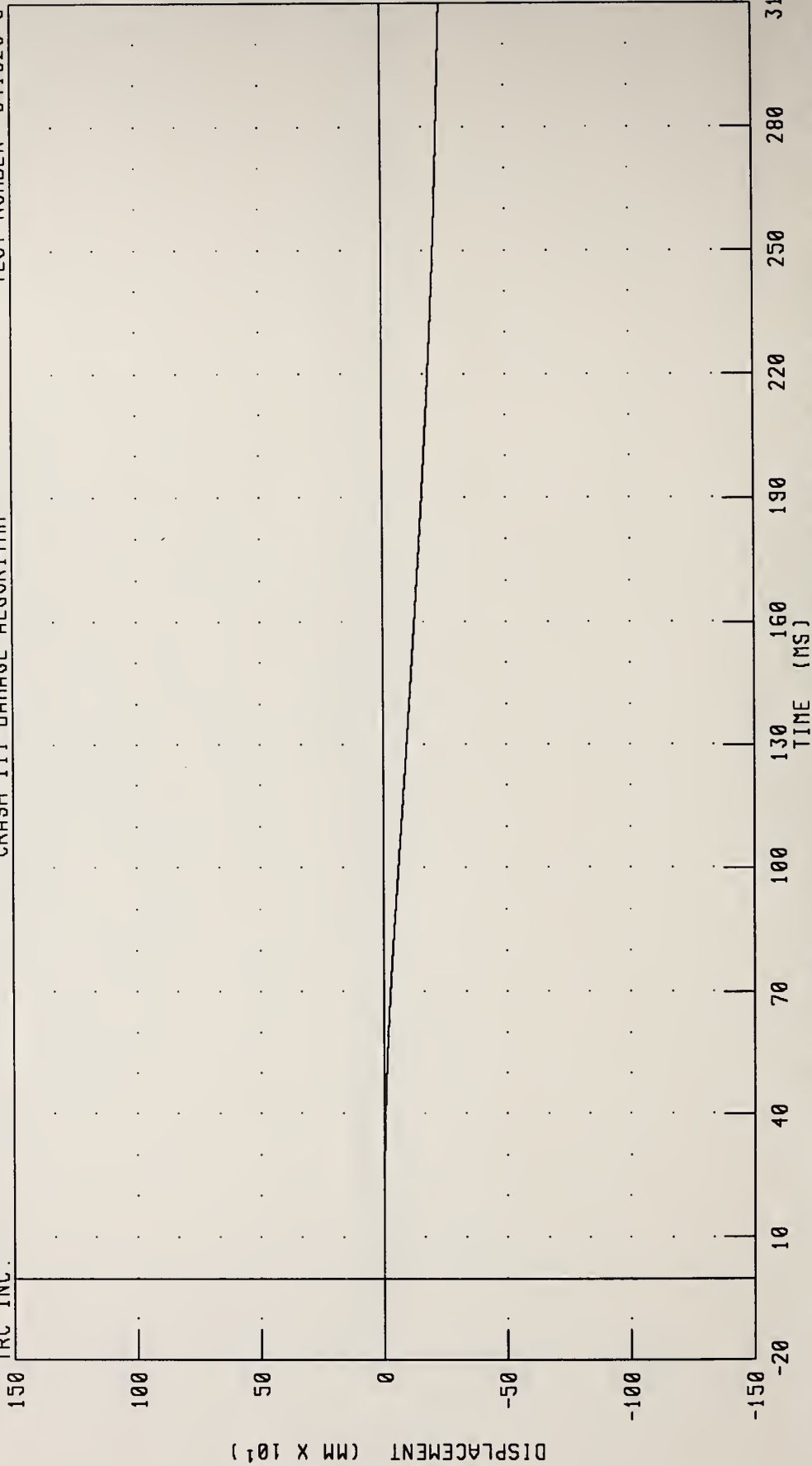
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

LEFT REAR SILL Y-AXIS DISPLACEMENT

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LRSYD FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 0.00 MS; -240.03 MM @ 310.00 MS

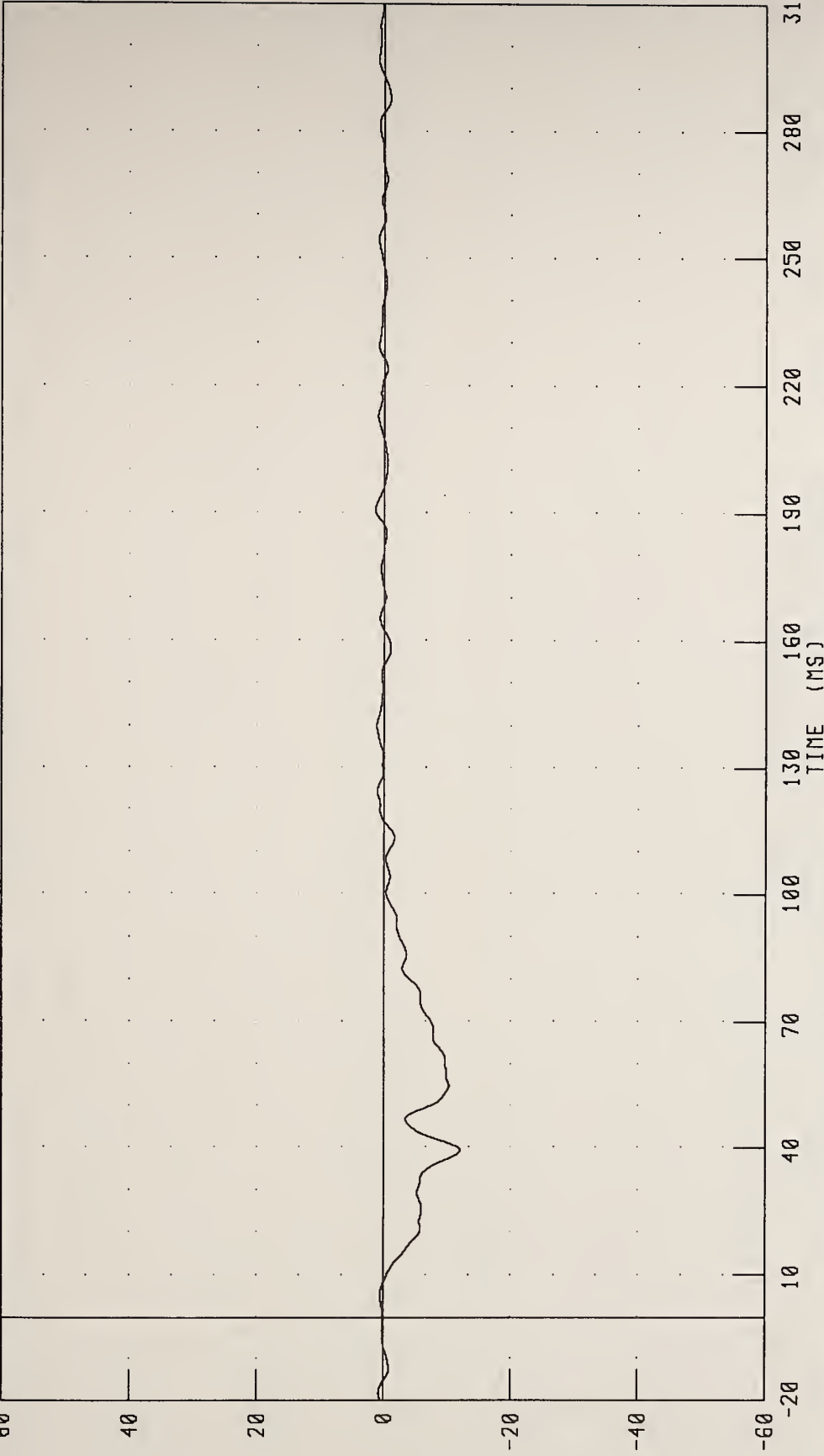
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT REAR SILL X-AXIS ACCELERATION

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: RRSXG FILTER: CH. CLASS 60

PEAK DATA: 1.39 G @ 190.72 MS; -12.03 G @ 39.28 MS

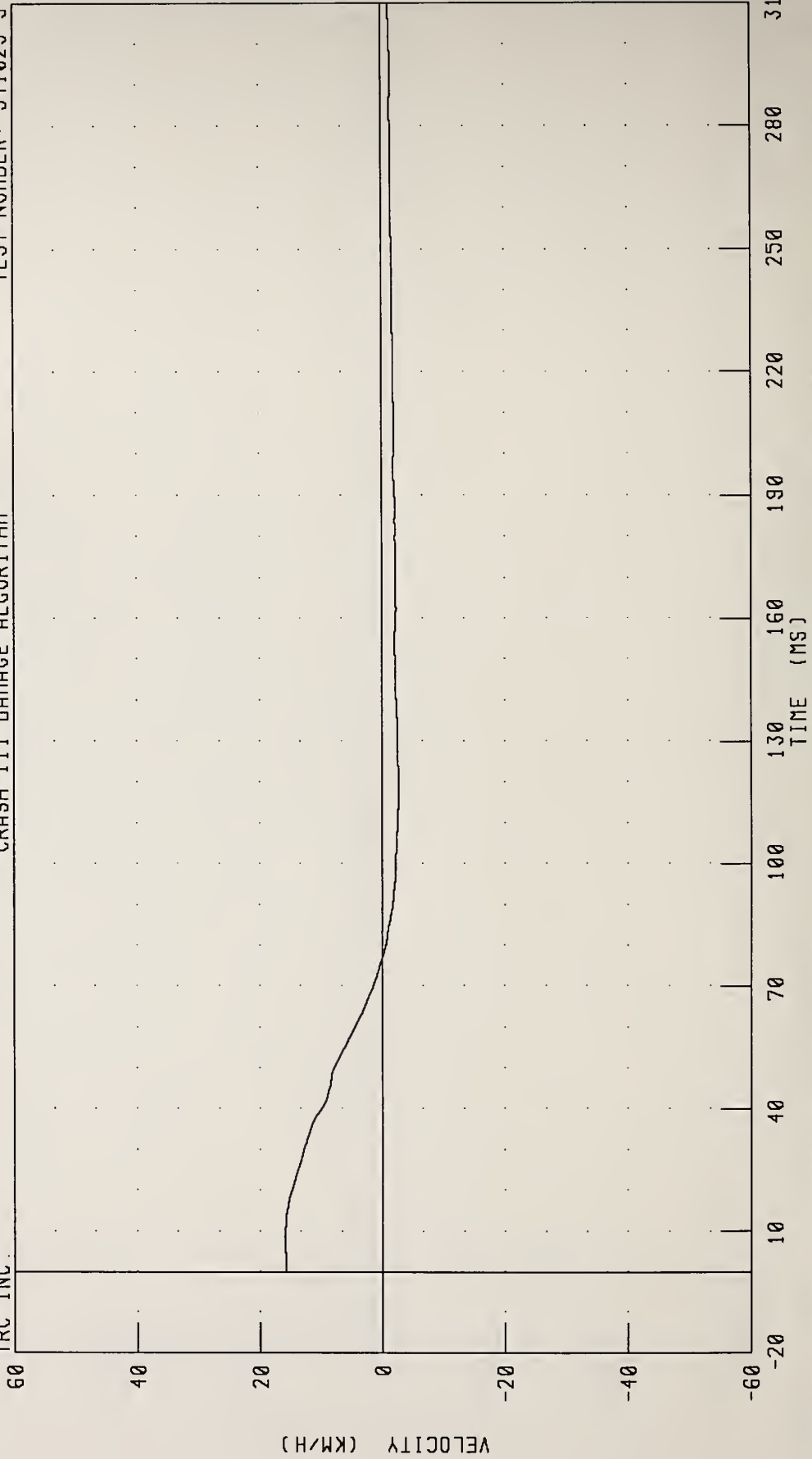
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT REAR SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3

TRC INC.



CHANNEL: RRSXV FILTER: CH. CLASS 180

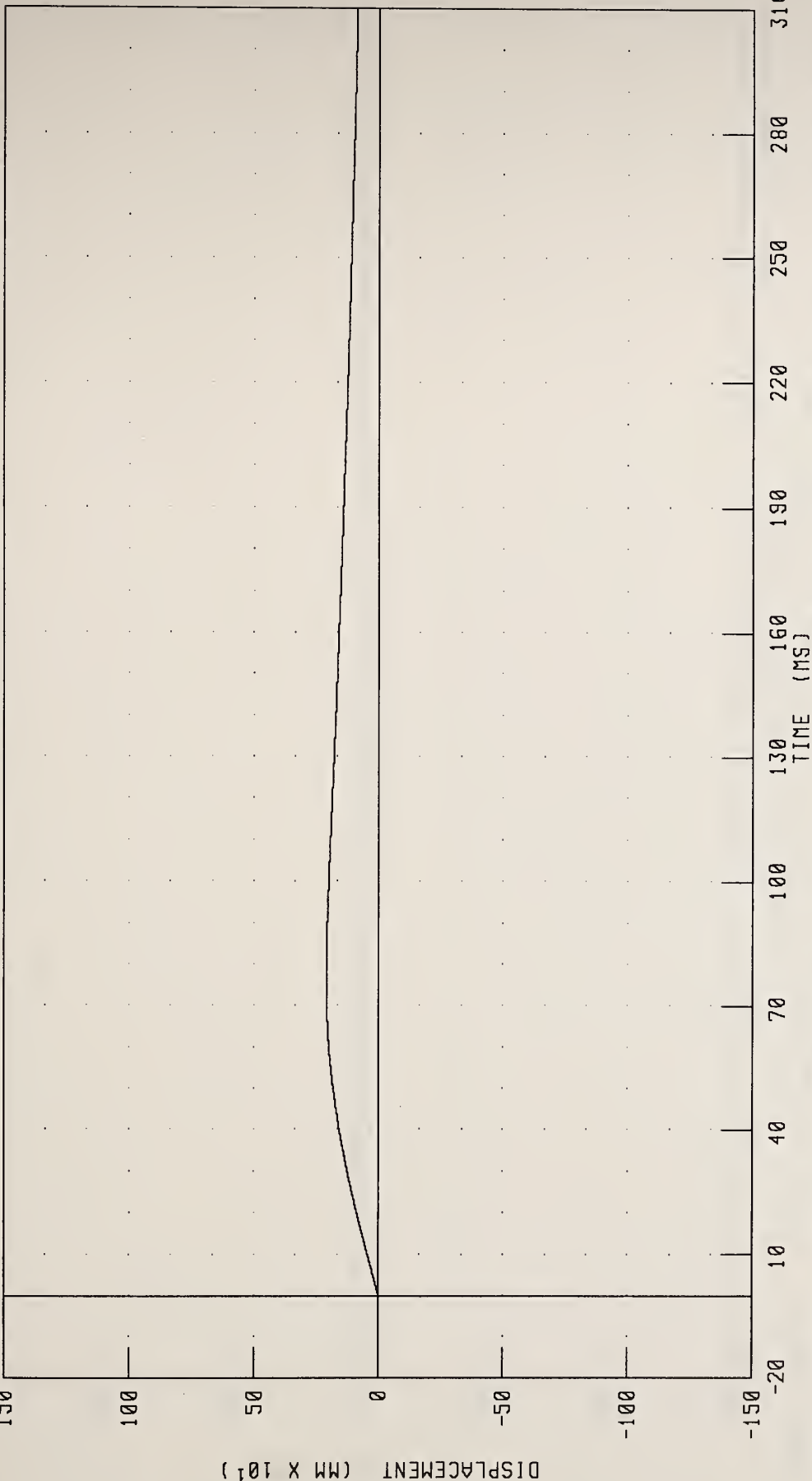
PEAK DATA: 15.90 KM/H @ 8.16 MS; -2.77 KM/H @ 116.24 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5
RIGHT REAR SILL X-AXIS DISPLACEMENT

TEST NUMBER: 941025-3

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: ARSXD FILTER: CH. CLASS 180

TIME (MS)

PEAK DATA: 209.13 MM @ 76.96 MS, 0.00 MM @ 0.00 MS

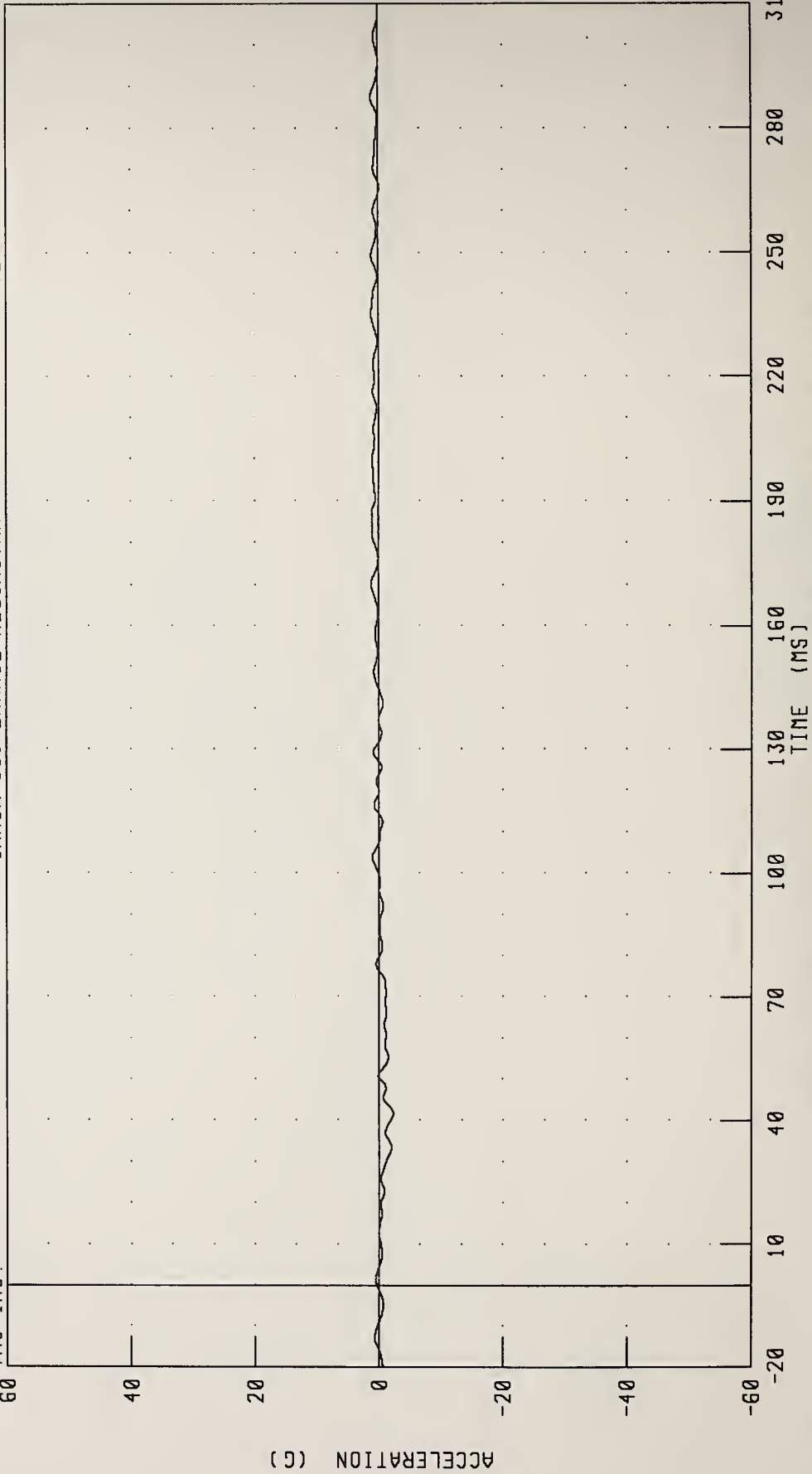
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT REAR SILL Y-AXIS ACCELERATION

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: RRSYG FILTER: CH. CLASS 60

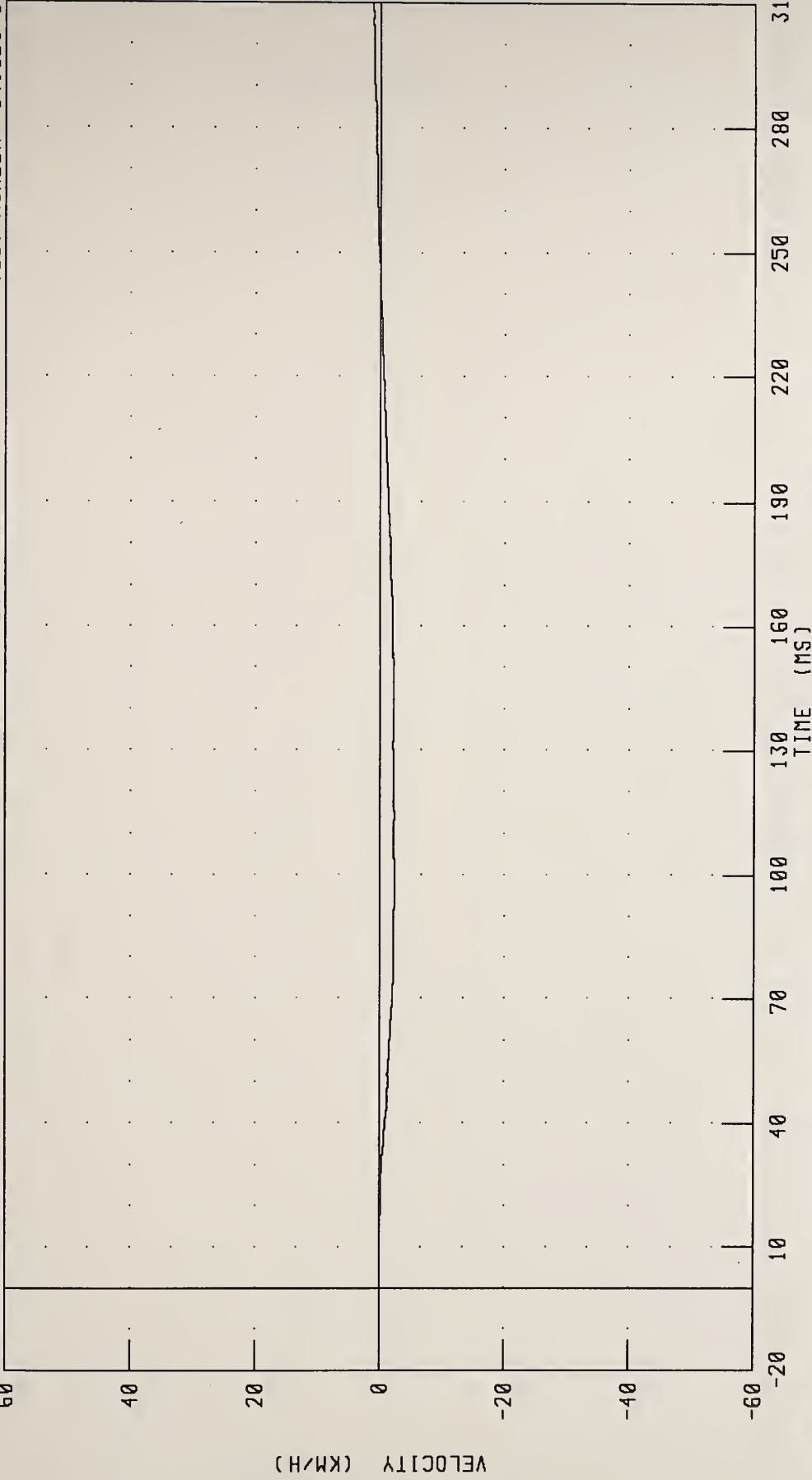
PEAK DATA: 1.23 G @ 170.08 MS; -2.31 G @ 41.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT REAR SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-3

TRC INC.



CHANNEL: RRSYV FILTER: CH. CLASS 180

TIME (MS)

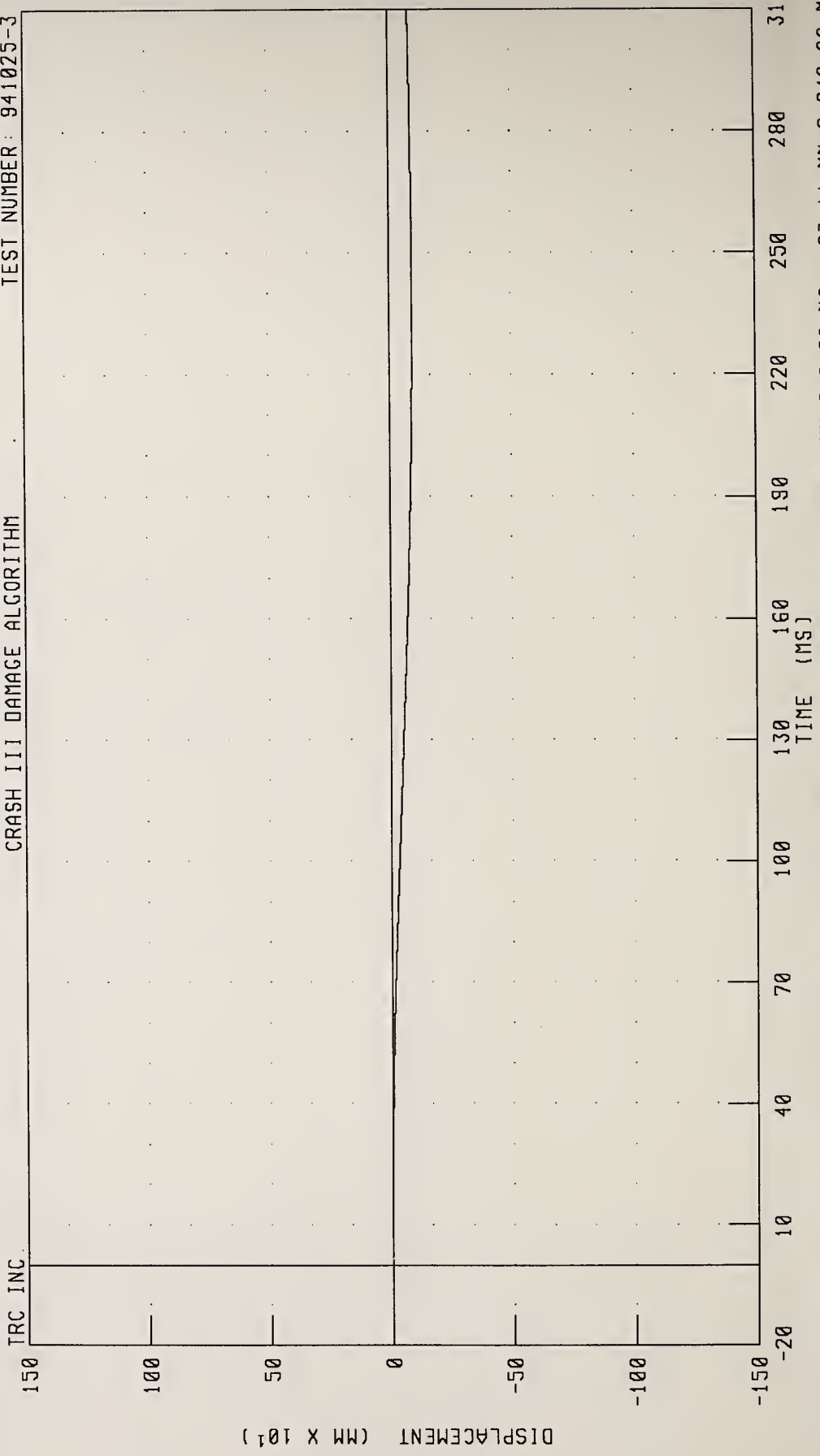
PEAK DATA: 1.12 KM/H @ 309.12 MS; -2.36 KM/H @ 98.88 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 3 OF 5

RIGHT REAR SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-3



CHANNEL: RRSYD FILTER: CH. CLASS 180

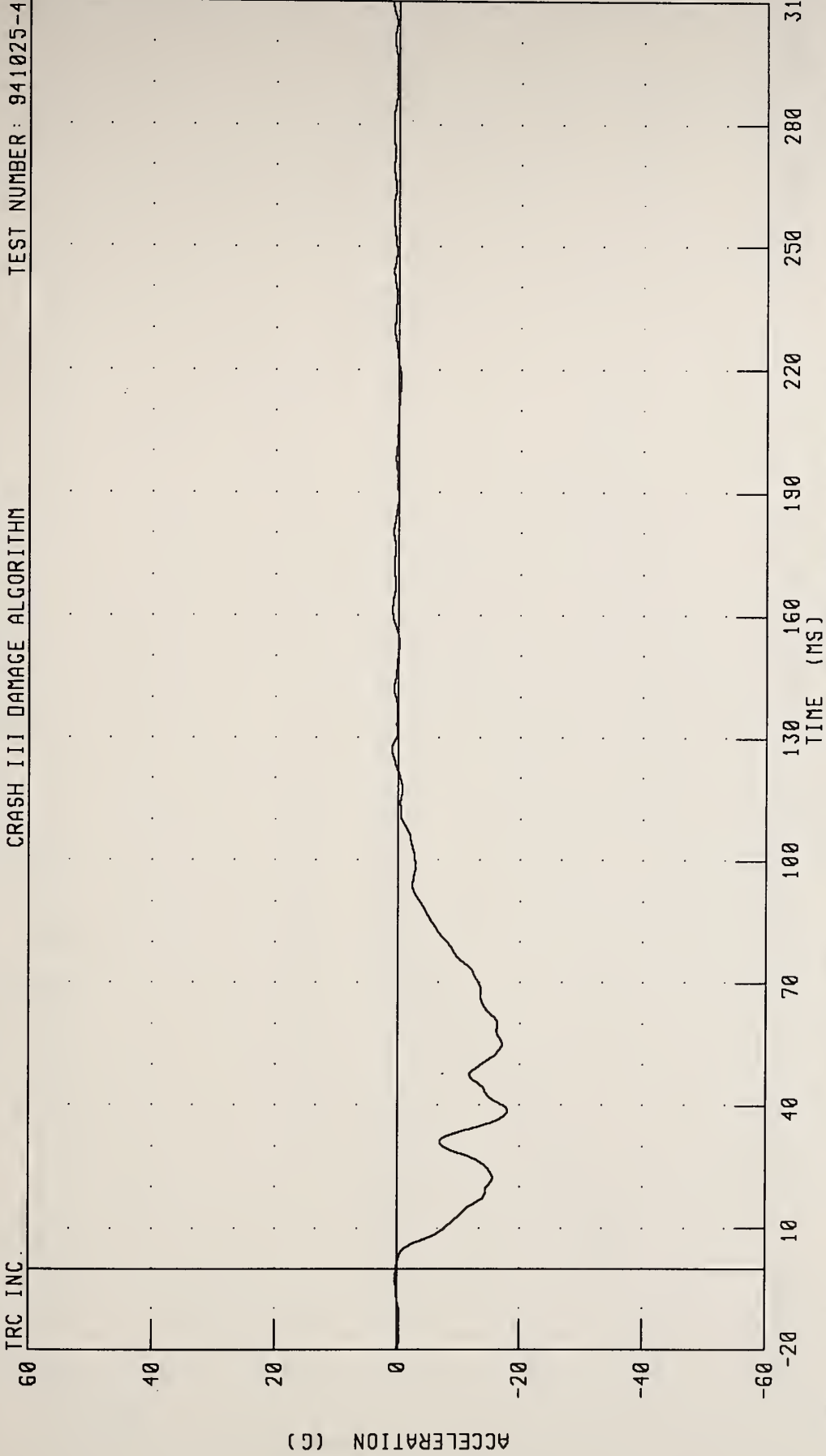
PEAK DATA: 0.11 MM @ 9.68 MS; -93.11 MM @ 240.88 MS

Data Plots

Test No. 941025-4

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
VEHICLE CG X-AXIS ACCELERATION

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: VCGXG FILTER: CH. CLASS 60

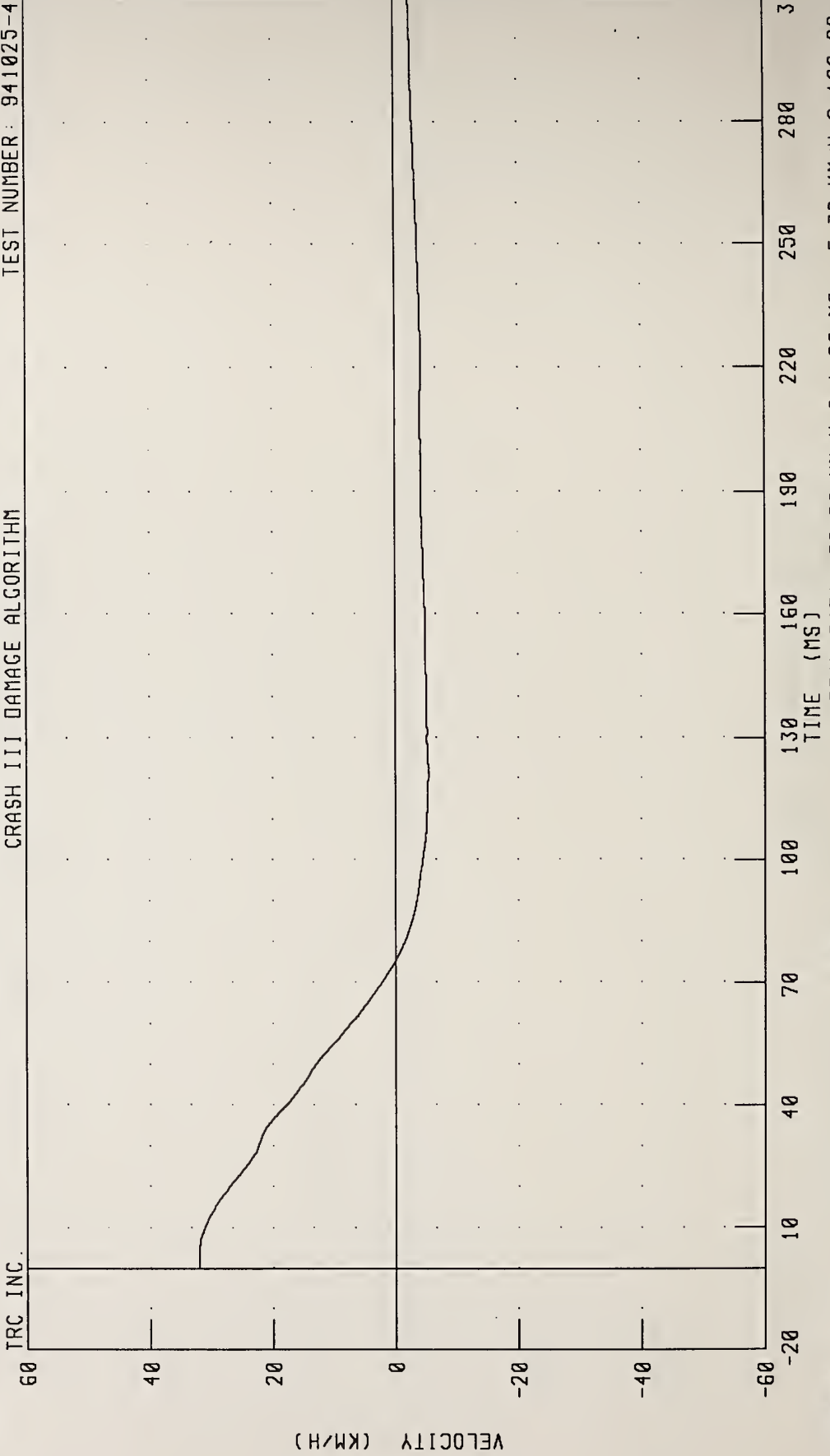
PEAK DATA: 1.08 G @ 127.20 MS, -17.96 G @ 38.80 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CG X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



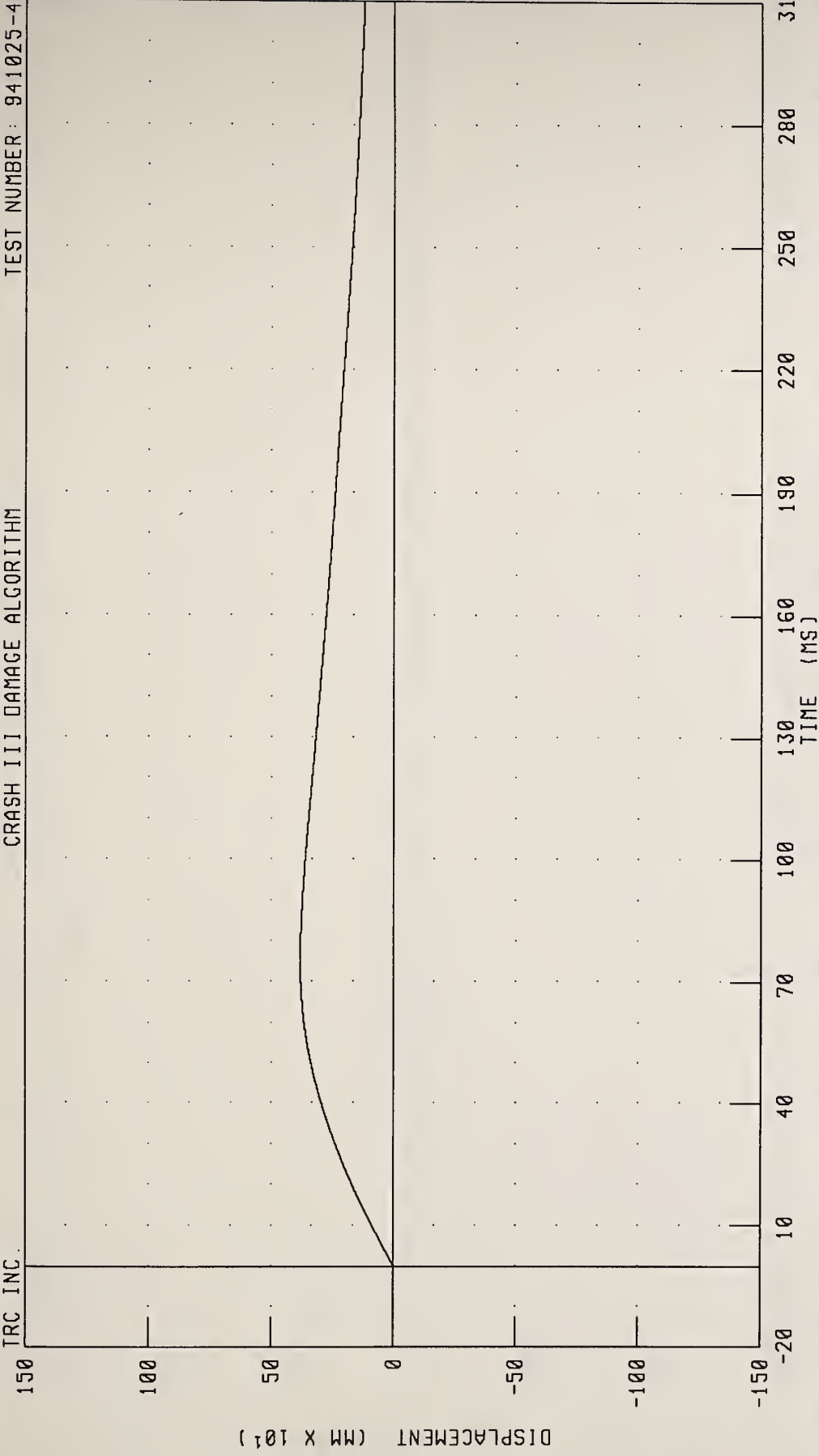
CHANNEL: VCGXY FILTER: CH. CLASS 180

PEAK DATA: 32.02 KM/H @ 1.20 MS; -5.36 KM/H @ 122.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CG X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: YCGXD FILTER: CH. CLASS 180

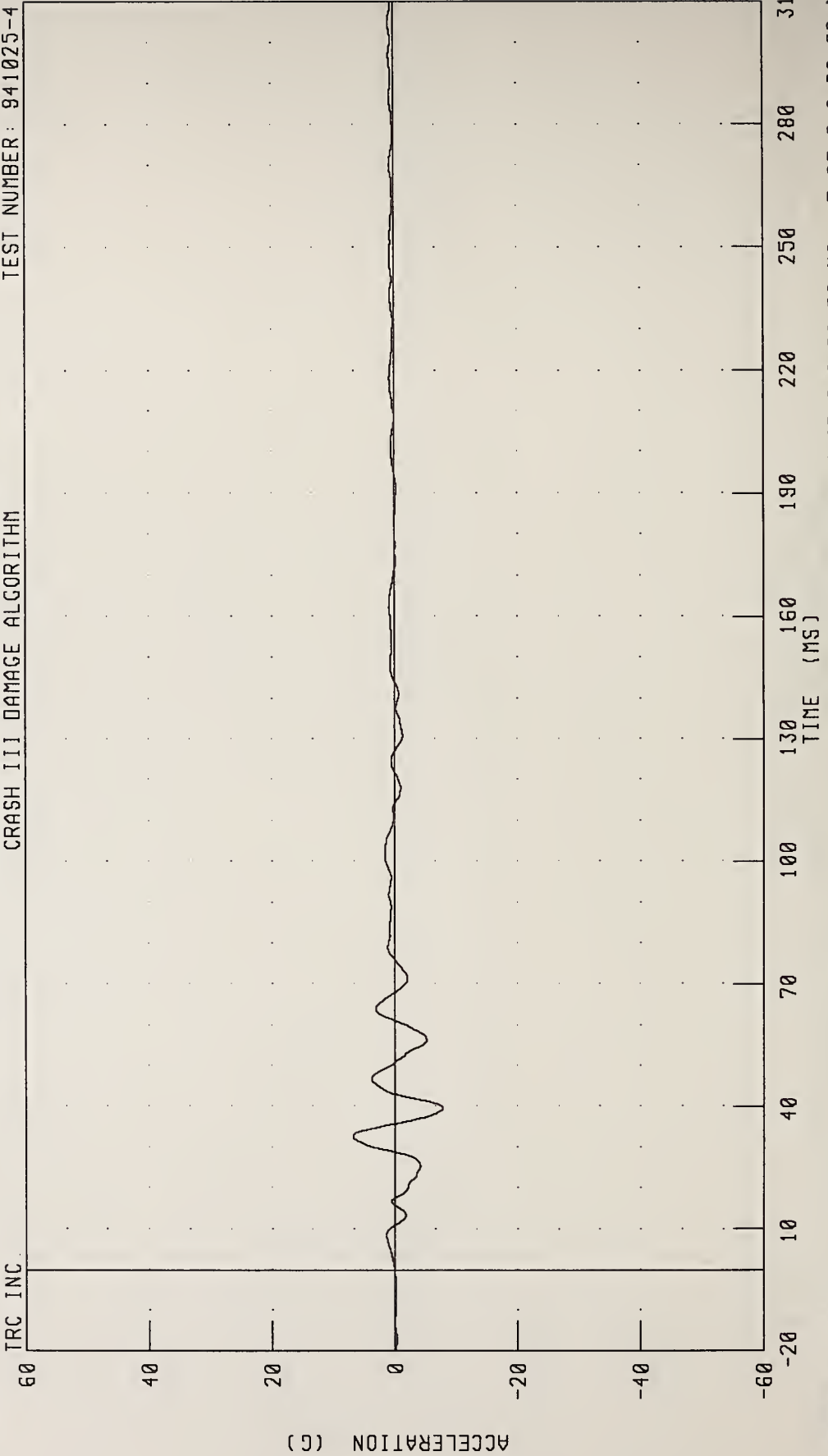
PEAK DATA: 380.99 MM @ 75.36 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CG Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



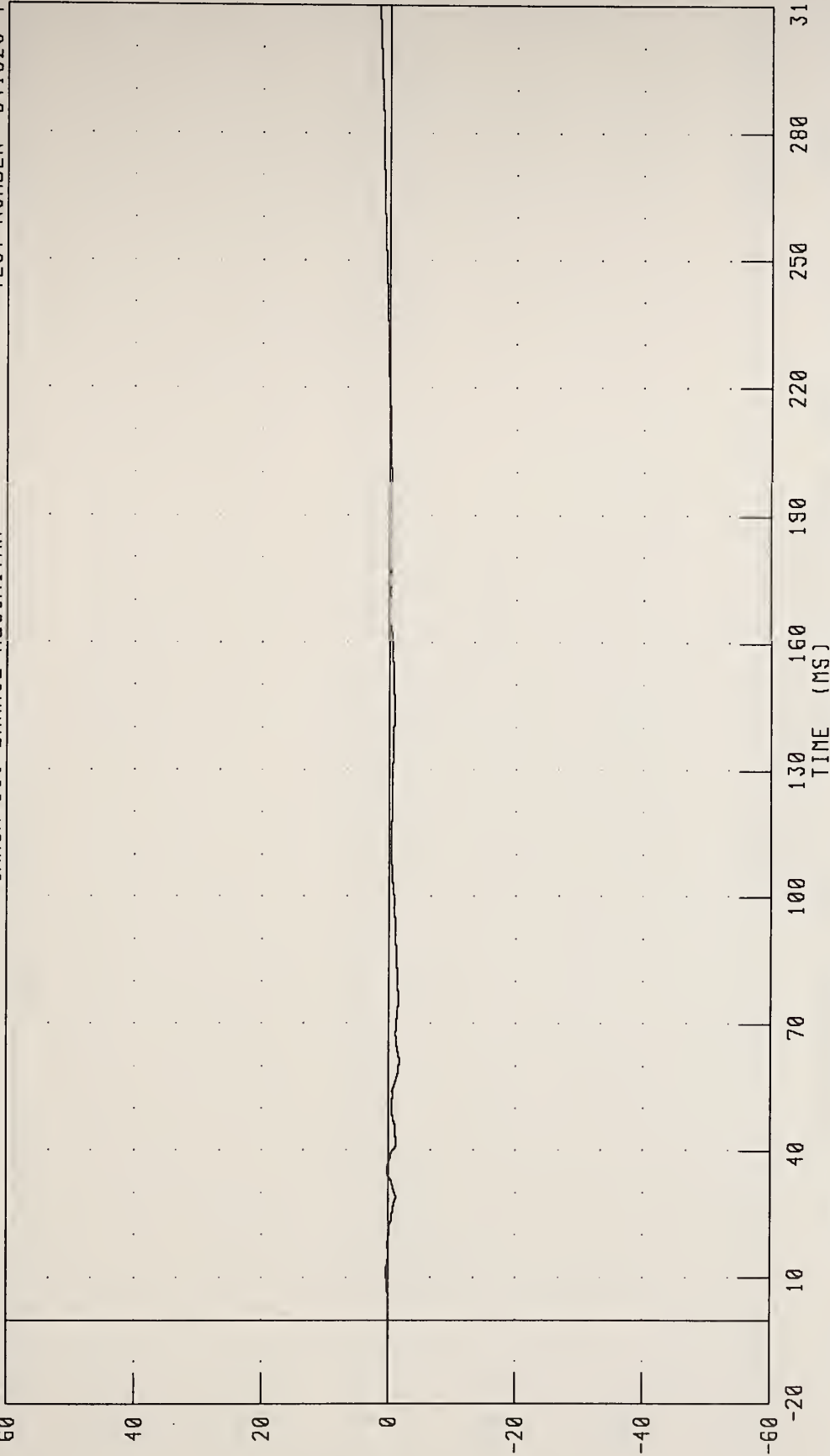
CHANNEL: VCCYG FILTER: CH. CLASS 60

PEAK DATA: 6.85 G @ 32.72 MS; -7.83 G @ 39.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
VEHICLE CG Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

TRC INC.

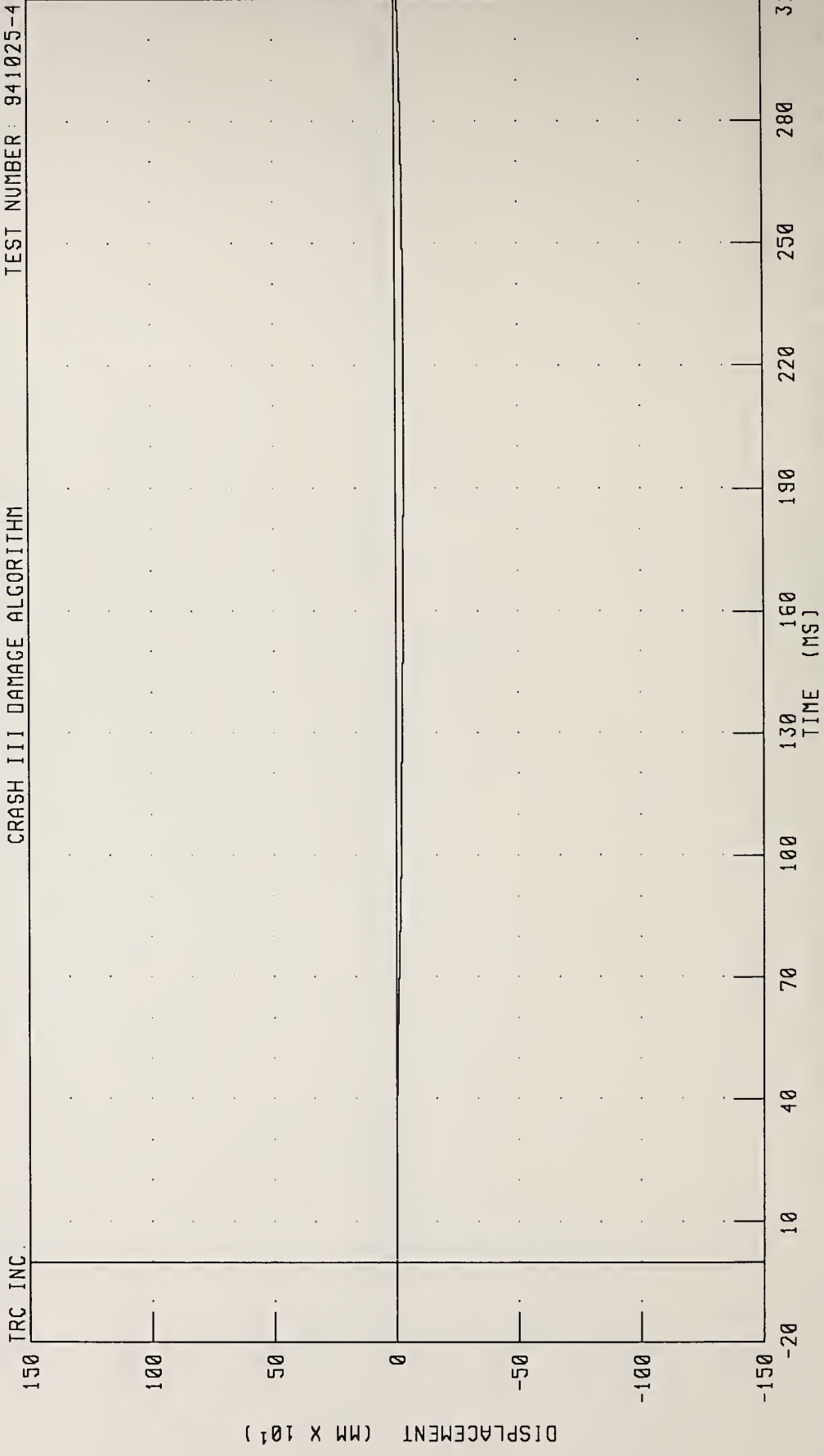


CHANNEL: VCGYV FILTER: CH. CLASS 180

PEAK DATA: 1.66 KM/H @ 308.80 MS; -1.62 KM/H @ 60.88 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
VEHICLE CG Y-AXIS DISPLACEMENT
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



CHANNEL: VCGYD FILTER: CH. CLASS 180

PEAK DATA: 0.61 MM @ 19.52 MS; -33.63 MM @ 218.40 MS

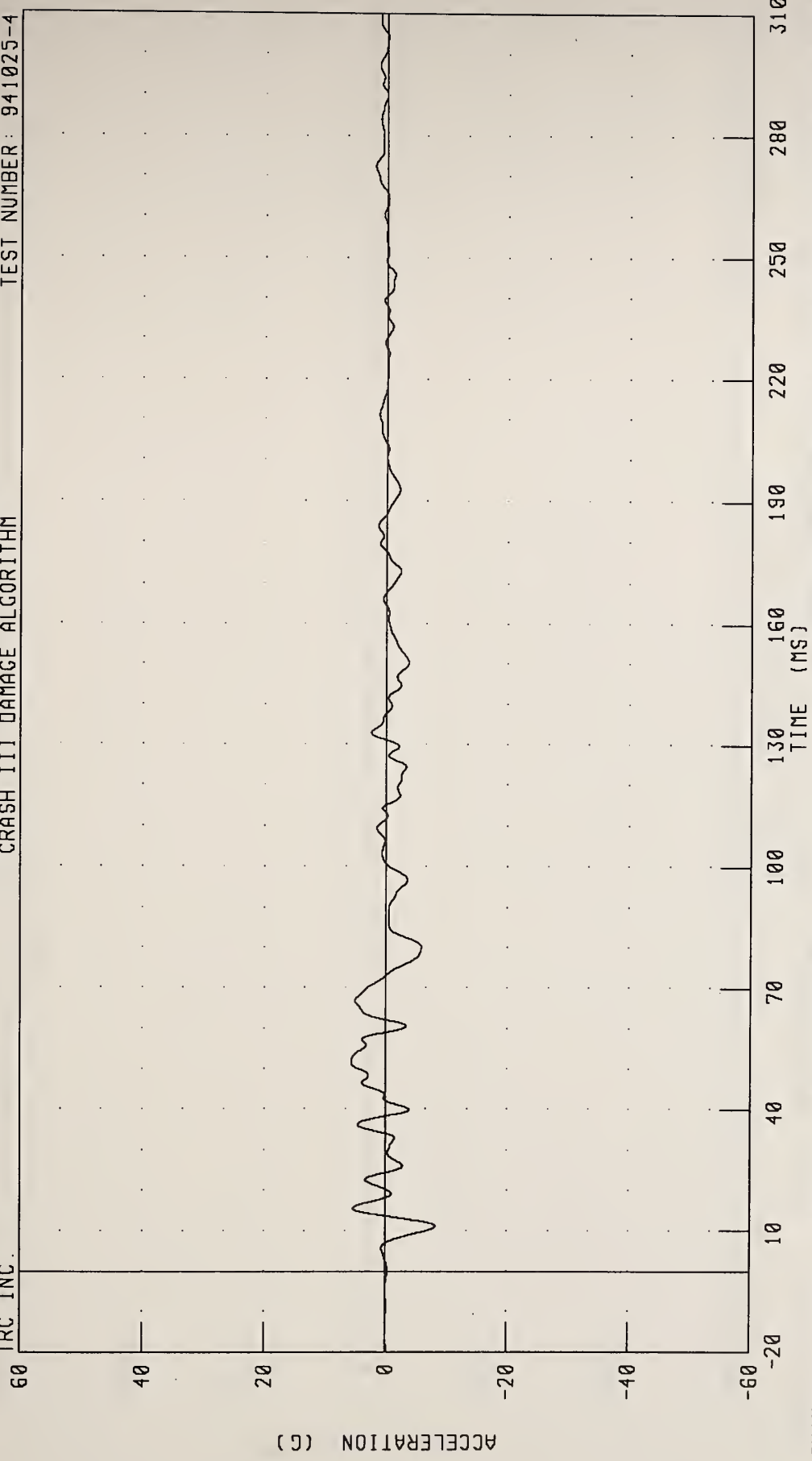
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CC Z-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4

TRC INC.



CHANNEL: VCGZG FILTER: CH. CLASS 60

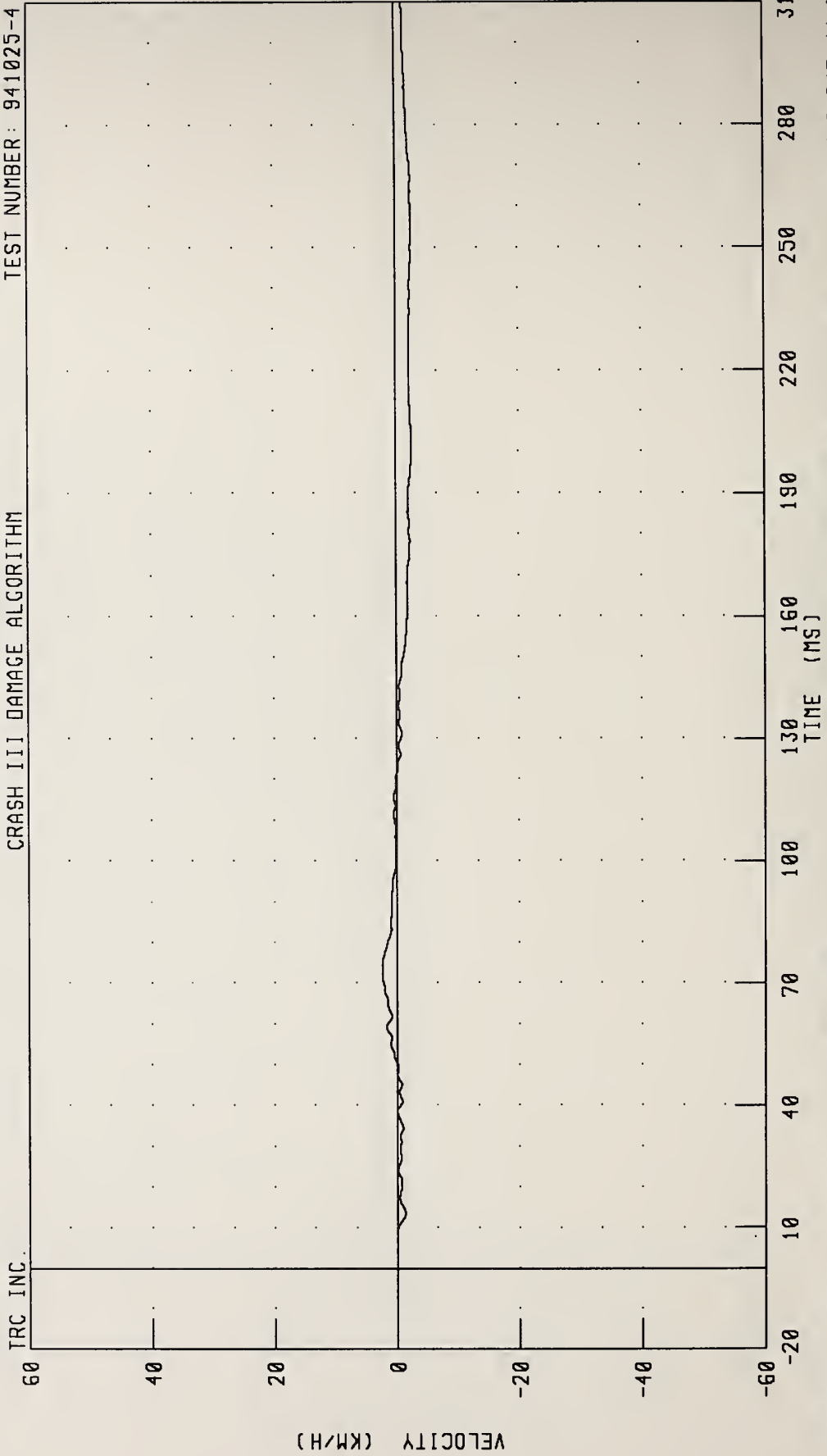
PEAK DATA: 5.68 G @ 51.60 MS; -8.26 G @ 11.12 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CG Z-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



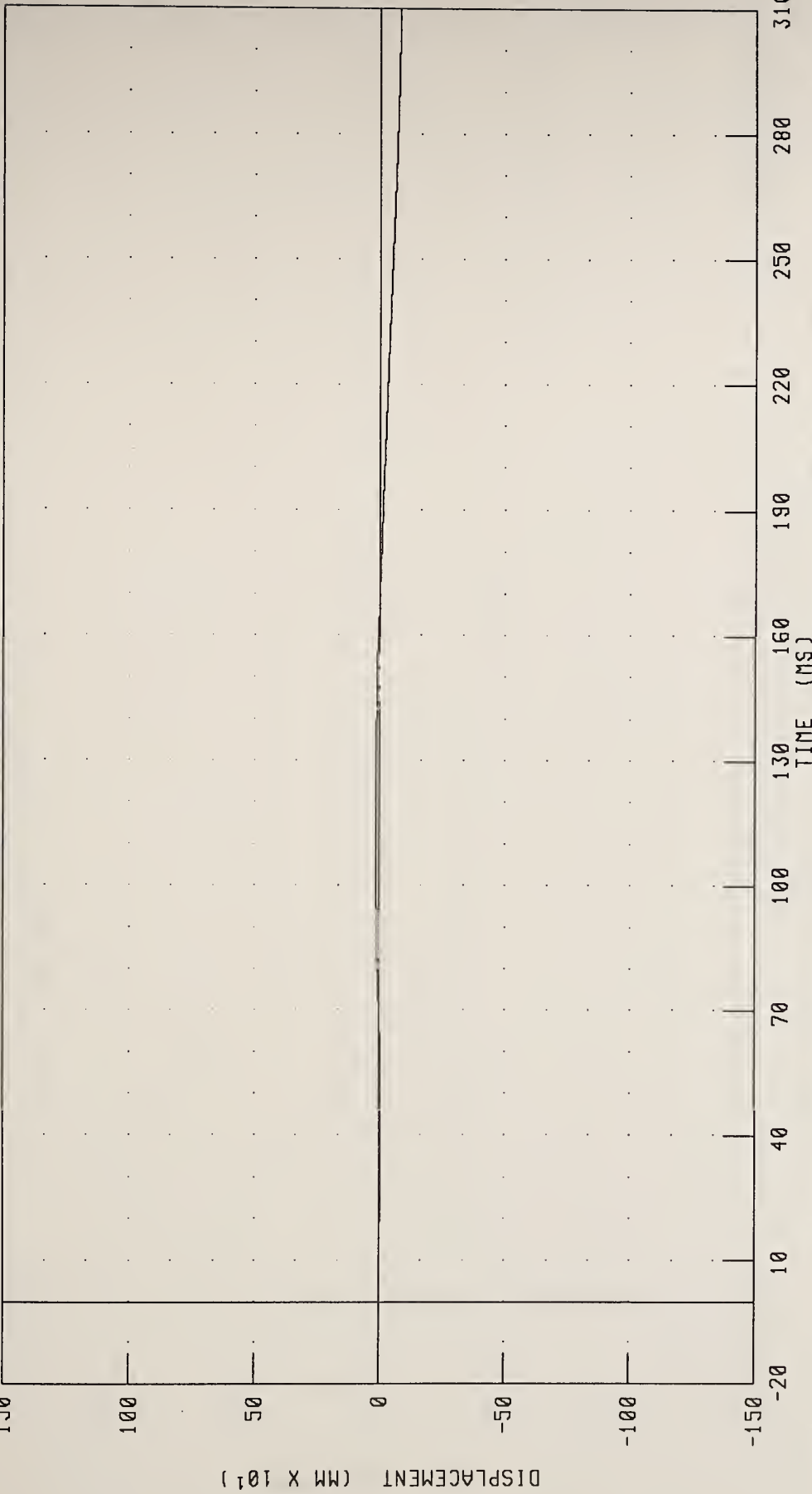
CHANNEL: VCGZY FILTER: CH. CLASS 180

PEAK DATA: 2.38 KM/H @ 71.36 MS; -2.54 KM/H @ 247.44 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
VEHICLE CG Z-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

TRC INC.



CHANNEL: VCGZD FILTER: CH. CLASS 180

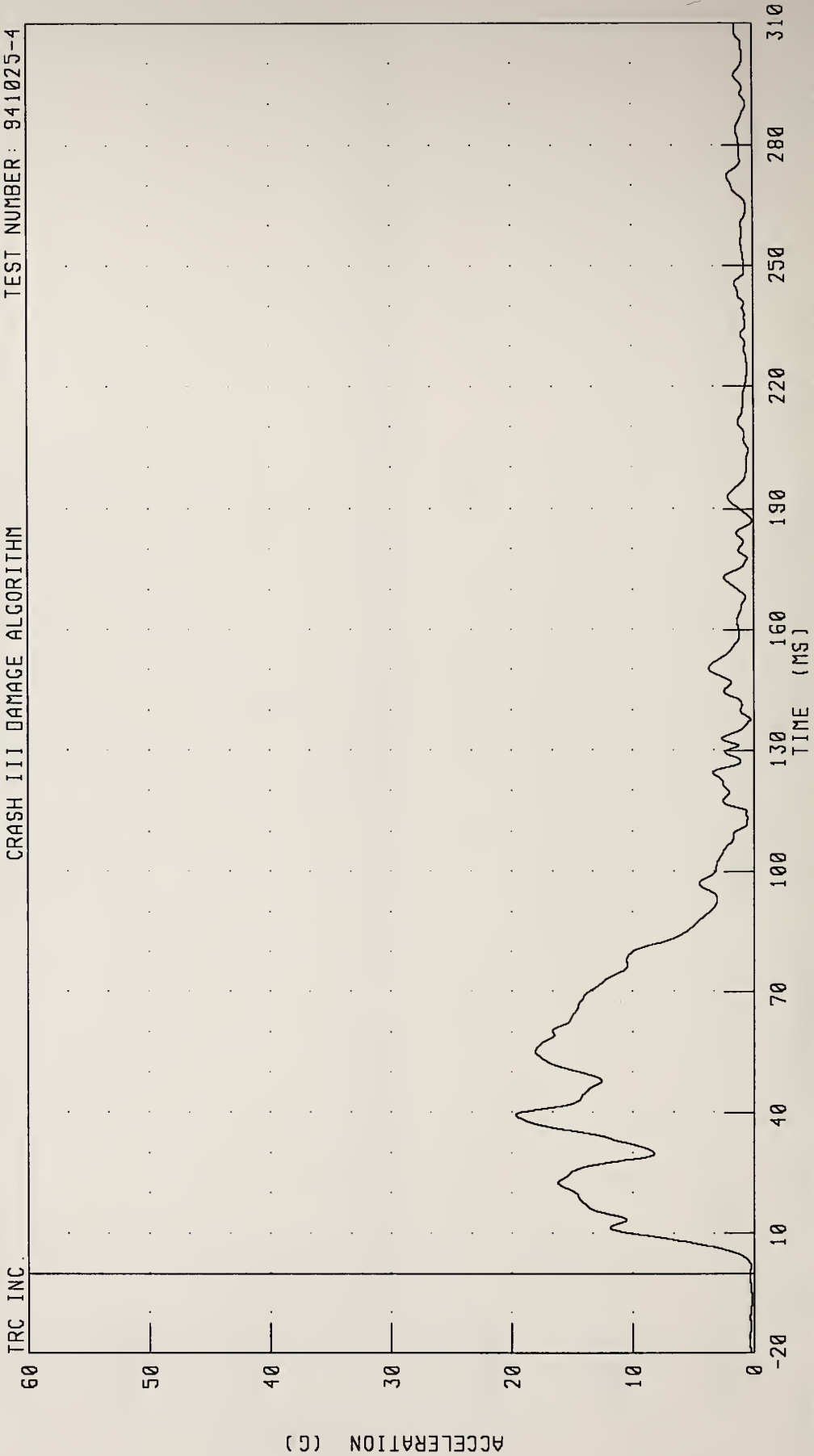
PEAK DATA: 12.98 MM @ 121.36 MS; -82.09 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CG RESULTANT ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



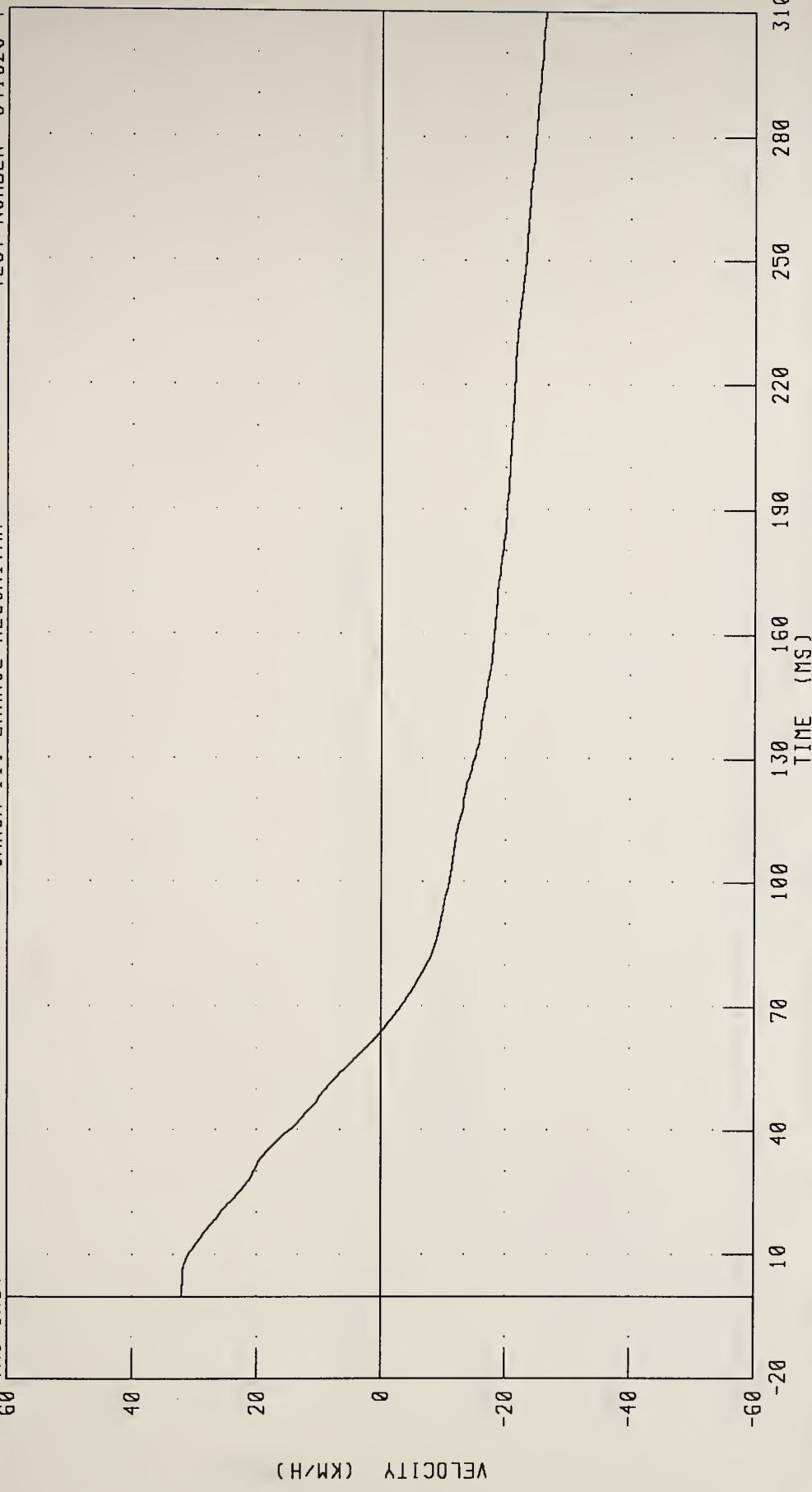
CHANNEL: VCGRG FILTER: CH. CLASS 60

PEAK DATA: 19.71 G @ 39.44 MS; 18.68 G @ 186.88 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
VEHICLE CC RESULTANT VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

TRC INC.



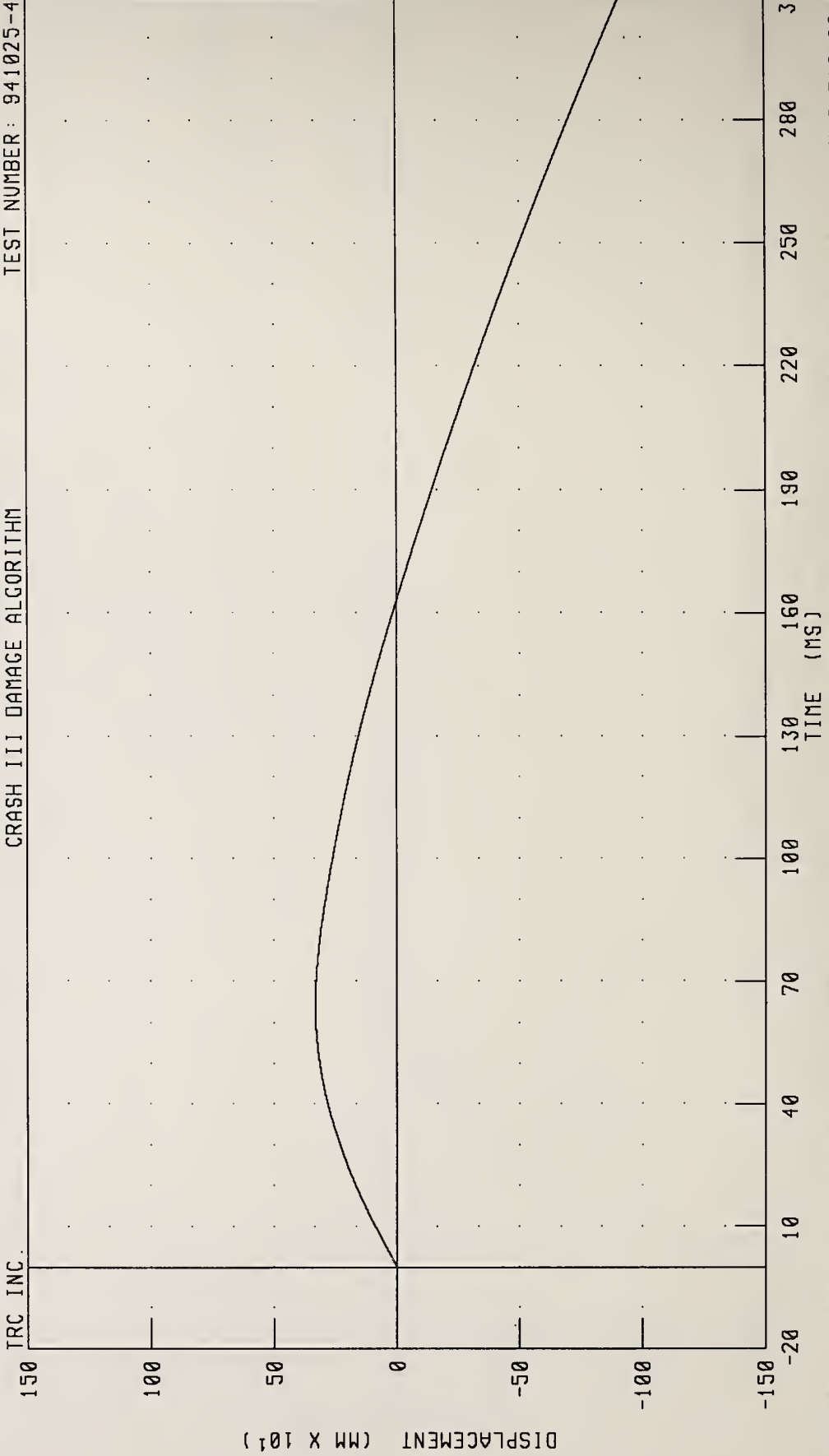
CHANNEL: VCGRV FILTER: CH. CLASS 180

PEAK DATA: 32.00 KM/H @ 0.00 MS; -26.39 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

VEHICLE CC RESULTANT DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

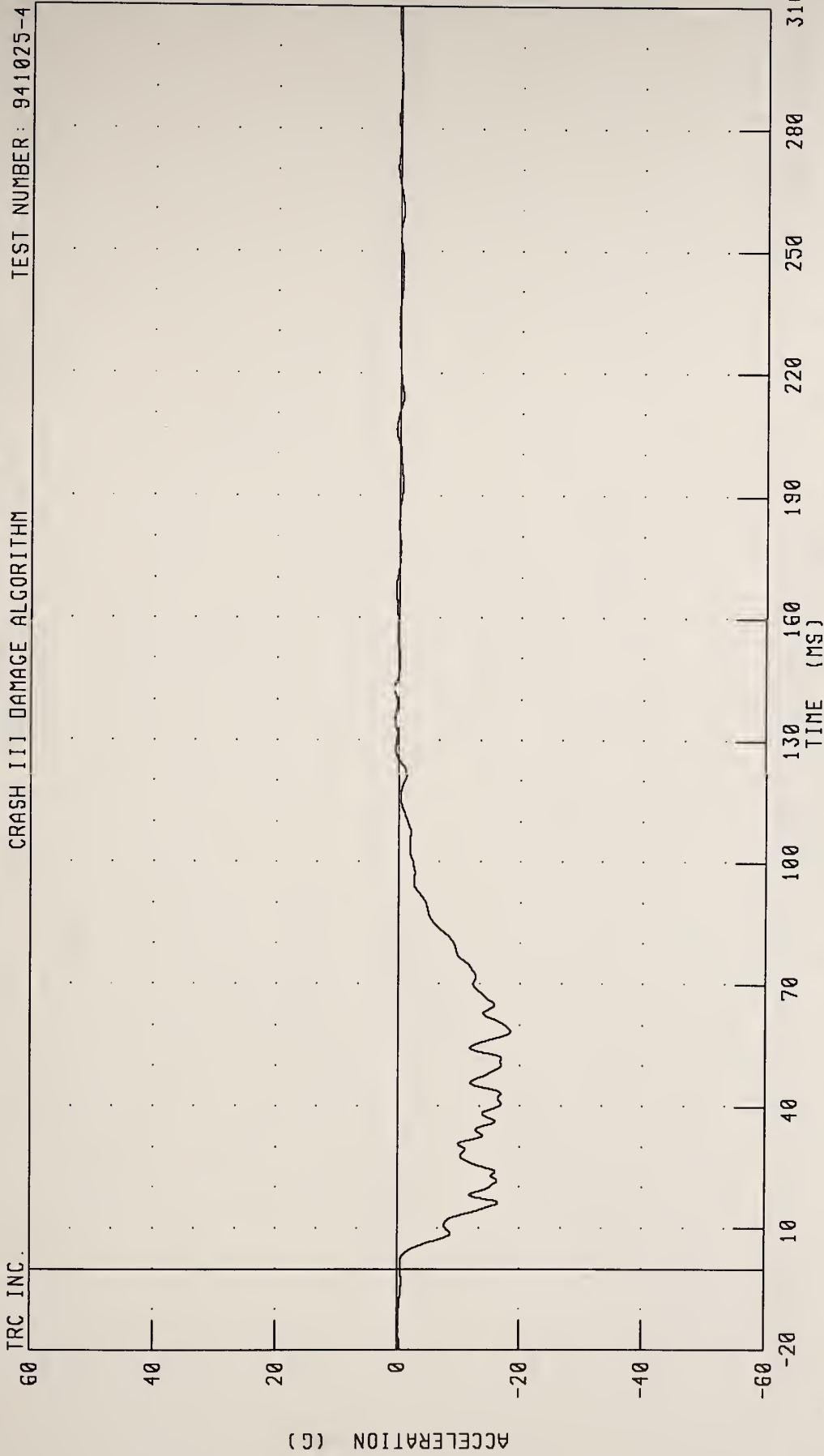


CHANNEL: VCGRD FILTER: CH. CLASS 180

PEAK DATA: 331.15 MM @ 64.00 MS; -913.32 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT FRONT SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: LFSXG FILTER: CH. CLASS 60

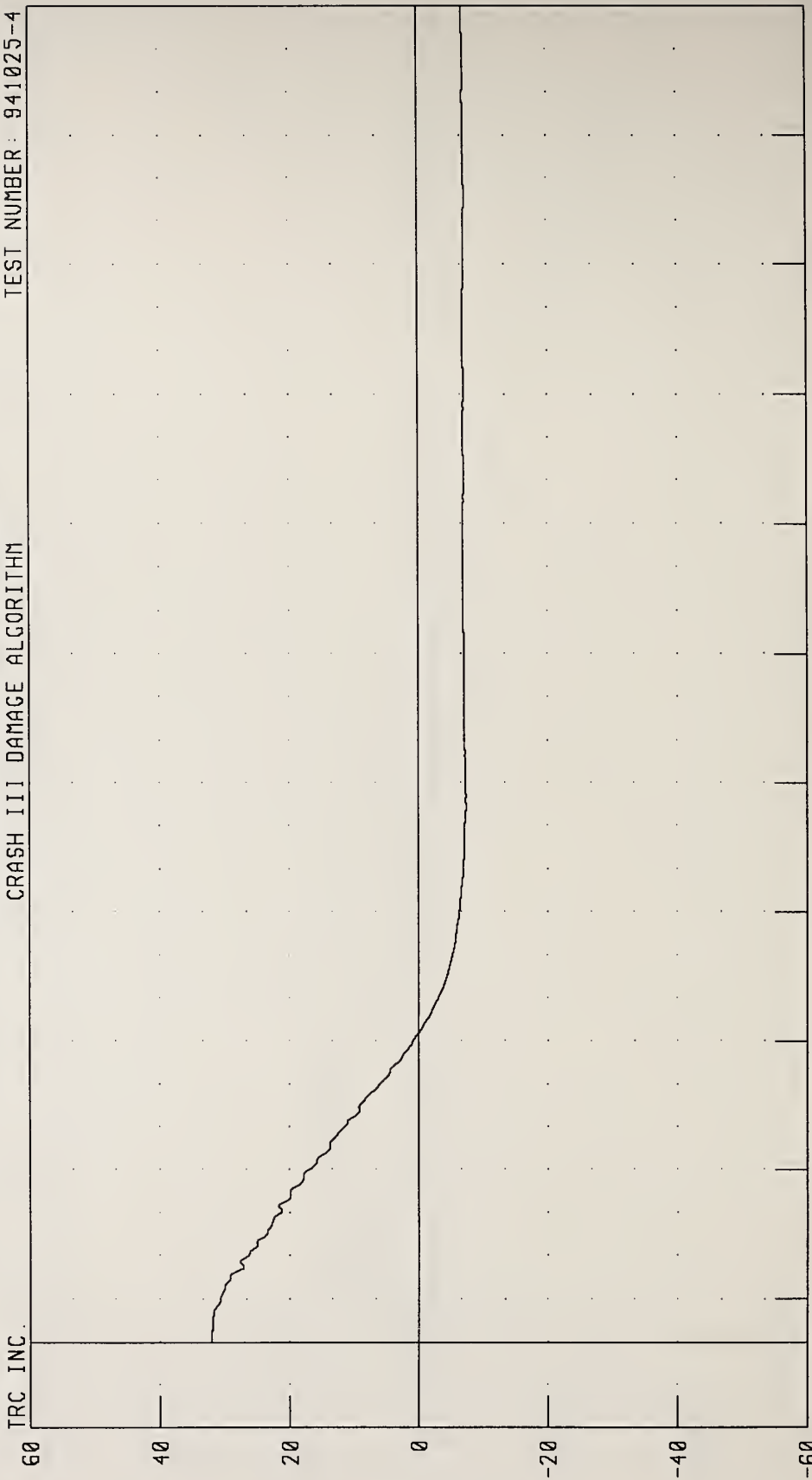
PEAK DATA: 0.72 G @ 143.04 MS; -18.47 G @ 58.56 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT FRONT SILL X-AXIS VELOCITY

TEST NUMBER: 941025-4

CRASH III DAMAGE ALGORITHM

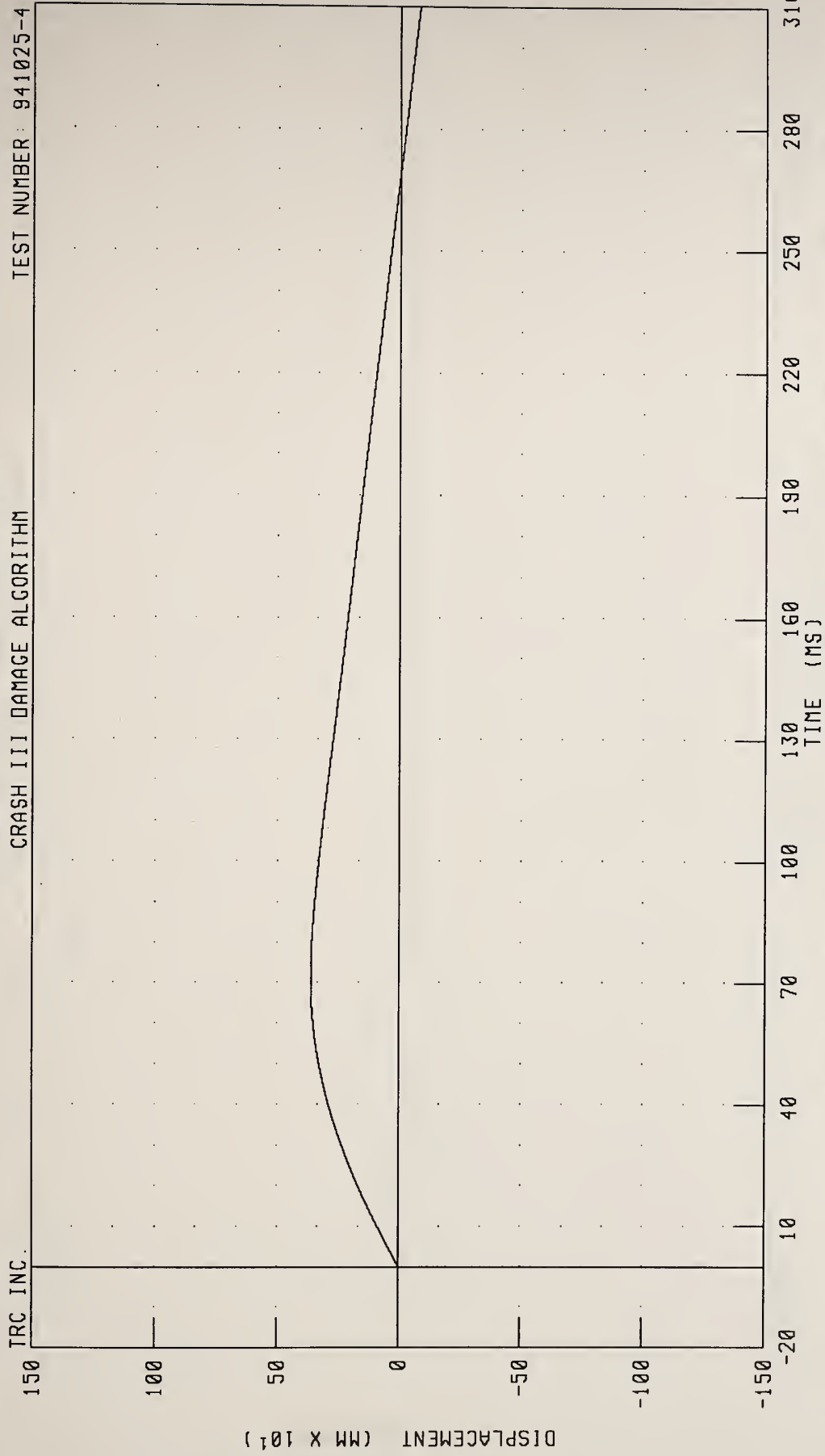
TRC INC.



CHANNEL: LFSXV FILTER: CH. CLASS 180 PEAK DATA: 32.00 KM/H @ 0.00 MS; -7.39 KM/H @ 124.40 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

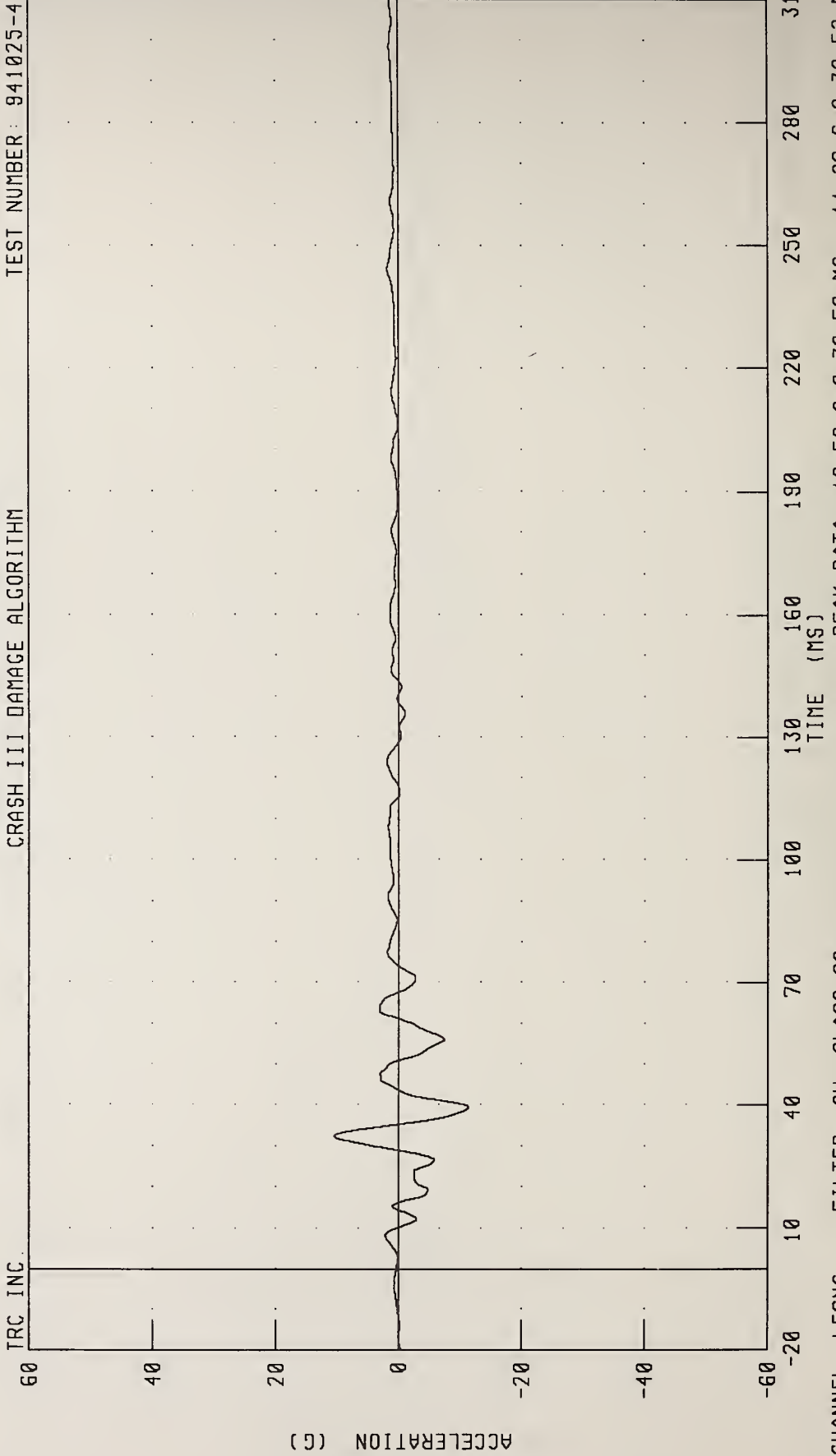


CHANNEL: LFSXD FILTER: CH. CLASS 180

PEAK DATA: 362.11 MM @ 72.00 MS; -80.10 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT FRONT SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



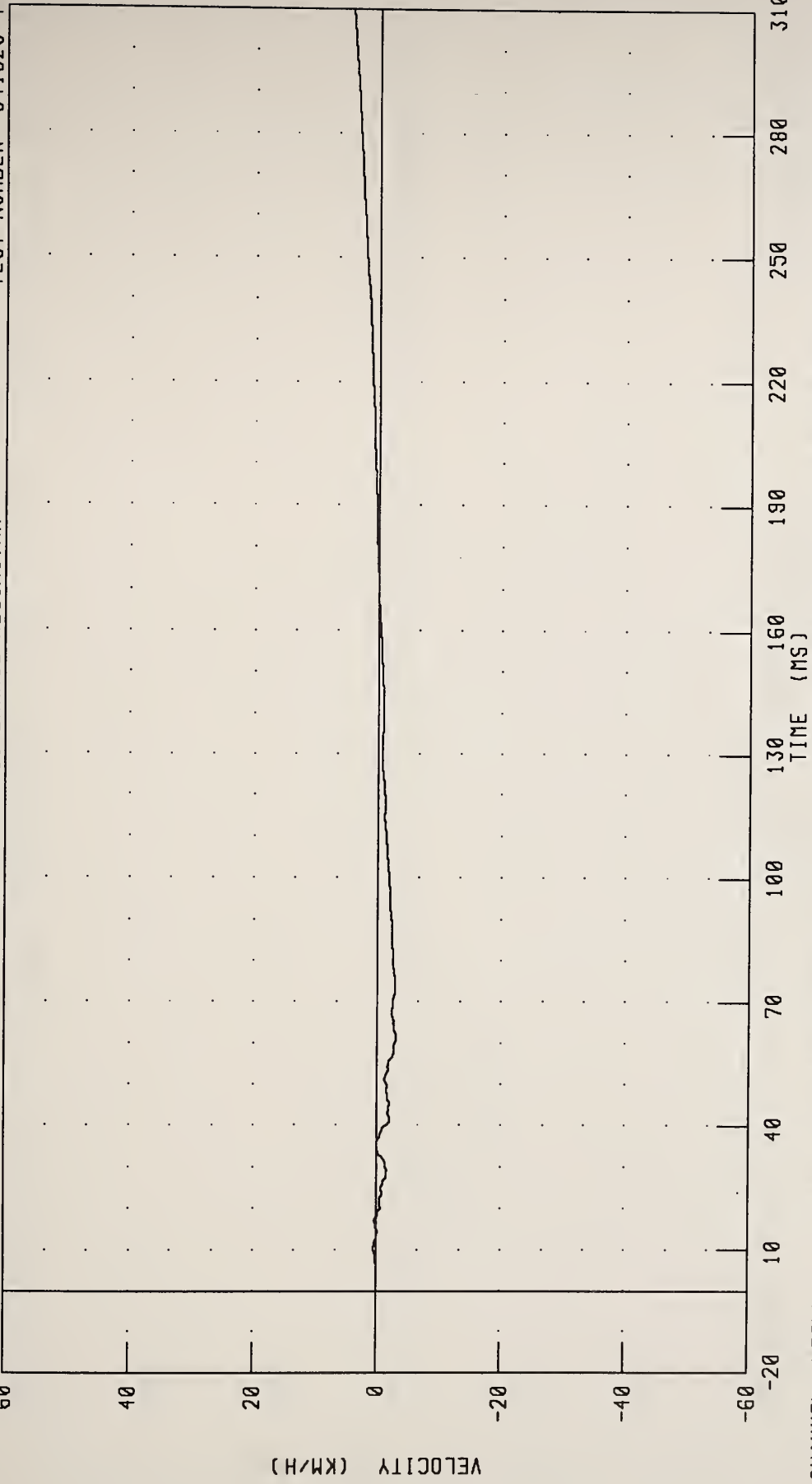
CHANNEL: LFSYG FILTER: CH. CLASS 60

PEAK DATA: 10.56 G @ 32.56 MS; -11.28 G @ 39.52 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT FRONT SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

TRC INC.



CHANNEL: LFSYV FILTER: CH. CLASS 180

PEAK DATA: 4.36 KM/H @ 310.00 MS; -3.10 KM/H @ 61.84 MS

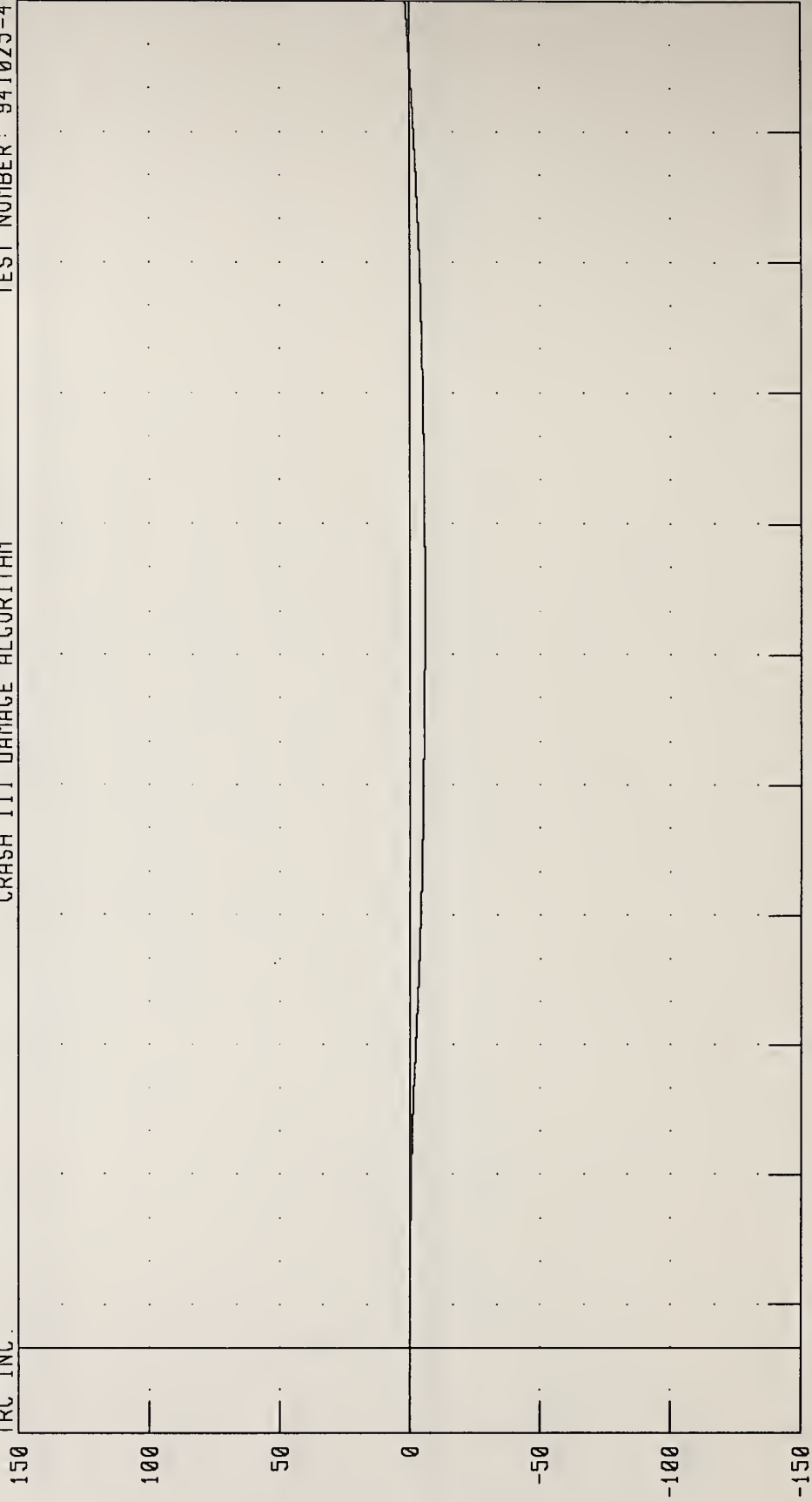
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT FRONT SILL Y-AXIS DISPLACEMENT

TEST NUMBER: 941025-4

CRASH III DAMAGE ALGORITHM

TRC INC.

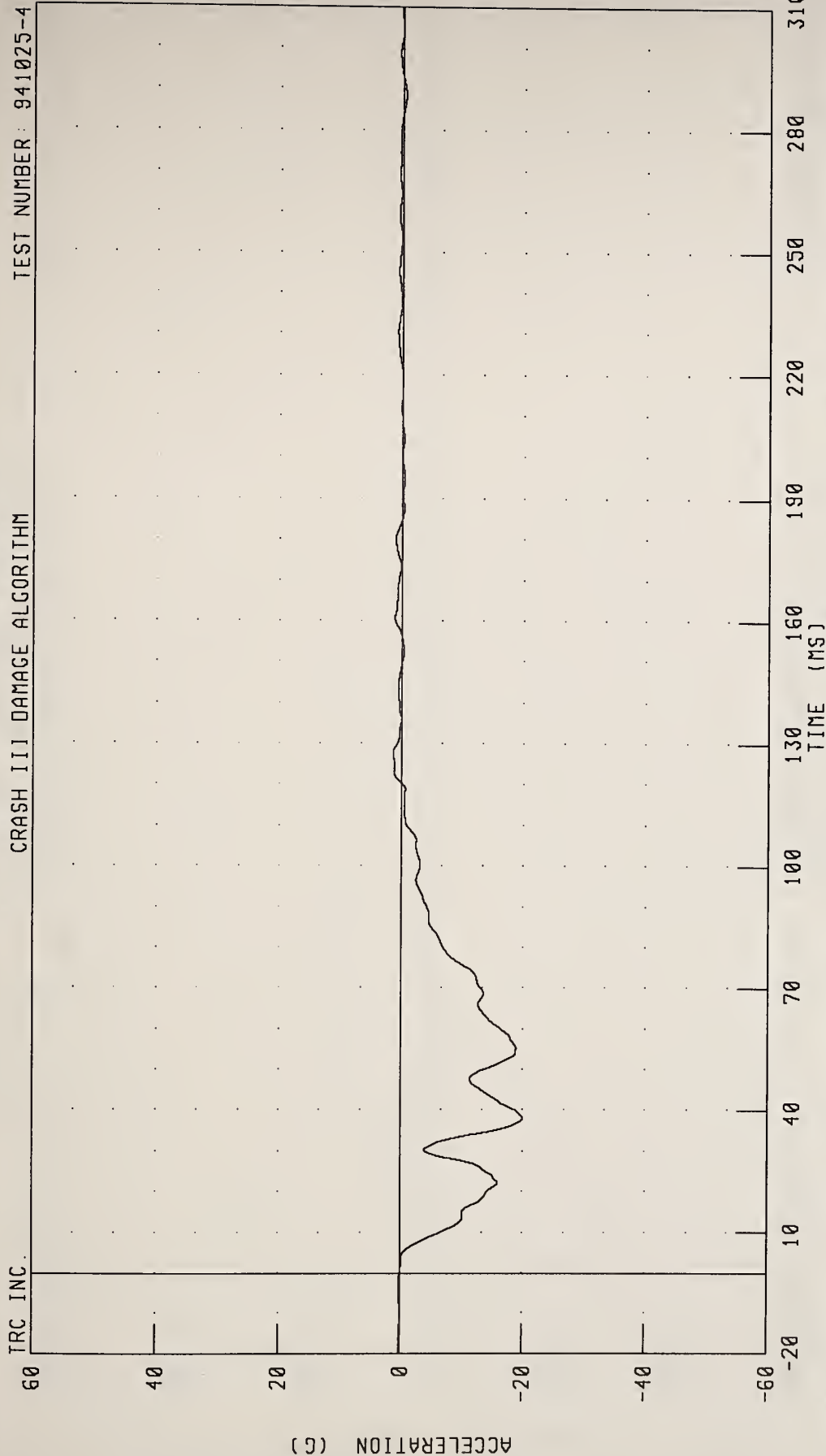
DISPLACEMENT (MM X 10¹)



CHANNEL: LFSYD FILTER: CH. CLASS 180 PEAK DATA: 15.70 MM @ 310.00 MS; -57.62 MM @ 169.84 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT FRONT SILL X-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



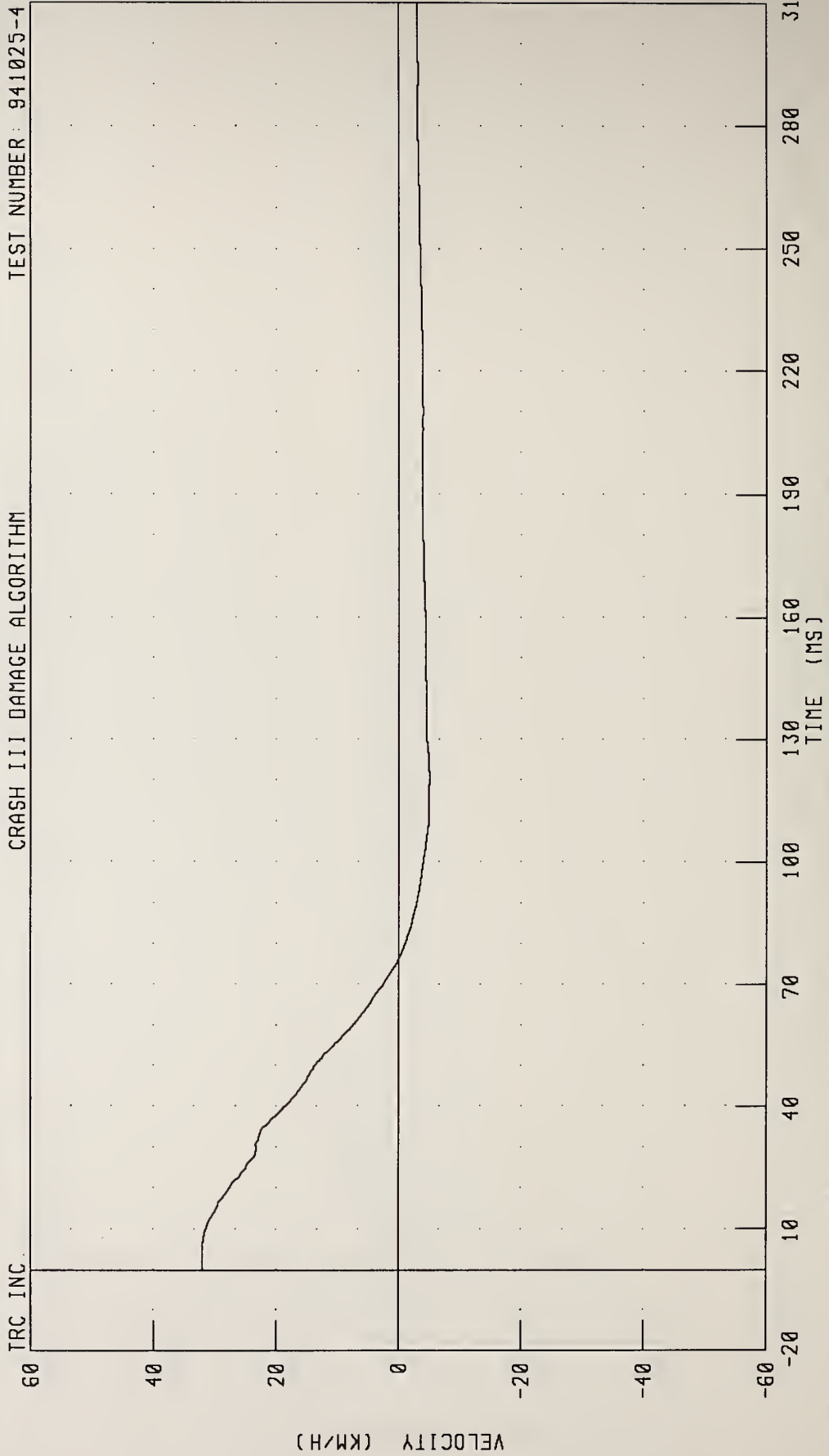
CHANNEL: RFSXG FILTER: CH. CLASS 60

PEAK DATA: 1.43 G @ 127.60 MS; -19.96 G @ 38.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

RIGHT FRONT SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: RFSXV FILTER: CH. CLASS 180

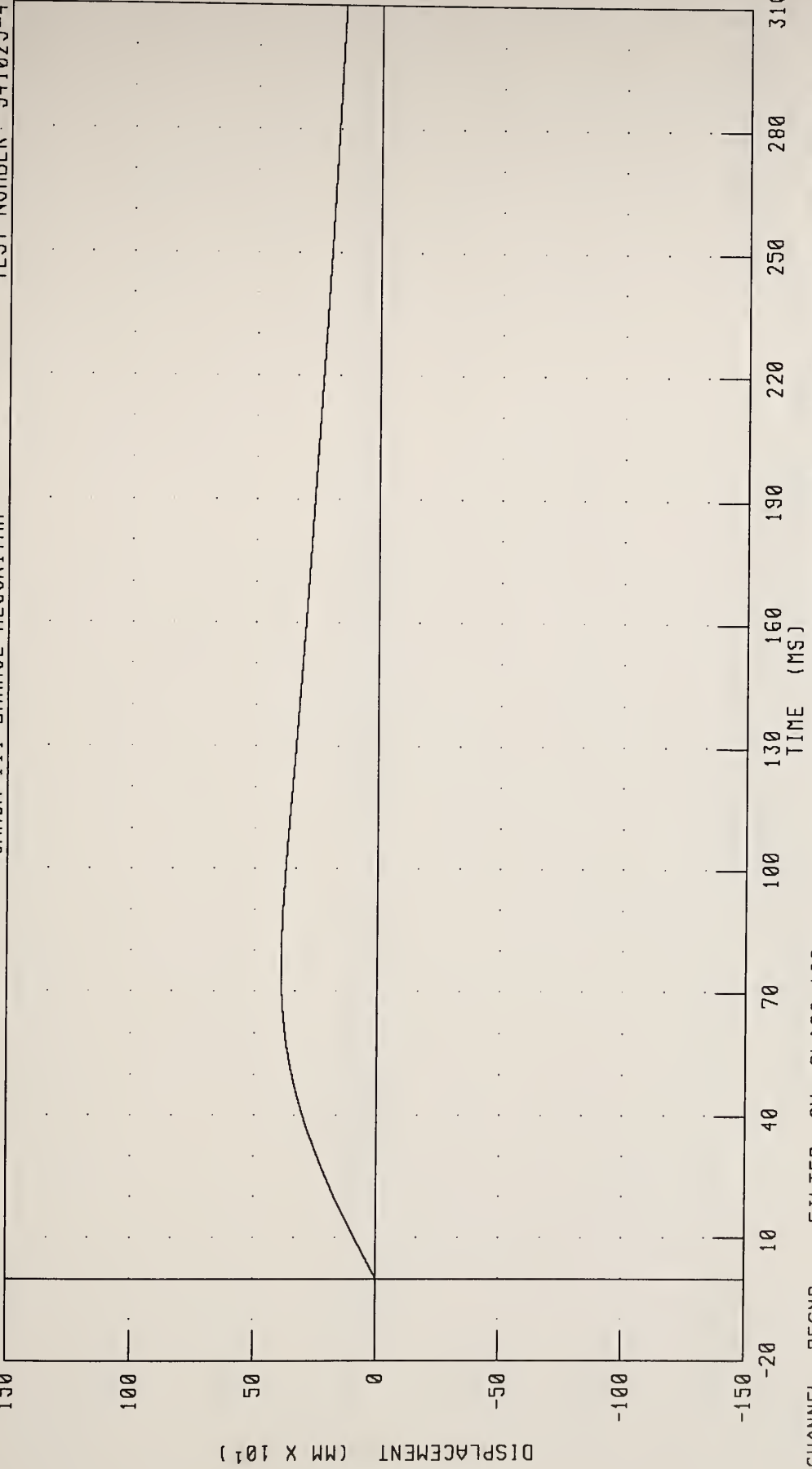
PEAK DATA: 32.00 KM/H @ 1.44 MS; -5.08 KM/H @ 120.64 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4

TRC INC.

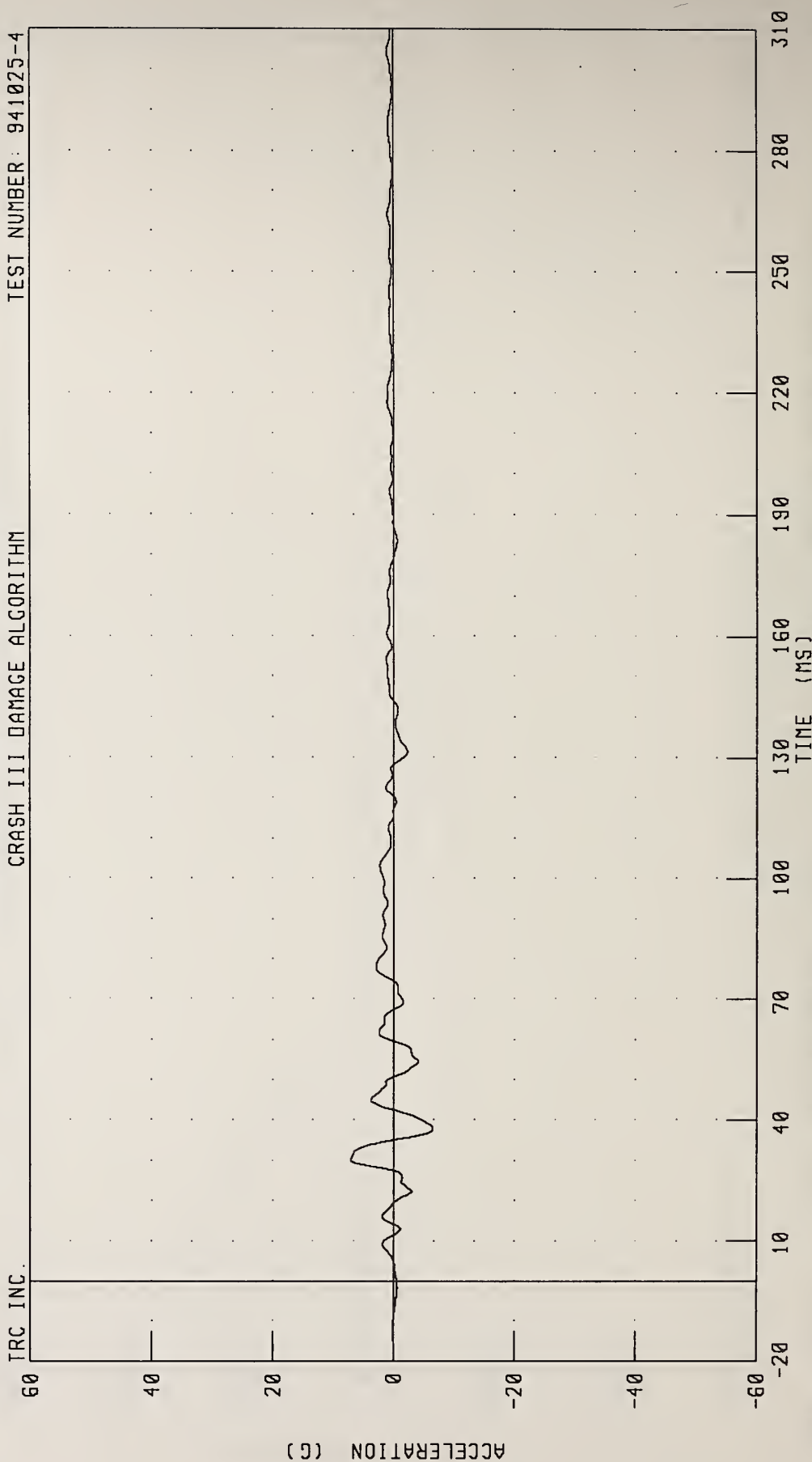


CHANNEL: RFSXD FILTER: CH. CLASS 180

PEAK DATA: 390.41 MM @ 76.24 MS, 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT FRONT SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



CHANNEL: RFSYG FILTER: CH. CLASS 60

PEAK DATA: 7.13 G @ 30.16 MS; -6.49 G @ 37.92 MS

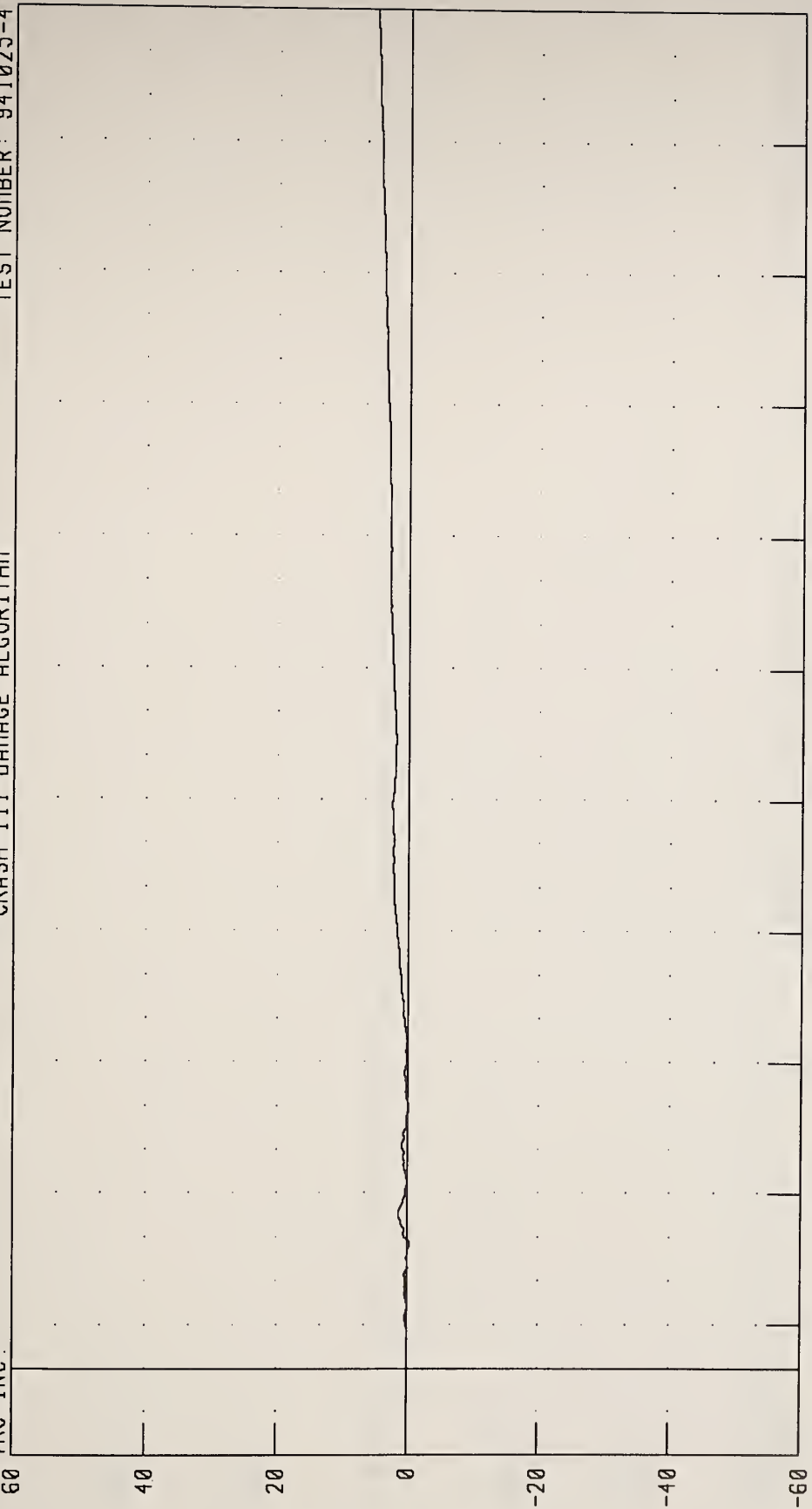
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

RIGHT FRONT SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4

TRC INC.



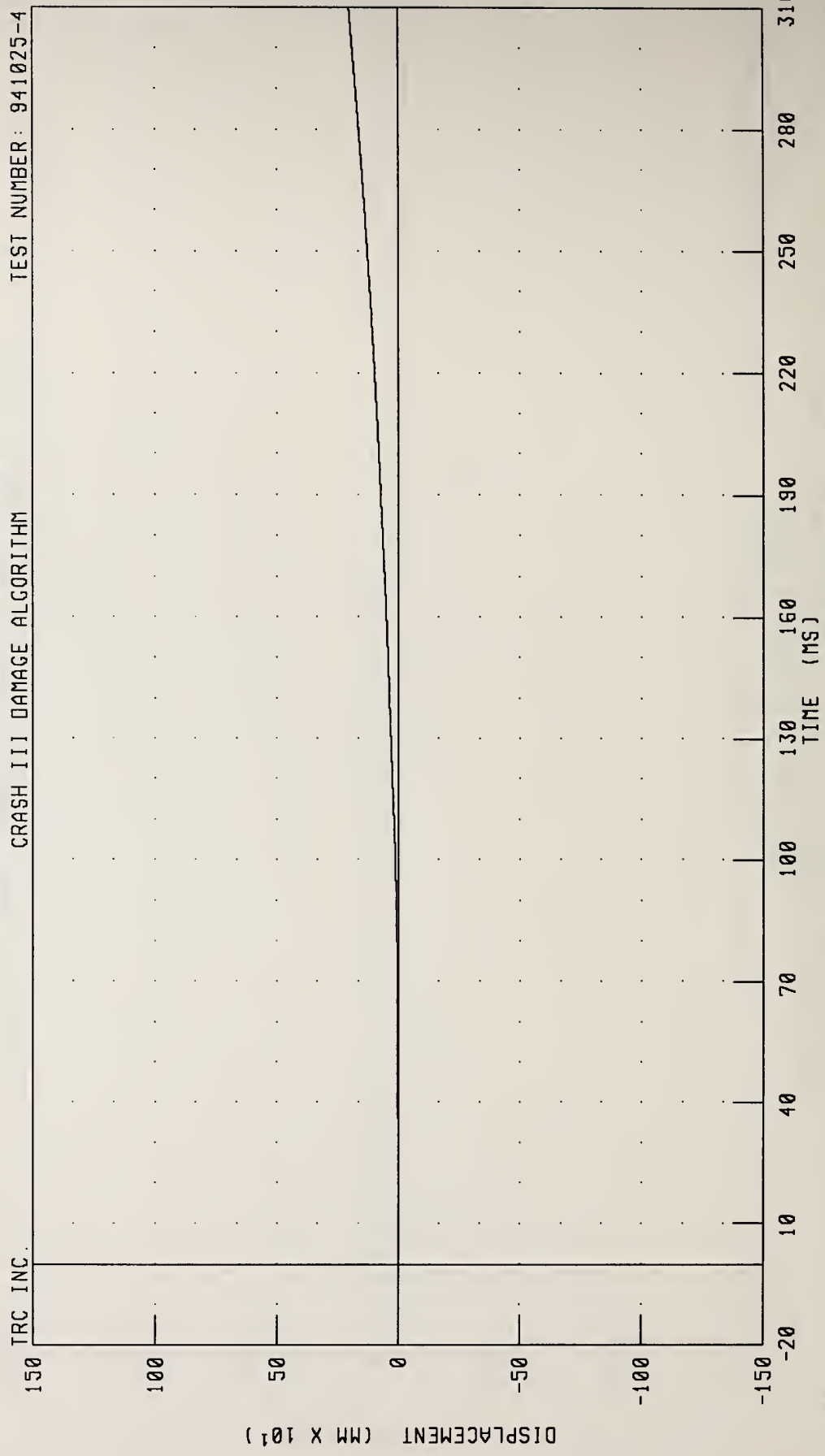
60
40
20
0
-20
-40
-60
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)

CHANNEL: RFSYV FILTER: CH. CLASS 180

PEAK DATA: 5.09 KM/H @ 310 00 MS, -0.36 KM/H @ 28.56 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT FRONT SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: RFSYD FILTER: CH. CLASS 180

PEAK DATA: 202.39 MM @ 310.00 MS; -0.05 MM @ 8.16 MS

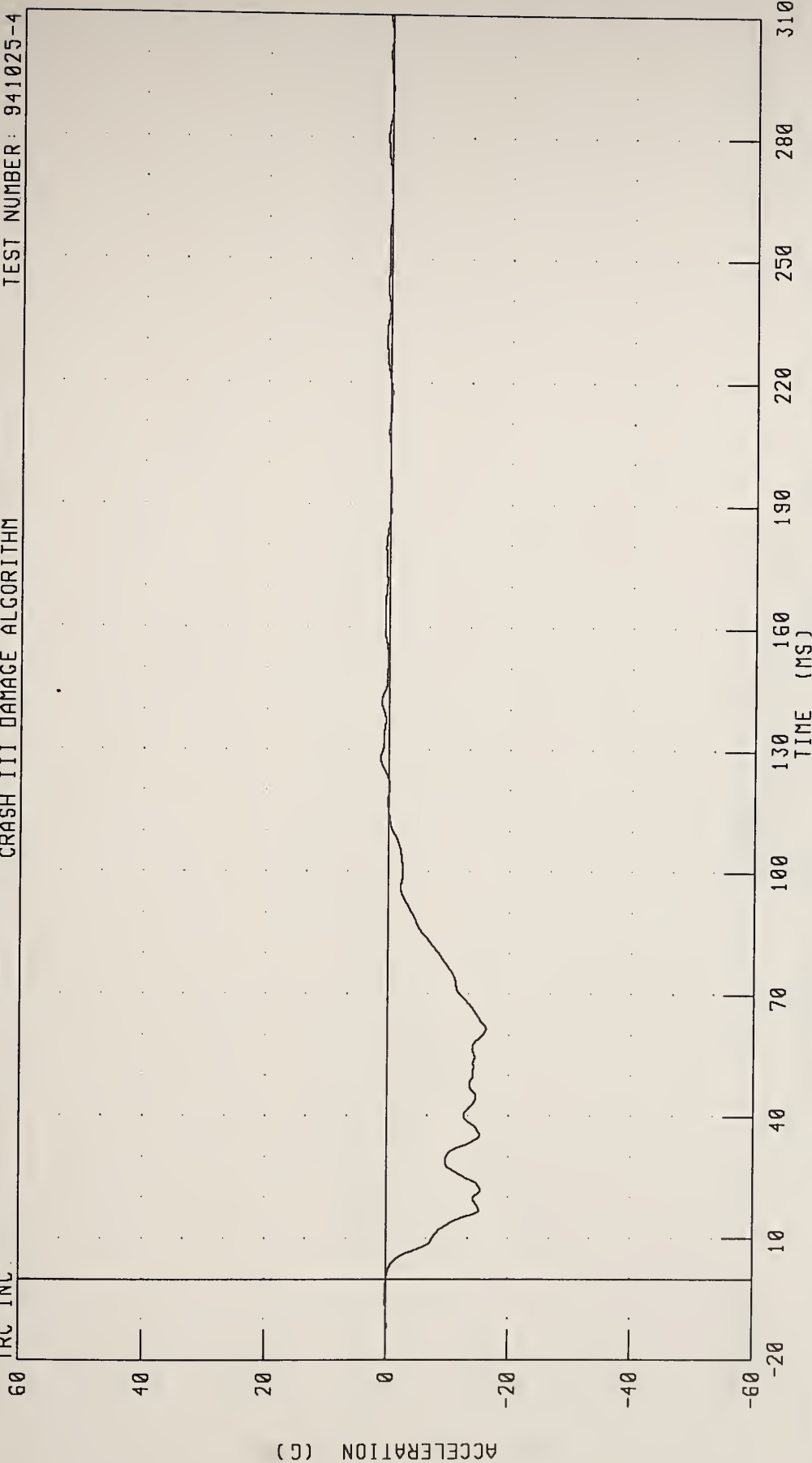
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

LEFT REAR SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4

TRC INC.



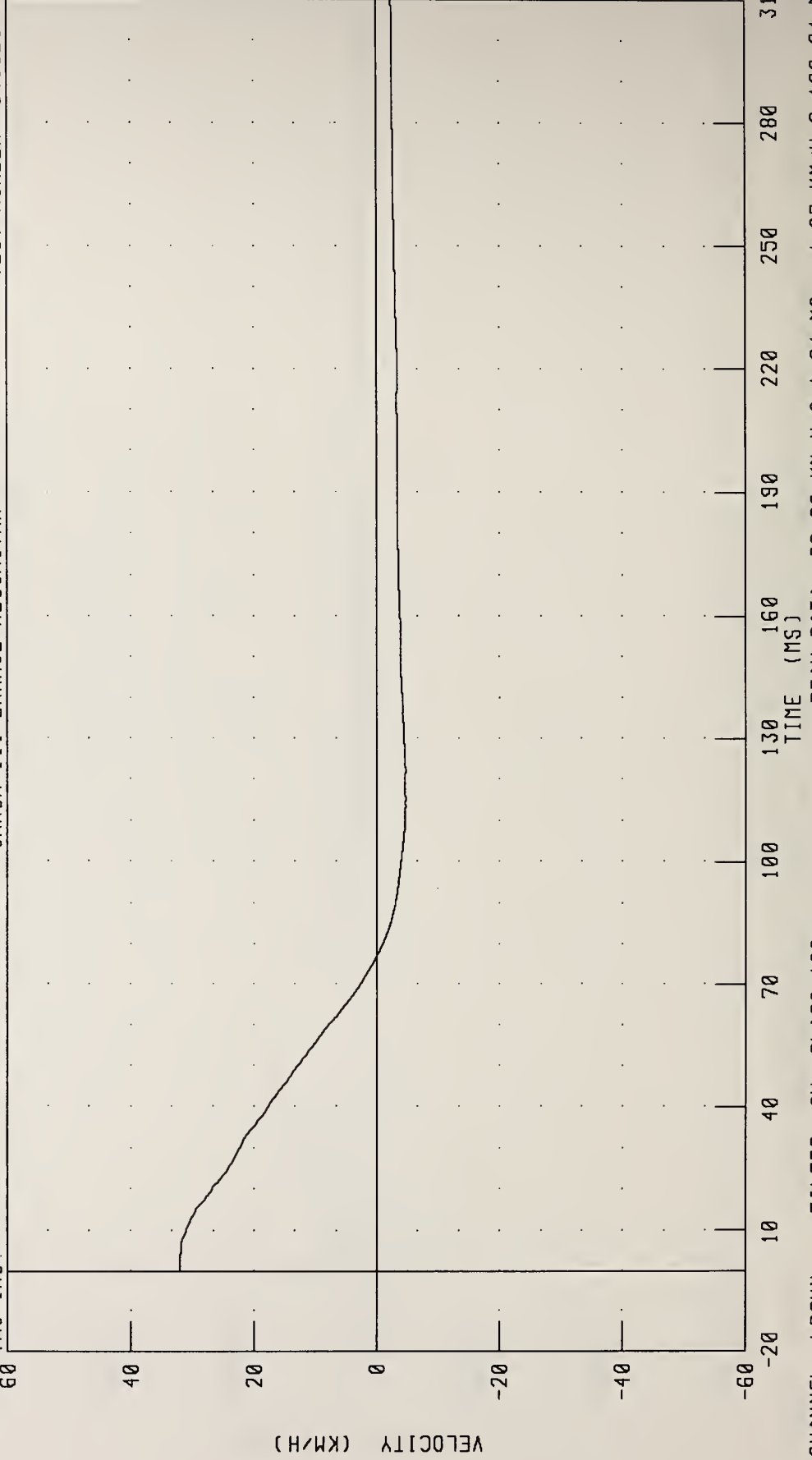
CHANNEL: LRSXG FILTER: CH. CLASS 60

PEAK DATA: 1.34 G @ 128.08 MS; -16.19 G @ 61.52 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT REAR SILL X-AXIS VELOCITY
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4

TRC INC.



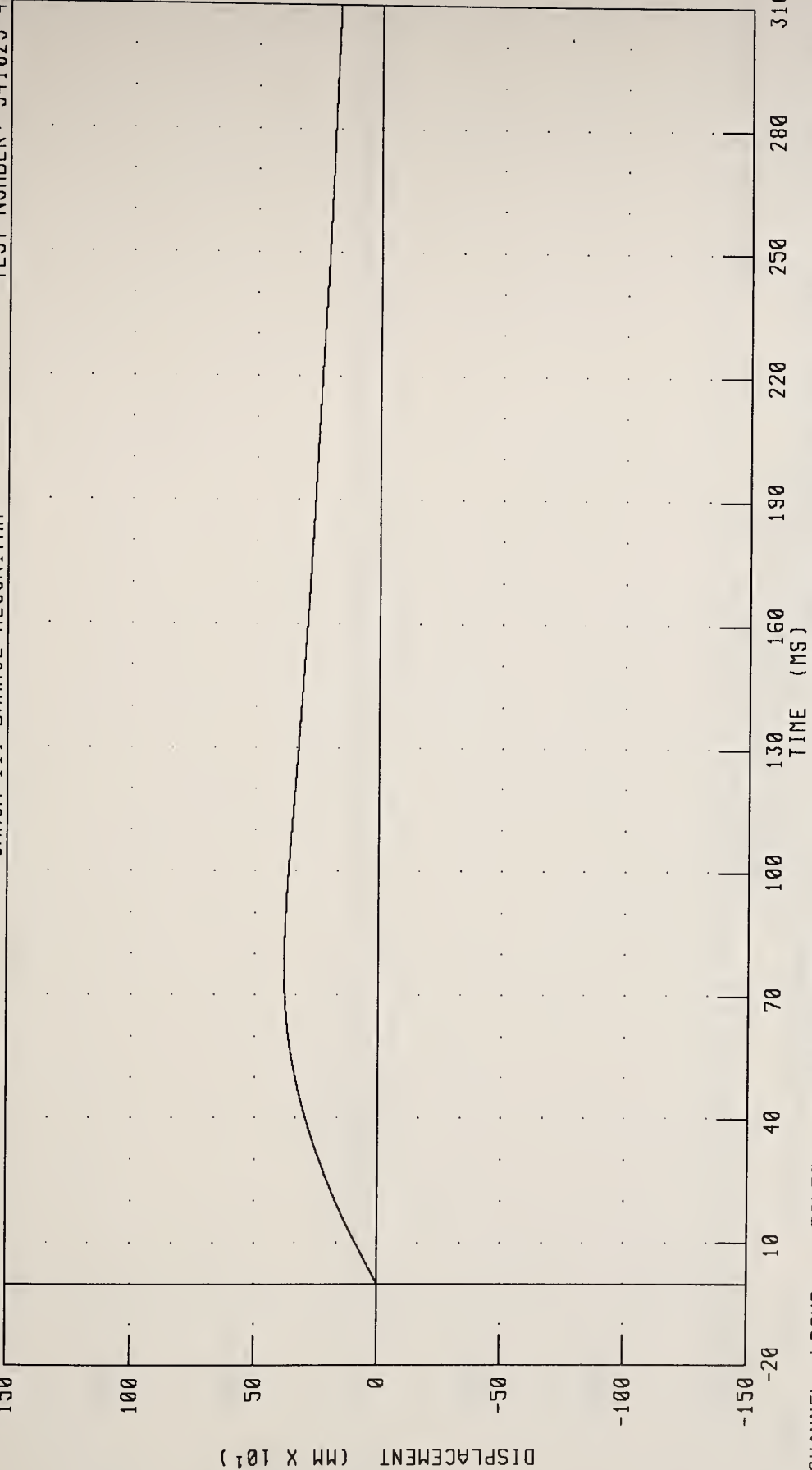
CHANNEL: LRSXY FILTER: CH. CLASS 180

PEAK DATA: 32.00 KM/H @ 1.04 MS; -4.67 KM/H @ 122.24 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT REAR SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

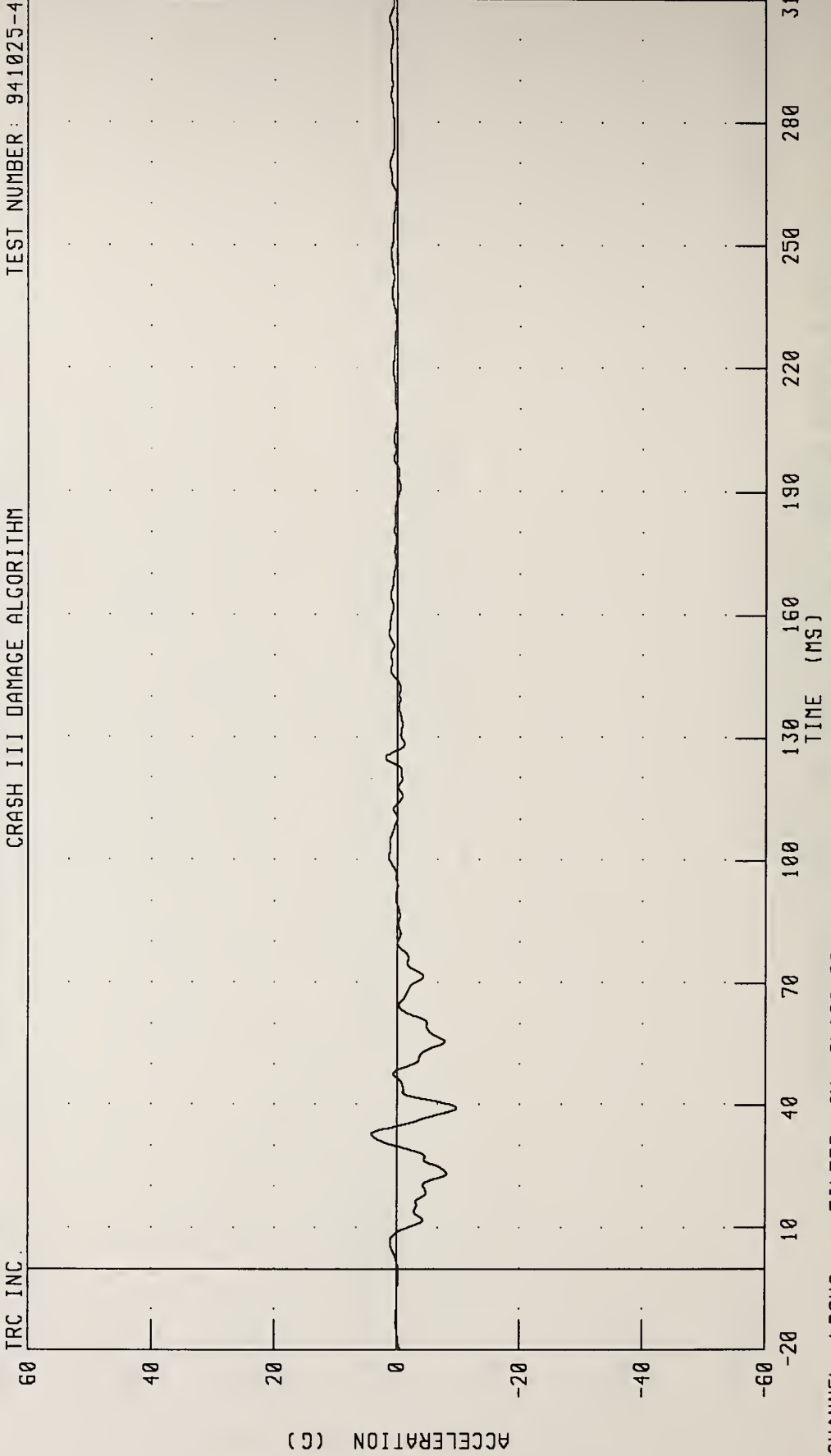
TRC INC.



CHANNEL: LRSXD FILTER: CH. CLASS 180

PEAK DATA: 381.39 MM @ 77.04 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT REAR SILL Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM



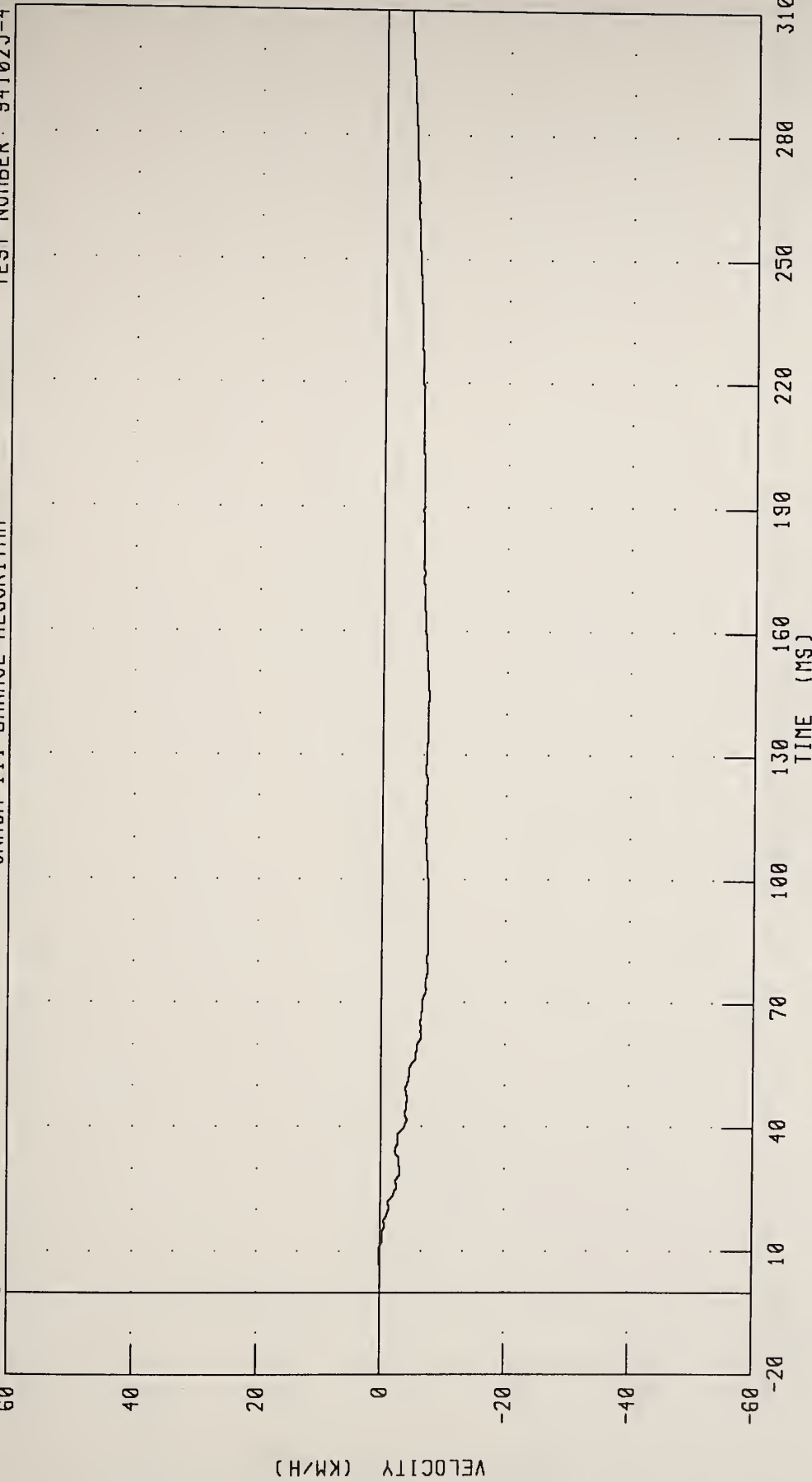
CHANNEL: LRSYG FILTER: CH. CLASS 60

PEAK DATA: 4.25 G @ 32.80 MS; -9.67 G @ 39.28 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
LEFT REAR SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4

TRC INC.



CHANNEL: LRSYV FILTER: CH. CLASS 180

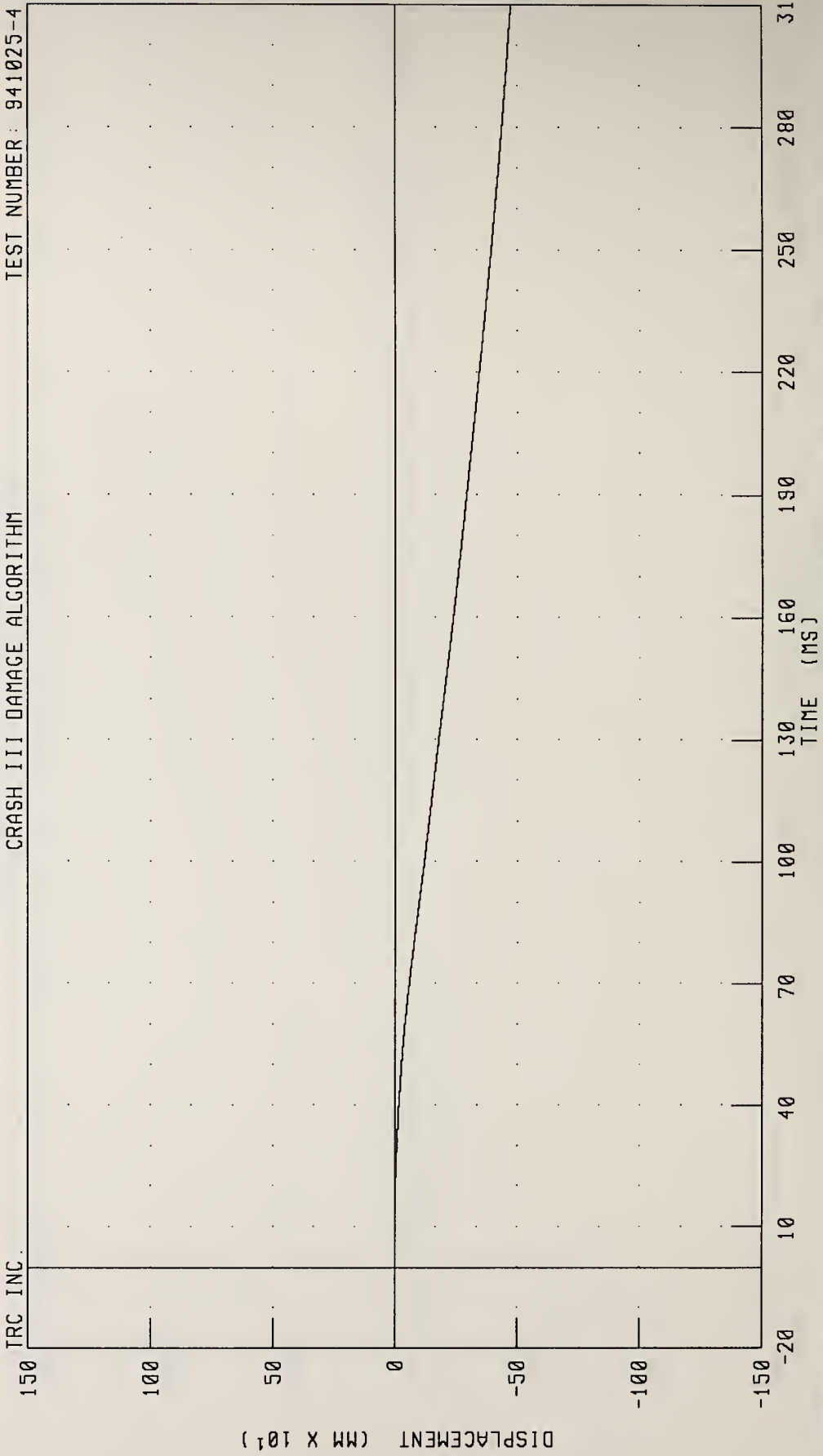
PEAK DATA: 0.25 KM/H @ 10.32 MS; -7.48 KM/H @ 88.40 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

LEFT REAR SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



CHANNEL: LRSYD FILTER: CH. CLASS 180

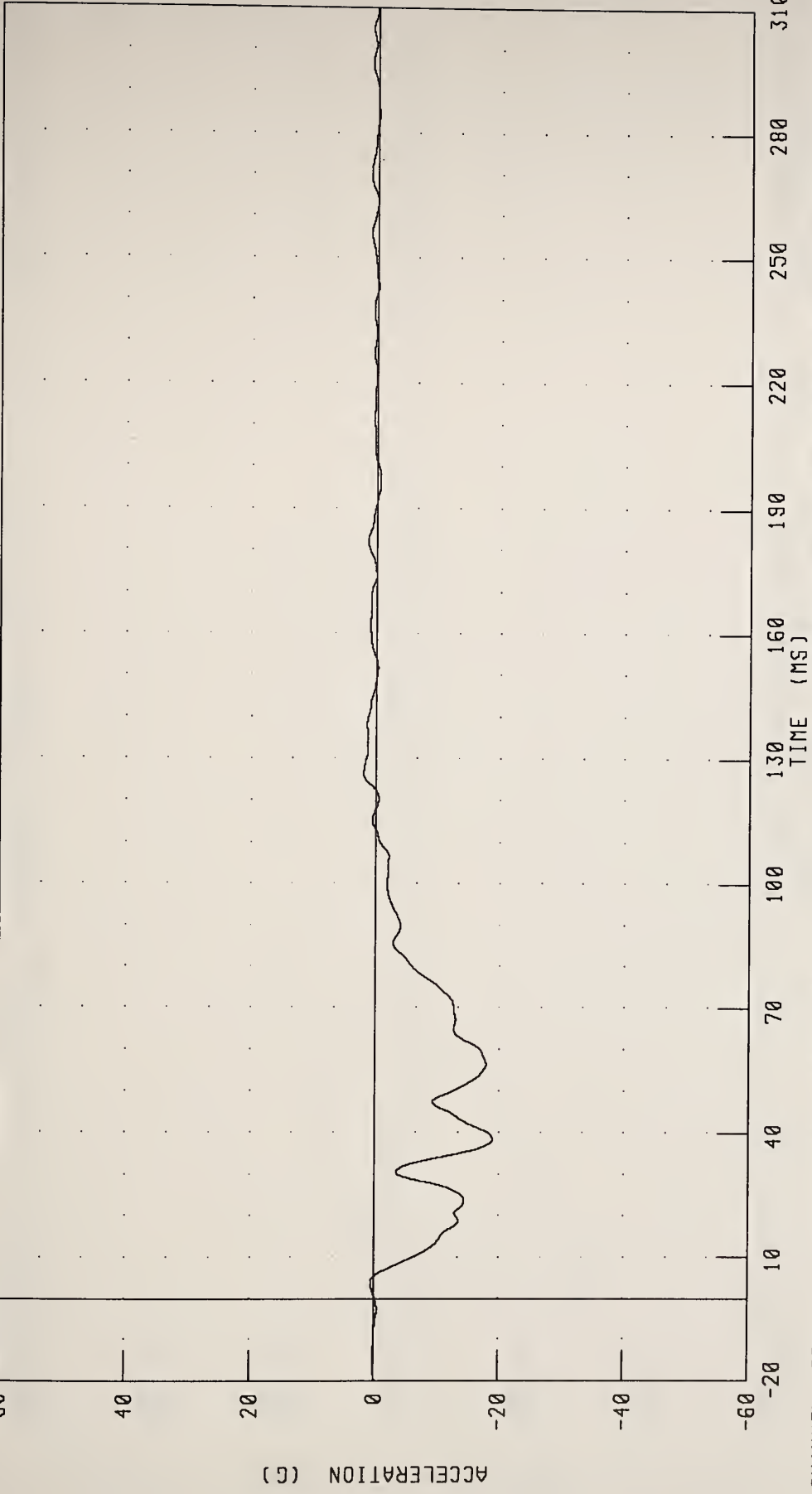
PEAK DATA: 0.24 MM @ 11.44 MS; -474.16 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT REAR SILL X-AXIS ACCELERATION

TEST NUMBER: 941025-4

CRASH III DAMAGE ALGORITHM

TRC INC.



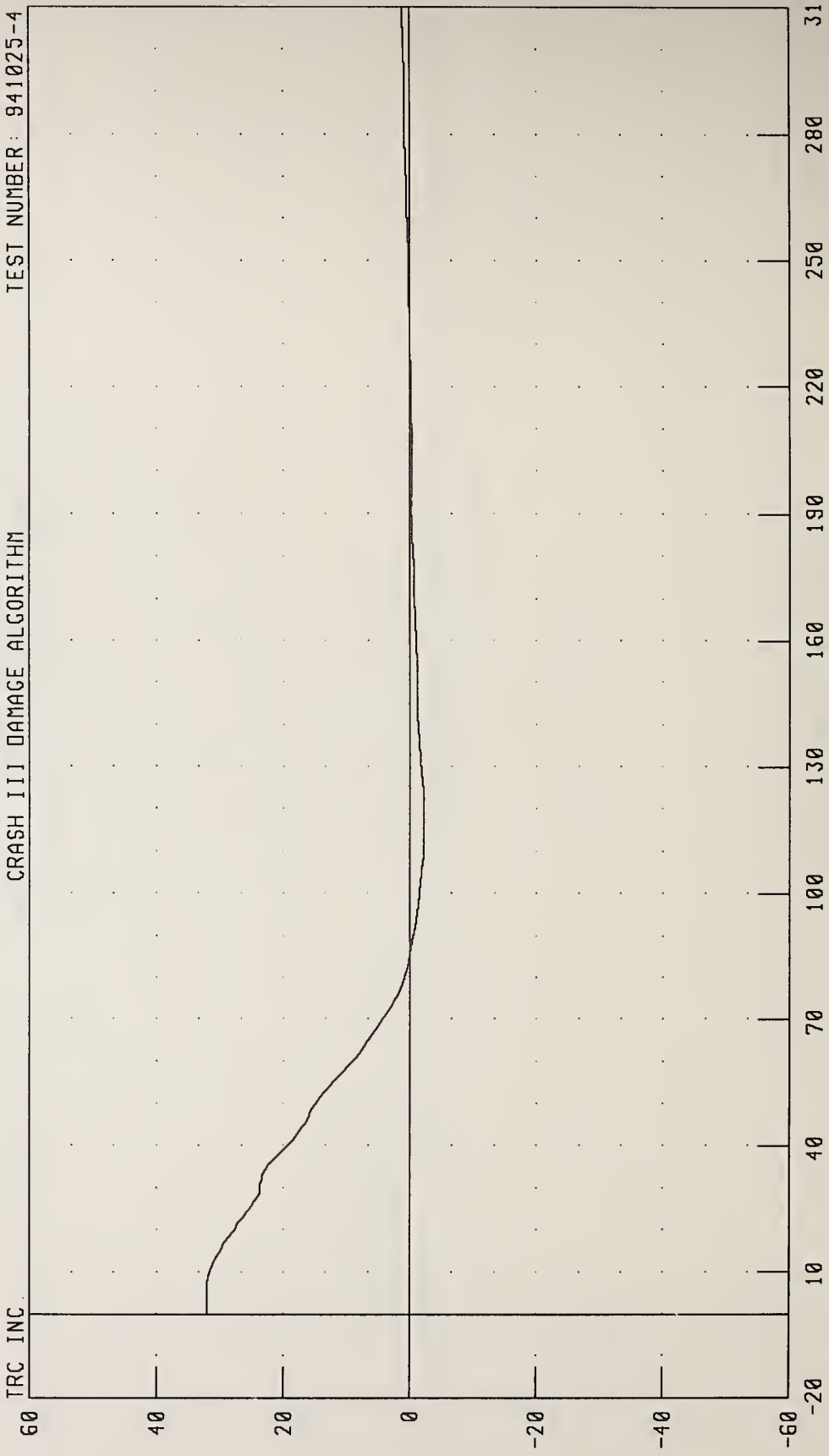
CHANNEL: RRSXG FILTER: CH. CLASS 60

PEAK DATA: 2.00 G @ 126.40 MS; -18.95 G @ 38.48 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT REAR SILL X-AXIS VELOCITY

TRC INC. TEST NUMBER: 941025-4

CRASH III DAMAGE ALGORITHM

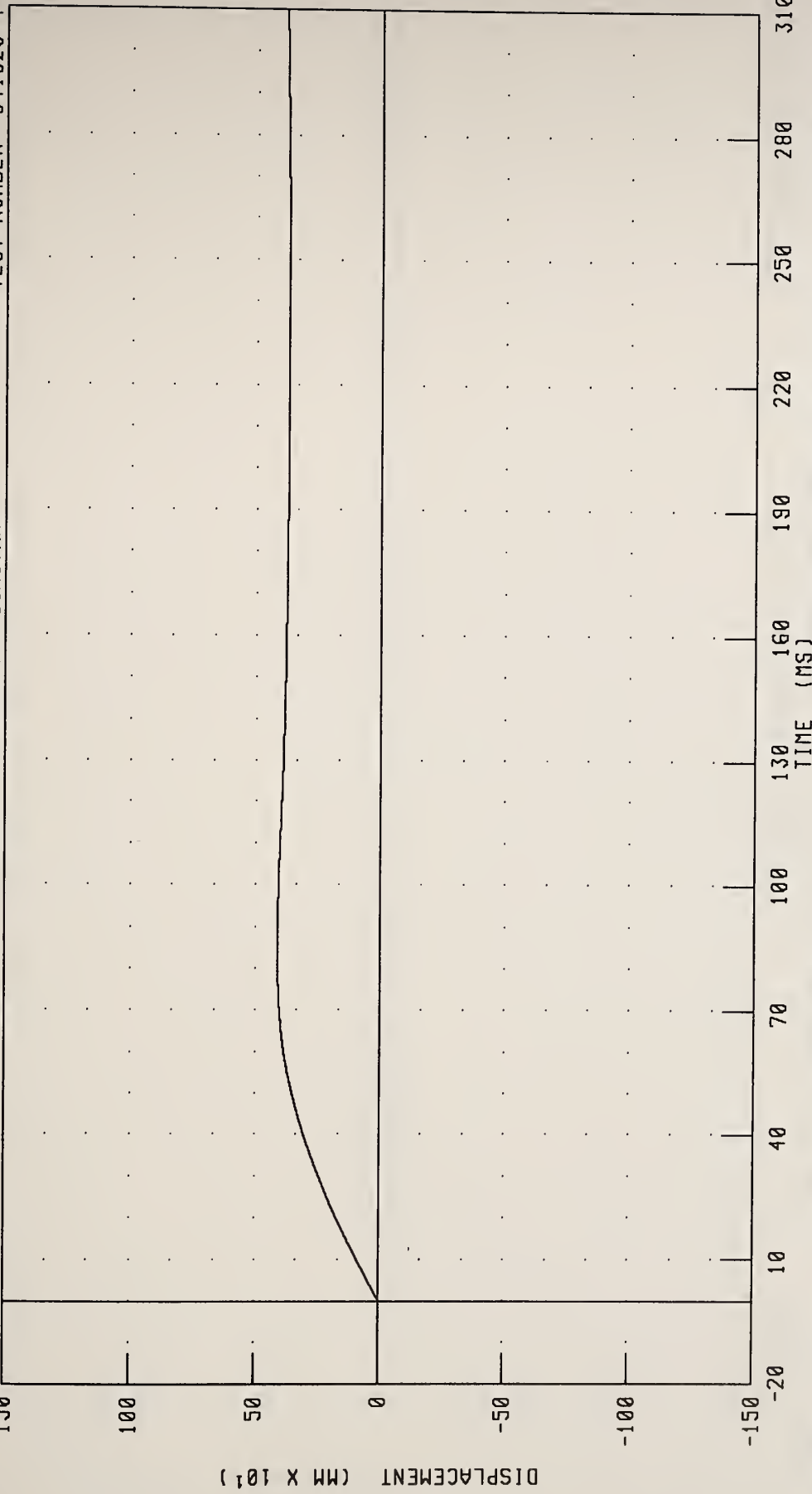


CHANNEL: RRSXV FILTER: CH. CLASS 180

PEAK DATA: 32.07 KM/H @ 6.64 MS; -2.23 KM/H @ 113.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT REAR SILL X-AXIS DISPLACEMENT

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: RRSXD FILTER: CH. CLASS 180

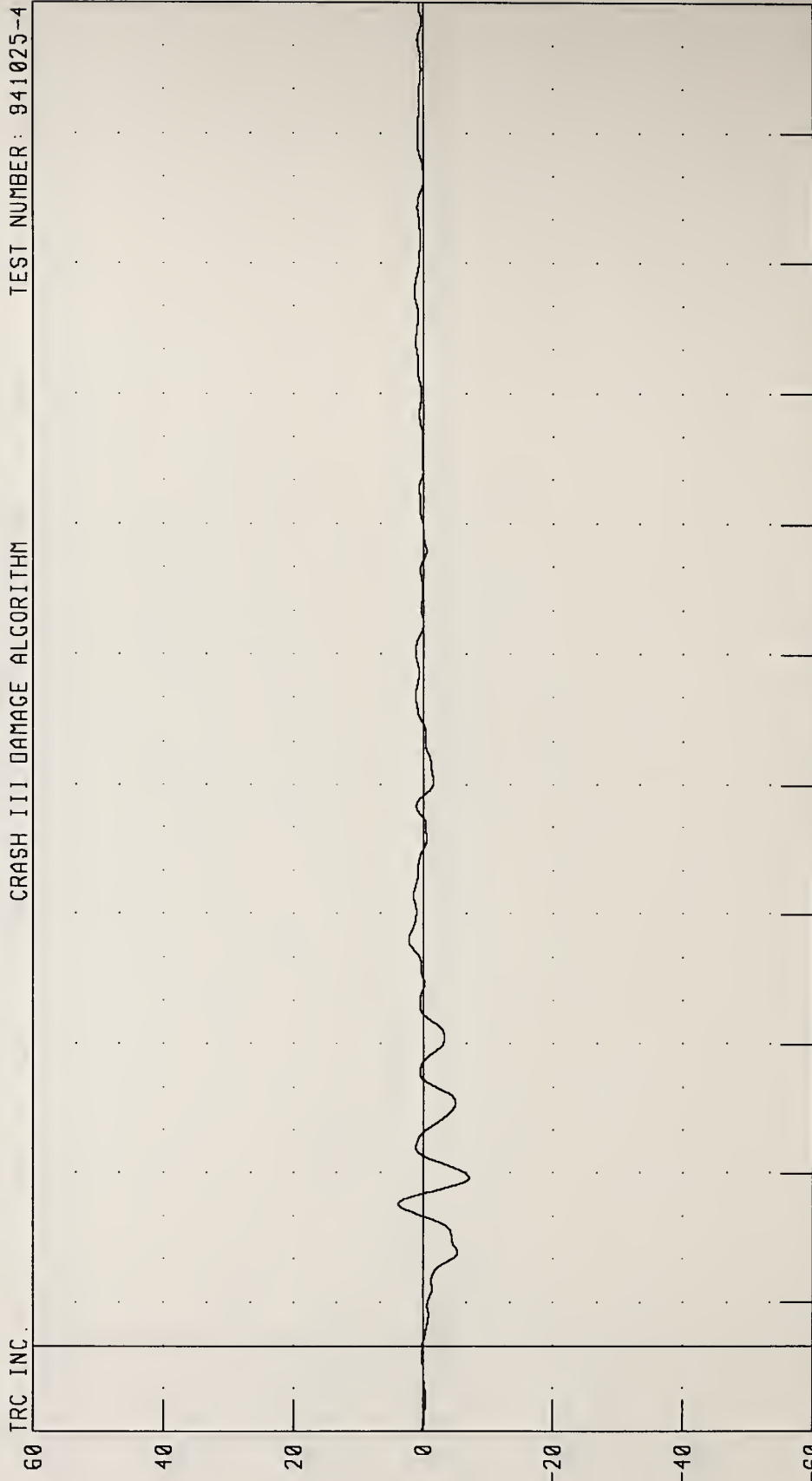
PEAK DATA: 410.80 MM @ 85.84 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

RIGHT REAR SILL Y-AXIS ACCELERATION

TEST NUMBER: 941025-4

CRASH III DAMAGE ALGORITHM



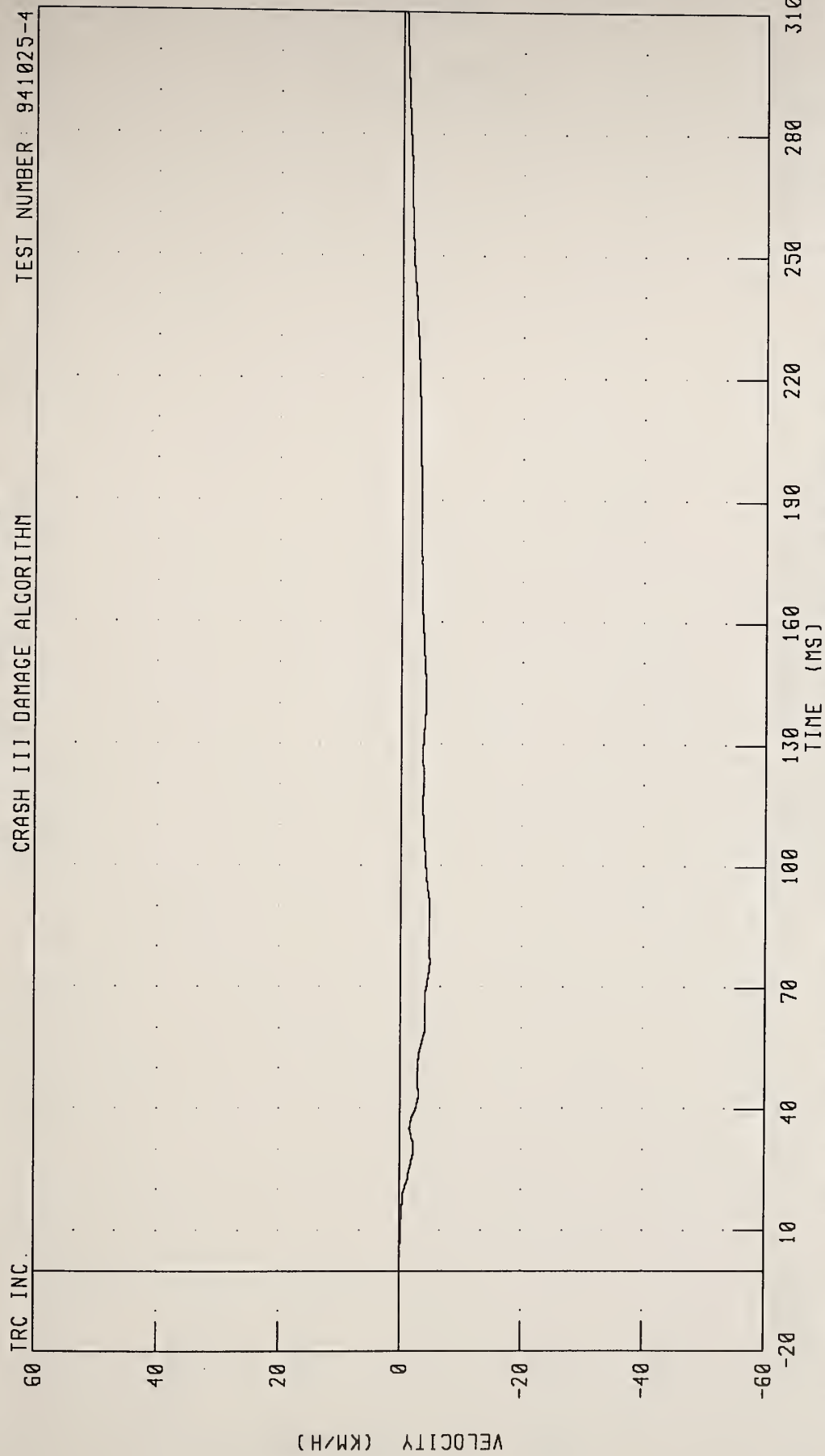
TRC INC.

CHANNEL: RRSYG FILTER: CH. CLASS 60

PEAK DATA: 3.91 G @ 32.80 MS; -7.04 G @ 39.04 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5
RIGHT REAR SILL Y-AXIS VELOCITY

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-4



CHANNEL: RRSYV FILTER: CH. CLASS 180

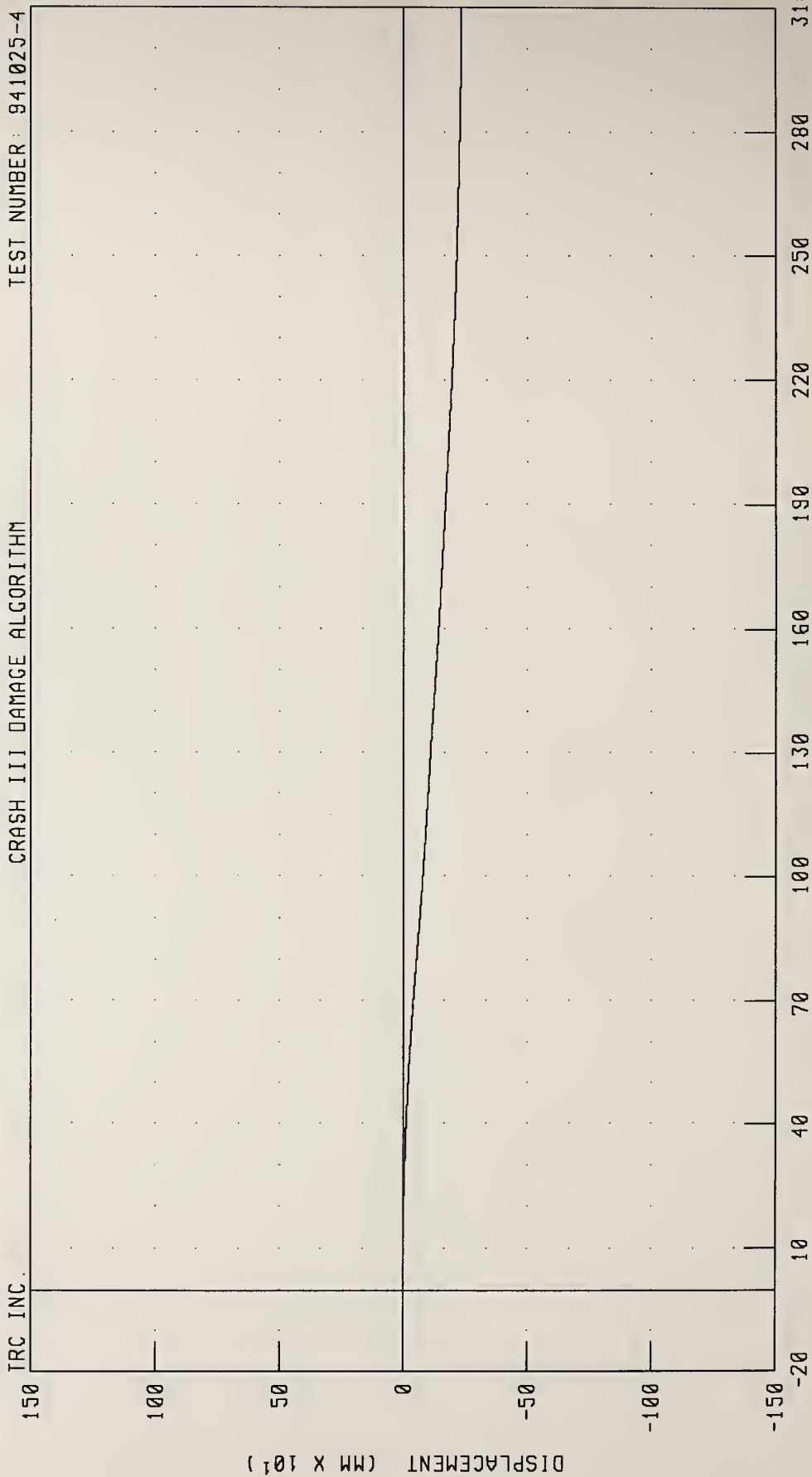
PEAK DATA: 0.02 KM/H @ 1.20 MS; -4.83 KM/H @ 76.16 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 4 OF 5

RIGHT REAR SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-4



CHANNEL: RRSYD FILTER: CH. CLASS 180

PEAK DATA: 0.01 MM @ 2.32 MS; -234.64 MM @ 310.00 MS

Data Plots

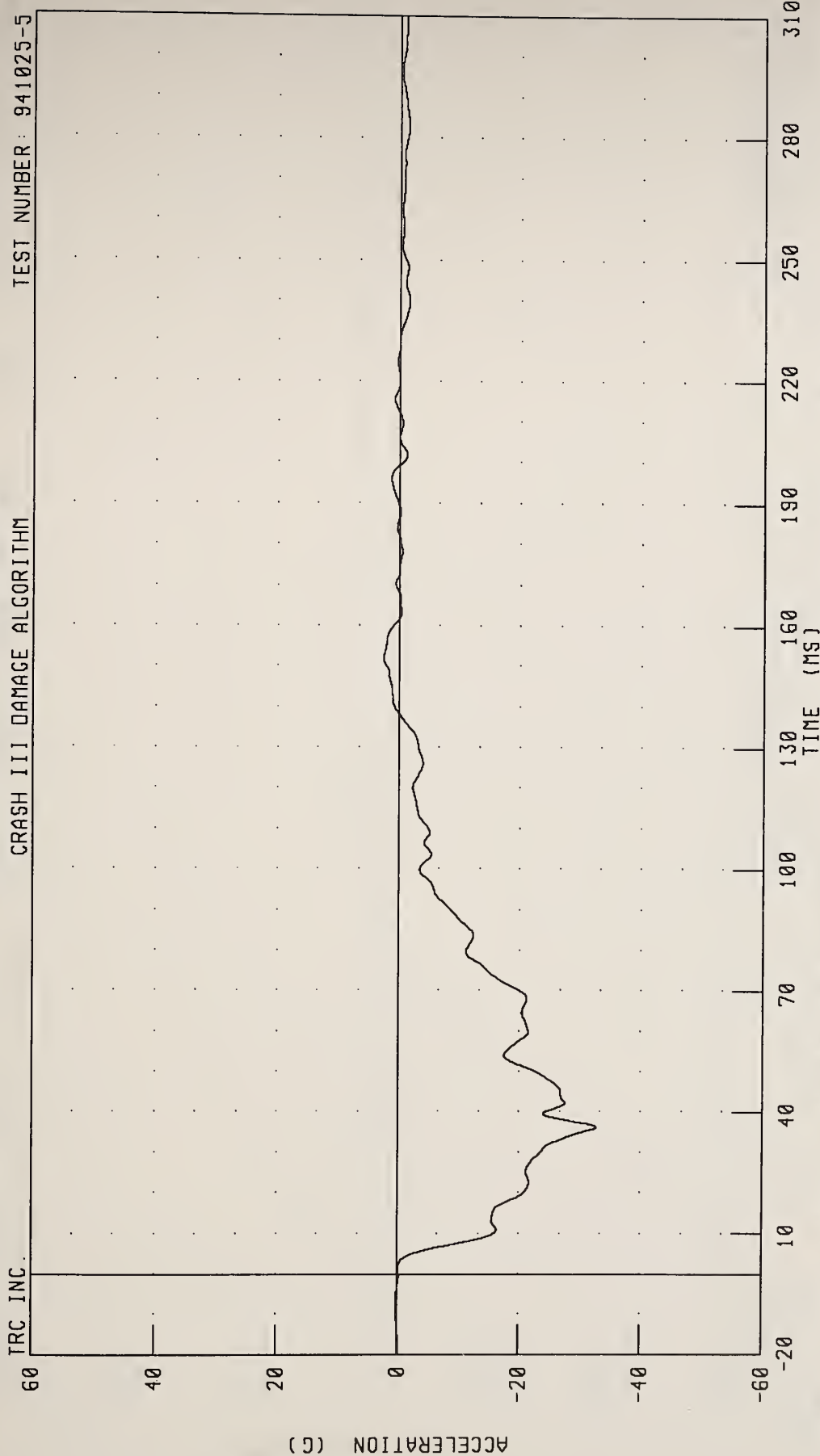
Test No. 941025-5

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

VEHICLE CC X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



TRC INC.

CHANNEL: VCGXG FILTER: CH. CLASS 60

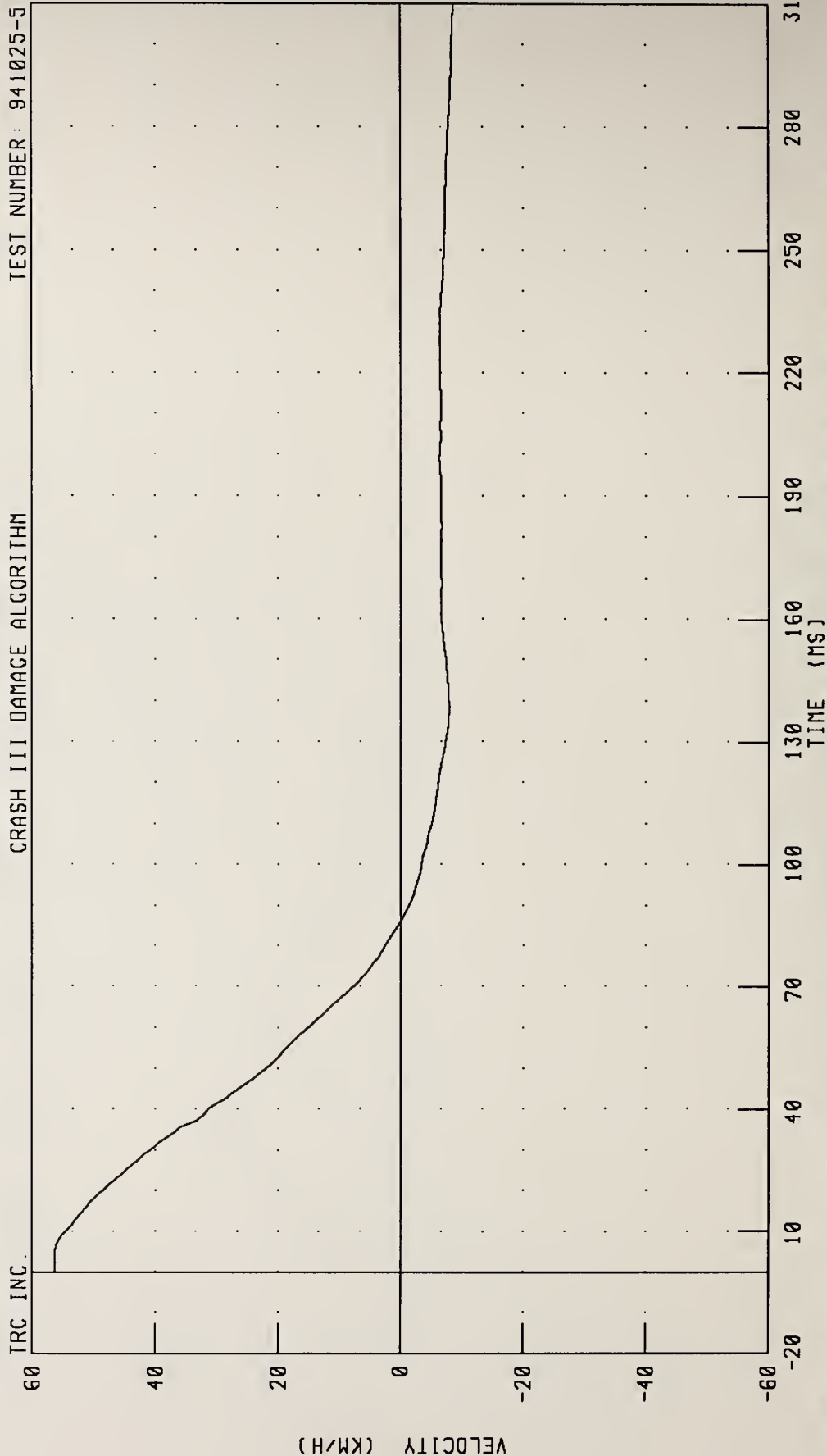
PEAK DATA: 2.59 G @ 152.08 MS; -32.72 G @ 36.32 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

VEHICLE CG X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



CHANNEL: VCGXV FILTER: CH. CLASS 180

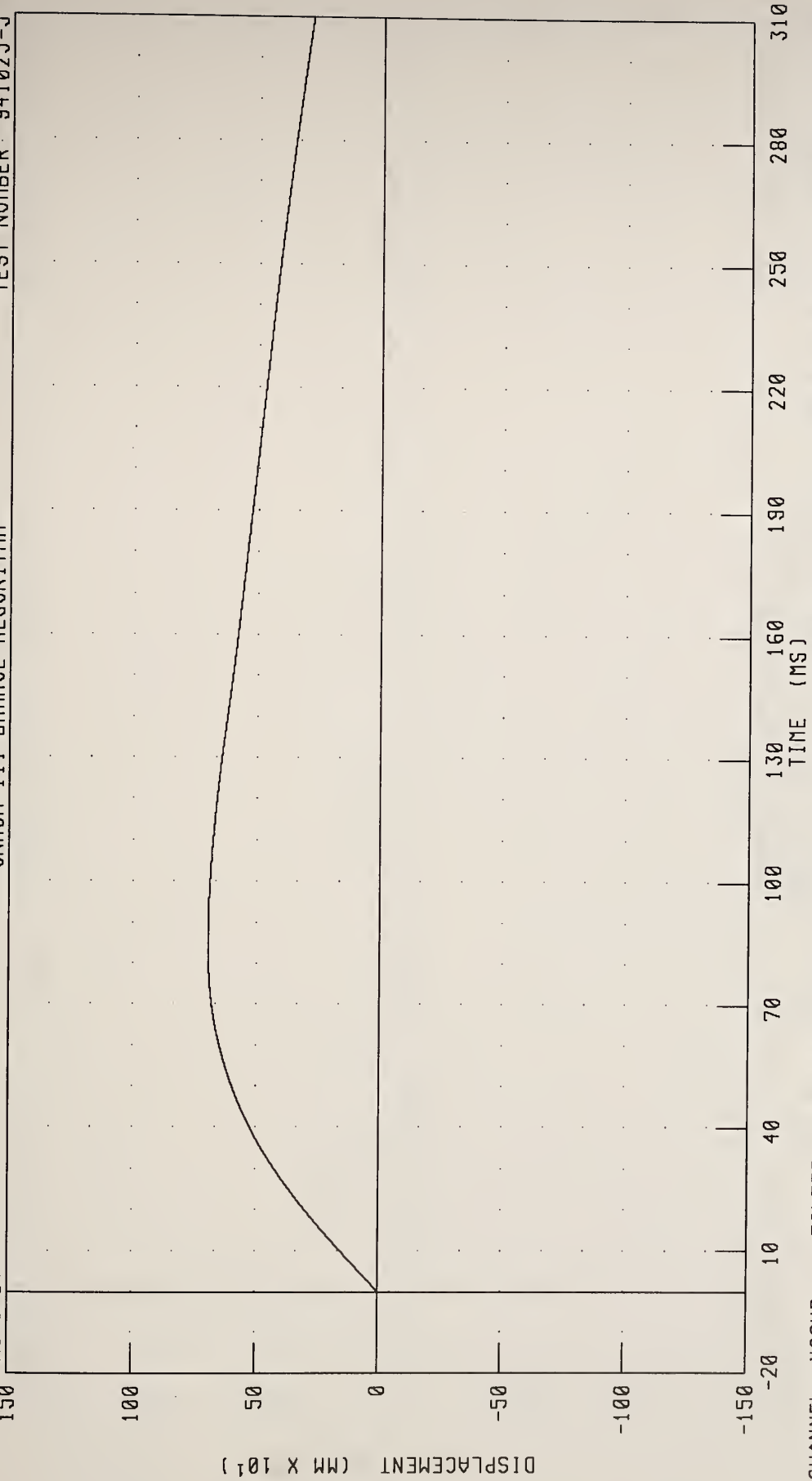
PEAK DATA: 56.30 KM/H @ 0.00 MS; -8.63 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
VEHICLE CG X-AXIS DISPLACEMENT

TRC INC.

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



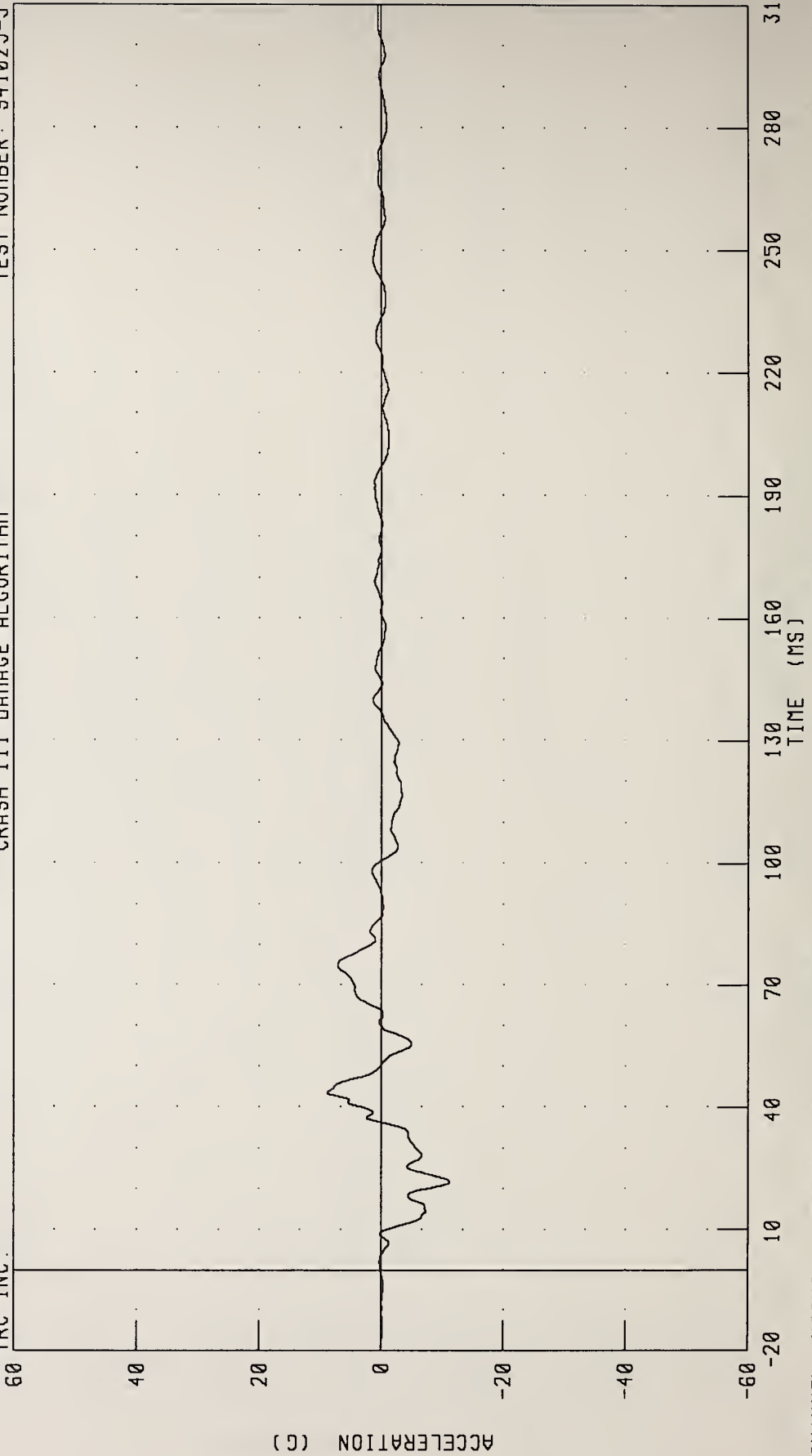
CHANNEL: VCGXD FILTER: CH. CLASS 180

PEAK DATA: 696.72 MM @ 86.08 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
VEHICLE CG Y-AXIS ACCELERATION
CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

TRC INC.



CHANNEL: VCGYG FILTER: CH. CLASS 60

PEAK DATA: 8.88 G @ 43.60 MS, -11.21 G @ 21.76 MS

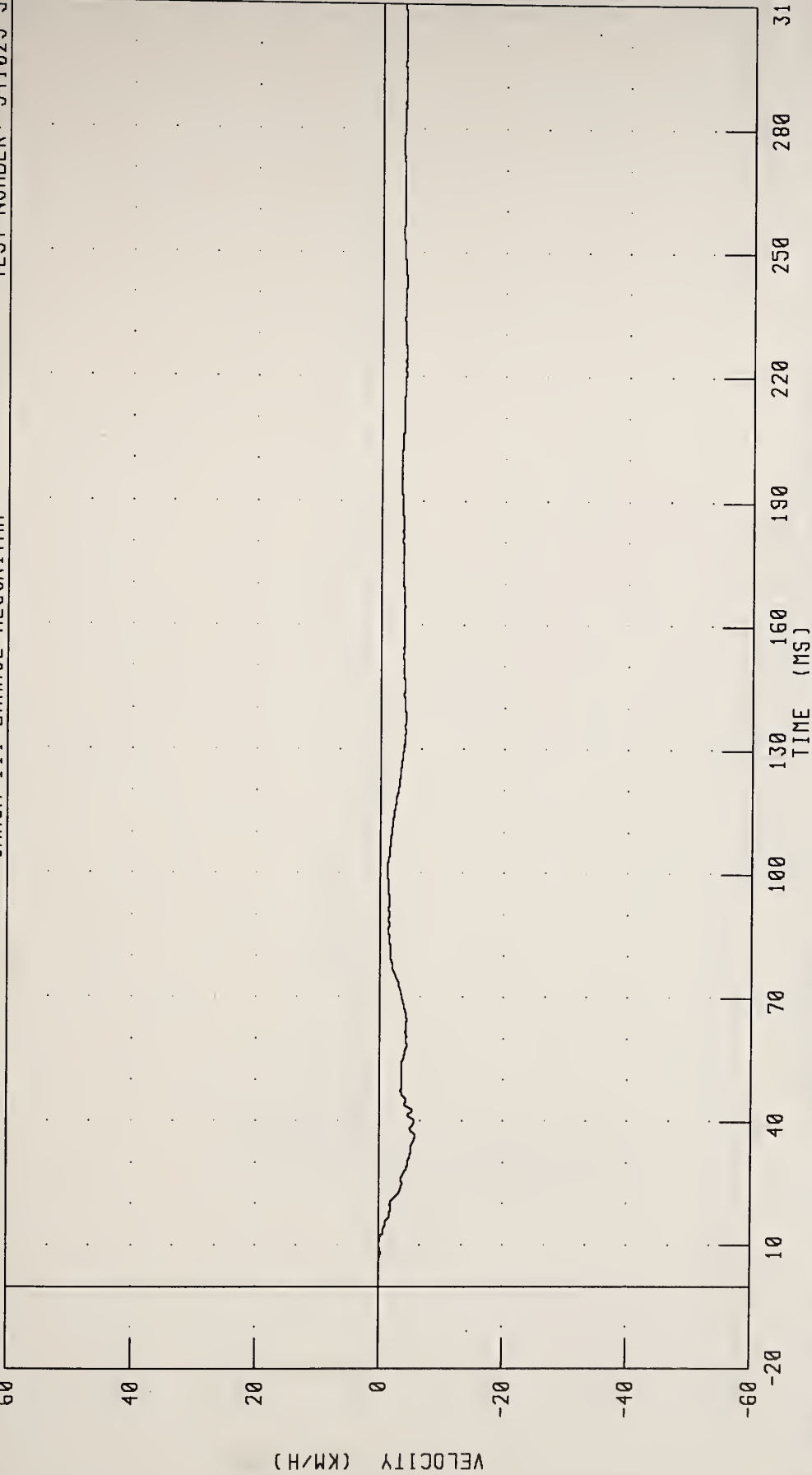
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

VEHICLE CG Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

TRC INC.



CHANNEL: VCGYV FILTER: CH. CLASS 180

PEAK DATA: 0.06 KM/H @ 5.92 MS; -5.81 KM/H @ 36.56 MS

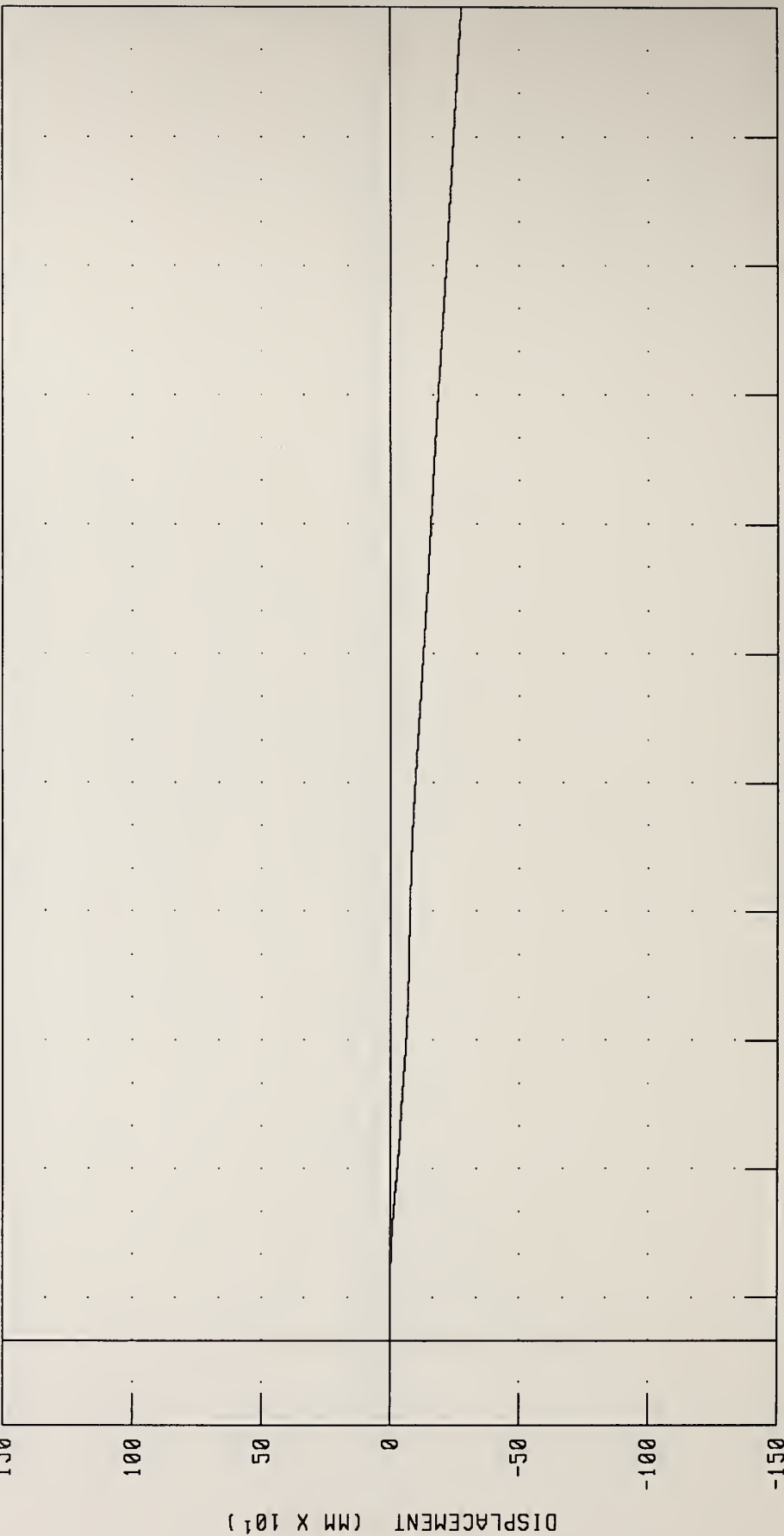
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

VEHICLE CG Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

TRC INC



150
100
50
0
-50
-100
-150

10 40 70 100 130 160 190 220 250 280 310

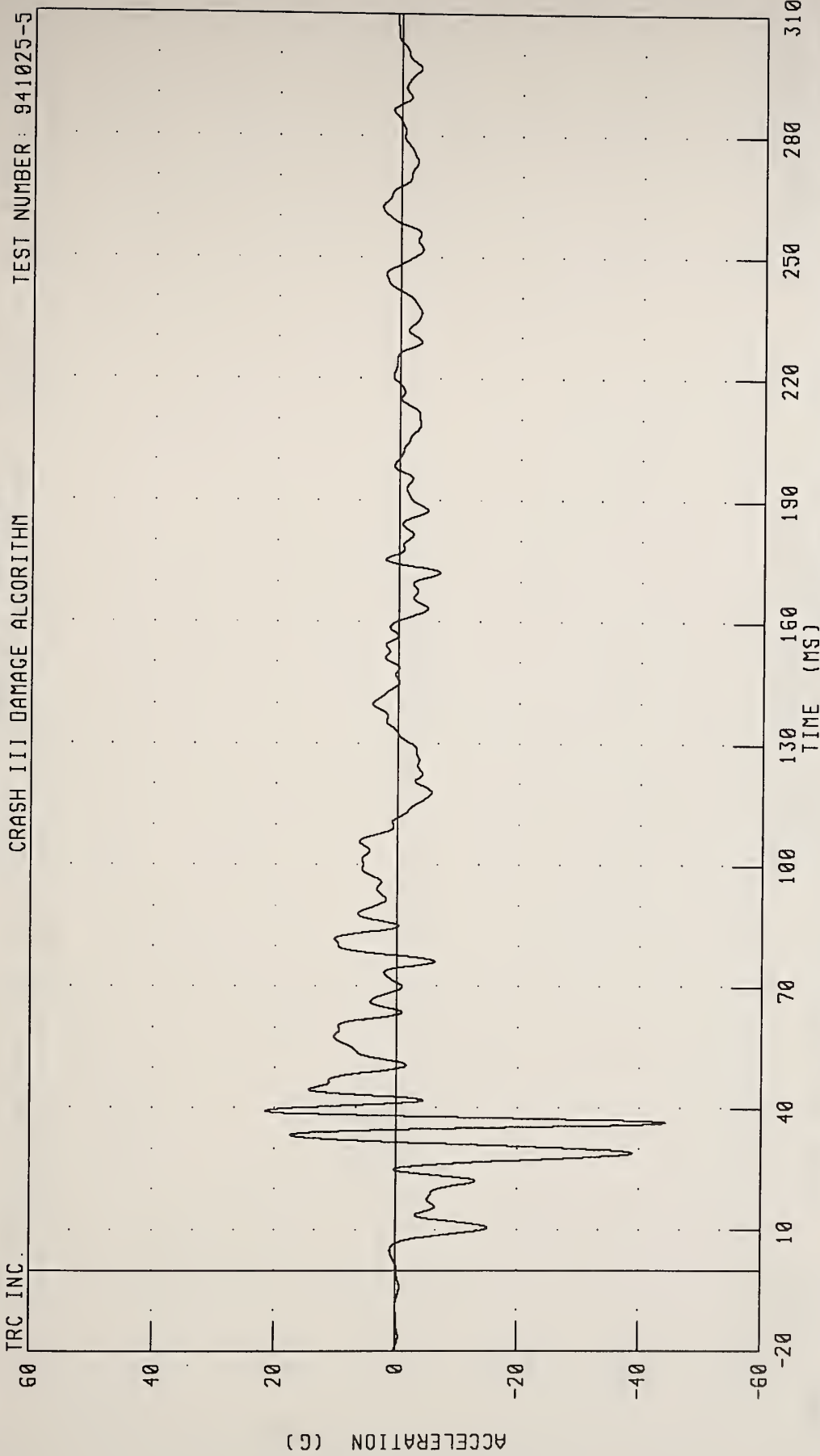
TIME (MS)

CHANNEL: VCGYD FILTER: CH. CLASS 180

PEAK DATA: 0.03 MM @ 6.56 MS; -275.87 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
VEHICLE CC Z-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



TRC INC. CHANNEL: VCGZG FILTER: CH. CLASS 60

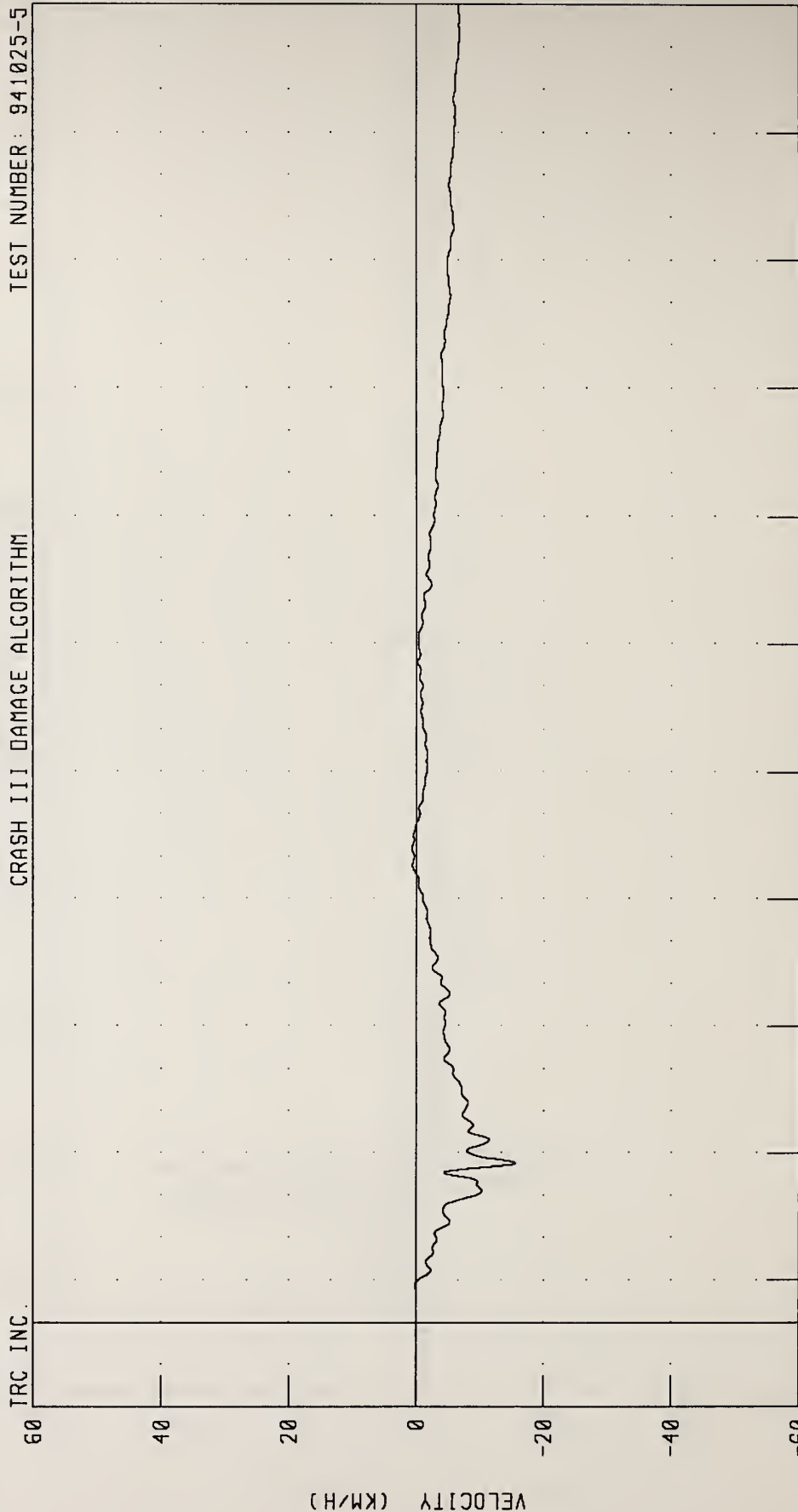
PEAK DATA: 21.52 G @ 39.36 MS, -44.32 G @ 36.48 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

VEHICLE CG Z-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



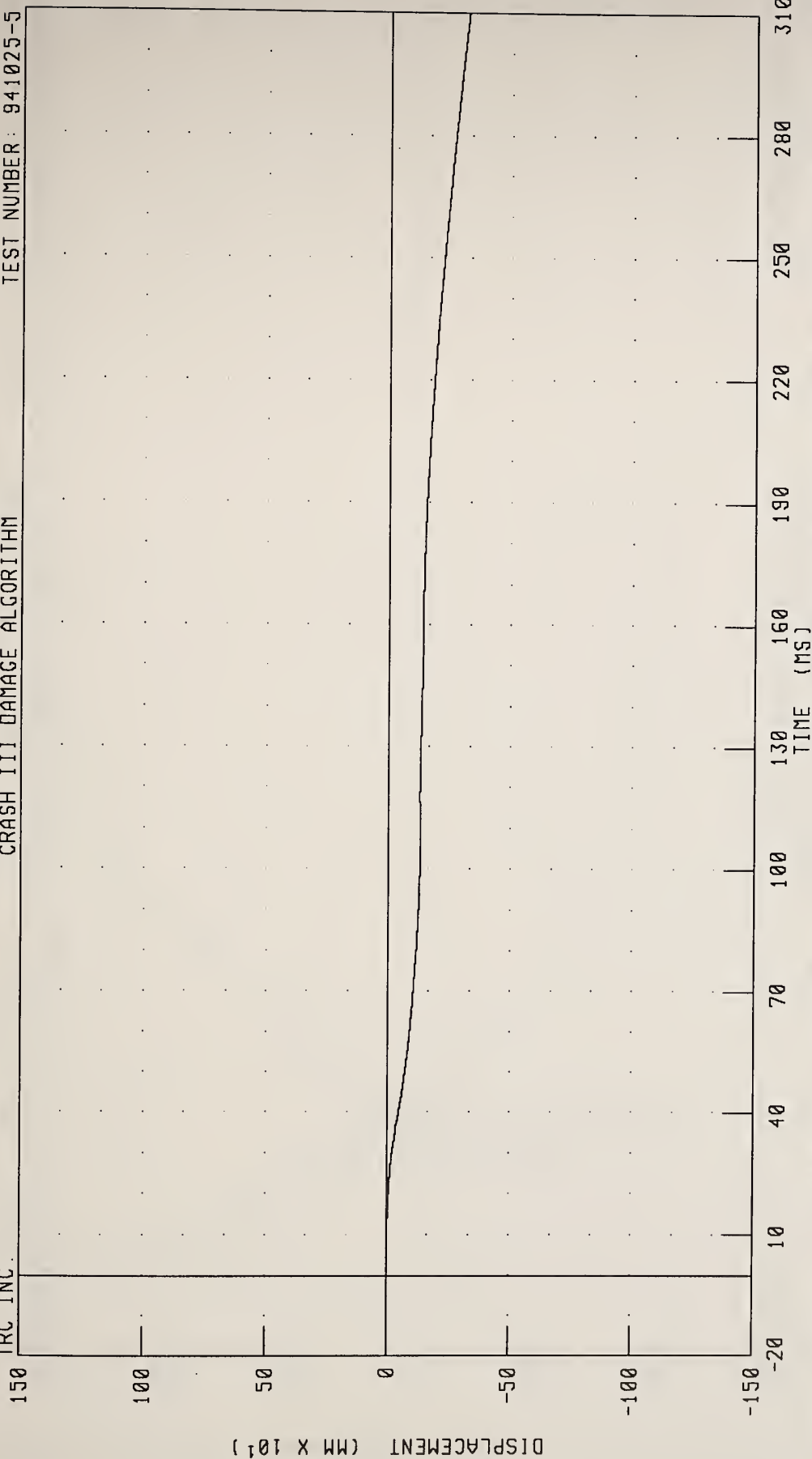
CHANNEL: VCGZV FILTER: CH. CLASS 180

PEAK DATA: 0.72 KM/H @ 111.92 MS; -15.63 KM/H @ 37.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
VEHICLE CG Z-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5

TRC INC.



CHANNEL: VCGZO FILTER: CH. CLASS 180

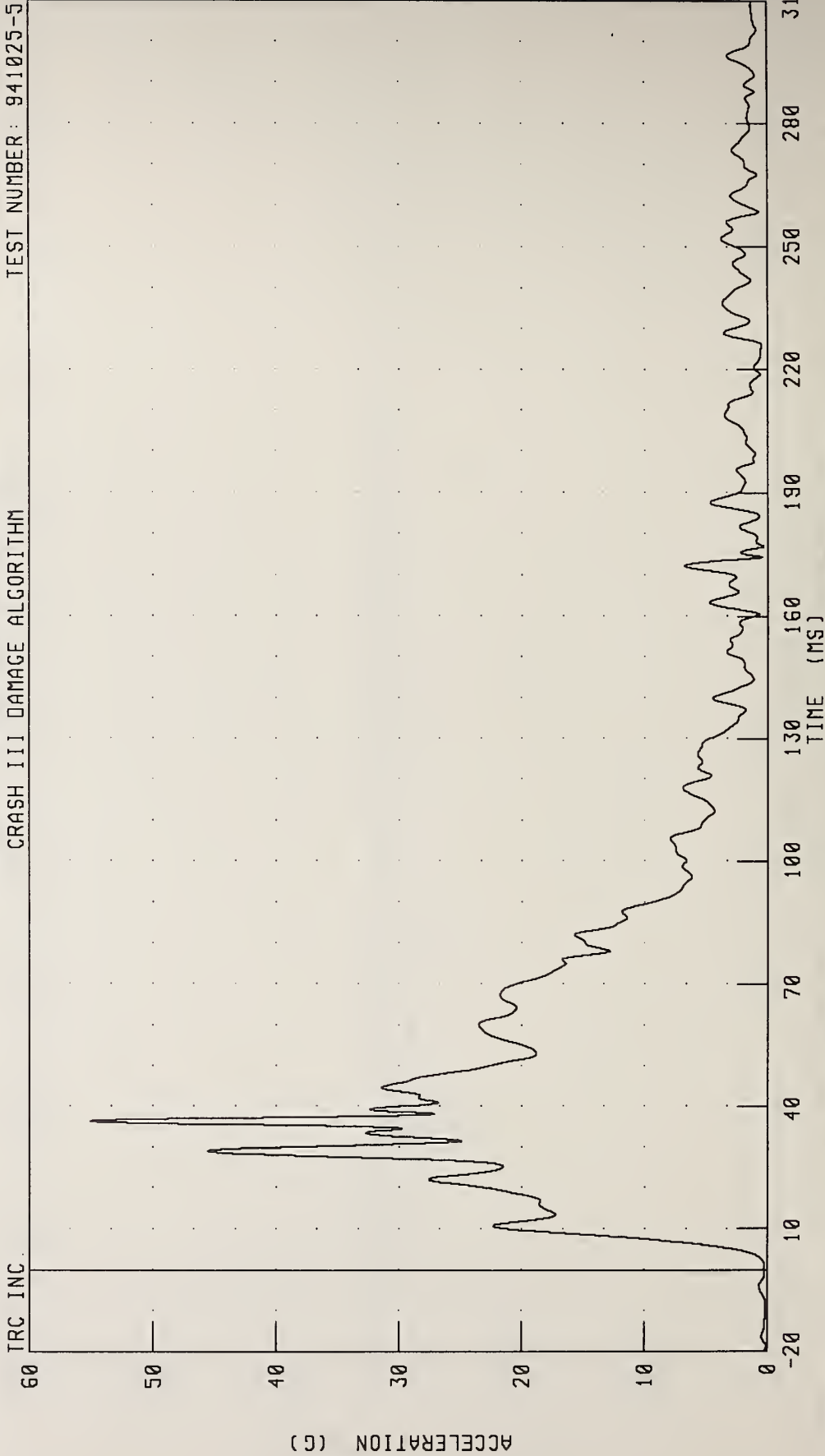
PEAK DATA: 0.03 MM @ 9.44 MS; -319.78 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

VEHICLE CG RESULTANT ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



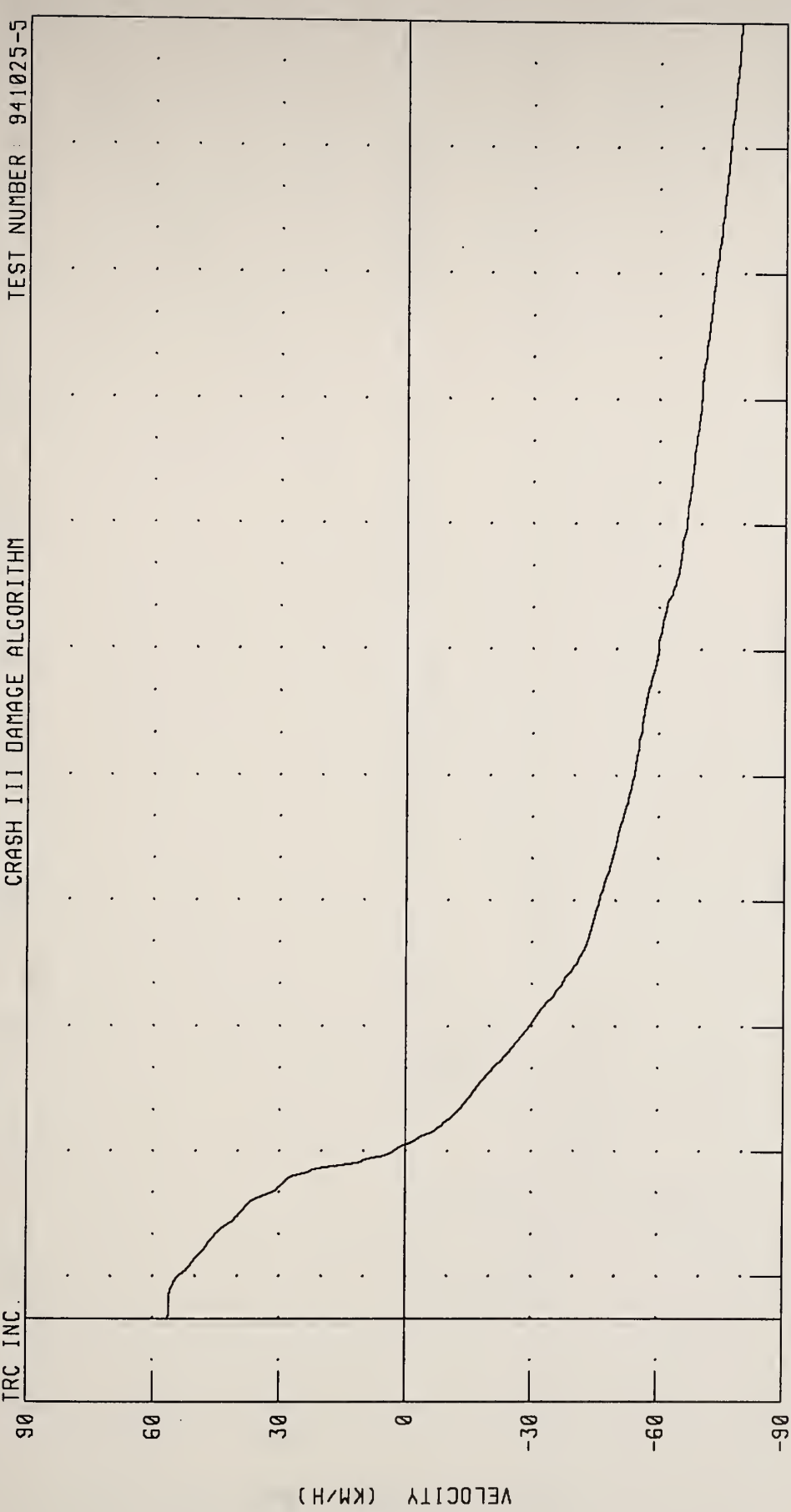
CHANNEL: VCGRG FILTER: CH. CLASS 60

PEAK DATA: 55.04 G @ 36.48 MS; 0.12 G @ -18.72 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
VEHICLE CG RESULTANT VELOCITY

TRC INC. TEST NUMBER: 941025-5

CRASH III DAMAGE ALGORITHM

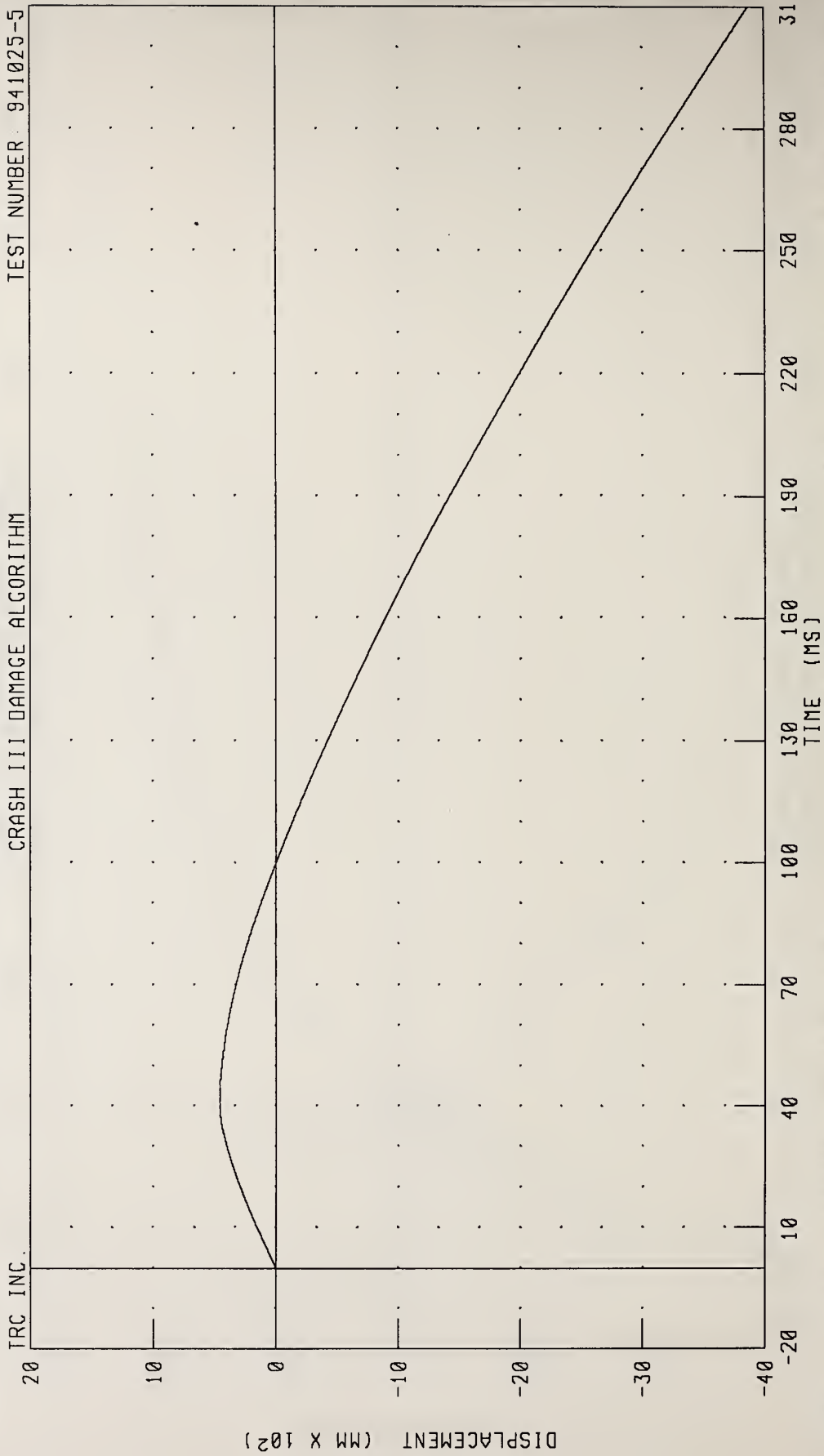


CHANNEL: VCGRV FILTER: CH. CLASS 180

PEAK DATA: 56.30 KM/H @ 0.00 MS; -79.24 KM/H @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
VEHICLE CG RESULTANT DISPLACEMENT

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER 941025-5



CHANNEL: VCGRD FILTER: CH. CLASS 180

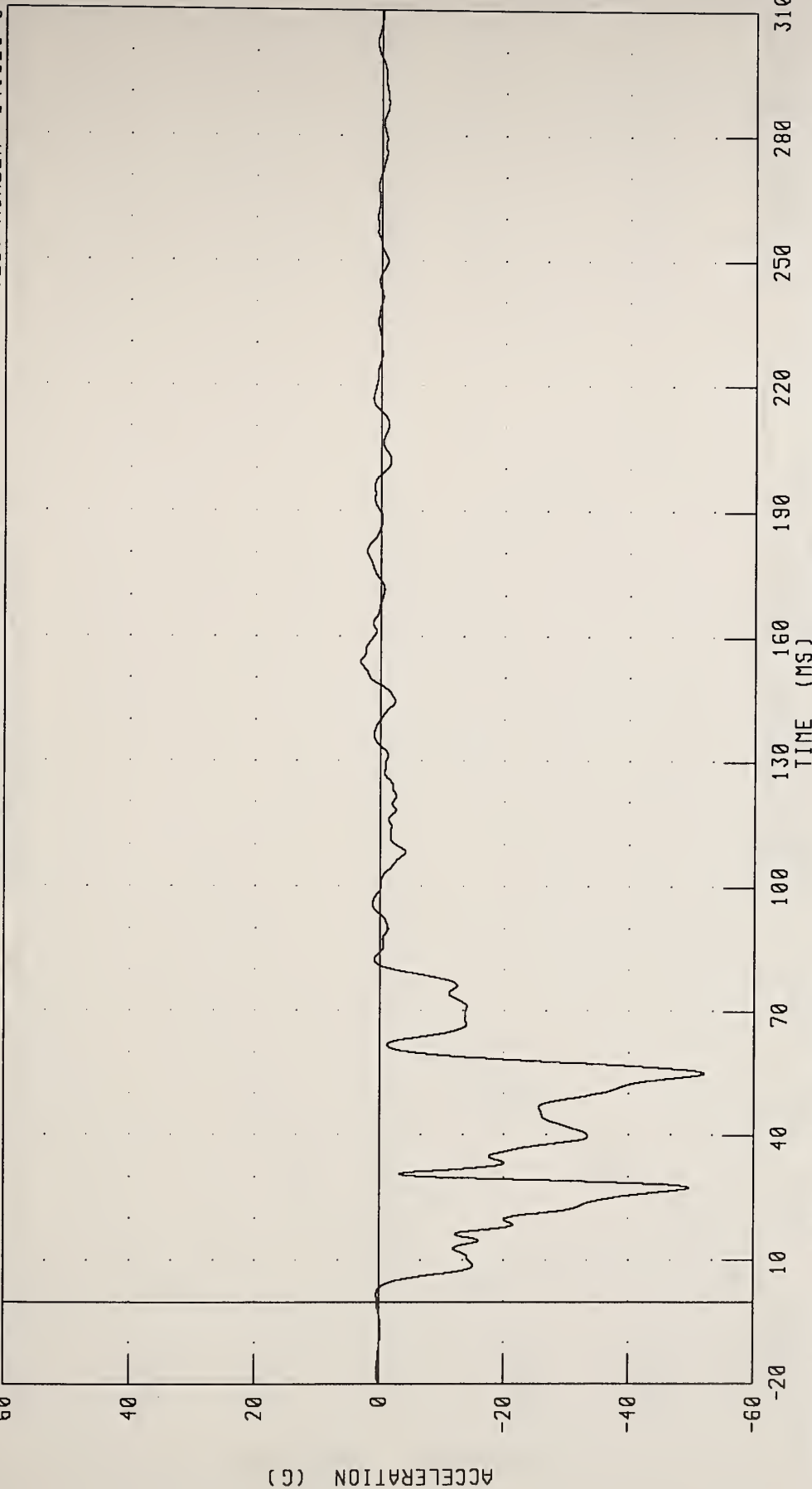
PEAK DATA: 459.33 MM @ 41.68 MS; -3863.44 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT FRONT SILL X-AXIS ACCELERATION

TEST NUMBER: 941025-5

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LFSXG FILTER: CH. CLASS 60

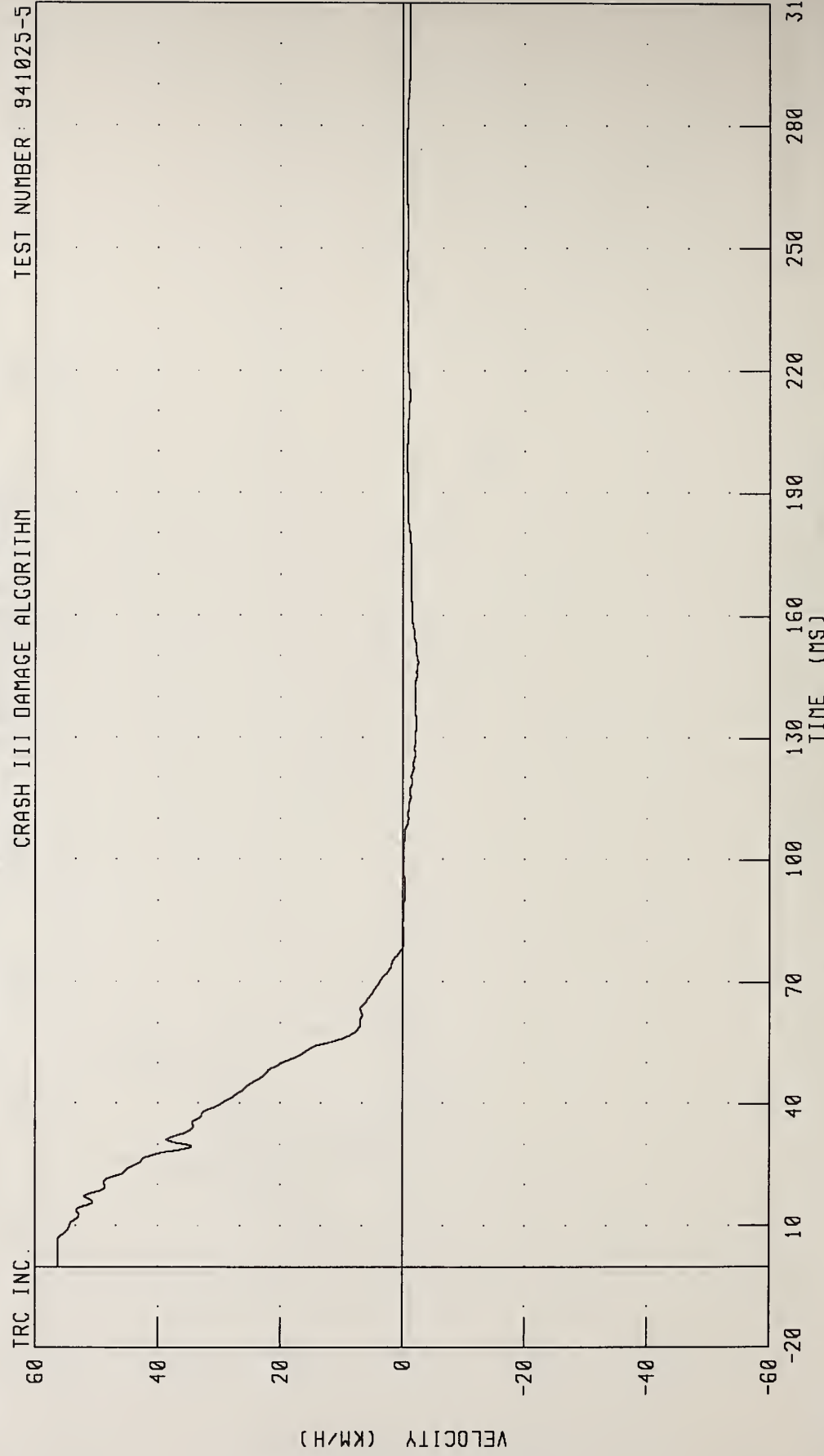
PEAK DATA: 3.20 G @ 154.08 MS; -52.04 G @ 55.04 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

LEFT FRONT SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



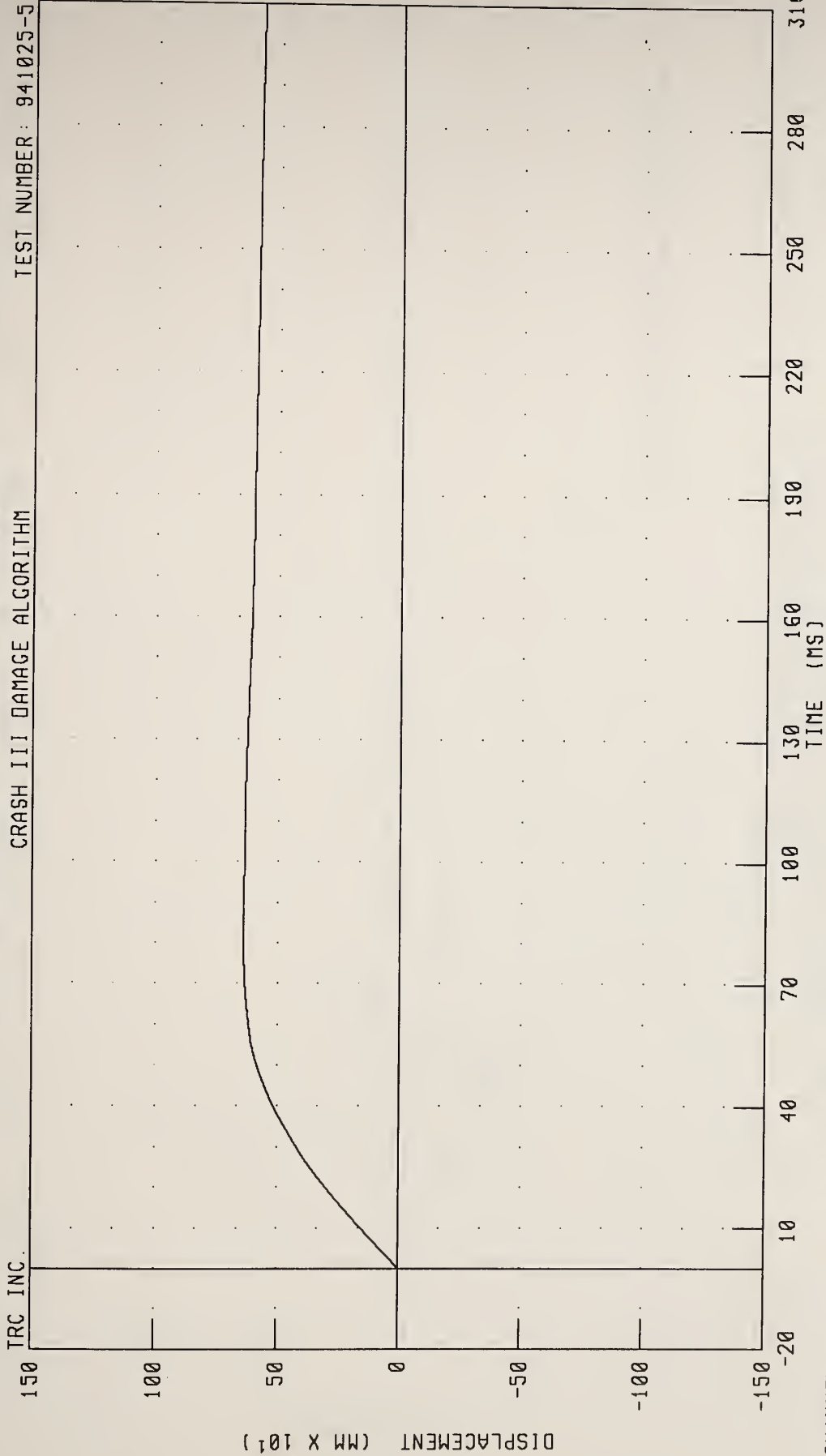
CHANNEL: LFSXV FILTER: CH. CLASS 180

PEAK DATA: 56.31 KM/H @ 6.32 MS; -2.46 KM/H @ 148.64 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

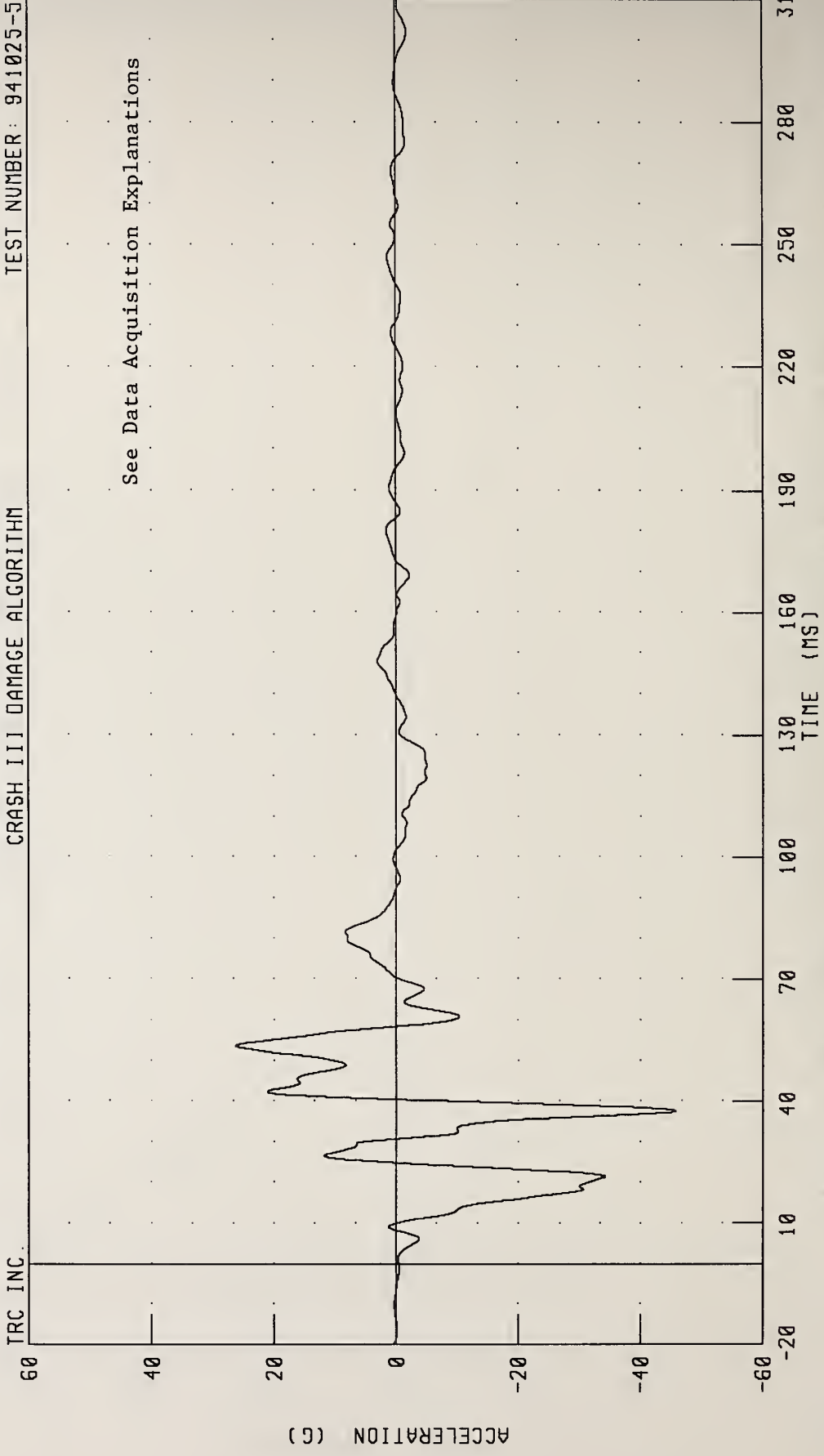


CHANNEL: LFSXD FILTER: CH. CLASS 180

PEAK DATA: 638.43 MM @ 78.48 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT FRONT SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



TRC INC.

CHANNEL: LFSYG FILTER: CH. CLASS 60

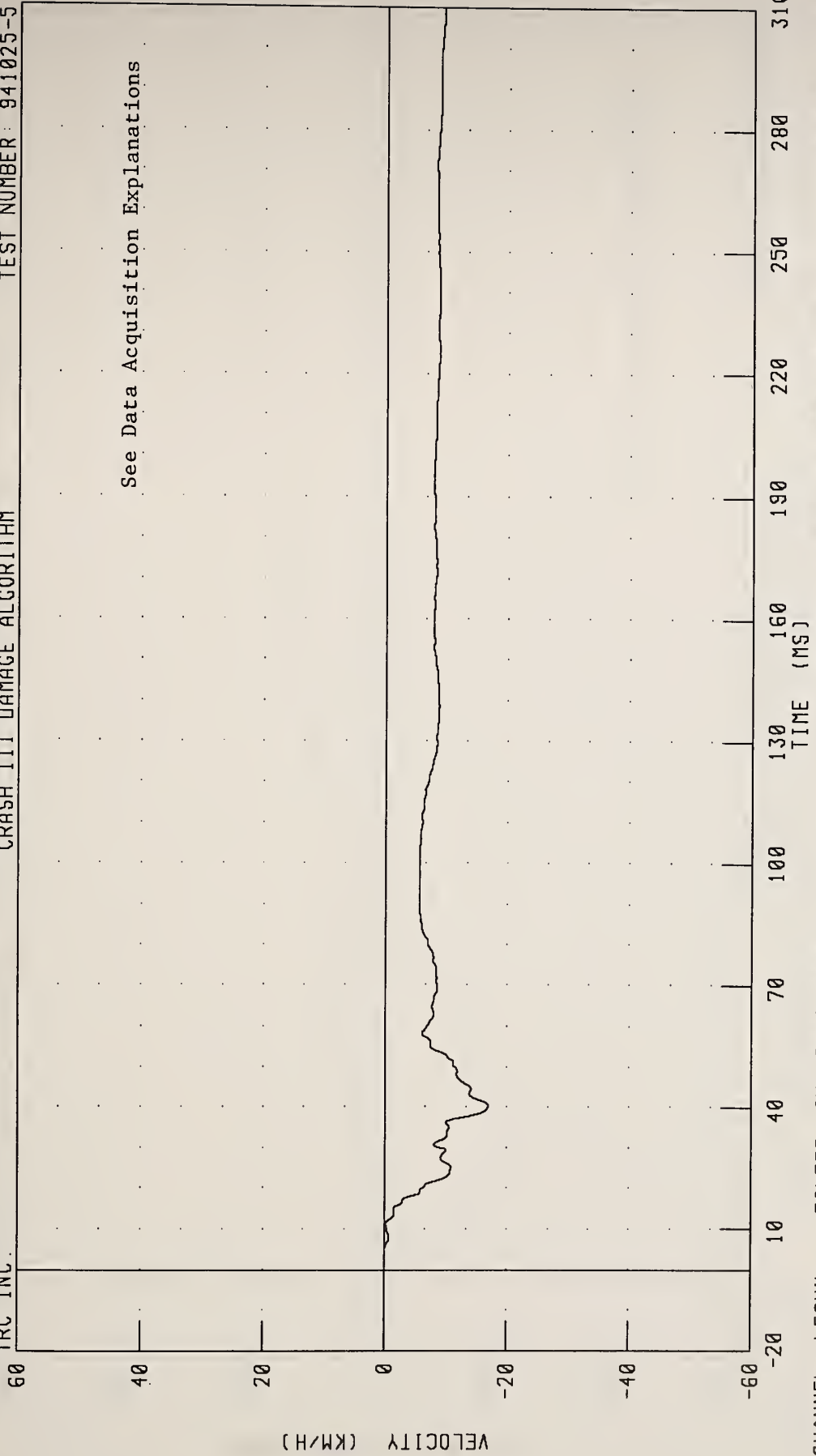
PEAK DATA: 26.23 G @ 53.68 MS; -45.72 G @ 37.68 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT FRONT SILL Y-AXIS VELOCITY

TEST NUMBER: 941025-5

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LFSYV FILTER: CH. CLASS 180

PEAK DATA: 0.00 KM/H @ 0.00 MS; -16.92 KM/H @ 40.32 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

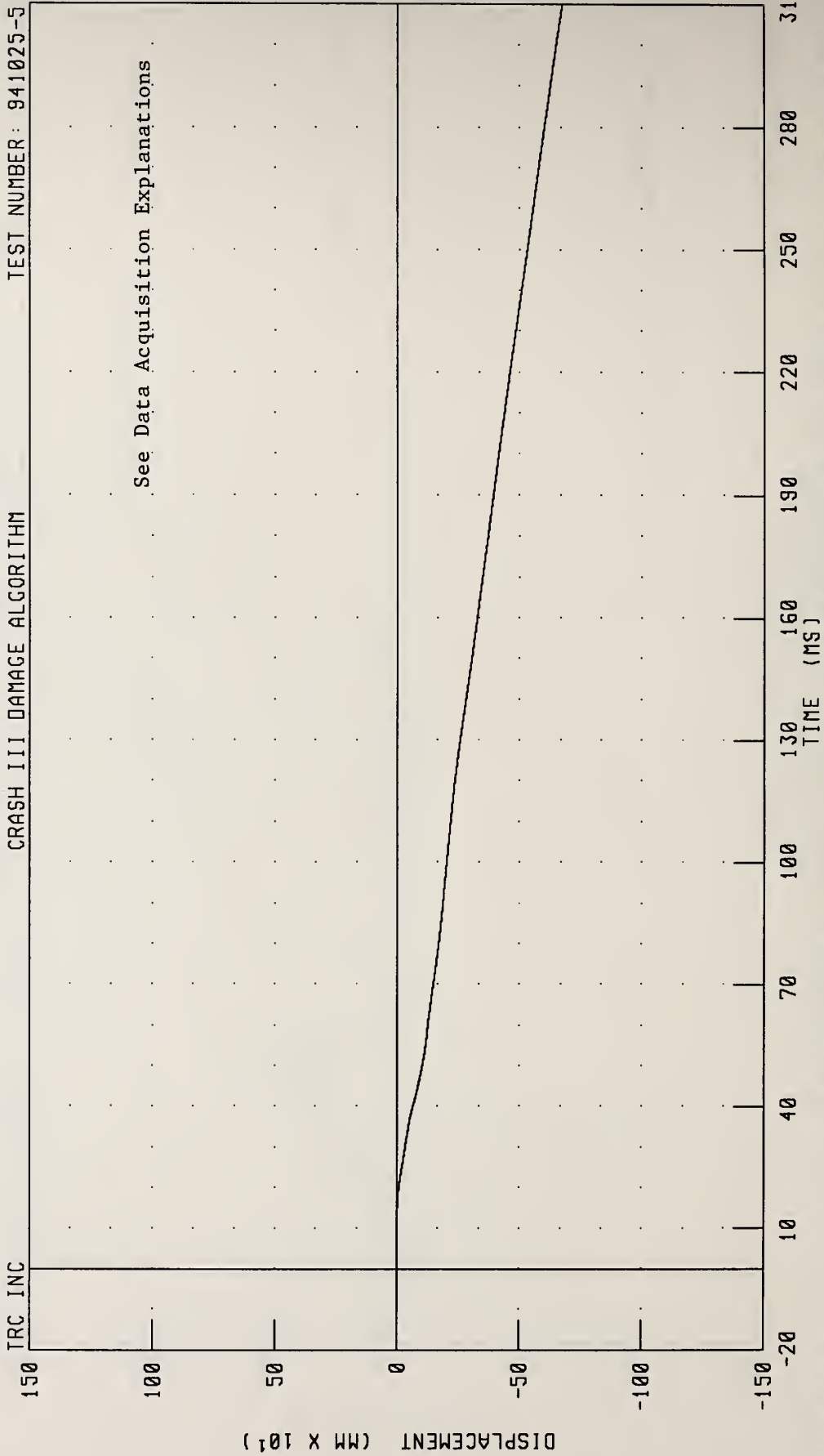
LEFT FRONT SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TRC INC

TEST NUMBER: 941025-5

See Data Acquisition Explanations

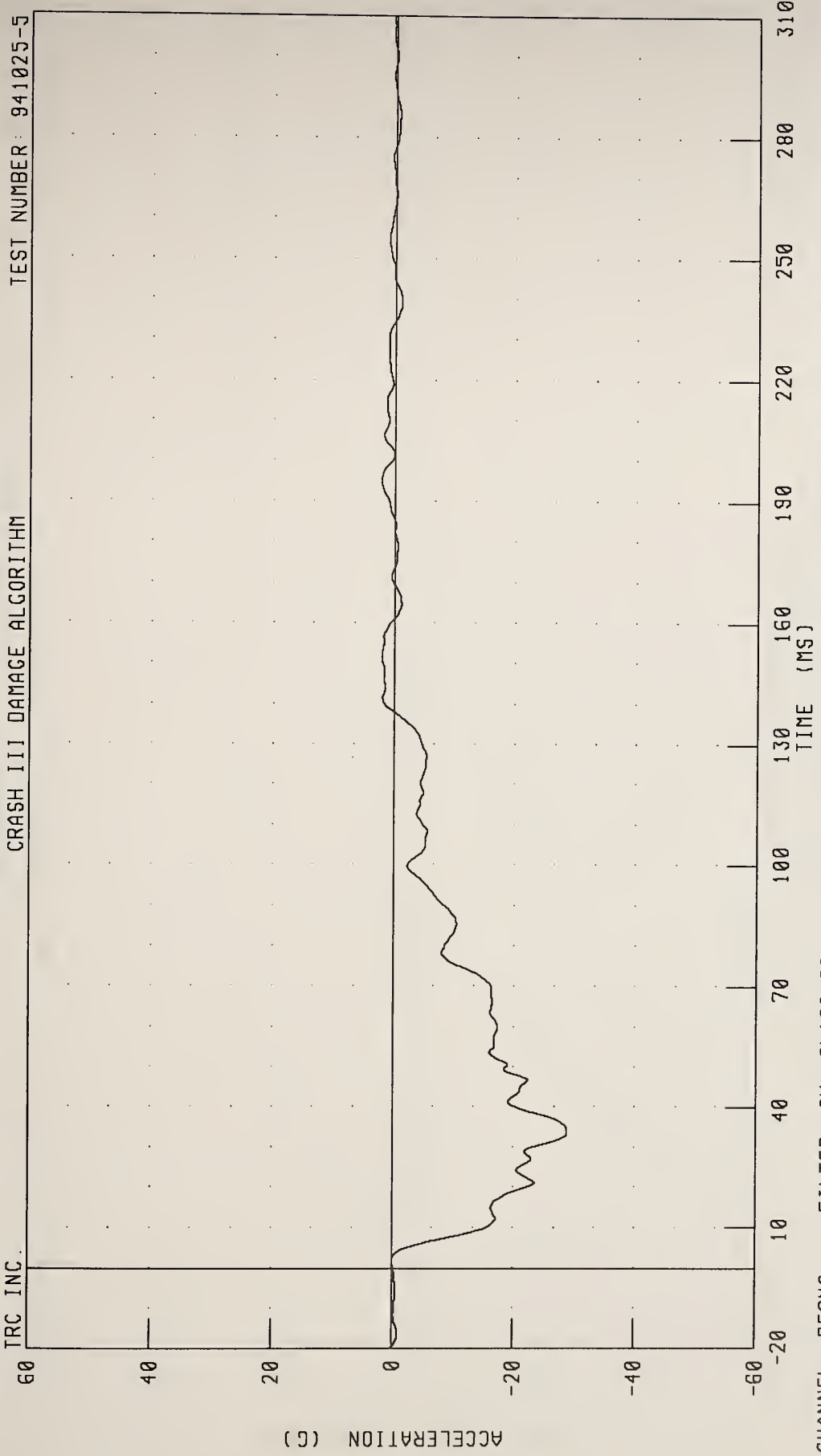


CHANNEL: LFSYD FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 0.00 MS; -674.71 MM @ 310.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
RIGHT FRONT SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5

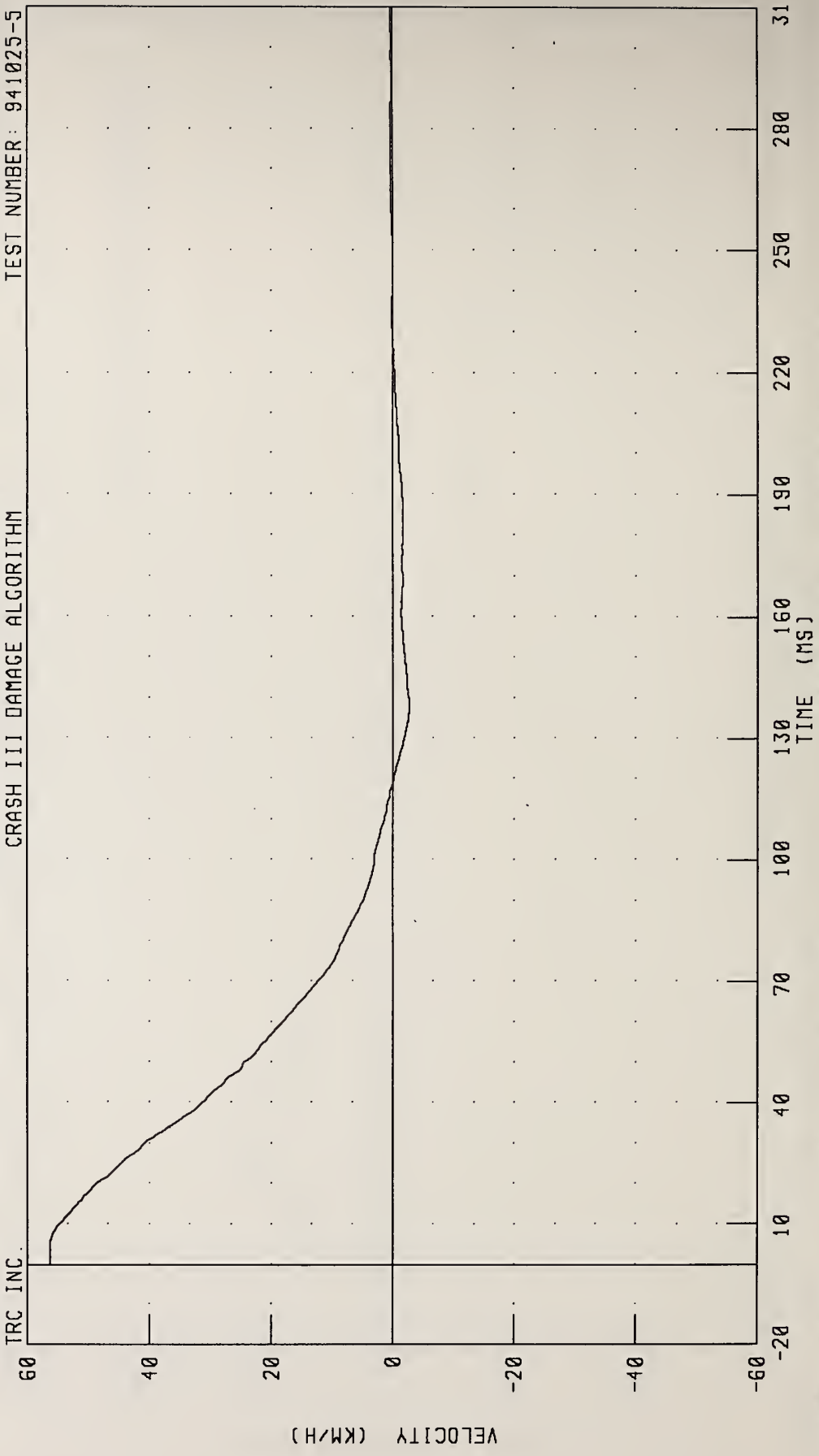


CHANNEL: RFSXG FILTER: CH. CLASS 60

PEAK DATA: 2.19 G @ 194.80 MS; -28.80 G @ 34.32 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
RIGHT FRONT SILL X-AXIS VELOCITY

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



CHANNEL: RFSXV FILTER: CH. CLASS 180

PEAK DATA: 56.30 KM/H @ 0.00 MS; -2.72 KM/H @ 138.48 MS

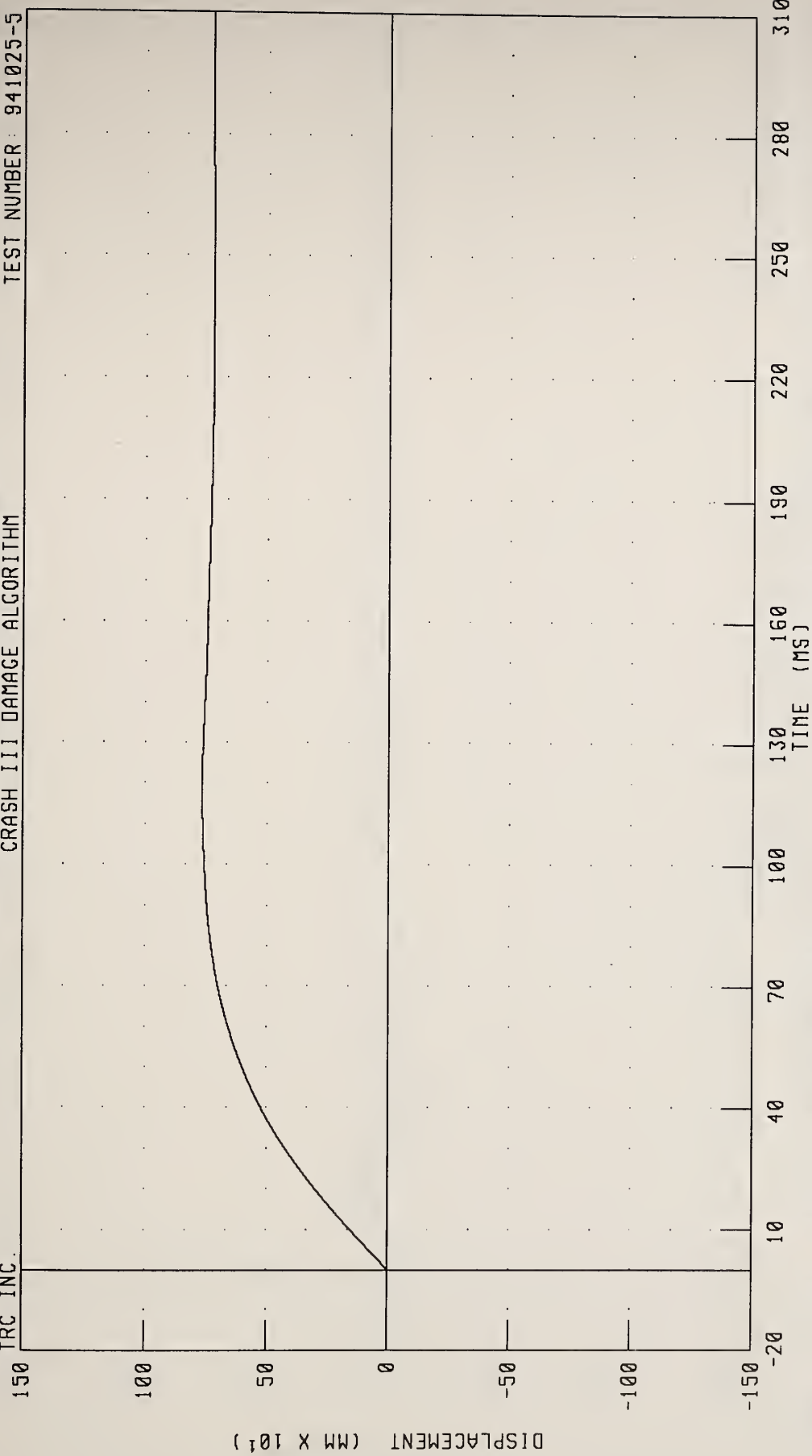
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

RIGHT FRONT SILL X-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

TRC INC.

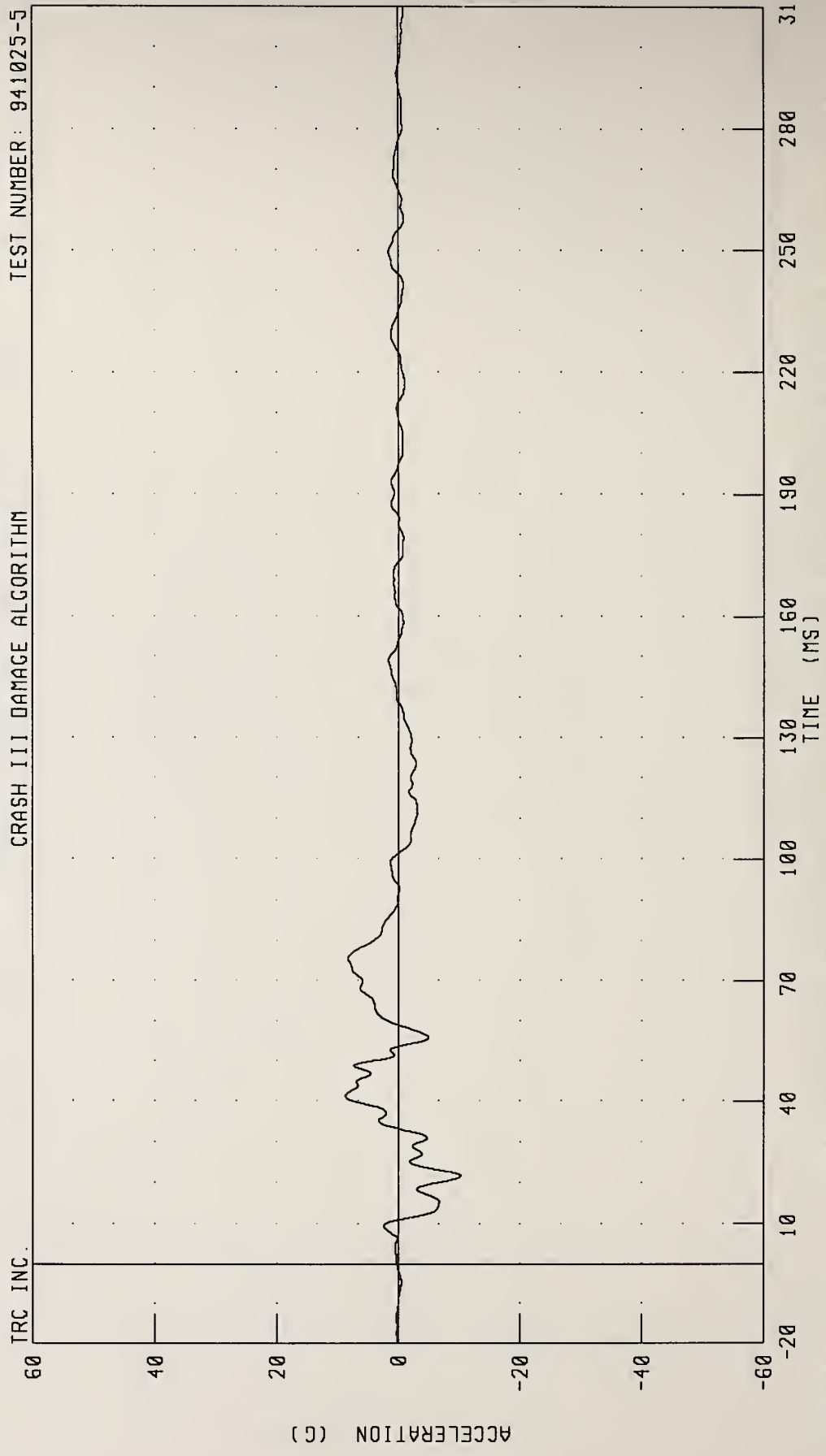


CHANNEL: RFSXD FILTER: CH. CLASS 180

PEAK DATA: 765.75 MM @ 118.96 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
RIGHT FRONT SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



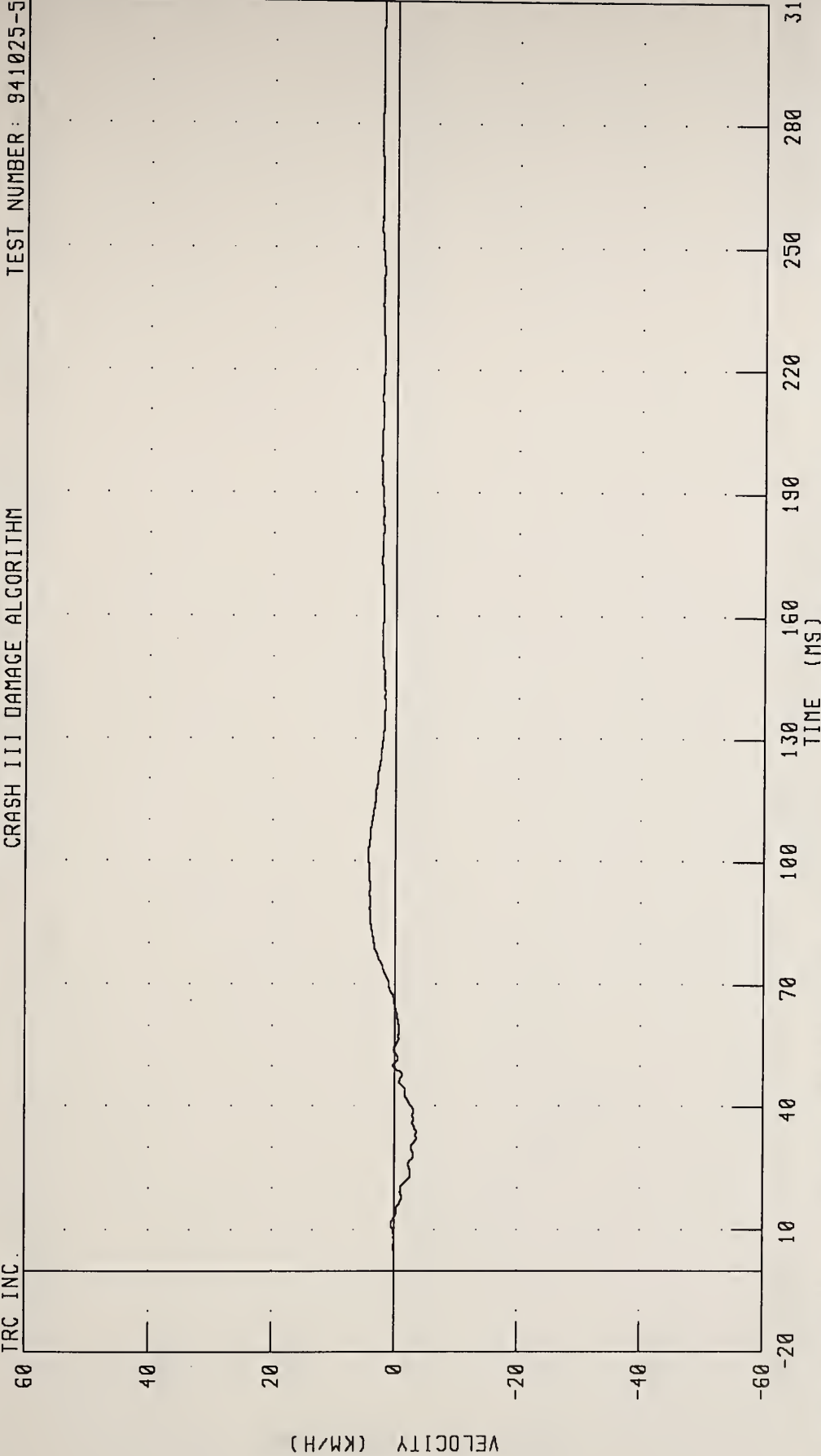
CHANNEL: RFSYG FILTER: CH. CLASS 60

PEAK DATA: 8.77 G @ 41.36 MS, -10.26 G @ 21.76 MS

TRC INC. 60

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
RIGHT FRONT SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER : 941025-5



TRC INC. CHANNEL : RFSYV FILTER : CH. CLASS 180

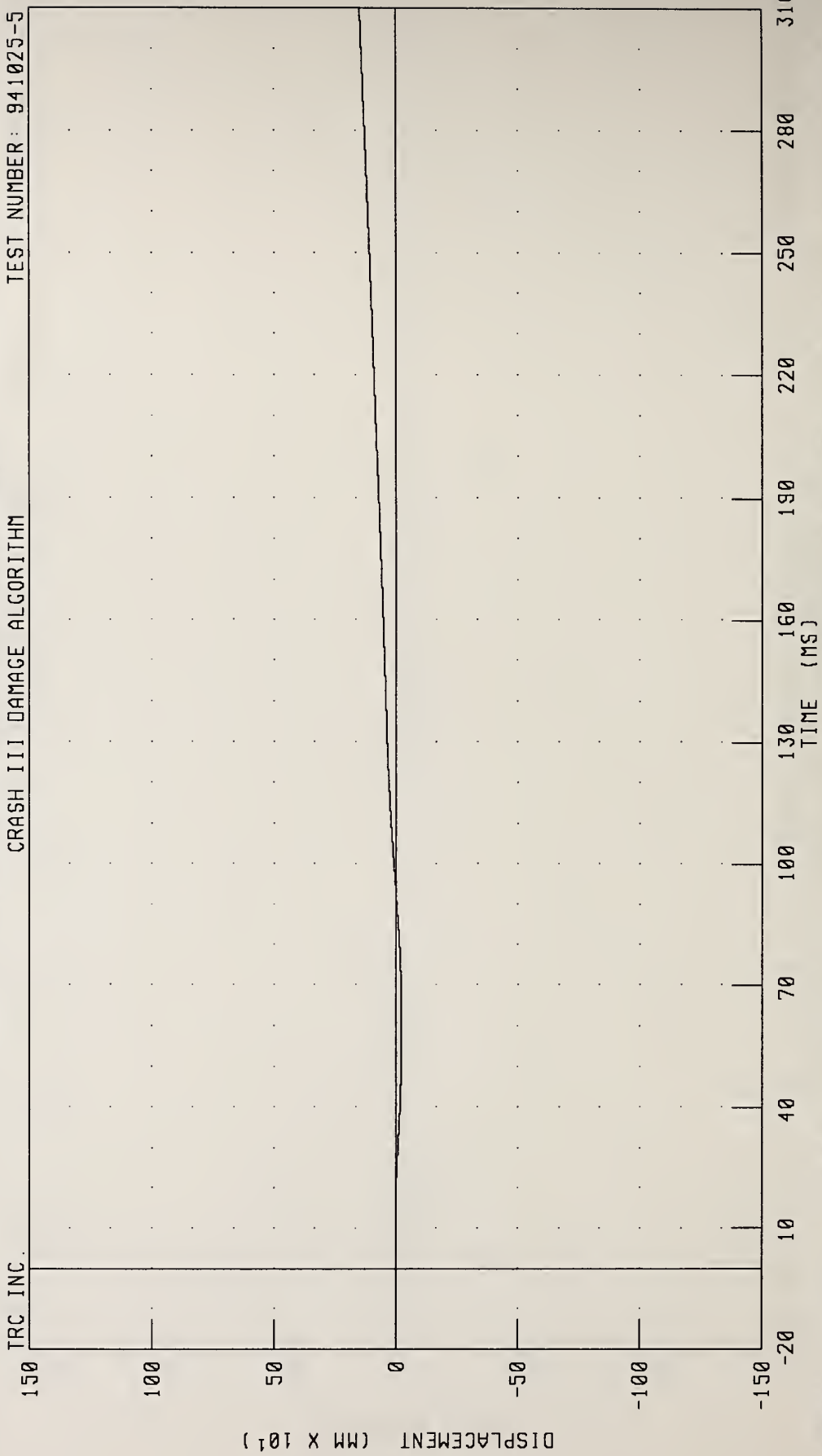
PEAK DATA : 4.42 KM/H @ 100.88 MS; -3.62 KM/H @ 32.32 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

RIGHT FRONT SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

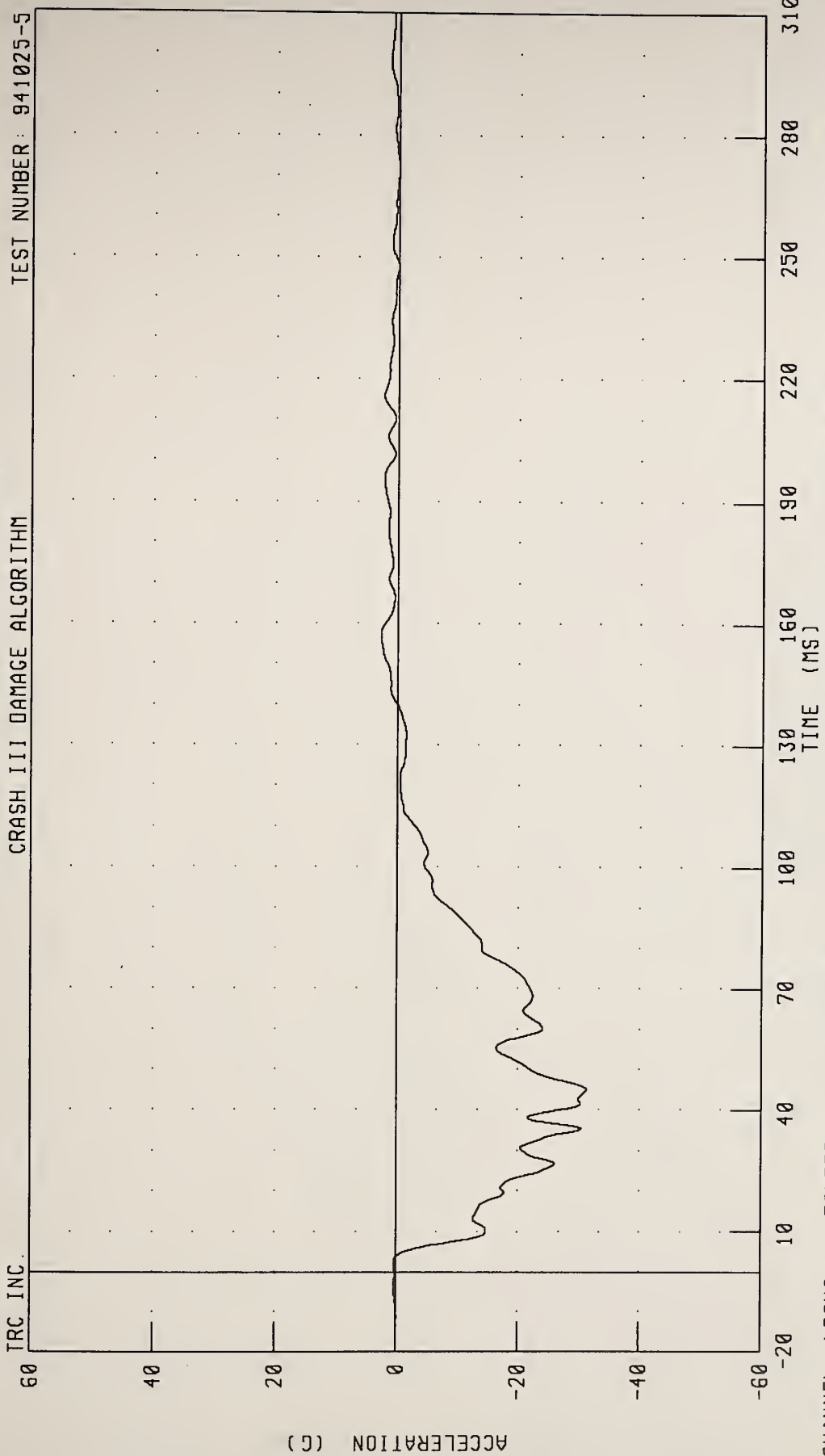


CHANNEL: RFSYD FILTER: CH. CLASS 180

PEAK DATA: 148.19 MM @ 310.00 MS; -20.92 MM @ 64.48 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT REAR SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



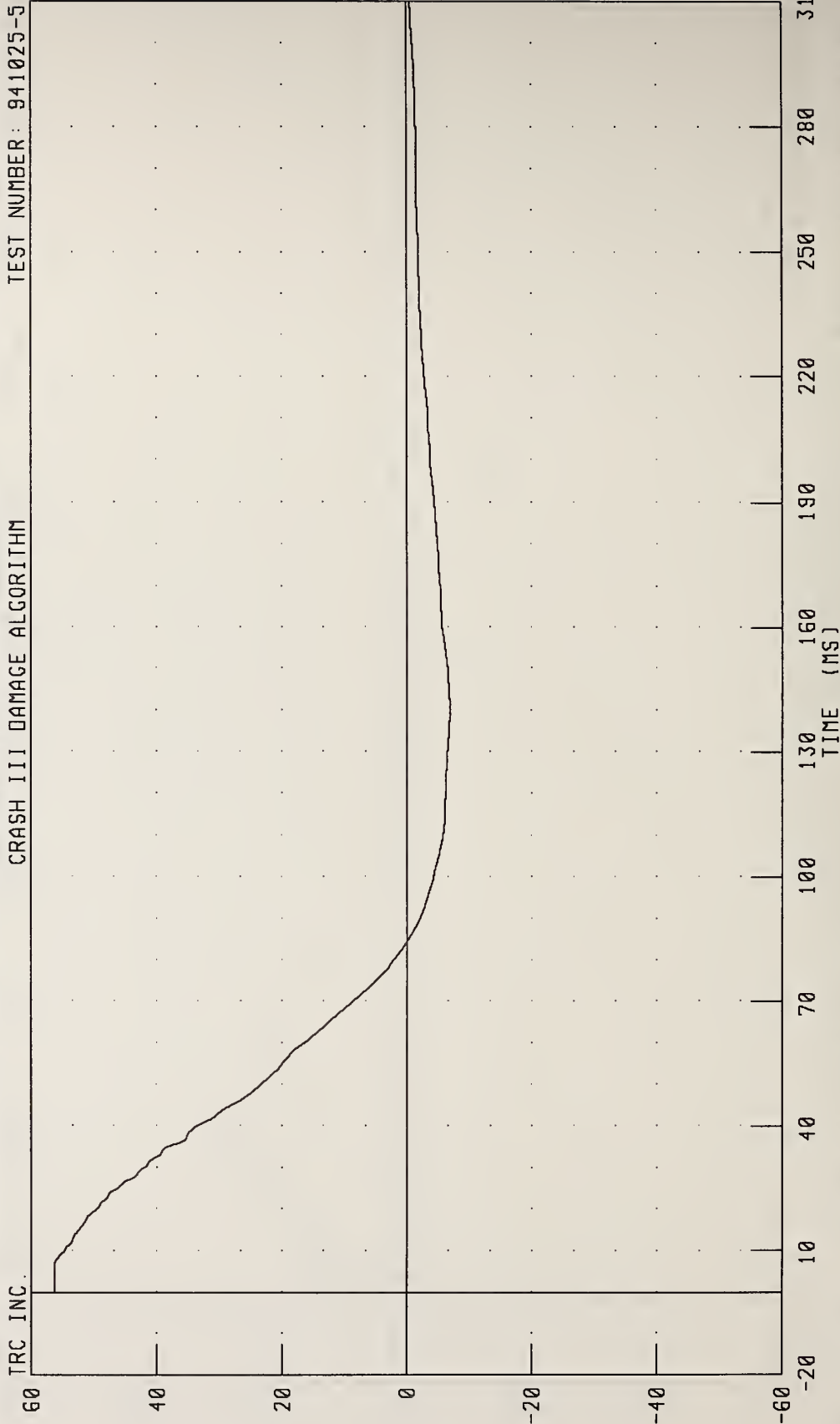
CHANNEL: LRSXG FILTER: CH. CLASS 60

PEAK DATA: 2.77 G @ 157.28 MS; -31.29 G @ 44.96 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

LEFT REAR SILL X-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



TRC INC.

VELOCITY (KM/H)

TIME (MS)

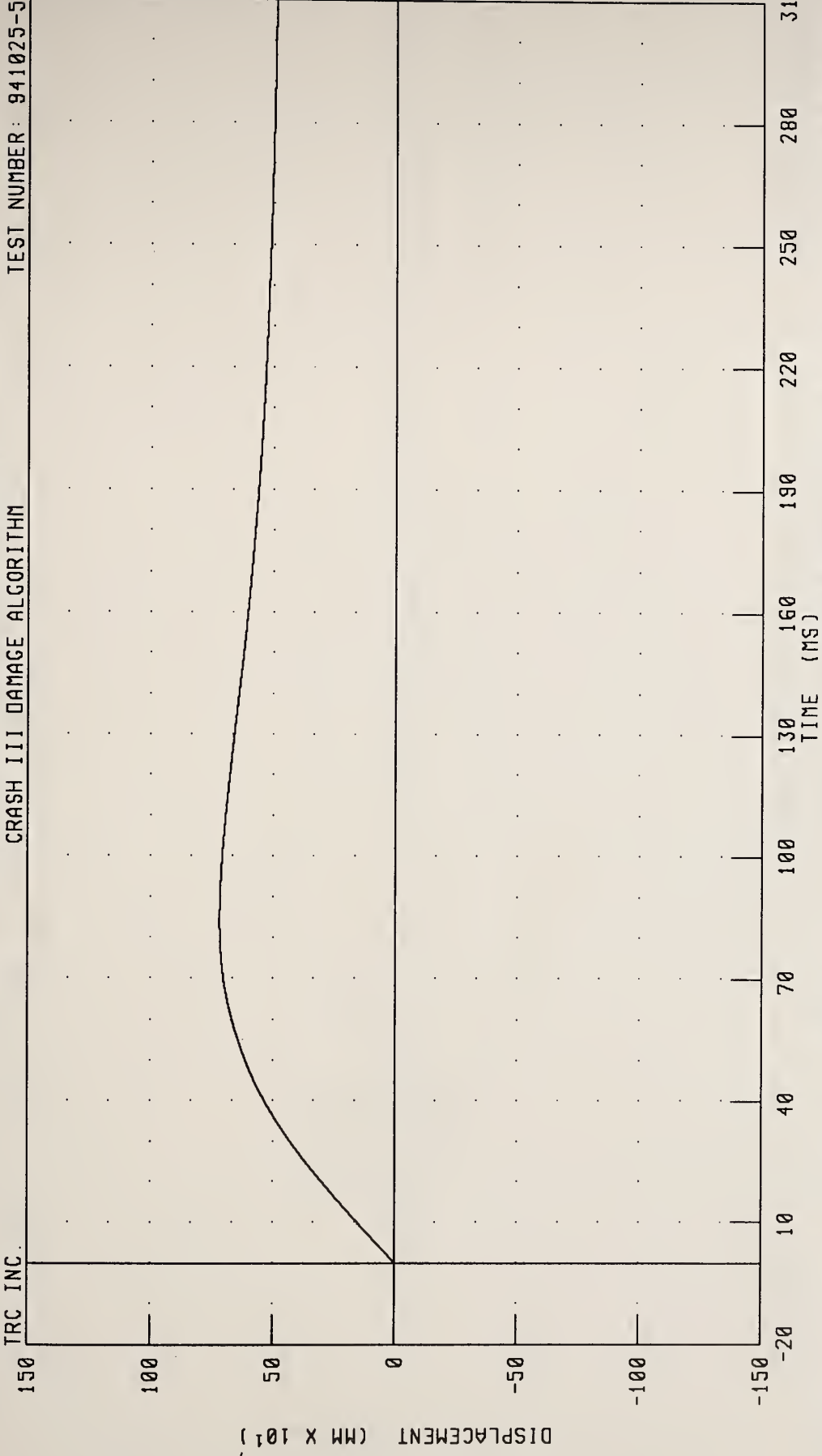
CHANNEL: LRSXY FILTER: CH. CLASS 180

PEAK DATA: 56.32 KM/H @ 1.76 MS; -6.90 KM/H @ 140.48 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT REAR SILL X-AXIS DISPLACEMENT

TRC INC. TEST NUMBER: 941025-5

CRASH III DAMAGE ALGORITHM

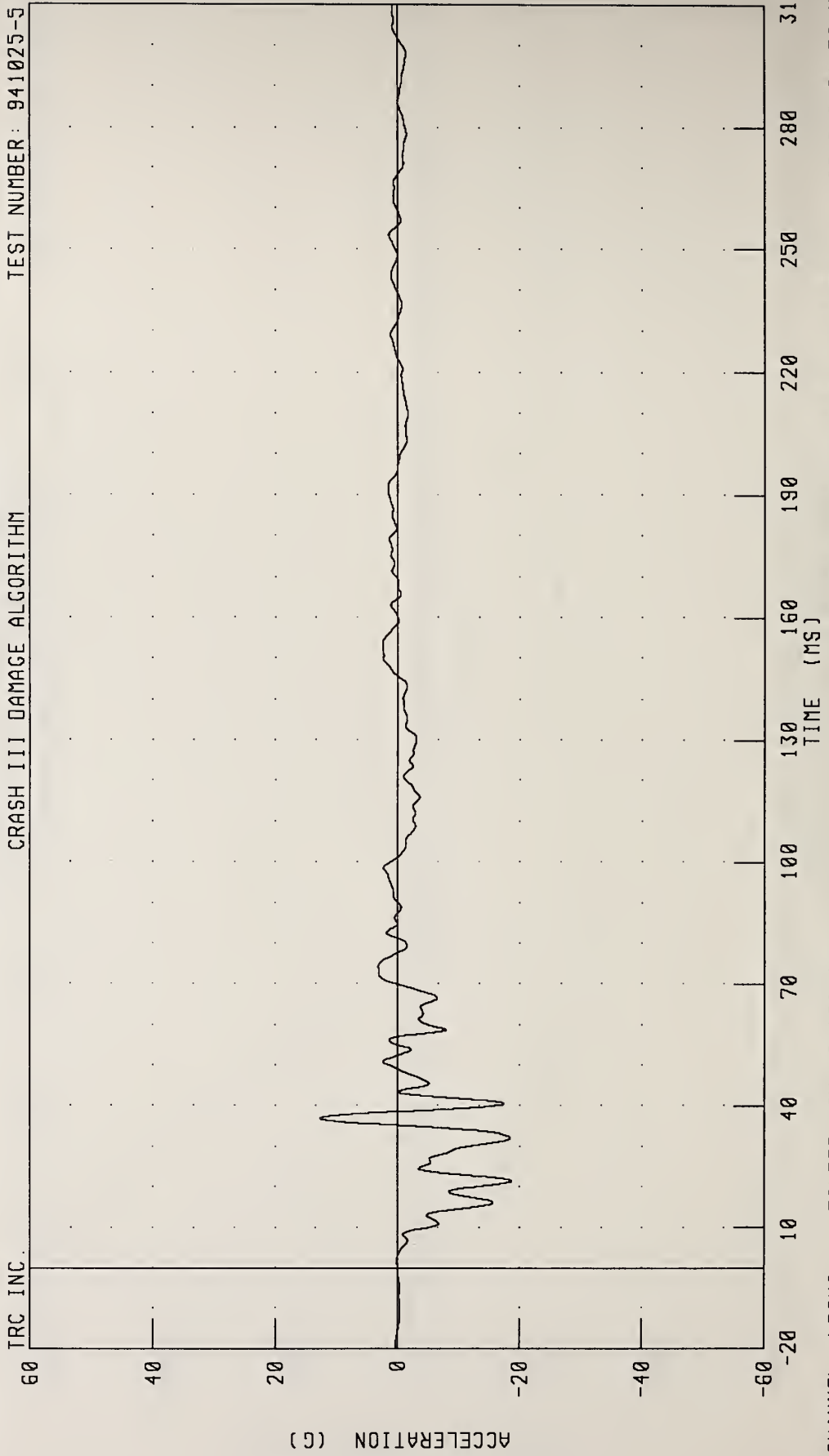


CHANNEL: LRSXD FILTER: CH. CLASS 180

PEAK DATA: 718.05 MM @ 84.48 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT REAR SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



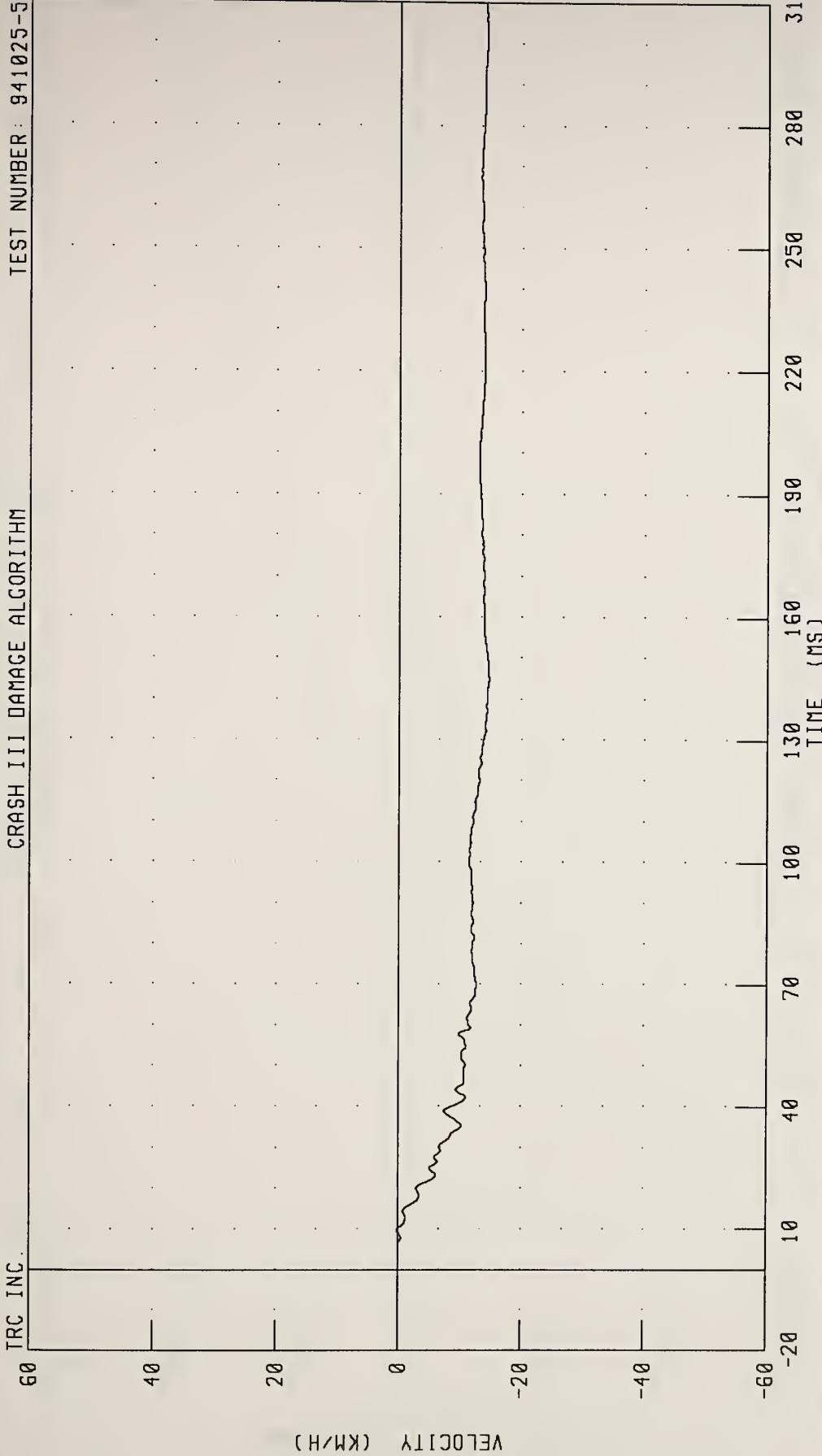
CHANNEL: LRSYG FILTER: CH. CLASS 60

PEAK DATA: 12.77 G @ 37.04 MS; -18.68 G @ 21.52 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

LEFT REAR SILL Y-AXIS VELOCITY

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



CHANNEL: LRSYV FILTER: CH. CLASS 180

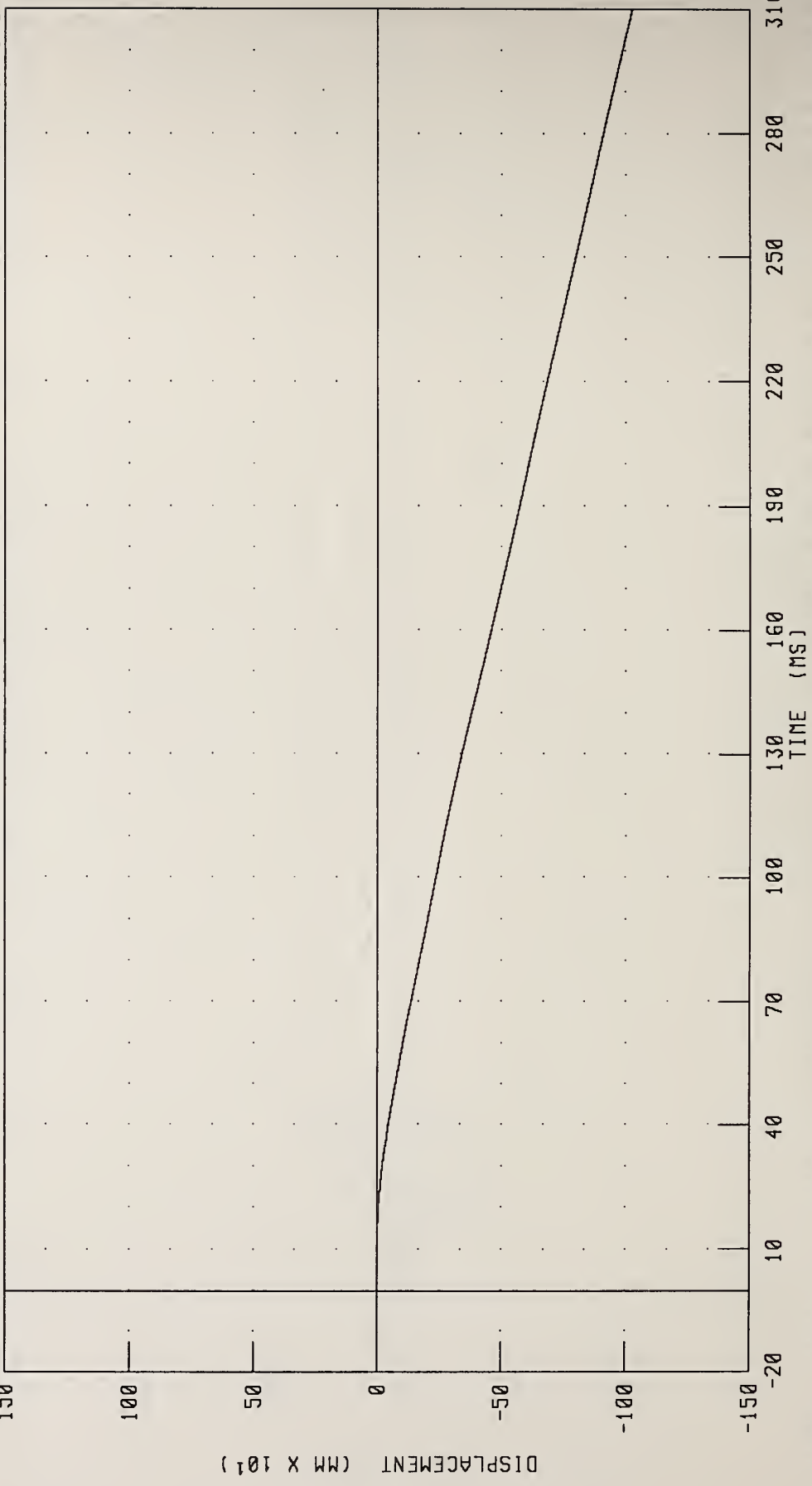
PEAK DATA: 0.21 KM/H @ 9.60 MS; -14.66 KM/H @ 144.88 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
LEFT REAR SILL Y-AXIS DISPLACEMENT

TEST NUMBER: 941025-5

CRASH III DAMAGE ALGORITHM

TRC INC.



CHANNEL: LRSYD FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 0.00 MS; -1027.21 MM @ 310.00 MS

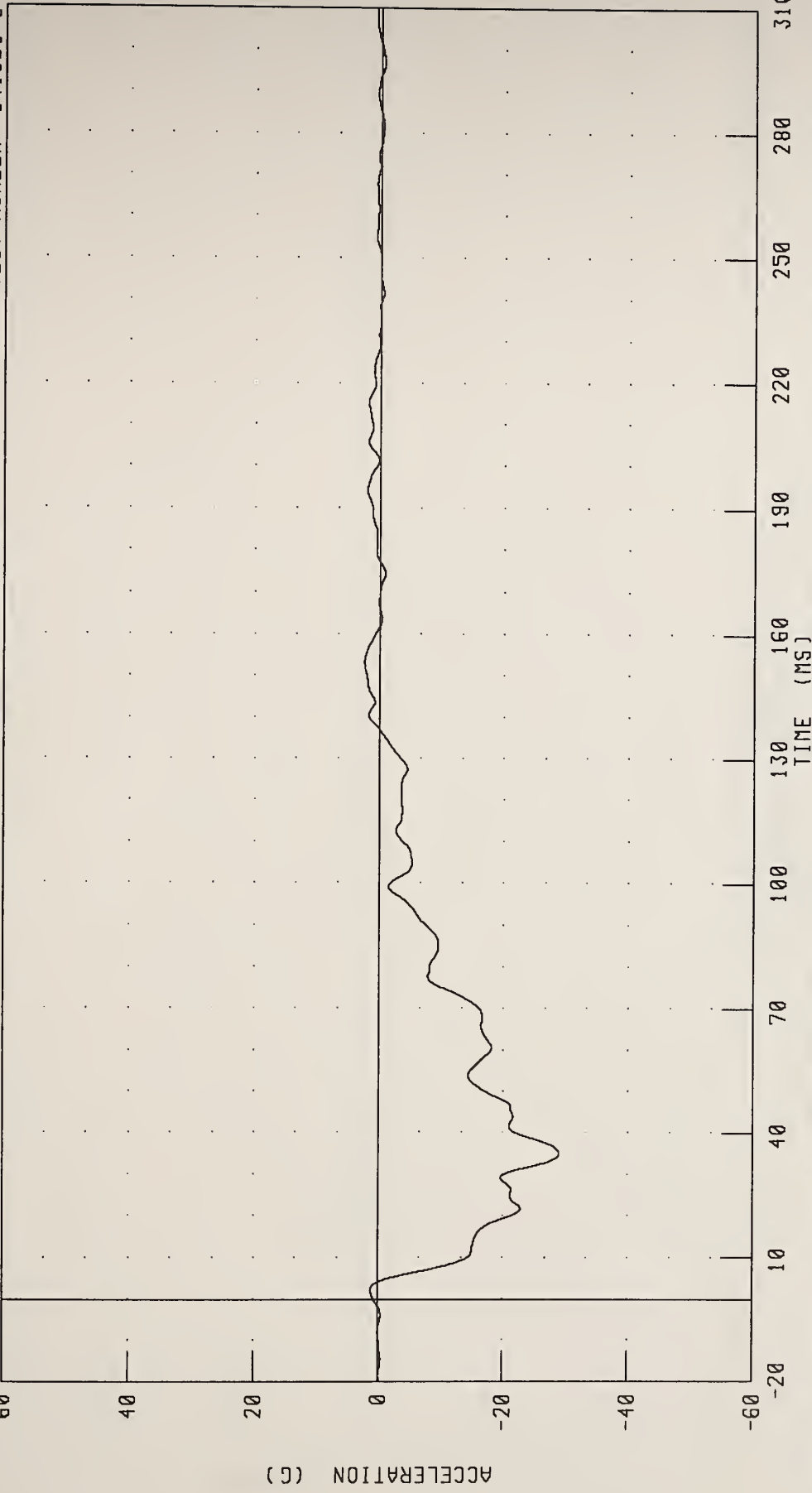
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

RIGHT REAR SILL X-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

TRC INC.



CHANNEL: RRSXG FILTER: CH. CLASS 60

PEAK DATA: 2.48 G @ 153.28 MS; -28.97 G @ 35.20 MS

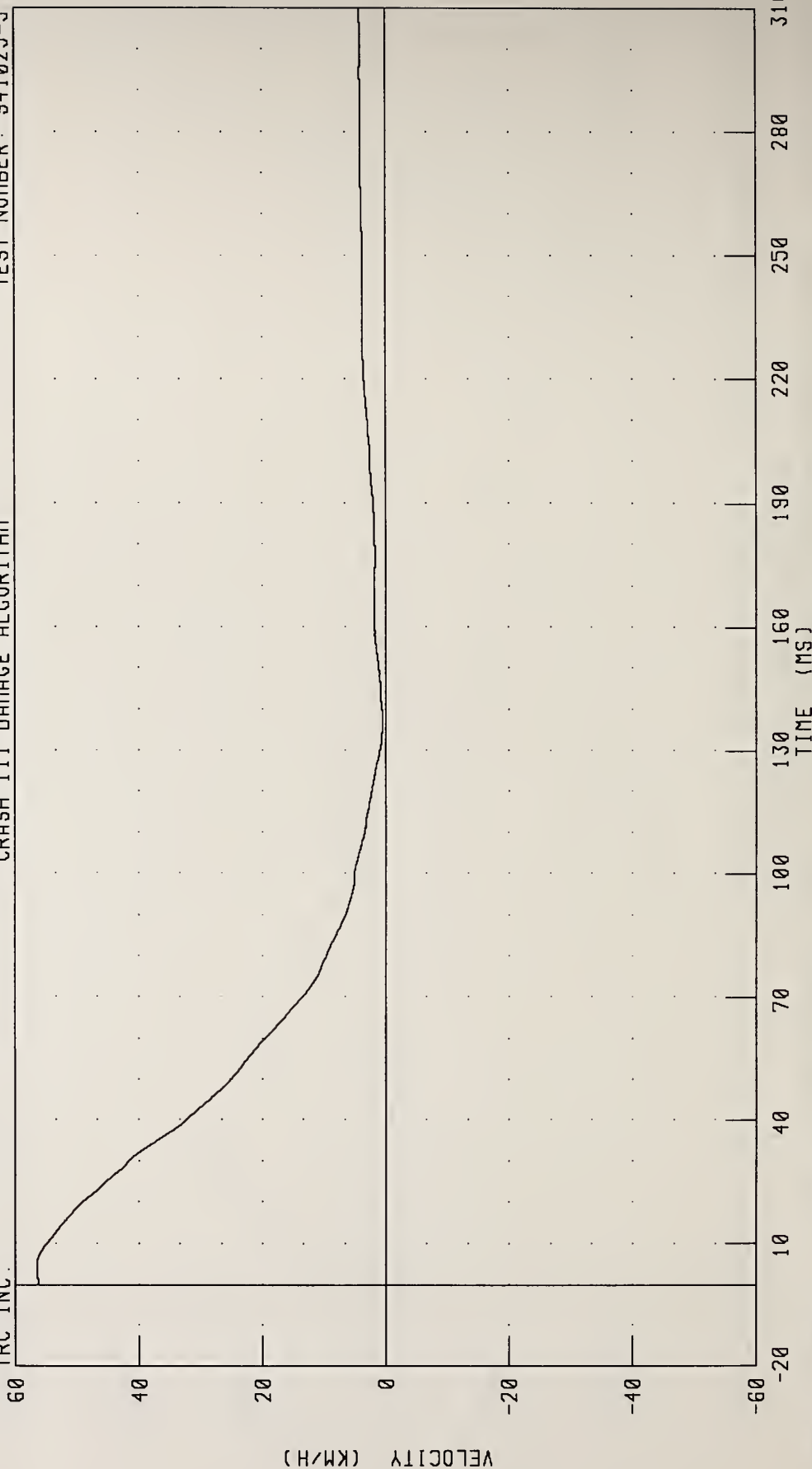
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

RIGHT REAR SILL X-AXIS VELOCITY

TEST NUMBER: 941025-5

CRASH III DAMAGE ALGORITHM

TRC INC.

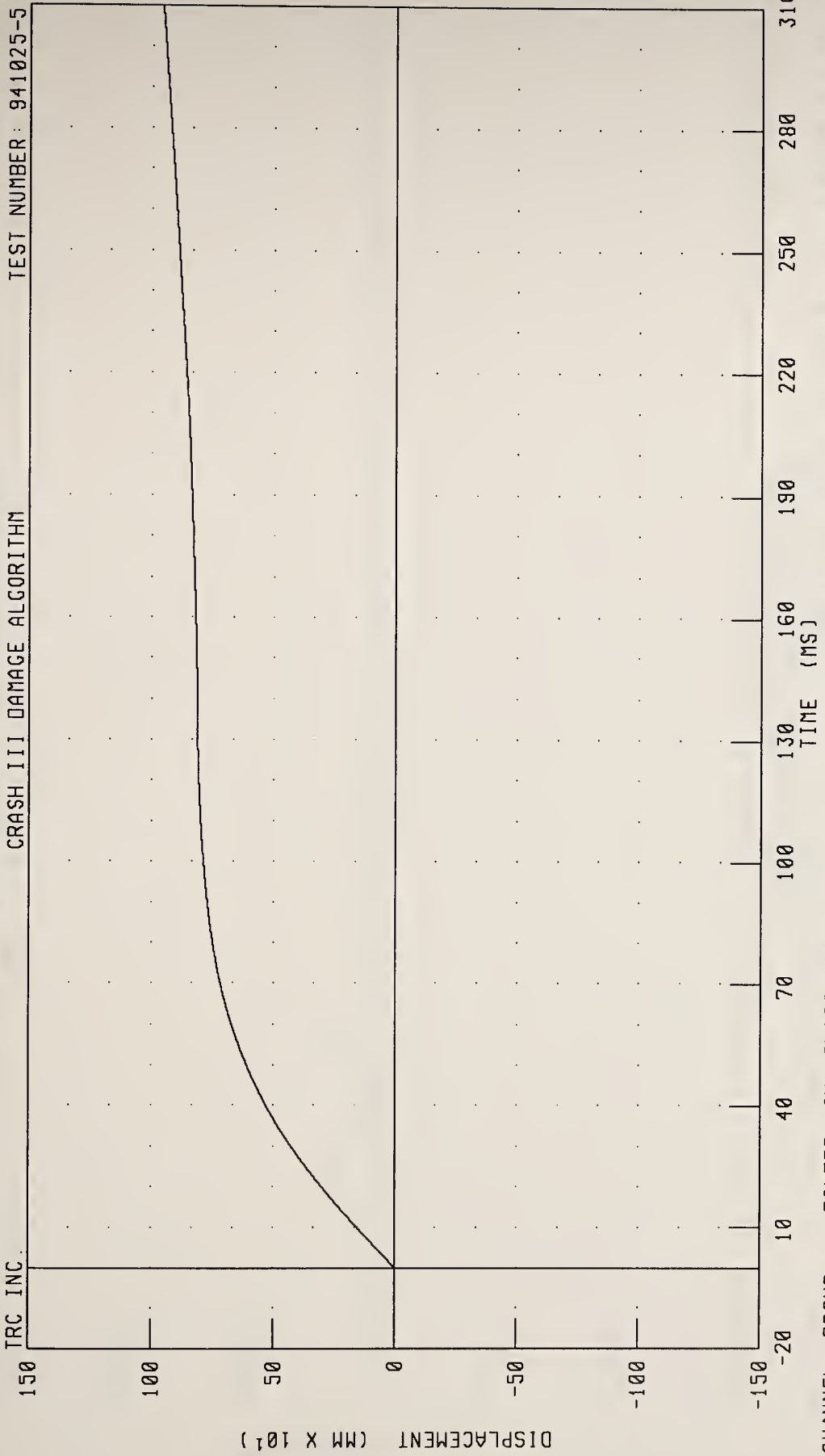


CHANNEL: RRSXV FILTER: CH. CLASS 180

PEAK DATA: 56.44 KM/H @ 5.20 MS; 0.54 KM/H @ 138.32 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
RIGHT REAR SILL X-AXIS DISPLACEMENT

TRC INC. CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5

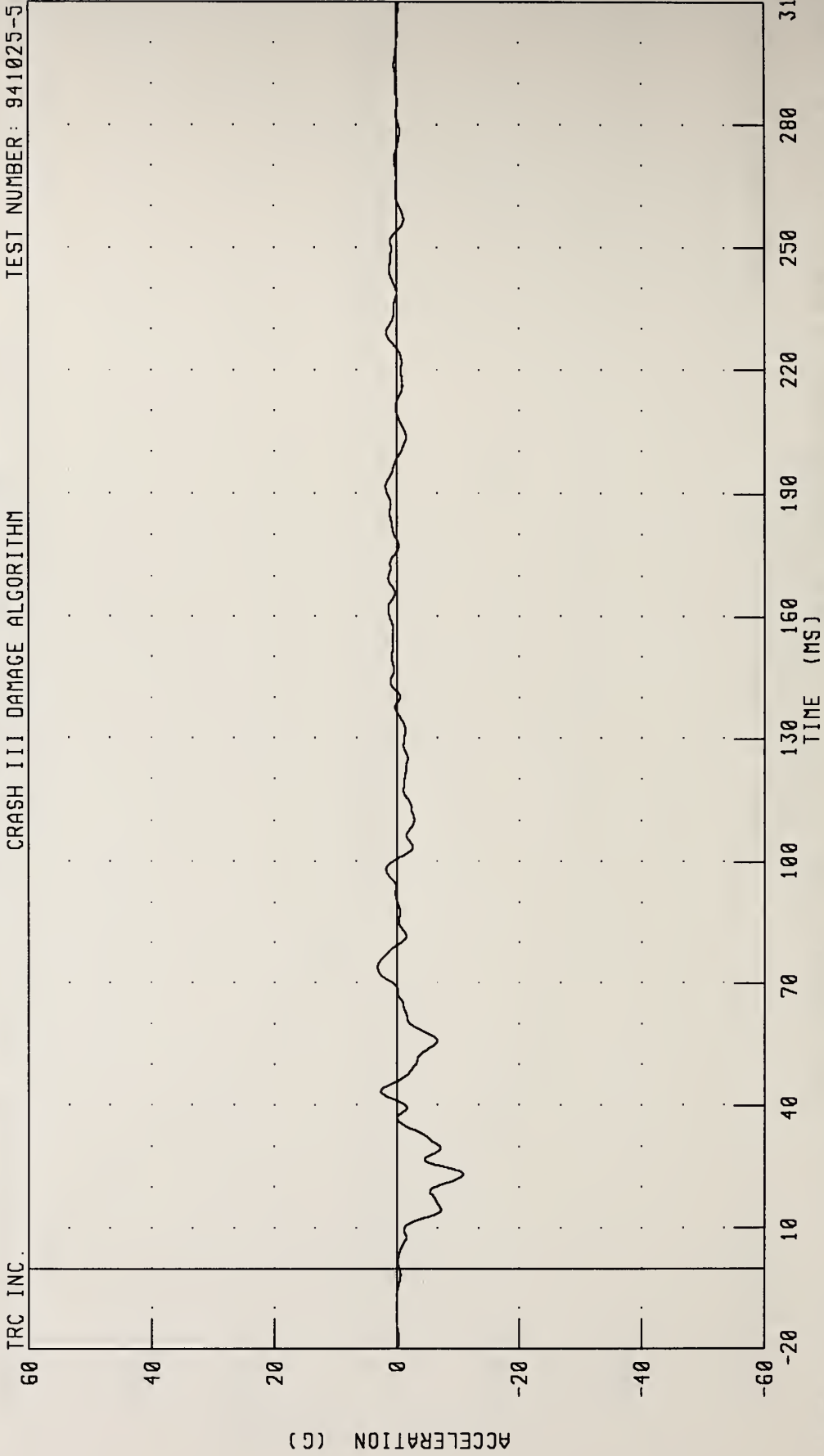


CHANNEL: RRSXD FILTER: CH. CLASS 180

PEAK DATA: 957.10 MM @ 310.00 MS; 0.00 MM @ 0.00 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5
RIGHT REAR SILL Y-AXIS ACCELERATION

CRASH III DAMAGE ALGORITHM TEST NUMBER: 941025-5



CHANNEL: RRSYG FILTER: CH. CLASS 60

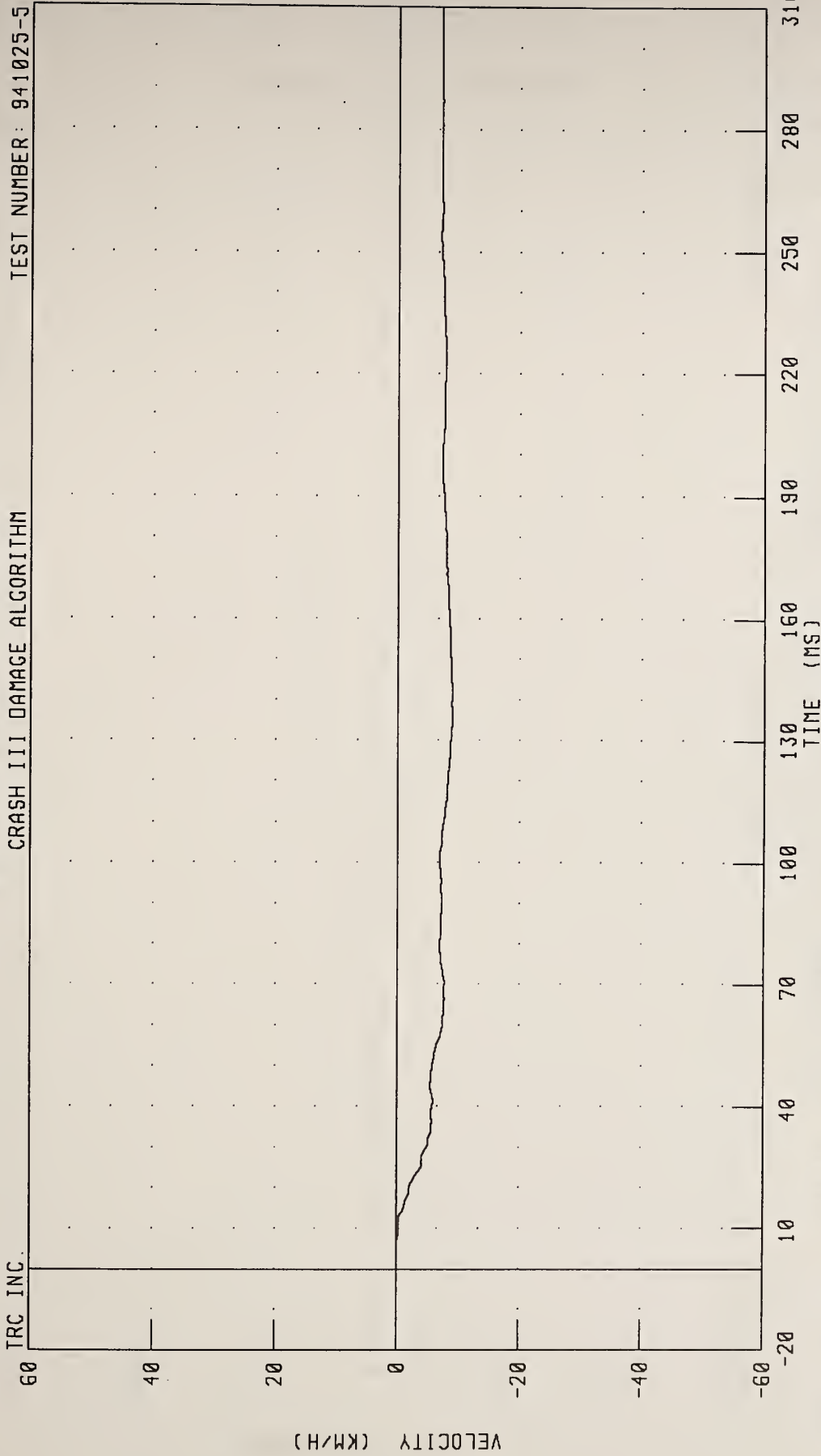
PEAK DATA: 3.16 G @ 73.92 MS; -10.85 G @ 23.20 MS

1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

RIGHT REAR SILL Y-AXIS VELOCITY

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5



CHANNEL: RRSYV FILTER: CH. CLASS 180

PEAK DATA: 0.02 KM/H @ 1.60 MS; -9.01 KM/H @ 141.60 MS

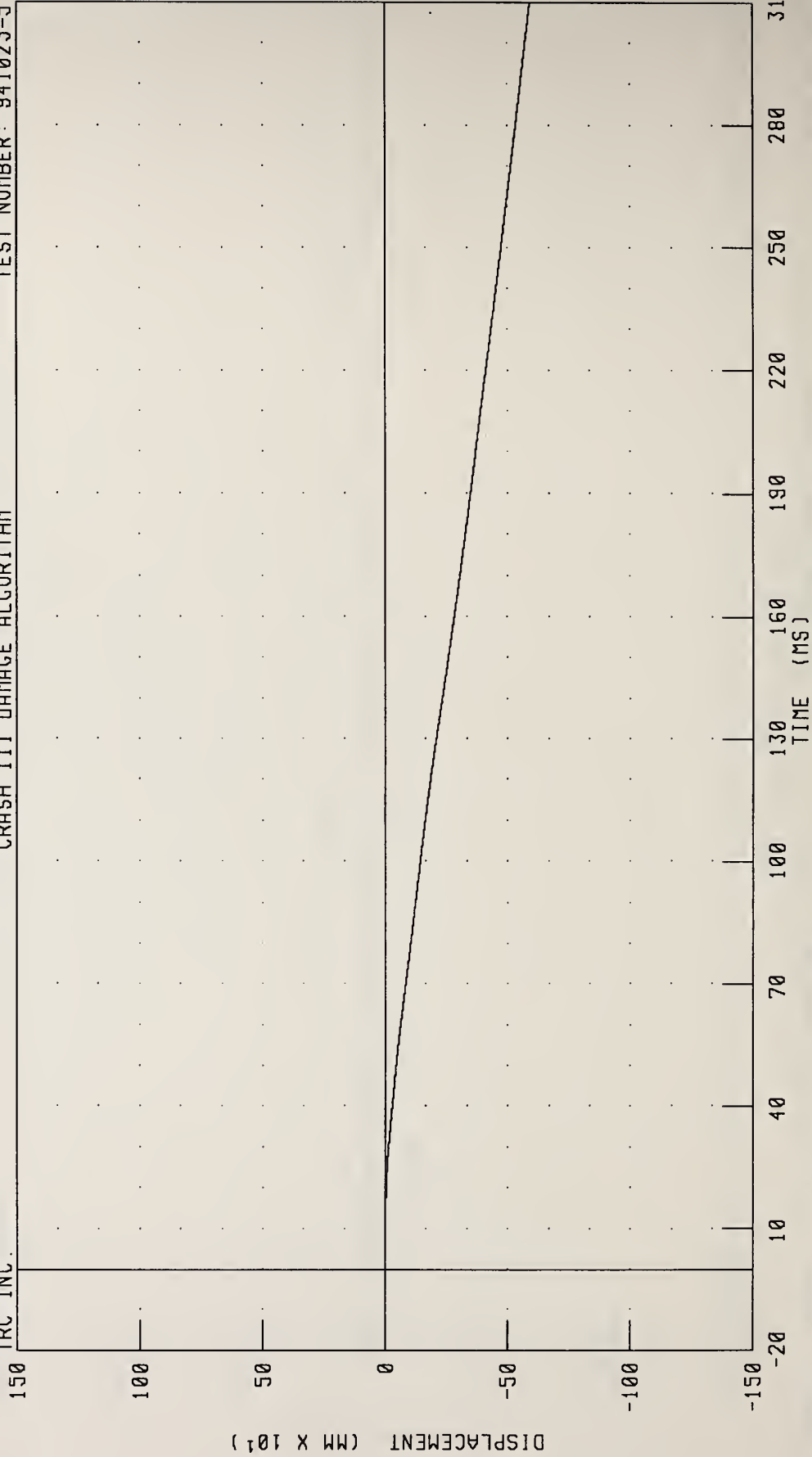
1992 PLYMOUTH VOYAGER INTO 50% LEFT OFFSET BARRIER IMPACT 5 OF 5

RIGHT REAR SILL Y-AXIS DISPLACEMENT

CRASH III DAMAGE ALGORITHM

TEST NUMBER: 941025-5

TRC INC.



CHANNEL: RRSYD FILTER: CH. CLASS 180

PEAK DATA: 0.01 MM @ 2.72 MS; -592.16 MM @ 310.00 MS

Appendix C

Miscellaneous Test Information

Vehicle Accelerometer Information

| No. | Location | Axis | Manufacturer | Model | Serial Number | Orientation (+ Sensing) |
|-----|---------------------------|------|--------------|-------|---------------|-------------------------|
| 1 | Vehicle center of gravity | X | Endevco | 7264 | DR49J7 | Rear |
| | | Y | Endevco | 7264 | DW34JC | Left |
| | | Z | Endevco | 7264 | AGRF4 | Up |
| 2 | Left front sill | X | Endevco | 7264 | AGRG7 | Front |
| | | Y | Endevco | 7264 | CR59H | Right |
| 3 | Right front sill | X | Endevco | 7264 | CR26H | Rear |
| | | Y | Endevco | 7264 | DY61J | Left |
| 4 | Left rear sill | X | Endevco | 7264 | CP90H | Rear |
| | | Y | Endevco | 7264 | CM27H | Left |
| 5 | Right rear sill | X | Endevco | 7264 | AC861 | Front |
| | | Y | Endevco | 7264 | ACCJ0 | Right |

Sign Convention

All Dummy, Barrier And Vehicle Channels:

+X: Forward

+Y: Leftward

+Z: Upward

+Force: Tension

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