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DATA DOCUMENTATION FOR
VEHICLE HANDLING

Final Report

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DATA DOCUMENTATION FOR VEHICLE HANDLING

1. INTRODUCTION

During the course of two vehicle handling studies by HSRI [1, 2], a large bank of vehicle response data was generated and stored on digital magnetic tapes. However, the coding and format of that data was inconvenient for most users. As a result, the present effort, 'Data Documentation for Vehicle Handling,' was initiated in order to condense, edit, and re-format the data for purposes of user convenience. The end result was sixteen magnetic tapes containing more than 3000 vehicle test responses.

2. VEHICLE MANEUVERS

Six different vehicle handling test procedures (VHTP) were performed in the Vehicle Handling Performance (VHP) program. The first three (VHTP #1 to VHTP #3) utilized a human driver and are hence referred to as the driver series tests. The last three (VHTP #4 to VHTP #6) utilized an automatic controller for steering and braking and are referred to as the automatic series tests. Each of the test procedures will be described briefly below, however, Ervin [1] should be consulted for a more detailed explanation.

VHTP #1: Straight Line Braking

Initial Conditions: $V_o = 40$ mph
 $\delta_{sw} = 0$ degrees

The vehicle is allowed to coast down to its initial velocity of 40 mph at which time the driver depresses the brake pedal to its physical limit and holds the steering wheel fixed. All brake lines are controlled by one pressure limiter assembly.

VHTP #2: Braking In A Turn

Initial Conditions: $V_o = 40$ mph
 $\delta_{sw} =$ angle required for initial lateral acceleration of 0.3g at 40 mph determined from trial tests.

The initial 0.3g turn is entered by the driver rapidly applying the steering wheel to the limit stop. As the vehicle

coasts through the 40 mph initial velocity, while in the turn, the brake pedal is depressed to its physical stop. All brake lines are controlled by one pressure limiter assembly.

VHTP #3: Turning on a Rough Road

Initial Conditions: $V_0 = 30$ mph

$\delta_{sw} =$ angle required for an initial
0.4g turn at 30 mph determined
from trial tests.

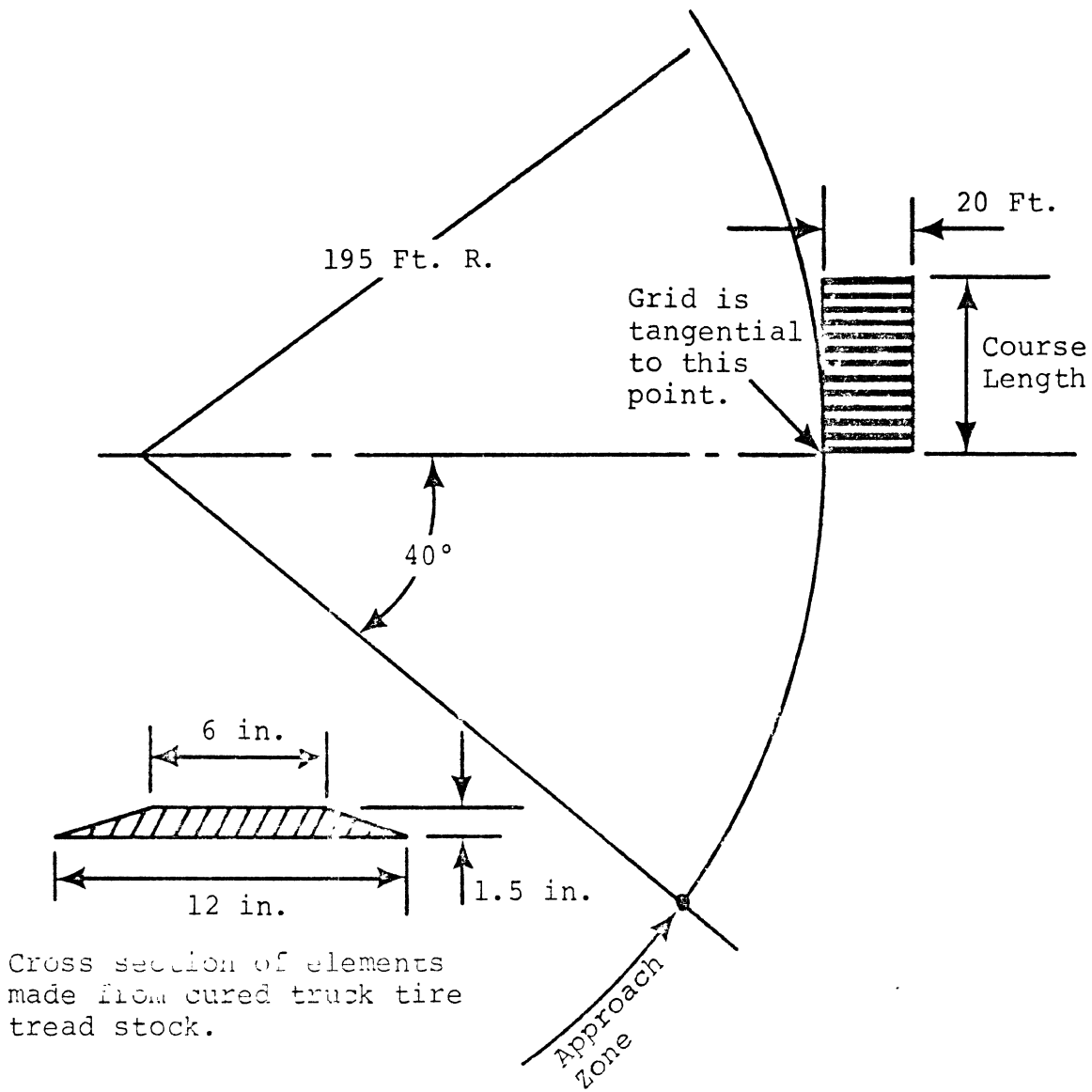
The vehicle approaches the test area at the initial velocity and the steering input is rapidly applied to the limit stop timed to aim the vehicle at the center of the disturbance grid. See Figure 1. Three different disturbance grids of 9, 11, and 14 Hz were used in this test. Grids #1, #2, and #3 correspond to the three fundamental frequencies 9, 11, and 14 Hz, respectively. The fifth wheel lifts just prior to contact with the disturbance grid.

VHTP #4: Trapezoidal Steer

Initial Conditions: $V_0 = 40$ mph

$\delta_{sw} = 0$ degrees

The vehicle coasts down through its initial velocity of 40 mph at which time the steering function generator is triggered and a trapezoidal steer input is applied. See Figure 2.



Fundamental Frequency	9 Hz	11 Hz	14 Hz
Center Spacing - Feet	4.8	4.0	3.14
Course Length -- Feet	38.4	40	40.8

Figure 1
Road Disturbance Course Layout

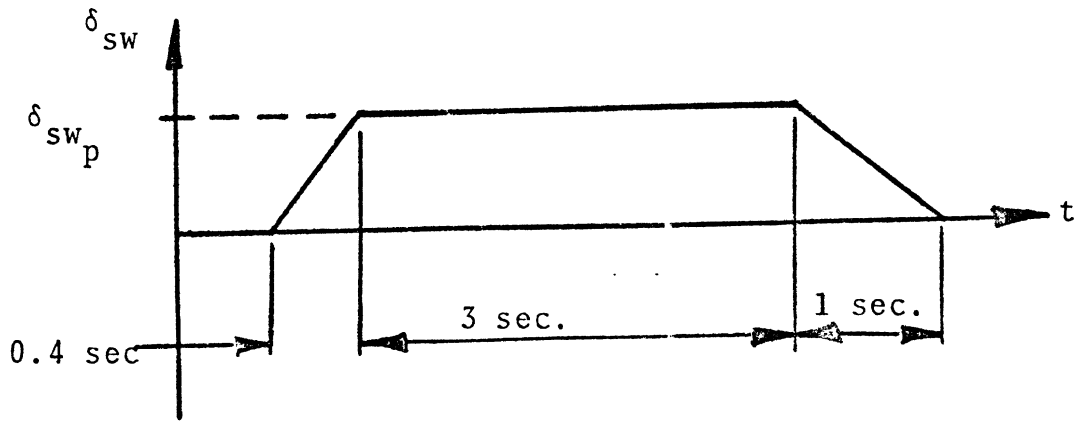


Figure 2.

VHTP #5: Sinusoidal Steer

Initial Conditions: $V_o = 45$ mph

and $V_o = 60$ mph

$\delta_{sw} = 0$ degrees

The vehicle coasts down through its initial velocity (45 or 60 mph) at which time the steering function generator applies a sinusoidal steering input as shown in Figure 3.

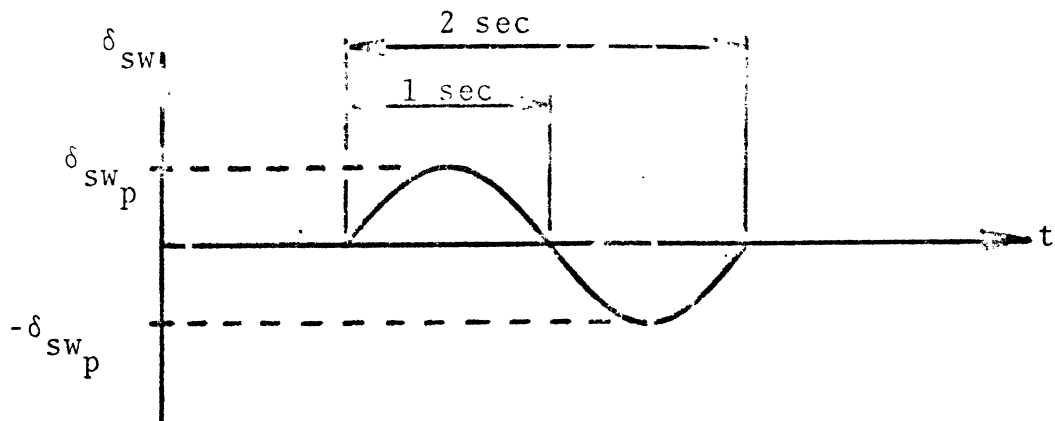


Figure 3.

VHTP #6: Drastic Brake-Steer

Initial Conditions: $V_o = 50$ mph

and $V_o = 60$ mph

$\delta_{sw} = 0$ degrees

The vehicle coasts down through the initial velocity (50 or 60 mph) at which time the function generator applies a half sine wave steering input (time $t = 0$). The function generator is also programmed to apply sufficient brake line pressure to lock all four wheels at time t_5 , and then release the pressure at time t_6 . The pressure application time, t_5 , and release time, t_6 , are tuned to the vehicle response. See

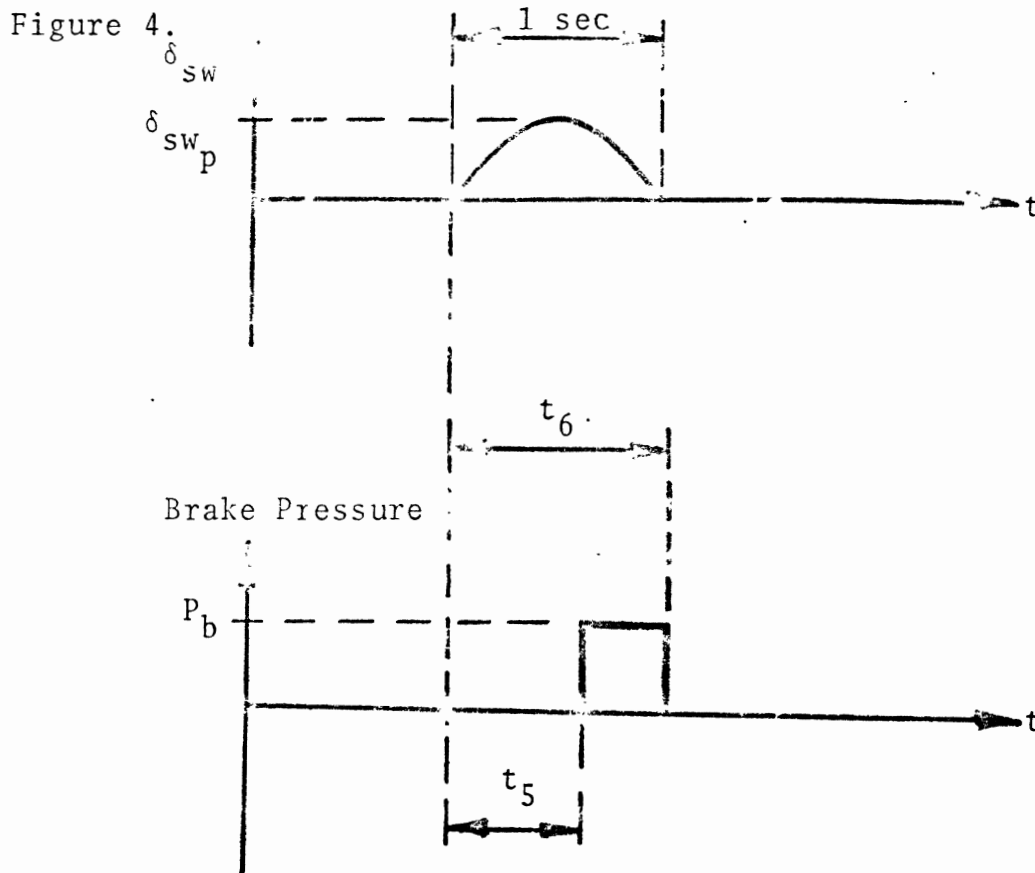


Figure 4.

3. DEGRADATIONS

Table 1 shows a listing of the vehicles used in the test program. All the vehicles shown were included in the O.E. (original equipment) test program. However, the Dodge Coronet and AMC Ambassador were also run in the degradation test program. Table 2 lists the degradation codes used and their descriptions. The letters D and A used in the degradation codes refer to driver series and automatic series, respectively. Fancher [2] should be consulted for further details.

TABLE 1

Vehicle

1. Dodge Coronet
Dodge Degradations
2. VW Super Beetle
3. Chrysler Imperial
4. Mercedes 300 SEL
5. Chevrolet Brookwood
6. Austin America
7. Pontiac Firebird (Trans-Am)
8. Lotus Europa
9. AMC Gremlin
10. Ford Galaxie
11. Olds Toronado
12. AMC Ambassador
AMC Ambassador Degradations

TABLE 2
 DEGRADATION CODES—FULL-SCALE TESTS

Degradation Code	Description	Applicable Tests
D1	Shock absorber degradation-both rear wheels	VHTP #3
D2	Shock absorber degradation-all four wheels	1, 2, 3
D3	2 steering system elements degraded (ball joints and tie-rod ends)	1, 2, 3
D4	4 steering system elements degraded (ball joints, tie-rod ends, steering gear box, and wheel bearings)	1, 2, 3
D5	Front end misalignment	1, 2, 3
<hr/>		
A1	Shock absorber degradation-all four wheels	VHTP #4, 5, 6
A2	4 steering system elements degraded (ball joints, tie-rod ends, steering gear box, and wheel bearings)	4, 5, 6
A3	Front end misalignment	4, 5, 6
A4	Front end misalignment combined with shock absorber degradation at all four wheels	4, 5, 6

Test Procedure Identification

- VHTP #1 - Straight Line Braking
- VHTP #2 - Braking In A Turn
- VHTP #3 - Roadholding In A Turn
- VHTP #4 - Trapezoidal Steer
- VHTP #5 - Sinusoidal Steer
- VHTP #6 - Drastic Steer and Brake

4. VEHICLE RESPONSE DATA AND FORMAT

Figures 5 through 7 show the format for a typical file. A header page, Figure 5, at the beginning of every file summarizes the test conditions and original processing information for that file. The next two pages, Figures 6 and 7, contain 21 vehicle response variables as a function of time. Each set of successive pages duplicate Figures 6 and 7, but for the next time intervals.

4.1 HEADER PAGE

Much of the information contained in the header page is self-explanatory. The remainder is explained below:

DOT TAPE LABEL I.D. refers to the name label on the outside of that particular tape.

DOT TAPE FILE is the present file number for that tape.

TEST SAMPLE refers to the VHP sample number assigned during the test program.

HSRI SOURCE TAPE/FILE refers to the original HSRI digital tape and file containing the equivalent reformatted data shown in the present VHPDOT tape file.

CONDITION CODE is a one letter, one numeral code used to identify automatic versus driver series tests and type of degradation if any. The letters A and D refer to the automatic and driver series, respectively, while the numerals denote type

** VHP SAMPLE 1485 **

TIME (SEC.)	LCNG ACCEL (G'S)	LAT ACCEL (G'S)	YAW RATE (DEG/SEC)	FTH-WHL VELOCITY (FT/SEC)	ROLL RATE (DEG/SEC)	TAN(DLTA)	FORWARD VELOCITY (FT/SEC)	LATERAL VELOCITY (FT/SEC)	PATH CURVATURE (1/FT)	STEERING ANGLE (DEGREES)
0.0	-0.0370	0.0010	0.4750	55.7418	-0.2400	-0.2641	55.9500	-0.2300	0.0005	0.0
0.0200	-0.0605	-0.0470	-0.1750	55.8882	-0.0200	-0.0667	56.0700	-0.2700	-0.0002	0.0
0.0450	-0.0465	0.0255	-0.1750	55.5954	-0.3900	-0.3109	55.7100	-0.2600	-0.0002	0.0
0.0660	-0.0595	-0.0090	0.4250	56.1078	-0.1000	-0.3047	56.2700	-0.3000	0.0001	0.0
0.0830	-0.0985	0.0435	-0.2500	55.7652	-0.1000	-0.3046	55.3700	-0.2700	0.0002	0.0
0.1110	-0.0135	-0.0375	0.2250	55.6320	-0.2000	-0.2995	55.7000	-0.2500	0.0002	0.0
0.1330	-0.0555	0.0405	-0.0750	55.5954	-0.1800	-0.3109	55.7100	-0.2800	-0.0002	0.0
0.1530	-0.0475	0.0455	-0.2250	55.4758	-0.2200	-0.3013	55.3400	-0.2500	0.0002	0.0
0.1770	-0.0475	0.0515	0.4750	55.7052	-0.0400	-0.3109	55.3400	-0.2600	0.0001	0.0
0.1960	-0.0940	0.0590	0.1750	55.4400	-0.3600	-0.3147	55.3400	-0.2600	0.0001	0.0
0.2200	-0.0595	0.0035	0.1250	55.5212	-0.2100	-0.3133	55.5300	-0.2300	0.0003	0.0
0.2400	-0.0650	-0.0450	0.3750	55.5222	-0.3600	-0.3148	55.5500	-0.2900	-0.0001	0.0
0.2600	-0.0435	0.0570	-0.1000	55.3396	-0.3800	-0.0947	55.1700	-0.2600	-0.0001	0.0
0.2850	-0.0775	-0.0350	0.1750	55.7382	-0.0700	-0.3107	55.7000	-0.2600	0.0002	0.0
0.3060	-0.0610	0.0455	-0.125	55.6650	-0.3800	-0.3075	55.7300	-0.2500	-0.0001	0.0
0.3310	-0.0465	-0.0160	0.4750	55.3830	-0.0700	-0.3137	55.1400	-0.2500	0.0003	0.0
0.3500	-0.0815	0.0135	0.0	55.5232	0.0000	-0.3147	55.1400	-0.2700	-0.0001	0.0
0.3710	-0.0375	-0.0075	-0.2500	55.2294	-0.2600	-0.3047	55.3900	-0.2500	0.0001	0.0
0.3940	-0.0815	-0.0265	0.1250	55.4490	-0.2600	-0.0740	55.6700	-0.2500	0.0001	0.0
0.4180	-0.0730	0.0540	0.1500	55.4450	-0.1700	-0.0670	55.5500	-0.2600	0.0001	0.0
0.4330	-0.0445	-0.0415	0.1500	55.3020	-0.2300	-0.3100	55.3300	-0.2500	0.0001	0.0
0.4620	-0.0895	0.0735	0.4250	55.1562	-0.2000	-0.3100	55.3400	-0.2900	-0.0002	0.0
0.4820	-0.0190	0.0055	-0.2250	55.3392	-0.0600	-0.0697	55.3300	-0.2500	0.0001	0.0
0.5020	-0.0630	-0.0305	0.0500	55.5054	-0.1400	-0.3149	55.6700	-0.2700	0.0001	0.0
0.5200	-0.0630	0.0005	0.1750	55.2211	-0.1000	-0.3143	55.3400	-0.2700	-0.0001	0.0
0.5470	-0.0305	-0.0175	0.000	55.7498	-0.1000	-0.3168	55.1200	-0.2700	0.0001	0.0
0.5700	-0.0875	0.0095	-0.4250	55.5490	-0.1300	-0.3151	55.5300	-0.2900	-0.0001	0.0
0.5930	-0.0425	0.0305	0.3750	54.7500	-0.4200	-0.3147	54.3500	-0.2800	0.0001	0.0
0.6190	-0.0735	-0.0450	-0.1250	55.1130	-0.4200	-0.3052	55.3000	-0.3000	0.0001	0.0
0.6420	-0.0715	0.0655	-0.1250	55.3392	-0.1200	-0.3048	55.4400	-0.2700	-0.0001	0.0
0.6680	-0.0570	-0.0275	0.4750	54.7302	-0.4000	-0.3119	54.3500	-0.2700	0.0002	0.0
0.6920	-0.0665	0.0195	0.0500	55.0908	-0.1300	-0.3153	55.1900	-0.2900	-0.0001	0.0
0.7050	-0.0635	0.0170	-0.1750	54.9732	-0.1600	-0.3150	55.0300	-0.2700	0.0000	0.0
0.7240	-0.0100	-0.0440	0.6750	54.8268	-0.0400	-0.0352	55.0300	-0.3000	0.0000	0.0
0.7450	-0.0725	0.0475	0.0000	54.8034	-0.1200	-0.3100	55.0300	-0.2700	0.0000	0.0
0.7680	-0.0535	-0.0325	-0.2750	54.8634	-0.1200	-0.3100	54.9300	-0.2700	0.0000	0.0
0.7890	-0.0655	0.0075	0.7750	54.8268	-0.5200	-0.0250	54.8700	-0.3100	-0.0002	0.0
0.8110	-0.0600	0.0305	-0.2000	54.6436	-0.2600	-0.0300	54.8400	-0.2800	0.0001	0.0
0.8340	-0.0710	-0.0555	-0.3000	54.9366	-0.0600	-0.0300	55.0600	-0.3000	-0.0001	0.0
0.8560	-0.0725	0.0405	0.6250	54.9366	-0.0500	-0.0300	54.9700	-0.3000	0.0001	0.0
0.8770	-0.0625	0.0175	0.2750	54.4608	-0.2200	-0.0250	54.6500	-0.2900	0.0002	0.0
0.8980	-0.0495	-0.0375	-0.4250	55.2294	-0.2600	-0.0257	55.1000	-0.3100	-0.0002	0.0
0.9210	-0.0640	0.0205	0.4500	54.5706	-0.4400	-0.0355	54.5400	-0.3000	0.0001	0.0
0.9460	-0.0785	-0.0205	0.3250	54.4608	-0.3200	-0.0257	54.6000	-0.3100	0.0000	0.0
0.9650	-0.0575	0.0165	0.0	55.2294	-0.2000	-0.0350	55.2900	-0.3100	0.0000	0.0
0.9850	-0.0660	0.0235	0.3100	54.4242	-0.4200	-0.0255	54.4900	-0.3000	0.0001	0.0
1.0080	-0.0845	-0.0165	0.2750	54.6804	-0.2600	-0.0255	54.8300	-0.3100	0.0002	0.0
1.0300	-0.3025	0.1815	-3.2250	54.7536	-0.0600	-0.0248	54.8400	-0.2500	-0.0003	0.0
1.0540	-0.06185	0.0670	-11.9750	54.2778	-0.03600	0.0227	54.3100	0.0400	-0.0006	0.0
1.0740	-0.04785	-0.01485	-2.2750	54.8268	-0.2600	0.0015	54.7900	0.1100	0.0008	0.0

Figure 6.

** VHP SAMPLE 14B5 **

TIME (SEC)	HEADING ANGLE (DEG)	HOLL ANGLE (DEG)	STIFFSLIP ANGLE (DEG)	F SHEFL RATES	R SHIFL RATES	SIDESLIP RATE (DEG/SEC)	X-DOE (FT/SEC)	Y-DOE (FT/SEC)	X (FT)	Y (FT)	BRAKE PRESSURE (PSI)
C.0	0.7678	-0.6290	-0.2340	219.2499	207.4399	0.7330	55.9500	0.4900	146.3700	0.4800	0.0
C.0000	0.7793	-0.6320	-0.2700	56.0000	33.0000	-1.2700	56.7000	0.4500	147.5700	0.5100	0.0
C.0450	0.7735	-0.6440	-0.2700	-1.1000	92.0000	0.1000	55.7400	0.4700	146.6800	0.5100	0.0
C.0760	0.7793	-0.6440	-0.2700	202.6999	90.3000	0.1000	56.2400	0.4700	150.2300	0.5100	0.0
C.0880	0.7793	-0.6440	-0.2700	217.0999	206.5099	0.1500	55.3300	0.4700	151.2300	0.5100	0.0
C.1110	0.7907	-0.6440	-0.2700	167.5999	196.2099	-0.1400	55.3100	0.4700	152.4300	0.5700	0.0
C.1330	0.7965	-0.6520	-0.2700	55.4000	70.1000	-0.3300	55.6700	0.4700	153.7500	0.5700	0.0
C.1630	0.8022	-0.6500	-0.2700	164.7999	94.0000	1.1300	55.5900	0.5000	154.9500	0.5700	0.0
C.1900	0.8022	-0.6600	-0.2700	164.7999	1.0000	-0.0000	55.3400	0.4700	156.3400	0.5700	0.0
C.2000	0.8079	-0.6700	-0.2700	245.5999	207.0099	0.1000	55.6300	0.4700	157.4700	0.5700	0.0
C.2410	0.8134	-0.6700	-0.2700	164.7999	2.4000	1.1700	55.6300	0.5100	159.8100	0.5700	0.0
C.2410	0.8134	-0.6700	-0.2700	55.4000	65.0000	-1.3000	55.5500	0.4900	159.8100	0.6300	0.0
C.2650	0.8134	-0.6920	-0.2700	-2.3000	90.3000	0.0000	55.2300	0.4800	160.9800	0.5700	0.0
C.2850	0.8134	-0.6960	-0.2700	202.5999	49.7000	-0.1400	55.3500	0.4900	162.2100	0.6300	0.0
C.3000	0.8194	-0.6920	-0.2700	202.5999	196.3999	0.0000	55.6300	0.5300	163.4700	0.6600	0.0
C.3310	0.8194	-0.7000	-0.2520	112.3000	201.4099	0.0000	55.2200	0.5100	164.9700	0.6600	0.0
C.3530	0.8194	-0.7000	-0.2520	65.3000	82.2000	-0.2000	55.0700	0.4900	165.9300	0.6600	0.0
C.3710	0.8194	-0.7090	-0.2700	-3.0000	60.7000	0.2300	55.3500	0.5100	167.6700	0.6900	0.0
C.3910	0.8194	-0.7160	-0.2700	164.8999	41.1000	-0.0000	55.6700	0.5100	168.3300	0.6900	0.0
C.4110	0.8308	-0.7160	-0.2700	202.6397	201.4999	1.3000	55.5000	0.5300	169.5900	0.7200	0.0
C.4300	0.8308	-0.7240	-0.2520	162.7000	199.5099	-0.1000	55.3500	0.5300	170.7900	0.6900	0.0
C.4620	0.8366	-0.7320	-0.2700	93.5900	65.3000	-0.9000	55.3100	0.5100	171.9900	0.7200	0.0
C.4820	0.8366	-0.7320	-0.2700	3.3000	106.7000	0.2700	55.2300	0.5100	173.2500	0.7500	0.0
C.5030	0.8366	-0.7490	-0.2860	12.5900	34.7000	-0.5000	55.0300	0.5300	174.4500	0.7500	0.0
C.5200	0.8423	-0.7440	-0.2700	202.3997	201.5999	0.2000	55.2300	0.5100	175.6500	0.7500	0.0
C.5470	0.8538	-0.7500	-0.2700	102.3000	208.5099	-0.1120	55.1500	0.5100	176.8500	0.8100	0.0
C.5730	0.8538	-0.7560	-0.2860	53.7000	31.7000	-0.5000	55.4500	0.5100	178.0300	0.8100	0.0
C.5930	0.8538	-0.7630	-0.2860	2.0000	61.3000	0.6000	54.3700	0.5300	179.2800	0.8100	0.0
C.6100	0.8538	-0.7720	-0.2860	234.5999	39.0000	-1.2000	55.3500	0.5100	180.4500	0.8100	0.0
C.6340	0.8538	-0.7720	-0.2860	202.1397	201.3099	0.9000	55.3700	0.5300	181.7100	0.8100	0.0
C.6590	0.8710	-0.7720	-0.2700	53.4000	2.3000	-0.3000	54.8700	0.5000	182.9400	0.8800	0.0
C.6820	0.8710	-0.7800	-0.3360	55.7000	84.6000	-1.6300	55.1900	0.5000	184.1400	0.8700	0.0
C.7090	0.8752	-0.7840	-0.2860	-1.3000	91.3000	0.6000	55.0300	0.5300	185.3400	0.8700	0.0
C.7290	0.8752	-0.7840	-0.3360	164.4999	32.2000	-0.9000	55.2000	0.5100	186.5700	0.8700	0.0
C.7450	0.8767	-0.7990	-0.3360	292.3997	203.7099	0.4140	55.2900	0.5500	187.7700	0.8700	0.0
C.7610	0.8824	-0.7950	-0.3360	1.1000	197.0099	0.3700	54.0900	0.5000	189.0600	0.8700	0.0
C.7890	0.8767	-0.8120	-0.3000	60.0000	77.0000	-0.1000	54.3500	0.5100	190.2000	0.9300	0.0
C.8110	0.8824	-0.8120	-0.3260	3.1000	60.4000	0.2000	54.8700	0.5300	191.4000	0.9300	0.0
C.8340	0.8824	-0.8200	-0.2880	157.0999	35.1000	-0.6120	55.1100	0.5300	192.6000	0.9300	0.0
C.8500	0.8851	-0.8240	-0.3000	202.5999	201.4999	-0.0000	54.8900	0.5100	193.8000	0.9300	0.0
C.8770	0.8939	-0.8320	-0.3360	55.1000	200.5099	0.2000	54.7100	0.5300	195.0300	0.9300	0.0
C.8940	0.8939	-0.8360	-0.3360	17.0000	78.0000	-0.3000	55.0000	0.5300	196.2900	0.9300	0.0
C.9210	0.8939	-0.8360	-0.3000	-0.0000	91.0000	-0.9000	54.5700	0.5100	197.4300	0.9300	0.0
C.9440	0.8996	-0.8440	-0.3000	156.7999	43.1000	-0.2700	54.7100	0.5100	198.6900	0.9300	0.0
C.9650	0.9053	-0.8480	-0.3060	294.2998	200.3999	0.2340	55.1900	0.5100	199.8900	0.9900	0.0
C.9850	0.9053	-0.8520	-0.3060	51.1000	202.7999	0.2700	54.4500	0.5300	201.0900	0.9900	0.0
1.0080	0.9411	-0.8670	-0.3060	93.1000	60.1000	-0.1000	54.8200	0.5400	202.2900	0.9900	0.0
1.0300	0.9411	-0.8630	-0.3060	-0.1000	96.7000	3.0000	1.0000	0.5700	203.4900	1.0200	0.0
1.0540	0.6360	-0.8680	-0.1080	195.0999	89.3000	11.9000	54.3100	0.6100	204.7200	0.9900	0.0
1.0740	0.5329	-0.8760	0.0540	292.9998	207.7999	2.8620	54.7000	0.5900	205.8900	1.0500	0.0

Figure 7.

of degradation. 0 indicates no degradations or O.E. vehicle condition. Numerals 1 through 5 indicate the degradation type outlined in Table 2.

TAPE PROCESSING DATE refers to the date that the original HSRI digital tapes were produced.

4.2 VEHICLE RESPONSE VARIABLES

The vehicle response variables are shown at the top of Figures 6 and 7. Longitudinal and lateral accelerations, yaw rate, fifth-wheel velocity, roll rate, steering angle, brake pressure, and wheel rotation indicators are the measured variables. Longitudinal and lateral acceleration measurements were made with respect to an axis system which yawed with the vehicle but did not roll or pitch. The angular rate measurements were made with respect to the vehicle body axes. The remaining variables shown were computed on an analog computer, using the measured variables, at the time of digitization. Most samples on tape contain about 1 second of near zero accelerations and yaw rate (constant forward velocity with no turning) before any steering or braking inputs are applied.

The computed variable β is defined as the vehicle sideslip angle. Forward and lateral velocities were computed with respect to the vehicle axes. X-DOT, Y-DOT, X, and Y are the vehicle velocity components and displacement components computed with respect to the X-Y earth-fixed axes. Heading angle and roll angle are merely the integrals of yaw rate and roll rate, respectively.

The front wheel rate and rear wheel rate variables shown in Figure 7 are square wave wheel rotation indicators produced by photocells mounted outboard of each wheel. Each variable (front or rear) is a sum of two square waves of different magnitudes produced by the left and right wheels. The left wheel square wave ranges from 0 to 100, the right wheel 0 to 200. Therefore, either variable, which is the sum of these two square waves, can range from 0 to 300 with discrete levels of 100 and 200 also allowed because of phasing between left and right. If, for example, the left front wheel locked during a braking maneuver, the front wheel rate variable would be a square wave ranging from 0 to 200 or from 100 to 300 since the left wheel lockup would produce a constant value of either 0 or 100. Rotation of both wheels would produce a square wave ranging from 0 to 300 if both waves were exactly in phase; 100 to 200 if both waves were exactly out of phase; and a waveform with values of 0, 100, 200, and 300 if the square waves were arbitrarily out of phase. Right wheel lockups would produce a square wave ranging from 0 to 100 or from 200 to 300 since the right wheel lockup would produce a constant value of either 0 or 200. It should be noted that occasional difficulties did arise during the course of testing which resulted in one or more inoperative wheel rotation indicators. Hence, the observed wheel lock information contained in the catalog of Appendix I should be used as the primary information source pertaining to wheel locks.

4.3 GENERAL RECORDING CONVENTIONS

4.3.1 STEERING WHEEL ANGLE. The steering wheel angle measurement was recorded only for the automatic series tests (VHTP #'s 4, 5, 6). Hence, time histories of steering wheel angle are provided on tape for these tests but not for the driver series tests. The proper steering wheel angle for the driver series tests must be obtained from the catalog of Appendix I. The tape files contain zero steering wheel angle as a default value for the driver series tests. The steer levels for the automatic series tests are also provided in the catalog of Appendix I and should be used as a check on the automatic series time histories of steering wheel angle written on tape.

4.3.2 ROLL RATE. Roll rate was generally recorded only during the automatic series tests. Hence, roll rate and roll angle variable listings should be ignored for the driver series tests. The polarity of roll rate which was recorded was not consistent during the test program and should be determined from the polarity of lateral acceleration or yaw rate.

4.3.3 BRAKE PRESSURE. Brake pressure was generally recorded only during the driver series tests. However, since zero data offset errors were common, hence producing 100-200 psi transducer errors, the values recorded were not written on tape in order to avoid confusion. Instead, default values of zero appear on tape suggesting that the catalog of Appendix I be consulted for the proper brake line pressures.

4.4 ZERO OFFSETS AND GAIN ERRORS

Occasionally, significant zero offsets and gain errors did occur primarily due to instrumentation problems during the testing. The majority of these problems occurred with the yaw rate measurement. Zero offsets and/or gain errors in the yaw rate measurement can be detected by non-zero yaw rate values during the initial second of straight-line driving and/or by ramping of sideslip angle or lateral velocity during a steady turn. The following development can be used to make an estimate of the yaw rate zero offset and gain error.

The lateral equation of motion with respect to the vehicle axes is:

$$\dot{v} = A_y - r u$$

where

v = lateral velocity component in the vehicle axis system

A_y = lateral acceleration component in the vehicle axis system

r = yaw rate of the vehicle

u = forward velocity component in the vehicle axis system.

For an assumed zero offset δr and gain factor α other than 1.0, the relationship between the actual yaw rate r and an erroneous measured yaw rate r_m can be expressed as

$$r = \alpha(r_m + \delta r)$$

∴

$$\dot{v} = A_y - \alpha(r_m + \delta r)u$$

For steady turning at a constant velocity,

$$\dot{v} = 0 = A_y - \alpha(r_m + \delta r)u$$

or,

$$(r_m + \delta r)\alpha = \frac{A_y}{u}$$

δr can be estimated by averaging 10 or 20 time samples of r_m during the initial one second of maneuver when the vehicle is driving in a straight line and $A_y \equiv 0$. α can then be found from

$$\alpha = \frac{A_y}{u(r_m + \delta r)}$$

using the A_y , r_m , and u values recorded during a steady turn.

It is also interesting to note that the $1/R$ calculation is not affected by an erroneous yaw rate measurement even though the erroneous value is used in its calculation.

$$1/R = \frac{r_m + \dot{\beta}}{V_5}$$

where $\beta = \tan^{-1}\left(\frac{v}{u}\right)$ = vehicle sideslip angle

V_5 = fifth wheel velocity

For small β and constant u ,

$$\frac{1}{R} = \frac{r_m + \frac{\dot{v}}{u}}{u}$$

or,

$$\frac{1}{R} = \frac{r_m + \frac{1}{u}[A_y - r_m u]}{u} = \frac{A_y}{u^2}$$

Thus the erroneous r_m terms cancel each other leaving $1/R$ dependent only on A_y and u .

Estimates of longitudinal acceleration (A_x) zero offsets and gain errors can likewise be made by comparing A_x with Δ fifth wheel/ Δt values. The zero offset estimate is the difference between averaged A_x values and Δ fifth wheel/ Δt values during the initial interval of straight line driving. The gain factor estimate can be obtained by comparing averaged A_x values with Δ fifth wheel/ Δt values during an interval of steady braking.

Zero offsets in the roll rate measurement produce a superimposed ramp on the integrated roll angle which is easily detected. Improved estimates of roll angle can be obtained by subtracting out the ramp when this does occur.

Generally, A_x , A_y , and fifth-wheel measurements have been the most reliable. When discrepancies arise between A_x and $\Delta \text{fifth wheel} / \Delta t$ values for small β , the latter should be used.

4.5 DATA FILTERING AND DROPOUTS

All data channels, at the time of digitization, were passed through a first-order low pass filter with a breakpoint of 20 Hz and attenuation characteristic of -6 decibels/octave above 20 Hz. No additional digital filtering was performed on the data. The longitudinal and lateral acceleration measurements are somewhat noisy in comparison to the other measured and computed variables. As a result, computations involving particularly the acceleration variables should include some provisions for further averaging or smoothing.

During the analog-to-digital conversion process occasional dropouts or large variations for one time sample would occur. Occurrence of these dropouts is easily detected as a large excursion in one or more of the variables at one time sample and should be ignored.

REFERENCES

1. Ervin, R.D., et al., Vehicle Handling Performance, Final Report, Contract No. DOT-HS-031-1-159, Vols. 1 & 2 and Summary, Highway Safety Research Institute, Univ. of Michigan, Ann Arbor, November 1972..
2. Fancher, P.S., et al., Limit Handling Performance as Influenced by Degradation of Steering and Suspension Systems, Final Report, Contract No. DOT-HS-031-1-126, Vols. 1 & 2 and Summary, Highway Safety Research Institute, Univ. of Michigan, Ann Arbor, November 1972.

APPENDIX I
CATALOG OF VHP SAMPLES

The information in the catalog is arranged by vehicle and maneuver and indicates what tape and in what file a particular VHP sample can be found. Brake pressure and wheel lock information applies only to VHTP #1 and #2. Grid # pertains to VHTP #3. t_5 and t_6 are the tuned brake application and release times for VHTP #6. The degradation codes for the Ambassador and Dodge are shown in the catalog at the top of each page.

VEHICLE: TRANS - AM

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
1391	VHPDOT-8	209	55 R	200	40		
2	"	10	47 L	200	"		
3	"	1	47 L	300	"		
4	"	2	55 R	300	"		
5	"	3	55 R	400	"		
6	"	4	47 L	400	"		
7	"	5	47 L	500	"		
8	"	6	55 R	500	"		
9	"	7	55 R	600	"		
1400	"	8	47 L	600	"		
1	"	9	47 L	550	"		
2	"	20	55 R	550	"		
3	"	1	55 R	650	"	RF, RR	
4	"	2	55 R	650	"	RF, RR	
5	"	3	47 L	650	"	LR	
6	"	4	47 L	650	"	LR	
7	"	5	47 L	700	"	ALL	
8	"	6	47 L	700	"	ALL	
9	"	7	47 L	700	"	ALL	
10	"	8	55 R	700	"	RF	
1	"	9	55 R	700	"	RF	
2	"	30	55 R	725	"	RF, RR	
3	"	1	55 R	625	"	RF, RR	
5	"	2	55 R	625	"	RF	
6	"	3	47 L	625	"		
1417	"	234	47 L	625	"		

VEHICLE: TRANS - AM

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
1435	VHPDOT-9)	1	55 R	850	40	RF, RR	
6	"	2	55 R	850	"	RF, RR	
7	"	3	55 R	875	"	ALL	
8	"	4	55 R	875	"	ALL	
9	"	5	47 L	700	"	LF, LR	
40	"	6	47 L	700	"	LF, LR	
9	"	7	55 R	500	"		
50	"	8	47 L	500	"		
1	"	9	47 L	600	"	LR	
2	"	10	55 R	600	"	RR	
3	"	11	55 R	700	"	RF, RR	
4	"	12	47 L	700	"	LF	
5	"	13	47 L	800	"	LF	
6	"	14	55 R	700	"	RF, RR	
7	"	15	55 R	900	"	ALL	
58	"	16	47 L	900	"	ALL	
64	"	17	50 R	500	"		
5	"	18	53 L	500	"		
6	"	19	53 L	600	"		
7	"	20	50 R	600	"	RR	
8	"	21	50 R	700	"	RF, LF	
9	"	22	50 R	650	"	RF	
70	"	23	53 L	650	"	LF, LR	
1	"	24	53 L	700	"	LF	
2	"	25	53 L	750	"	LF, RF	
1473	"	26	50 R	750	"	RF, LF	

VEHICLE: TRANS-AM

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3099	VHPDOT-8	95	31	45		
3100	"	6	31	"		
1	"	7	31	"		
2	"	8	61	"		
3	"	9	"	"		
4	"	100	"	"		
5	"	1	"	"		
6	"	2	92	"		
7	"	3	"	"		
6	"	4	"	"		
8	"	5	"	"		
9	"	6	"	"		
12	"	7	123	"		
15	"	8	154	"		
6	"	9	"	"		
7	"	10	"	"		
3118	"	1	184	"		
3126	"	2	246	"		
7	"	3	"	"		
30	"	4	277	"		
32	"	5	"	"		
43	"	6	23	60		
47	"	7	46	"		
8	"	8	"	"		
9	"	9	"	"		
3150	"	120	69	"		

VEHICLE: TORNADO

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	'o (mph)	WHEEL LOCKS	GRID #
971	VHPDOT-6	139	0	300	40		
3	"	140	0	400	40		
4	"	141	0	500	40		
5	"	142	0	600	40		
6	"	143	0	700	40		
8	"	144	0	800	40		
9	"	145	0	900	40	LR	
982	"	146	"	800	"	LR	
3	"	147	"	800	"		
4	"	148	"	800	"		
997	"	149	"	800	"		
999	"	150	"	700	"		
1000	"	151	"	800	"		
5	"	152	"	800	"	LR, RR	
6	"	153	"	800	"		
7	"	154	"	800	"		
9	"	155	"	825	"		
1010	"	156	"	825	"		
11	"	157	"	850	"		
13	"	158	"	850	"		
15	"	159	"	875	"		
16	"	160	"	875	"	LR	
19	"	161	"	925	"	LR, RR	
10 20	"	162	"	925	"	LR, RR	
21	"	163	"	950	"	LR, RR	
22	"	164	"	950	"	LR, RR	

VEHICLE: TORONADO

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
1033	VHPDOT-6	165	85°L	200	40		
5	VHPDOT-6	6	85°L	300	"		
6	"	7	85°R	300	"		
7	"	8	85°R	400	"		
8	"	9	85°L	400	"		
9	"	170	85°L	500	"		
1040	"	1	85°R	500	"		
1	"	2	85°R	600	"		
2	"	3	85°L	600	"	LR	
3	"	4	85°L	500	"		
5	"	5	85°L	600	"	LR	
7	"	7	85°L	600	"		
8	"	11	85°R	600	"		
-	"	-	-	600	"		
1	"	0	85°R	625	"	RR	
2	"	130	85°R	625	"	RR	
3	"		85°L	625	"	LR	
4	"	0	85°L	625	"		
6	"	3	85°L	650	"	LR	
7	"	4	85°L	650	"	LR	
8	"	5	85°R	650	"	RR	
9	"	6	85°R	650	"	RR	
1060	"	7	85°R	675	"	RR RF	
1	"	8	85°R	675	"	LF, LR	
2	"	9	85°L	675	"	RF, LR	
3	"	190	85°L	675	"	RF, LR	

VEHICLE: TORONADO

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
1067	VHPDOT-7	1	85°R	675	40		
8	"	2	85°R	675	"		
9	"	3	85°L	675	"		
1070	"	4	85°L	675	"	LR	
1	"	5	85°L	700	"	LR	
2	"	6	85°L	"	"	LR	
3	"	7	85°R	"	"	RR	
4	"	8	"	"	"	RR	
5	"	9	"	725	"	RR RF	
6	"	10	"	"	"	RR	
						LR	
						LR	
						LR RF	
7	"	11	"	"	"	RR, RF	
8	"	12	"	715	"		
4	"	13	"	"	"		
5	"	19	85°L	"	"	LR	
6	"	20	"	"	"	LR	
7	"	21	"	800	"	LR, LF	
8	"	22	"	"	"	LR, LF	
9	"	23	85°R	"	"	RR RF	
1090	"	24	"	"	"		
1	"	25	"	825	"	RR, RF	
2	"	26	"	"	"	RR, RF	

VEHICLE: TORONADO

VHTP # 4,

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3894	VHFDOT-9	98	78	40		
5		9	"	"		
6		100	"	"		
7		1	"	"		
8		2	117	"		
9		3	"	"		
3900		4	"	"		
1		5	"	"		
2		6	157	"		
4		8	"	"		
5		9	"	"		
6		110	235	"		
7		1	"	"		
8		2	"	"		
9		3	"	"		
3910		4	315	"		
1		5	"	"		
2		6	"	"		
3		7	"	"		
4		8	371	"		
5		9	"	"		
6		120	"	"		
7		1	"	"		
8		2	470	"		
9		3	"	"		
3920		4	"	"		

VEHICLE: TORONADO

VHTP #5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V _o (mph)	t ₅	t ₆
3805	VHPNT-9	29	39	45		
6	"	30	"	"		
8	"	1	"	"		
9	"	2	72	"		
3810	"	3	"	"		
1	"	4	"	"		
2	"	5	"	"		
3	"	6	117	"		
4	"	7	"	"		
5	"	3	"	"		
6	"	4	"	"		
7	"	10	157	"		
8	"	1	"	"		
9	"	2	"	"		
3820	"	3	"	"		
1	"	4	196	"		
2	"	5	"	"		
3	"	6	"	"		
4	"	7	"	"		
5	"	8	235	"		
6	"	9	"	"		
7	"	50	"	"		
8	"	1	"	"		
9	"	2	274	"		
3830	"	3	"	"		
1	"	4	"	"		

VEHICLE: TORONADO

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3832	VHPDOT-9	55	274	45		
3	"	6	313	"		
4	"	7	"	"		
5	"	8	"	"		
6	"	9	"	"		
7	"	50	352	"		
8	"	1	"	"		
9	"	2	"	"		
3840	"	3	"	"		
9	"	64	29	60		
3850	"	5	"	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	59	"		
4	"	9	"	"		
5	"	10	"	"		
6	"	1	"	"		
8	"	2	53	"		
9	"	3	"	"		
3860	"	4	"	"		
1	"	5	118	"		
3	"	6	118	"		
4	"	7	"	"		
5	"	8	"	"		
6	"	9	147	"		
7	"	20	147	"		

VEHICLE: FORD GALAXIE

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	Speed (mph)	WHEEL LOCKS	GRID #
881	VHPDOT-5	32	90°R	200	40		
2	"	3	85°L	"	"		
3	"	4	"	300	"		
4	"	5	90°R	"	"		
5	"	6	"	400	"		
6	"	7	85°L	"	"		
8	"	8	"	500	"	LR, LF	
9	"	9	90°R	"	"	RR	
890	"	40	"	400	"		
1	"	1	"	"	"		
2	"	2	85°L	"	"		
3	"	3	"	"	"		
4	"	4	"	475	"		
5	"	5	"	"	"		
6	"	6	90°R	"	"	LF, LR	
7	"	7	"	"	"		
8	"	8	"	475	"		
9	"	9	"	"	"		
900	"	50	85°L	"	"	(LF, LR)	
1	"	1	"	"	"		
2	"	2	"	475	"	LF, LR	
3	"	3	"	"	"	LF, LR	
4	"	4	90°R	"	"		
6	"	5	"	"	"	RR	
7	"	6	85°L	500	"		
8	"	7	"	"	"		

VEHICLE: FORD GALAXIE

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3349	VHPDOT-8	1	46	45		
3350	"	2	"	"		
2	"	3	"	"		
3	"	4	"	"		
5	"	5	93	"		
6	"	6	"	"		
7	"	7	"	"		
8	"	8	"	"		
9	"	9	127	"		
3360	"	10	"	"		
3371	"	11	"	"		
2	"	12	"	"		
3	"	13	"	"		
4	"	14	"	"		
5	"	15	127	"		
6	"	16	"	"		
3380	"	17	"	"		
1	"	18	"	"		
2	"	19	270	"		
7	"	20	324	"		
8	"	21	"	"		
9	"	22	"	"		
3390	"	23	"	"		
1	"	24	370	"		
2	"	25	"	"		

VEHICLE: FORD GALAXIE

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3394	VHPDOT-2	27	370	45		
5	"	8	"	"		
6	"	9	417	"		
8	"	30	"	"		
9	"	1	"	"		
3400		2	315	50		
9	"	3	"	"		
3410	"	4	"	"		
1	"	5	"	"		
3	"	6	50	"		
4	"	7	"	"		
5	"	8	"	"		
6	"	9	"	"		
7	"	50	"	"		
8	"	1	209	"		
9	"	2	"	"		

VEHICLE: GREMLIN

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
1177	VHPDOT-7	66	0	200	40		
8	"	7		300	"		
9	"	8		400	"	LR	
1180	"	9		400	"	LR	
1	"	70		300	"		
2	"	1		300	"		
3	"	2		325	"		
4	"	3		325	"		
5	"	4		350	"		
6	"	5		350	"		
7	"	6		375	"	LR	
8	"	7		375	"		
9	"	8		400	"	LR	
1180	"	9		400	"	LR	
1	"	80		425	"	LR	
2	"	1		425	"	LR, LF	
3	"	2		450	"	LR, LF	
4	"	3		450	"	LR, LF	
5	"	4		475	"	LR, LF	
6	"	5		475	"	LR, LF	
7	"	6		500	"		
8	"	7		500	"	LR, LF	
9	"	8		525	"	LR, LF, RF	
1205	"	9		300	"		
7	"	90		400	"	LR	
8	"	91		500	"	ALL	

VEHICLE: GREMLIN

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
1268	VHPDOT-7	122	100°L	200	40		
9	"	3	95°R	200	"		
1270	"	4	"	300	"	RR	
1	"	5	100°L	"	"	LR	
2	"	6	"	200	"		
3	"	7	"	"	"		
4	"	8	95°R	"	"		
5	"	9	"	"	"		
6	"	130	"	250	"	RR	
7	"	1	"	"	"	RR	
8	"	2	100°L	"	"		
9	"	3	"	"	"		
1280	"	4	"	300	"	LR	
1	"	5	"	"	"	LR	
2	"	6	"	350	"	LR	
3	"	7	"	"	"		
4	"	8	75°L	300	"	RR	
5	"	9	"	"	"	RR	
6	"	140	"	350	"	RR	
7	"	1	"	"	"		
8	"	2	"	400	"	RR	
9	"	3	"	"	"	RR	
1290	"	4	100°L	"	"	LF, LR	
1	"	5	"	"	"		
3	"	6	"	450	"	ALL	
4	"	7	"	450	"	ALL	

VEHICLE: GREMLIN

VHTP # 4.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2996	VH10T-5	141	93	40		
7	"	2	"	"		
8	"	3	"	"		
9	"	4	"	"		
3000	"	5	142	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	"	"		
4	"	9	104	"		
5	"	150	"	"		
6	"	1	"	"		
7	"	2	"	"		
8	"	3	"	"		
9	"	4	"	"		
3020	"	5	"	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	"	"		
4	"	9	101	"		
5	"	1	"	"		
6	"	2	"	"		
7	"	3	"	"		
8	"	4	"	"		
9	"	5	"	"		
3020	"	5	580	"		
1	"	6	"	"		

VEHICLE: GREMLIN

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2908	VHPDOT-5	82	49	45		
9	"	3	"	"		
2910	"	4	"	"		
1	"	5	"	"		
3	"	6	9.3	"		
4	"	7	"	"		
5	"	8	"	"		
6	"	9	147	"		
7	"	90	"	"		
8	"	1	"	"		
9	"	2	"	"		
2912	"	3	194	"		
1	"	4	"	"		
2	"	5	"	"		
3	"	6	"	"		
4	"	7	217	"		
5	"	8	"	"		
6	"	9	"	"		
7	"	10	"	"		
8	"	100	235	"		
9	"	1	"	"		
2920	"	2	"	"		
1	"	3	"	"		
2	"	4	3.4	"		
3	"	5	"	"		
4	"	6	"	"		
5	"	7	"	"		

VEHICLE: GREMLIN

VHTP # 5.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2936	VHPDOT-5	108	393	45		
7	"	9	"	"		
8	"	110	"	"		
9	"	1	"	"		
2940	"	2	442	"		
1	"	3	"	"		
2	"	4	"	"		
3	"	5	"	"		
2952	"	6	37	60		
5	"	7	"	"		
6	"		70	"		
8	"	9	"	"		
9	"	100	"	"		
2954	"	1	110	"		
1	"	2	"	"		
2	"	3	"	"		
3	"	4	100	"		
4	"	5	"	"		
5	"	6	"	"		
6	"	7	104	"		
9	"	8	"	"		
2970	"	9	"	"		
2	"	130	221	"		
5	"	1	"	"		
7	"	2	258	"		
8	"	3	"	"		

VEHICLE: LOTUS

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	Vo (mph)	WHEEL LOCKS	GRID #
2073	VHPTT-12	76	0	500	40		
4		77		600	"		
9		78		900			
2081		79					
2143		80		600	40		
4		1		700	"		
5		2		800	"		
6		3		"	"		
8		4		825	"		
9		5		"	"		
2150		6		800	"	LF	
1		7		"	"	LF	
2		8		875	"		
3		9		"	"		
4		90		900	"		
5		1		"	"		
6		2		875	"		
7		3		"	"		
8		4		950	"	LF, LR	
9		5		"	"	LF, LR	
2160		6		975	"	LF, LR	
1		7		"	"	LF,	
2		8		1000	"	LF, LR	
3		9		"	"	LF, LR	
4		100		1025	"	LF, LR, RF	
5		1		"	"	LF, LR	

VEHICLE: LOTUS

VHTP # 2.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
2176	VHPDOT-12	104	25°R	400	40		
7	"	5	11L	"	"		
8	"	6	"	500	"		
9	"	7	20°R	"	"		
2180	"	8	15°R	600	"		
1	"	9	15°L	"	"		
2	"	110	"	700	"		
3	"	1	18°R	"	"		
4	"	2	"	800	"		
5	"	3	11°L	"	"	LF	
6	"	4	"	"	"	LF	
7	"	5	15°R	"	"		
8	"	6	"	700	"		
9	"	7	15°L	"	"	LF, LR	
10	"	8	"	"	"	LF, LR	
11	"	9	"	850	"	LF, LR	
12	"	10	"	"	"	LF, LR	
13	"	11	10°R	"	"		
14	"	12	"	1000	"	LF	
15	"	13	"	"	"	LF	
16	"	14	"	"	"	LF	
2227	"	15	"	1050	"	LF, RF	
17	"	16	"	"	"	LF, LR, RF	
18	"	17	12°L	1000	"	LF, LR, RF	
19	"	18	"	"	"	LF, LR	
20	"	19	"	1050	"	LF, LR, RF	

VEHICLE: LOTUS

VHTP # 4.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2789	HD-4	137	43	40		
2790	"	8	"	"		
1	"	9	"	"		
2	"	140	65	"		
3	"	1	"	"		
4	"	2	"	"		
5	"	3	"	"		
6	"	4	86	"		
7	"	5	"	"		
8	"	6	"	"		
9	"	7	"	"		
10	"	8	127	"		
11	"	9	"	"		
12	"	10	"	"		
13	"	1	"	"		
14	"	2	123	"		
15	"	3	"	"		
16	"	4	"	"		
17	"	5	"	"		
18	"	6	211	"		
19	"	7	"	"		
2810	"	8	"	"		
1	"	9	"	"		
2	"	160	257	"		
3	"	1	"	"		
4	"	2	"	"		

VEHICLE: LOTUS

VHTP #5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	\dot{v}_0 (mph)	t_5	t_6
2691	VHFDOT-4	76	65	45		
2	"	7	"	"		
3	"	8	"	"		
4	"	9	"	"		
5	"	80	36	"		
6	"	1	"	"		
7	"	2	"	"		
8	"	3	"	"		
9	"	4	108	"		
2700	"	5	"	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	127	"		
4	"	9	"	"		
5	"	10	"	"		
6	"	91	"	"		
7	"	101	"	"		
8	"	102	"	"		
9	"	103	"	"		
2710	"	5	"	"		
1	"	6	133	"		
2	"	7	"	"		
3	"	8	"	"		
4	"	9	"	"		
5	"	100	10.1	"		
6	"	1	"	"		

VEHICLE: LOTUS

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2717	VHPDOT-4	102	194	45		
8	"	3	"	"		
2727	"	4	17	60		
8	"	5	"	"		
9	"	6	"	"		
2730	"	7	"	"		
1	"	8	32	"		
2	"	9	"	"		
4	"	110	"	"		
5	"	1	49	"		
6	"	2	"	"		
7	"	3	"	"		
8	"	4	"	"		
9	"	5	45	"		
2740	"	6	"	"		
1	"	7	"	"		
2	"	8	"	"		
4	"	9	41	"		
5	"	120	"	"		
6	"	1	"	"		
7	"	2	"	"		
8	"	3	95	"		
9	"	4	"	"		
2750	"	5	"	"		
1	"	6	"	"		
2	"	7	113	"		

VEHICLE: CHEVY BROOKWOOD

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
2738	VHPDOT-15	14	70°L	200	40		
9	"	15	67°R	"	"		
2740	"	16	"	300	"		
1	"	17	70°L	"	"		
2	"	18	"	400	"		
3	"	19	67°R	"	"		
4	"	20	"	500	"	RF, RR	
5	"	21	70°L	"	"	LF, LR	
6	"	22	"	400	"		
7	"	23	"	"	"		
8	"	24	67°L	"	"		
9	"	25	"	"	"		
2741	"	26	"	400	"		
1	"	27	70°L	"	"		
2	"	28	"	500	"		
3	"	29	67°R	"	"		
4	"	30	"	"	"		
5	"	31	"	500	"	RF, RR	
2742	"	32	"	"	"	RF, RR	
1	"	33	70°L	"	"	LF, LR	
2	"	34	"	"	"	LF, LR	
3	"	35	"	600	"	LF, LR	
7	"	36	"	"	"	LF, LR	
8	"	37	67°R	"	"	RF, RR	
9	"	38	"	"	"	RF, RR, LR	
2750	"	39	"	650	"	RF, RR	

VEHICLE: CHEVY BROOKWOOD

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
2771	VHTPOT-15	40	67°R	650	40	RF, RR	
2	"	41	70°L	"	"	LF, LR	
3	"	42	"	"	"	LF, LR	
4	"	43	"	700	"	LF, LR	
5	"	44	"	"	"	LF, LR	
9	"	45	67°R	"	"	RF, RR	
2781	"	46	"	750	"	RF, RR	
2	"	47	70°L	"	"	LF, LR	
3	"	48	"	"	"	LF, LR	
4	"	49	"	800	"	ALL	
2791	"	50	67°R	600	"	RF, RR	
2	"	51	70°L	"	"	LF, LR	
3	"	52	"	650	"	LF, LR	
4	"	53	"	"	"	RF, RR	
5	"	54	"	700	"	RF, RR	
1	"	55	70°L	"	"	LF, LR	
2	"	56	"	700	"	LF, LR	
8	"	57	67°R	"	"	RF, LF, RR	
9	"	58	"	"	"	RF, RR	
2800	"	59	"	725	"	RF, RR	
2	"	60	"	"	"	RF, RR	
3	"	61	70°L	"	"	LF, LR	
4	"	62	"	"	"	LF, LR	
5	"	63	"	750	"	LF, LR	
6	"	64	"	"	"	LF, LR	
7	"	65	67°R	"	"	RF, RR	

VEHICLE: CHEVY BROOKWOOD

VHTP #. 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4134	VHTP-12	27	75	40		
5	"	28	"	"		
6	"	29	"	"		
7	"	30	"	"		
8	"	31+32	112	"		
9	"	33	"	"		
4140	"	34	"	"		
1	"	35	"	"		
2	"	36	112	"		
3	"	37	"	"		
4	"	38	"	"		
5	"	39	"	"		
6	"	40	224	"		
4154	"	41	293	"		
1	"	42	"	"		
2	"	43	"	"		
3	"	44	"	"		
4	"	45	311	"		
5	"	46	"	"		
6	"	47	"	"		
7	"	48	"	"		
8	"	49	447	"		
4160	"	50	"	"		
1	"	51	"	"		
2	"	52	"	"		

VEHICLE: CHEVY BROOKWOOD

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4046	VHEDOT-12	160	37	45		
7	"	1	"	"		
8	"	2	"	"		
9	"	3-4A	75	"		
4050	"	5	"	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	112	"		
4	"	9	"	"		
5	"	170	"	"		
6	"	1	"	"		
7	"	2	149	"		
8	"	3	"	"		
9	"	4	"	"		
4060	"	5	"	"		
2	"	6	186	"		
3	"	7	"	"		
4	"	8	"	"		
5	"	9	221	"		
6	"	100	"	"		
7	"	1	"	"		
8	"	2	"	"		
9	"	3	261	"		
4070	"	4	"	"		
1	"	5	"	"		
2	"	6	"	"		

VEHICLE: CHEVY BROOKWOOD

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4074	VHFDOT-12	187	298	45		
5	"	188	"	"		
6	"	189	"	"		
7	"	190	225	"		
8	"	191	"	"		
9	"	192	"	"		
4080	"	193	"	"		
4091	VHFDOT-13	1	28	60		
2	"	2	34	"		
3	"	3	"	"		
4	"	4	"	"		
4100	"	5	"	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	"	"		
4	"	9	"	"		
5	"	10	"	"		
6	"	11	"	"		
7	"	12	"	"		
8	"	13	"	"		
4112	"	14	163	"		
3	"	15	196	"		
4	"	16	"	"		
5	"	17	"	"		
7	"	19	"	"		
8	"	19 17	224	"		

VEHICLE: IMPERIAL

VHTP # 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2281	HEPOT-6	85	132	40		
2	"	86	"	"		
3	"	87	"	"		
4	"	88	"	"		
5	"	89	176	"		
6	"	90	"	"		
7	"	91	"	"		
8	"	92	"	"		
9	"	93	212	"		
2290	"	94	"	"		
1	"	95	"	"		
2	"	96	"	"		
3	"	97	351	"		
4	"	98	"	"		
5	"	99	"	"		
6	"	100	"	"		
7	"	101	"	"		
2300	"	102	"	"		
1	"	103	"	"		
2	"	105	523	"		
3	"	106	"	"		
4	"	107	"	"		

VEHICLE: IMPERIAL

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V _o (mph)	t ₅	t ₆
2177	VHPDOT-10	17	88	45		
8	"	18	"	"		
9	"	19	"	"		
2180	"	20	"	"		
1	"	21	160	"		
2	"	22	"	"		
3	"	23	"	"		
4	"	24	"	"		
5	"	25	176	"		
6	"	26	"	"		
7	"	27	"	"		
8	"	28	"	"		
9	"	29	200	"		
2190	"	30	"	"		
1	"	31	"	"		
2	"	32	"	"		
3	"	33	274	"		
4	"	34	"	"		
5	"	35	"	"		
6	"	36	"	"		
7	"	37	305	"		
8	"	38	"	"		
9	"	39	"	"		
2200	"	40	"	"		
1	"	41	352	"		
CONTINUED						

VEHICLE: IMPERIAL

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2203	"	42	352	45		
4	"	43	"	"		
5	"	44	"	"		
6	"	45	526	"		
7	"	46	"	"		
8	"	47	"	"		
9	"	48	"	"		
2237	"	49	66	60		
0	"	50	"	"		
9	"	51	"	"		
	"	52	"	"		
1	"	53	75	"		
2	"	54	"	"		
3	"	55	"	"		
4	"	56	"	"		
5	"	57	127	"		
6	"	58	"	"		
7	"	59	"	"		
8	"	60	"	"		
9	"	61	145	"		
2250	"	62	"	"		
1	"	63	"	"		
2	"	64	"	"		
3	"	65	193	"		
4	"	66	"	"		
5	"	67	"	"		

VEHICLE: IMPERIAL

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2256	VHPID-4	68	198	60		
7	"	69	231	"		
8	"	70	"	"		
9	"	71	"	"		
2260	"	72	"	"		
1	"	73	264	"		
2	"	74	"	"		
3	"	75	"	"		
4	"	76	"	"		
5	"	77	287	"		
6	"	78	"	"		
7	"	79	"	"		
8	"	80	"	"		
9	"	81	"	"		
2270	"	82	303	45		
1	"	83	"	"		
2	"	84	"	"		
3	"	85	"	"		
4	"	86	"	"		
5	"	87	276	"		
6	"	88	"	"		
7	"	89	"	"		
2328	"	123	33	60		
9	"	124	"	"		

VEHICLE: IMPERIAL
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2340	VHT-4	125	33	60		
1	"	126	"	"		
2	"	127	66	"		
3	"	128	"	"		
4	"	129	"	"		
5	"	120	"	"		
6	"	131	99	"		
7	"	132	"	"		
8	"	133	"	"		
9	"	134	"	"		
2350	"	135	122	"		
1	"	136	"	"		
2	"	137	"	"		
3	"	138	"	"		
2313	APDOT-6	109	42	45		
4		0	"	"		
5		10	"	"		
2315		111	"	"		

VEHICLE: AUSTIN

VHTP # L

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
632	VHTDOT-3	137	0	300	40		
3	"	8		400	"		
4	"	9		500	"		
6	"	11		600	"		
7	"	1		700	"		
8	"	2		800	"		
9	"	3		900	"		
644	"	4		300	"		
8	"	5		400	"		
9	"	7		500	"		
10	"	6		600	"		
1	"	9		700	"		
2	"	11		800	"		
3	"	10		900	"		
4	"	12		1000	"		
5	"	13		"	"		
6	"	14		"	"		
7	"	15		1025	"		
8	"	16		"	"	LF	
660	"	4		1050	"		
1	"	5		"	"		
2	"	6		1075	"		
3	"	7		"	"		
709	"	35		400	"		
710	"	36		500	"		
1	"	37		600	"		

VEHICLE: AUSTIN

VHTP #2.

NOTE: SAMPLES 672-700 ARE 0.4 g's LATERAL ACCEL.
 " 736-759 " 0.3 " " "

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
672	VHPDOT-#	8	72°R	200	40		
3	"	9	72°L	"	"		
4	"	10	"	300	"		
5	"	11	72°R	"	"		
6	"	12	"	400	"		
7	"	13	72°L	"	"		
680	"	14	"	500	"		
1	"	15	72°R	"	"		
2	"	16	"	600	"		
3	"	17	72°L	"	"		
4	"	18	"	700	"		
5	"	19	72°R	"	"		
6	"	20	"	800	"		
7	"	21	72°L	"	"	LF	
8	"	22	72°L	"	"		
9	"	23	"	900	"		
	"						
1	"	24	"	1000	"	LF	
2	"	25	72°R	"	"		
3	"	26	"	1100	"	RF	
4	"	27	72°L	"	"	LF	
5	"	28	"	1200	"	RF	
6	"	29	72°R	"	"	LF	
7	"	30	"	950	"		
8	"	31	72°L	"	"		
9	"	32	"	1000	"		
	"	33	"				

VEHICLE: AUSTIN

VHTP # 3

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	° (mph)	WHEEL LOCKS	GRID #
509	VHPDET-3	110	100°		30		1
511	"	1	"		"		1
2	"	2	"		"		1
3	"	3	"		"		1
4	"	4	"		"		1
5	"	5	"		"		2
6	"	6	"		"		2
9	"	7	"		"		2
522	"	8	"		"		3
4	"	9	"		"		3
5	"	120	"		"		3
6	"	1	"		"		3
537	"	2	100°		"		1
"	"	3	"		"		1
7	"	4	"		"		1
540	"	5	"		"		1
1	"	6	"		"		1
2	"	7	"		"		2
3	"	8	"		"		2
5	"	9	"		"		2
6	"	130	"		"		2
7	"	1	"		"		2
8	"	2	"		"		3
9	"	3	"		"		3
550	"	4	"		"		3
551	"	5	"		"		3

VEHICLE: AUSTIN

VHTP #4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3586	WADOT-7	197	63°	40		
7	"	8	"	"		
9	"	9	"	"		
3589	"	100	74	"		
1	"	1	"	"		
2	"	2	"	"		
3	"	3	"	"		
4	"	4	125	"		
5	"	5	"	"		
6	"	6	"	"		
7	"	7	"	"		
8	"	8	125	"		
9	"	9	"	"		
3590	"	100	"	"		
1	"	1	"	"		
2	"	2	251	"		
3	"	3	"	"		
4	"	4	"	"		
5	"	5	"	"		
6	"	6	312	"		
7	"	7	"	"		
8	"	8	"	"		
9	"	9	"	"		
3610	"	220	374	"		
1	"	1	"	"		
2	"	2	"	"		

VEHICLE: AUSTIN

VHTP # 5.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
3542	VHENT-7	161	31	45		
3	"	2	"	"		
4	"	3	"	"		
5	"	4	"	"		
6	"	5	"	"		
7	"	6	"	"		
8	"	7	"	"		
9	"	8	"	"		
3543	"	9	"	"		
1	"	10	"	"		
2	"	11	"	"		
3	"	12	"	"		
4	"	13	"	"		
5	"	14	"	"		
6	"	15	"	"		
7	"	16	"	"		
8	"	17	"	"		
9	"	18	"	"		
3544	"	19	"	"		
1	"	20	"	"		
2	"	1	400	"		
3	"	2	"	"		
4	"	3	"	"		
5	"	4	"	"		
6	"	5	220	"		
7	"	6	"	"		

VEHICLE: MERCEDES

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
312	VHDET-1	149	0	300	40		
3	"	150		400	"		
4	"	1		500	"		
5	"	2		600	"		
320	"	3		700	"		
1	"	4		700	"		
2	"	5		900	"		
3	"	6		1000	"		
4	"	7		1100	"		
5	"	8		1175	"	LF	
6	"	9		1100	"		
7	"	10		"	"		
8	"	11		1100	"	RF	
9	"	12		"	"	RF	
320	"	13		"	"		
1	"	14		900	"		
2	"	15		1100	"		
3	"	16		1100	"		
421	VHDET-2	31		300	"		
2	"	2		900	"		
3	"	3		1000	"		
4	"	4		1100	"	RF, LF	
5	"	5		1000	"	RF, LF	
6	"	6		900	"		
7	"	7		925	"		
8	"	8		950	"		

VEHICLE: MERCEDES

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
3A4	VHPEOT-2	1	55°R	200	40		
5	"	2	60°L	"	"		
7	"	3	"	300	"		
8	"	4	55°R	"	"		
9	"	5	"	400	"		
8A7	"	6	60°L	"	"		
1	"	7	"	500	"		
2	"	8	55°R	"	"		
3	"	9	"	600	"		
4	"	10	60°L	"	"		
5	"	11	"	"	"		
6	"	12	55°R	"	"		
7	"	13	"	700	"		
8	"	14	60°L	"	"		
9	"	15	"	700	"		
8A7	"	16	55°R	"	"		
1	"	17	"	"	"		
2	"	18	60°L	"	"	LF	
3	"	19	"	900	"		
4	"	20	"	"	"	LF	
5	"	21	"	"	"	LF	
6	"	22	"	800	"		
7	"	23	"	"	"		
8	"	24	55°R	"	"		
9	"	25	"	"	"		
3A3	"	26	"	825	"		

VEHICLE: MERCEDES

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	0 (mph)	WHEEL LOCKS	GRID #
374	VHP107-1	27	55°R	325	40		
5	"	28	60°L	"	"		
6	"	29	"	"	"	LF	
7	"	30	"	850	"	LF	
8	"	31	"	"	"		
9	"	32	50°R	"	"	RF	
200	"	33	"	"	"		
1	"	34	"	875	"		
2	"	35	"	"	"	RF	
3	"	36	40°	"	"	LF	
4	"	37	"	"	"	LF	
5	"	38	"	850	"		
6	"	39	"	"	"	LF	
7	"	40	"	"	"	RF	
8	"	41	"	"	"	RF	
9	"	42	"	800	"	RF	
10	"	43	"	"	"	RF	
1	"	44	60°L	"	"	LF	
2	"	45	"	"	"	LF	
3	"	46	"	850	"	LF	
4	"	47	"	"	"	LF	
5	"	48	60°?	"	"	RF	
6	"	49	"	"	"	RF	
7	"	50	"	975	"	RF	
8	"	51	"	"	"		
100	"	52	60°L	"	"	LF	

VEHICLE: MERCEDES

VHTP # 2.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
403	VHTP001	52	60%	975	40	LF	
4	"	54	"	1000	"	LF	
5	"	55	"	"	"	LF	
6	"	56	55%	"	"	RF	
7	"	57	"	"	"	RF	
8	"	58	"	1000	"	RF	
9	"	59	60%	"	"	LF	
410	"	60	"	"	"	LF	
411	"	61	55%	"	"		
1	"	91	55%	"	"		
2	"	92	"	"	"		
3	"	93	55%	"	"		
4	"	94	"	1000	"	RF	
5	"	95	55%	"	"	LF	
6	"	96	"	"	"	LF	
7	"	97	55%	"	"	RF	
8	"	98	"	"	"	LF	
9	"	99	55%	"	"	RF, LF	
10	"	100	"	1150	"	LF	
11	"	101	"	"	"	LF, RF	
12	"	102	55%	"	"	RF	
13	"	103	"	"	"	RF	
14	"	104	"	1150	"	RF	
15	"	105	"	"	"	RF, LF	
16	"	106	55%	"	"	LF	
17	"	107	"	"	"	LF, RF	

VEHICLE: MERCEDES

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2516	VHPT-2	170	33	45		
7	"	1	"	"		
8	"	2	"	"		
9	"	3	"	"		
2520	"	4	771/6	"		
1	"	5	100	"		
2	"	6	772/67L	"		
3	"	7	773/67L	"		
4	"	8	67	"		
5	"	9	"	"		
6	"	100	"	"		
7	"	1	"	"		
8	"	2	100	"		
9	"	3	"	"		
2520	"	4	"	"		
1	"	5	"	"		
2	"	6	"	"		
3	"	7	"	"		
4	"	8	"	"		
5	"	9	"	"		
6	"	100	100	"		
7	"	1	"	"		
8	"	2	"	"		
9	"	3	"	"		
2510	"	4	200	"		
1	"	5	"	"		

VEHICLE: MERCEDES

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2542	VHPMT-2	196	200	45		
3	"	7	"	"		
4	"	8	234	"		
5	"	9	"	"		
6	"	200	"	"		
7	"	1	"	"		
8	"	2	267	"		
9	"	3	"	"		
2550	"	4	"	"		
1	"	5	"	"		
2	"	6	"	"		
3	"	7	"	"		
4	"	8	"	"		
5	"	9	"	"		
2554	VHPMT-2	444	25	50		
5	"	5762	"	"		
6	"	5763	"	"		
7	"	5764	"	"		
8	"	65	50	"		
9	"	66	"	"		
2570	"	67	"	"		
1	"	68	"	"		
2	"	69	101	"		
3	"	70	"	"		
4	"	71	"	"		
5	"	72	"	"		

VEHICLE: AMBASSADOR (OE.)

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
2257	VHTP#1	24	70°R	300	40		
8	"	25	70°L	"	"		
9	"	26	"	400	"		
10	"	27	"	"	"	FR	
11	"	28	"	"	"	FR	
12	"	29	"	250	"		
13	"	30	70°L	450	"	LF	
14	"	31	"	"	"	LF	
15	"	32	70°R	"	"	RF,RR	
16	"	33	"	"	"	RF,RR	
17	"	34	"	350	"	RF,RR	
18	"	35	"	"	"	RF,RR	
19	"	36	70°L	"	"	LF,LR	
20	"	37	"	"	"	LF,LR	
21	"	38	"	550	"	LF,LR,RR	
22	"	39	"	"	"	LF,LR	
23	"	40	"	"	"	RF,RR	
24	"	41	"	"	"	RF,RR	
25	"	42	"	600	"	ALL	
26	"	43	"	"	"	ALL	
27	"	44	70°L	"	"	LF,LR,RR	
2258	"	45	"	"	"	LF,LR,RR	
1	"	46	"	575	"	LF,LR,RR	
2	"	47	"	"	"	LF,RR,LR	
3	"	48	70°R	"	"	ALL	
4	"	49	"	"	"	ALL	

VEHICLE: AMBASSADOR (OE.)

VHTP # 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5534	VHPT-15	150	80	40		
5	"	9	"	"		
6	"	160	"	"		
7	"	1	"	"		
8	"	2	110	"		
9	"	3	"	"		
5540	"	4	"	"		
1	"	5	"	"		
2	"	6	150	"		
3	"	7	"	"		
4	"	8	"	"		
5	"	9	"	"		
6	"	170	240	"		
7	"	2	"	"		
8	"	2	"	"		
9	"	3	"	"		
10	"	4	"	"		
1	"	5	"	"		
2	"	6	"	"		
3	"	7	"	"		
4	"	8	400	"		
5	"	9	"	"		
6	"	100	"	"		
7	"	1	"	"		
8	"	2	480	"		
9	"	3	"	"		

VEHICLE: AMBASSADOR (O.E.)

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V _o (mph)	t ₅	t ₆
5409	VHEDOT-15	87	40	45		
5410	"	88	"	"		
1	"	89	"	"		
2	"	90	"	"		
3	"	91	80	"		
4	"	92	"	"		
5	"	93	"	"		
6	"	94	"	"		
7	"	95	120	"		
8	"	96	"	"		
	"		"	"		
1			120	"		
			"	"		
2			"	"		
3	"	102	"	"		
4	"	103	"	"		
5	"	104	"	"		
6	"	105	"	"		
7	"	106	"	"		
8	"	107	240	"		
5420	"	108	"	"		
1	"	109	"	"		
2	"	110	"	"		
3	"	111	280	"		
4	"	112	"	"		

VEHICLE: AMBASSADOR (O.E.)

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5435	WEDOT-15	113	280	4.5		
6	"	4	"	"		
7	"	5	320	"		
8	"	6	"	"		
9	"	7	"	"		
10	"	8	"	"		
11	"	9	360	"		
12	"	10	"	"		
13	"	11	"	"		
14	"	12	"	"		
15	"	13	"	"		
16	"	14	"	"		
17	"	15	280	"		
18	"	16	"	"		
19	"	17	"	"		
20	"	18	"	"		
21	"	19	"	"		
22	"	20	120	"		
5460	"	1	"	"		
1	"	2	"	"		
2	"	3	120	"		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	"	"		
6	"	7	150	"		
7	"	8	"	"		

VEHICLE: AMBASSADOR (O.E.)

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5460	W.P.P.T-1	139	150	60		
9	"	140	"	"		
5470	"	1	180	"		
	"		"	"		
2	"		"	"		
3	"		"	"		
4	"	5	210	"		
5	"	6	"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
	"		"	"		
5570	"	177	320	67		
8	"	8	"	"		
9	"	8	"	"		
5570	"	9	"	"		
1	"	190	360	"		
2	"	1	"	"		
3	"	2	"	"		

VEHICLE: AMBASSADOR (OE)

VHTP # 6.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5592	VHPTOT-15	201	240	50	1.70	3.70
3	"	2	"	"	"	"
4	"	3	"	"	"	2.20
5	"	4	"	"	"	"
6	"	5	"	"	"	2.65
7	"	6	"	"	"	"
8	"	7	"	"	"	2.55
9	"	8	"	"	"	"
5593	"	9	35.0	"	"	2.20
1	"	210	"	"	"	"
2	"	1	"	"	"	2.15
3	"	2	"	"	"	"
4	"	3	"	"	"	2.35
5	"	4	"	"	"	"
6	"	5	22.0	30	"	2.10
7	"	6	"	"	"	"
8	"	7	"	"	"	2.15
9	"	8	"	"	"	"
5610	"	9	"	"	"	2.55
1	"	225	"	"	"	"
2	"	1	320	"	"	2.20
3	"	2	"	"	"	"
4	"	3	"	"	"	2.35
5	"	4	"	"	"	"
5621	"	5	240	30	"	2.20
2	"	6	"	"	"	"

VEHICLE: AMBASSADOR A-1
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5717	VHPDET-1	28	93	45		
8	"	9	"	"		
9	"	30	"	"		
	"	1	"	"		
	"	2	"	"		
1	"	3	"	"		
3	"	4	"	"		
4	"	5	"	"		
	"	6	"	"		
	"	7	"	"		
	"	8	"	"		
	"	9	"	"		
	"	0	"	"		
	"	1	"	"		
	"	2	"	"		
	"	3	"	"		
	"	4	"	"		
	"	5	"	"		
	"	6	"	"		
	"	7	"	"		
	"	8	"	"		
	"	9	320	"		
	"	50	"	"		
5718	"	1	"	"		
	"	2	"	"		
	"	3	74	60		

VEHICLE: AMBASSADOR A-1
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5748	NIPDOT-1A	54	74	60		
9	"	5	"	"		
5750	"	6	"	"		
1	"	7	"	"		
2	"	8	"	"		
3	"	9	"	"		
5760	"	60	123	"		
1	"	1	"	"		
2	"	2	"	"		
3	"	3	"	"		
4	"	4	"	"		
5	"	5	"	"		
6	"	6	"	"		
7	"	7	"	"		
8	"	8	"	"		
9	"	9	"	"		
5770	"	70	"	"		
1	"	1	"	"		
2	"	2	240	"		
3	"	3	"	"		
4	"	4	"	"		
5	"	5	"	"		

VEHICLE: AMBASSADOR A-2

VHTP # 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V _o (mph)	t ₅	t ₆
5689	MH207-16	8	120	40		
5690	"	9	"	"		
1	"	10	"	"		
2	"	"	"	"		
3	"	11	120	"		
4	"	12	"	"		
5	"	13	"	"		
6	"	15	"	"		
7	"	16	120	"		
8	"	17	"	"		
9	"	18	"	"		
10	"	19	"	"		
11	"	20	"	"		
12	"	21	"	"		
13	"	22	"	"		
14	"	23	"	"		
15	"	24	"	"		
16	"	25	"	"		
17	"	26	"	"		
18	"	27	"	"		
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

VEHICLE: AMBASSADOR (A-2)

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5631	WHDOT-155	230	9-2	45		
2	"	1	"	"		
3	"	2	"	"		
4	"	3	"	"		
5	"	4	12-1	"		
6	"	5	"	"		
7	"	6	"	"		
8	"	7	"	"		
9	"	8	12-1	"		
10	"	9	"	"		
1	"	10	"	"		
2	"	1	"	"		
3	"	2	17-1	"		
4	"	3	"	"		
5	"	4	"	"		
6	"	5	"	"		
7	"	6	22-1	"		
8	"	7	"	"		
9	"	8	"	"		
5650	"	9	"	"		
1	"	250	320	"		
2	"	1	"	"		
3	"	2	"	"		
4	"	3	"	"		
5660	"	4	27-1	60		
1	"	5	"	"		

VEHICLE: AMBASSADOR

(D-3)

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
2-102	10201-11	74	0	300	40		
3	"	75		400	"		
4	"	76		500	"	LR	
5	"	77		400	"		
6	"	78		"	"		
7	"	79		400	"		
8	"	80		"	"		
9	"	81		450	"		
10	"	82		"	"		
11	"	83		500	"		
12	"	84		"	"	LR	
13	"	85		500	"	LR	
14	"	86		"	"	LR	
15	"	87		550	"	LR	
16	"	88		"	"	ALL	
17	"	89		"	"	ALL	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

VEHICLE: AMBASSADOR A-3
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	v ₀ (mph)	t ₅	t ₆
5984	VHTP#	165	98	45		
5	"	6	"	"		
6	"	7	"	"		
7	"	8	"	"		
8	"	9	124	"		
9	"	10	"	"		
5990	"	1	"	"		
1	"	2	"	"		
2	"	3	114	"		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	"	"		
6	"	7	114	"		
7	"	8	"	"		
8	"	9	"	"		
9	"	10	"	"		
10	"	11	"	"		
11	"	12	242	"		
12	"	13	"	"		
13	"	14	"	"		
14	"	15	"	"		
15	"	16	320	"		
16	"	17	"	"		
17	"	18	"	"		
18	"	19	"	"		
6013	"	9	74	60		
4	"	10	"	"		

VEHICLE: AMBASSADOR A-3
 - VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	v ₀ (mph)	t ₅	t ₆
6015	WHEAT-16	191	74	60		
6	"	2	"	"		
7	"	3	92	"		
8	"	4	"	"		
9	"	5	"	"		
6020	"	6	"	"		
1	"	7	102	"		
2	"	8	"	"		
3	"	9	"	"		
4	"	200	"	"		
5	"	1	102	"		
6	"	2	"	"		
7	"	3	"	"		
8	"	4	"	"		
9	"	5	102	"		
6030	"	6	"	"		
1	"	7	"	"		
2	"	8	"	"		
3	"	9	200	"		
4	"	210	"	"		
5	"	1	"	"		
6	"	2	"	"		

VEHICLE: AMBASSADOR A-4

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE REEF	STEER POINT	v ₀ (mph)	t _c	t ₆
5894	WHEAT-14	95	98	45		
7	"	6	"	"		
8	"	7	"	"		
9	"	8	"	"		
10	"	9	101	"		
11	"	100	"	"		
12	"	1	"	"		
13	"	2	"	"		
14	"	3	164	"		
15	"	4	"	"		
16	"	5	"	"		
17	"	6	"	"		
18	"	7	191	"		
19	"	8	"	"		
20	"	9	"	"		
21	"	110	"	"		
22	"	1	232	"		
23	"	2	"	"		
24	"	3	"	"		
25	"	4	"	"		
26	"	5	32.0	"		
27	"	6	"	"		
28	"	7	"	"		
29	"	8	"	"		
5927	"	9	71	60		
8	"	12.0	"	"		

VEHICLE: AMBASSADOR A-4

VHP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER	V ₀ (mph)	t ₅	t ₆
5929	11858-1	124	74	60		
5930	"	2	"	"		
1	"	123,125	99	"		
2	"		"	"		
3	"		"	"		
4	"	9	"	"		
5	"	8	113	"		
6	"	10	"	"		
7	"	4	"	"		
8	"	2	"	"		
9	"		"	"		
10	"	7	"	"		
11	"	5	"	"		
12	"	6	"	"		
13	"		"	"		
14	"	8	"	"		
15	"	9	"	"		
16	"		"	"		
17	"	1	110	"		
18	"	2	"	"		
19	"	3	"	"		
5954	"	1	"	"		

VEHICLE: DODGE (O.E.)

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V ₀ (mph)	WHEEL LOCKS	GRID #
1485	VHPTCT-9	126	0	300	40		
6	"	7		400	"	LR	
7	"	8		"	"	LR	
8	"	9		"	"	LR	
9	"	100		310	"		
1490	"	1		"	"		
1	"	2		325	"		
2	"	3		"	"		
3	"	4		350	"		
4	"	5		"	"		
5	"	6		375	"		
6	"	7		"	"		
7	"	8		425	"	LF	
9	"	9		"	"		
1500	"	100		450	"	LF, R	
1	"	1		"	"	LF, R	
2	"	2		475	"	LF, RF	
3	"	3		475	"	LF, RF	
1744	VHPTCT-10	38		200	40		
5	"	9		300	"		
6	"	40		400	"		
7	"	1		500	"	ALL	
8	"	2		400	"		
9	"	3		"	"		
1750	"	4		425	"		
1	"	5		"	"		

VEHICLE: DODGE (O.E.)

VHTP # 2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	'o (mph)	WHEEL LOCKS	GRID #
1553	WHEEL ST-9	158	80°R	200	40		
4	"	9	80°L	"	"		
5	"	160	"	300	"		
6	"	1	80°R	"	"		
7	"	2	"	"	"	RR	
8	"	3	80°L	300	"	LR	
9	"	4	"	"	"		
1556	"	5	"	"	"		
1	"	6	80°R	"	"		
2	"	7	"	"	"		
3	"	8	"	"	"		
4	"	9	"	"	"		
5	"	10	80°L	"	"		
6	"	11	"	"	"		
7	"	12	"	"	"	RR	
8	"	13	"	"	"	LF	
9	"	14	80°R	"	"		
1557	"	15	"	"	"		
1	"	16	"	375	"		
2	"	17	"	"	"		
1558	"	18	80°L	375	"	LF LR	
1559	"	19	"	"	"	LF, LR	
1	"	100	80°R	"	"	RR	
2	"	1	"	"	"	RR	
3	"	2	"	400	"	RR	
4	"	3	"	"	"	RR	

VEHICLE: DODGE (O.E.)

VHTP #2

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	0 (mph)	WHEEL LOCKS	GRID #
1595	1001-9	184	80°L	400	40	LF, LR	
6	"	5	"	"	"	LF, LR	
7	"	6	"	425	"	LF, LR	
8	"	7	"	"	"	LF, LR	
9	"	8	80°L	"	"	RR	
1600	"	9	"	"	"	RR	
1	"	190	"	450	"	RF, RR	
2	"	1	"	"	"	RF, RR	
2	"	2	80°L	"	"	LF, LR	
5	"	3	"	475	"	LF, LR	
4	"	4	"	475	"	LF, LR	
7	"	5	90°R	"	"	ALL	
8	"	6	"	"	"	RF, RR	
9	"	7	"	500	"	ALL	
1710	"	8	"	"	"	ALL	
1	"	9	80°L	"	"	ALL	
2	"	100	80°L	"	"	ALL	
1711	"	101	80°L	500	50		
1	"	5	90°L	"	"		
2	"	6	"	300	"		
3	"	7	90°R	"	"		
5	"	8	"	400	"	RR	
6	"	9	90°L	"	"	LF, LR	
7	"	60	"	300	"		
8	"	1	90°R	"	"		
9	"	2	"	350	"		

VEHICLE: DODGE (O.E.)

VHTP # 3

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
1513	VHTPOT-9	1-14	130°		20		1
4	"	5	"		"		1
6	"	6	"		"		1
7	"	7	"		"		1
8	"	8	"		"		1
9	"	9	"		"		2
1520	"	150	"		"		2
3	"	1	"		"		2
9	"	2	"		"		2
1530	"	3	"		"		2
	"	4	"		"		3
1540	"	5	"		"		3
6	"	6	"		"		3
7	"	7	"		"		3
1550	"	8	"		20		1
1	"	3	"		"		1
9	"	4	"		"		1
1560	"	5	"		"		1
2	"	6	"		"		2
3	"	7	"		"		2
4	"	8	"		"		2
5	"	9	"		"		2
6	"	10	"		"		2
7	"	1	"		"		3
8	"	2	"		"		3
9	"	3	"		"		3

VEHICLE: DODGE (O.E.)

VHTP # 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	v ₀ (mph)	t ₅	t ₆
4697	VHPDT-12	144	77	40		
8	"	5	"	"		
4700	"	6	"	"		
1	"	7	"	"		
2	"	8	116	"		
3	"	9	"	"		
4	"	150	"	"		
5	"	1	"	"		
6	"	2	157	"		
7	"	3	"	"		
8	"	4	"	"		
9	"	5	"	"		
4710	"	6	222	"		
1	"	7	"	"		
2	"	8	"	"		
3	"	9	"	"		
4	"	110	200	"		
5	"	1	"	"		
6	"	2	"	"		
7	"	3	"	"		
8	"	4	336	"		
9	"	5	"	"		
4720	"	6	"	"		
1	"	7	"	"		
2	"	8	464	"		
3	"	9	"	"		

VEHICLE: DODGE (OE)

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4614	VHPTOT-12	73	39	45		
5	"	4	"	"		
6	"	5	"	"		
7	"	6	"	"		
8	"	7	77	"		
9	"	8	"	"		
4620	"	9	"	"		
1	"	80	"	"		
2	"	1	114	"		
3	"	2	"	"		
4	"	3	"	"		
5	"	4	"	"		
6	"	5	153	"		
7	"	6	"	"		
8	"	7	"	"		
4630	"	8	103	"		
1	"	9	"	"		
2	"	20	"	"		
3	"	1	"	"		
4	"	2	272	"		
5	"	3	"	"		
6	"	4	"	"		
7	"	5	"	"		
8	"	6	270	"		
9	"	7	"	"		
4640	"	8	"	"		

VEHICLE: DODGE O.E.
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4641	VHPDOT-13	99	270	45		
2	"	100	309	"		
3	"	1	"	"		
4	"	2	"	"		
5	"	3	"	"		
4	"	4	277	"		
8	"	5	"	"		
9	"	6	"	"		
10	"	7	"	"		
6	"	8	29	60		
7	"	9	"	"		
8	"	110	"	"		
9	"	1	"	"		
4660	"	2	58	"		
1	"	3	"	"		
2	"	4	"	"		
3	"	5	"	"		
4	"	6	277	"		
5	"	7	"	"		
6	"	8	"	"		
7	"	9	"	"		
8	"	120	116	"		
9	"	1	"	"		
4670	"	2	"	"		
1	"	3	"	"		
2	"	4	145	"		

VEHICLE: DODGE (O.E.)

VHTP #6.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER DEGREE	v ₀ (mph)	t ₅	t ₆
4731	VHPDOT-13	172	232	50		
2	"	3	"	"		
3	"	4	"	"	1.70	3.70
4	"	5	"	"	"	"
5	"	6	"	"	"	2.15
6	"	7	"	"	"	"
7	"	8	"	"	"	2.30
8	"	0	"	"	"	"
4745	"	180	232	"	"	2.60
6	"	1	"	"	"	"
7	"	2	"	"	"	2.50
8	"	3	"	"	"	"
9	"	4	300	"	"	2.15
4750	"	5	"	"	"	"
1	"	6	"	"	"	2.30
2	"	7	"	"	"	"
3	"	8	"	"	"	2.60
4	"	0	"	"	"	"
5	"	180	"	"	"	"
7	"	1	"	"	"	"
8	"	2	"	"	"	"
9	"	2	"	"	"	2.50
4760	"	4	"	"	"	"
1	"	5	"	60	"	2.15
2	"	6	"	"	"	"
3	"	7	"	"	"	2.60

VEHICLE: DODGE A-1

VHTP #4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4853	WHDOT-13	255	116	40		
4	"	6	"	"		
5	"	7	"	"		
6	"	8	"	"		
7	"	9	"	"		
8	"	10	"	"		
9	"	11	"	"		
10	"	12	"	"		
11	"	13	"	"		
12	"	14	"	"		
13	"	15	"	"		
14	"	16	"	"		
15	"	17	"	"		
16	"	18	"	"		
17	"	19	"	"		
18	"	20	"	"		
19	"	21	"	"		
20	"	22	"	"		
21	"	23	"	"		
22	"	24	"	"		
23	"	25	"	"		
24	"	26	"	"		
25	"	27	"	"		
26	"	28	"	"		
27	"	29	"	"		
28	"	30	"	"		
29	"	31	"	"		
30	"	32	"	"		
31	"	33	"	"		
32	"	34	"	"		
33	"	35	"	"		
34	"	36	"	"		
35	"	37	"	"		
36	"	38	"	"		
37	"	39	"	"		
38	"	40	"	"		
39	"	41	"	"		
40	"	42	"	"		
41	"	43	"	"		
42	"	44	"	"		
43	"	45	"	"		
44	"	46	"	"		
45	"	47	"	"		
46	"	48	"	"		
47	"	49	"	"		
48	"	50	"	"		
49	"	51	"	"		
50	"	52	"	"		
51	"	53	"	"		
52	"	54	"	"		
53	"	55	"	"		
54	"	56	"	"		
55	"	57	"	"		
56	"	58	"	"		
57	"	59	"	"		
58	"	60	"	"		
59	"	61	"	"		
60	"	62	"	"		
61	"	63	"	"		
62	"	64	"	"		
63	"	65	"	"		
64	"	66	"	"		
65	"	67	"	"		
66	"	68	"	"		
67	"	69	"	"		
68	"	70	"	"		
69	"	71	"	"		
70	"	72	"	"		
71	"	73	"	"		
72	"	74	"	"		
73	"	75	"	"		
74	"	76	"	"		
75	"	77	"	"		
76	"	78	"	"		
77	"	79	"	"		
78	"	80	"	"		
79	"	81	"	"		
80	"	82	"	"		
81	"	83	"	"		
82	"	84	"	"		
83	"	85	"	"		
84	"	86	"	"		
85	"	87	"	"		
86	"	88	"	"		
87	"	89	"	"		
88	"	90	"	"		
89	"	91	"	"		
90	"	92	"	"		
91	"	93	"	"		
92	"	94	"	"		
93	"	95	"	"		
94	"	96	"	"		
95	"	97	"	"		
96	"	98	"	"		
97	"	99	"	"		
98	"	100	"	"		

VEHICLE: DODGE A-1
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4782	VHPDOT-R	207	39	45		
3	"	8	"	"		
4	"	9	"	"		
5	"	210	"	"		
6	"		71	"		
7	"		"	"		
8	"	3	"	"		
9	"	4	"	"		
4790	"	5	14	"		
1	"	6	"	"		
2	"	7	"	"		
3	"	8	"	"		
4	"	9	15	"		
5	"	220	"	"		
6	"		"	"		
7	"	2	"	"		
8	"	3	20	"		
9	"		"	"		
4800	"	4	"	"		
1	"	6	"	"		
2	"	7	30	"		
3	"	8	"	"		
4	"	9	"	"		
5	"	230	"	"		
4815	"	1	29	60		
6	"	2	"	"		

VEHICLE: DODGE A-1
 VHTP #6.

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4880	VHPDGT-14	1	232	50	1.70	2.15
1	"	2	"	"	"	"
2	"	3	"	"	"	2.30
3	"	4	"	"	"	"
4	"	5	"	"	"	2.45
5	"	6	"	"	"	"
6	"	7	"	"	"	2.60
7	"	8	"	"	"	"
8	"	9	309	"	"	2.15
9	"	10	"	"	"	"
10	"	11	"	"	"	2.60
11	"	12	"	"	"	"
12	"	13	"	"	"	2.45
13	"	14	"	"	"	"
14	"	15	"	"	"	2.30
15	"	16	"	"	"	"
16	"	17	"	40	"	2.15
17	"	18	"	"	"	"
18	"	19	"	"	"	2.30
19	"	20	"	"	"	"
4903	"	21, 22	"	"	"	2.60
1	"	23, 25	"	"	"	"

VEHICLE: DODGE A2
VHTP #4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4972	VHPTST-14	70	72	40		
3	"	1	"	"		
4	"	2	"	"		
5	"	3	"	"		
	"			"		
7	"		114	"		
8	"	6	"	"		
9	"	7	"	"		
4980	"	8	"	"		
1	"	9	155	"		
2	"		"	"		
3	"	1	"	"		
4	"	2	"	"		
5	"	3	232	"		
6	"	4	"	"		
7	"	5	"	"		
8	"	6	"	"		
9	"			"		
4990	"	8	"	"		
1	"	9	"	"		
2	"	90	"	"		
3	"	91, 92	20%	"		
4	"	92, 95	"	"		
5	"	93, 96	"	"		
6	"	97	"	"		

VEHICLE: DODGE A-2

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
4914	VHPDET-14	26	39	45		
5	"	7	"	"		
6	"	8	"	"		
7	"	9	"	"		
8	"	10	"	"		
9	"	11	"	"		
10	"	12	"	"		
11	"	13	"	"		
4920	"	2	"	"		
1	"	3	"	"		
2	"	4	116	"		
3	"	5	"	"		
4	"	6	"	"		
5	"	7	"	"		
6	"	8	155	"		
7	"	9	"	"		
8	"	10	"	"		
9	"	11	"	"		
4920	"	2	230	"		
1	"	3	"	"		
2	"	4	"	"		
3	"	5	"	"		
4	"	6	300	"		
5	"	7	"	"		
6	"	8	"	"		
7	"	9	"	"		
4943	"	50	29	60		
4	"	1	"	"		

VEHICLE: DODGE A-2

VHTP # 6

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5002	WJEDST-14	98	100	50	1.70	2.15
3	"	9	"	"	"	"
4	"	100	"	"	"	2.30
5	"	1	"	"	"	"
6	"	2	"	"	"	2.45
7	"	3	"	"	"	"
8	"	4	"	"	"	2.60
9	"	5	"	"	"	"
5010	"	6	309	"	"	2.15
1	"	7	"	"	"	"
2	"	8	"	"	"	2.30
3	"	9	"	"	"	"
4	"	110	"	"	"	2.45
5	"	1	"	"	"	"
6	"	2	"	"	"	2.60
7	"	3	"	"	"	"
8	"	4	"	60	"	2.15
9	"	5	"	"	"	"
5021	"	6	"	"	"	"
2	"	7	"	"	"	2.30
3	"	8	"	"	"	2.45
4	"	9	"	"	"	2.45

VEHICLE: DODGE A-3

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5030	VHPDET-14	120	39	45		
1	"	1	"	"		
3	"	2	"	"		
4	"	3	"	"		
5	"	4	"	"		
6	"	5	"	"		
7	"	6	"	"		
8	"	7	"	"		
9	"	8	"	"		
5040	"	9	"	"		
1	"	1	"	"		
2	"	1	155	"		
3	"	2	"	"		
4	"	3	"	"		
5	"	4	"	"		
6	"	5	232	"		
7	"	6	"	"		
8	"	7	"	"		
9	"	8	"	"		
5050	"	9	309	"		
1	"	147	"	"		
2	"	1	"	"		
3	"	2	"	"		
8	"	3	20	60		
9	"	4	"	"		
5060	"	5	"	"		

VEHICLE: DODGE A-3

VHTP # 6

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5312	VHTPOT-14	277	222	50	1.70	2.15
3	"	8	"	"	"	"
4	"	9	"	"	"	2.30
5	"	100	"	"	"	"
6	"	1	"	"	"	2.45
7	"	2	"	"	"	"
8	"	3	"	"	"	2.60
9	"	4	"	"	"	"
5320	"	5	309	"	"	2.15
1	"	6	"	"	"	"
2	"	7	"	"	"	2.50
3	"	8	"	"	"	"
4	"	9	"	"	"	2.45
5	"	290	"	"	"	2.60
6	"	1	"	"	"	2.45
7	"	2	"	60	"	2.15
5330	"	3	"	"	"	"
4	"	4	"	"	"	2.30
3	"	5	"	"	"	"
4	"	6	"	"	"	2.45
5	"	7	"	"	"	"
6	"	8	"	"	"	2.60
7	"	9	"	"	"	"
8	"	300	"	"	"	2.45
9	"	1	"	"	"	"
5340	"	2	"	"	"	"

VEHICLE: DODGE A-4

VHTP # 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5250	VHTPOT-14	231	11/2	40		
1	"	2	"	"		
2	"	3	"	"		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	"	"		
6	"	7	"	"		
7	"	8	230	"		
8	"	9	"	"		
9	"	10	"	"		
10	"	11	"	"		
11	"	12	"	"		
12	"	13	230	"		
13	"	14	"	"		
14	"	15	"	"		
15	"	16	230	"		
16	"	17	"	"		
17	"	18	"	"		
18	"	19	"	"		
19	"	20	"	"		
20	"	21	"	"		
21	"	22	"	"		
22	"	23	"	"		
23	"	24	"	"		
24	"	25	"	"		
25	"	26	"	"		
26	"	27	"	"		
27	"	28	"	"		
28	"	29	"	"		
29	"	30	"	"		
30	"	31	"	"		
31	"	32	"	"		
32	"	33	"	"		
33	"	34	"	"		
34	"	35	"	"		
35	"	36	"	"		
36	"	37	"	"		
37	"	38	"	"		
38	"	39	"	"		
39	"	40	"	"		
40	"	41	"	"		
41	"	42	"	"		
42	"	43	"	"		
43	"	44	"	"		
44	"	45	"	"		
45	"	46	"	"		
46	"	47	"	"		
47	"	48	"	"		
48	"	49	"	"		
49	"	50	"	"		

VEHICLE: DODGE A-4

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5192	VHP01-14	182	39	45		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	"	"		
6	"	7	"	"		
7	"	8	"	"		
8	"	9	"	"		
9	"	10	"	"		
5200	"	1	112	"		
1	"	2	"	"		
2	"	3	"	"		
3	"	4	"	"		
4	"	5	155	"		
5	"	6	"	"		
6	"	7	"	"		
7	"	8	"	"		
8	"	9	200	"		
9	"	1000	"	"		
5210	"	1	"	"		
1	"	2	"	"		
2	"	3	200	"		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	"	"		
5221	"	7	29	60		
2	"	8	"	"		

VEHICLE: DODGE A-4

VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5223	VHFDOT-14	209	29	60		
4	"	210	"	"		
5	"	1	58	"		
			"	"		
			"	"		
	"		"	"		
9	"	57	27	"		
10	"	5	"	"		
1	"		"	"		
2	"		"	"		
	"		"	"		
4	"	200	"	"		
5	"		"	"		
6	"		"	"		
	"		27	"		
3	"		"	"		
3	"		"	"		
	"		"	"		
1	"	2	232	"		
2	"	0	"	"		
3	"	0	"	"		
4	"	232	"	"		

VEHICLE: DODGE A-4

VHTP # 6

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
5278	MHFDCT-4	251.25	2.32	50	1.70	2.15
9	"	252.25	"	"	"	"
5280	"	253	"	"	"	2.30
1	"	4	"	"	"	"
2	"	5	"	"	"	2.45
3	"	6	"	"	"	"
4	"	7	"	"	"	2.60
5	"	8	"	"	"	"
6	"	9	3.00	"	"	2.15
7	"	2	"	"	"	"
8	"	3	"	"	"	2.4
9	"	4	"	"	"	"
5282	"	5	"	"	"	2.45
1	"	6	"	"	"	"
2	"	7	"	"	"	2.60
3	"	8	"	"	"	"
4	"	9	4	4.0	"	2.85
5	"	10	"	"	"	"
6	"	1	"	"	"	2.30
7	"	2	"	"	"	"
8	"	3	"	"	"	2.45
5282	"	4	"	"	"	2.60
5282	"	5	"	"	"	"

VEHICLE: DODGE D-5

VHTP # 3

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	% (mph)	WHEEL LOCKS	GRID #
2044	VHPDCEW	174	137°		30		1
2	"	5	"		"		1
3	"	6	"		"		1
	"	7	"		"		1
	"	8	"		"		1
	"	9	"		"		2
	"	10	"		"		2
	"	11	"		"		2
	"	12	"		"		2
	"	13	"		"		2
	"	14	"		"		2
	"	15	"		"		2
	"	16	"		"		2
	"	17	"		"		2
	"	18	"		"		2
	"	19	"		"		2
	"	20	"		"		2
	"	21	"		"		2
	"	22	"		"		2
	"	23	"		"		2
	"	24	"		"		2
	"	25	"		"		2
	"	26	"		"		2
	"	27	"		"		2
	"	28	"		"		2
	"	29	"		"		2
	"	30	"		"		2
	"	31	"		"		2
	"	32	"		"		2
	"	33	"		"		2
	"	34	"		"		2
	"	35	"		"		2
	"	36	"		"		2
	"	37	"		"		2
	"	38	"		"		2
	"	39	"		"		2
	"	40	"		"		2
	"	41	"		"		2
	"	42	"		"		2
	"	43	"		"		2
	"	44	"		"		2
	"	45	"		"		2
	"	46	"		"		2
	"	47	"		"		2
	"	48	"		"		2
	"	49	"		"		2
	"	50	"		"		2
	"	51	"		"		2
	"	52	"		"		2
	"	53	"		"		2
	"	54	"		"		2
	"	55	"		"		2
	"	56	"		"		2
	"	57	"		"		2
	"	58	"		"		2
	"	59	"		"		2
	"	60	"		"		2
	"	61	"		"		2
	"	62	"		"		2
	"	63	"		"		2
	"	64	"		"		2
	"	65	"		"		2
	"	66	"		"		2
	"	67	"		"		2
	"	68	"		"		2
	"	69	"		"		2
	"	70	"		"		2
	"	71	"		"		2
	"	72	"		"		2
	"	73	"		"		2
	"	74	"		"		2
	"	75	"		"		2
	"	76	"		"		2
	"	77	"		"		2
	"	78	"		"		2
	"	79	"		"		2
	"	80	"		"		2
	"	81	"		"		2
	"	82	"		"		2
	"	83	"		"		2
	"	84	"		"		2
	"	85	"		"		2
	"	86	"		"		2
	"	87	"		"		2
	"	88	"		"		2
	"	89	"		"		2
	"	90	"		"		2
	"	91	"		"		2
	"	92	"		"		2
	"	93	"		"		2
	"	94	"		"		2
	"	95	"		"		2
	"	96	"		"		2
	"	97	"		"		2
	"	98	"		"		2
	"	99	"		"		2
	"	100	"		"		2

VEHICLE: VW Super Beetle

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
5	VHPDOT-1	33	0	600	40		
6	"	34		"	"		
7	"	35		"	"		
8	"	36		"	"		
9	"	37		700	"		
10	"	38		"	"		
11	"	39		"	"		
12	"	40		"	"		
13	"	41		500	"		
14	"	42		300	"		
15	"	43		"	"		
16	"	44		"	"		
17	"	45		900	"	RF, LF	
18	"	46		"	"	RF, LF	
19	"	47		"	"	RF, LF	
20	"	48		"	"	RF, LF	
21	"	49		"	"	RF, LF	
22	"	50		"	"	RF, LF	
23	"	51		"	"	RF, LF	
24	"	52		"	"	RF, LF	
25	"	53		300	"		
26	"	54		"	"		
27	"	55		"	"	RF RR	
28	"	56		"	"	RF RF	
29	"	57		700	"		
30	"	58		"	"		

VEHICLE: VW Super Beetle

VHTP # 1

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	BRAKE PRESSURE	V _o (mph)	WHEEL LOCKS	GRID #
36	VHT-1	59		700	40		
37	"	60		"	"		
38	"	61		600	"		
39	"	62		"	"		
40	"	63		"	"		
67	"	64		900	"	RE, LF	
68	"	65		"	"	RE, LF	
69	"	66		"	"	RE, LF	
70	"	67		800	"	RE, LF	
71	"	68		"	"	RE, LF	
72	"	69		"	"	RE, LF	
73	"	70		"	"	RE, LF	
86	"	71		600	"		
87	"	72		"	"		
88	"	73		"	"		
89	"	74		"	"		
90	"	75		700	"		
91	"	76		"	"		
92	"	77		"	"		
102	"	78		600	"		
103	"	79		"	"		
104	"	80		"	"		
105	"	81		"	"		
106	"	82		700	"		
107	"	83		"	"		
108	"	84		"	"		

VEHICLE: VW Super Beetle

VHTP # 4

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2096	VHPDOT-1	127	49	40		
7	"	8	"	"		
8	"	9	"	"		
9	"	10	"	"		
2100	"	1	77	"		
1	"	2	"	"		
2	"	3	"	"		
3	"	4	"	"		
4	"	5	90	"		
5	"	6	"	"		
6	"	7	"	"		
7	"	8	"	"		
8	"	9	140	"		
9	"	10	"	"		
2110	"	1	"	"		
1	"	2	"	"		
2	"	3	100	"		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	"	"		
6	"	7	247	"		
7	"	8	"	"		
2362	VHPDOT-2	160	292	"		
3	"	1	"	"		
4	"	2	"	"		
5	"	3	"	"		

VEHICLE: VW Super Beetle
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2055	VHPTOT-1	95	49	45		
6	"	6	"	"		
7	"	7	"	"		
8	"	8	"	"		
9	"	9	74	"		
2060	"	100	"	"		
1	"	1	"	"		
2	"	2	"	"		
3	"	3	99	"		
4	"	4	"	"		
5	"	5	"	"		
6	"	6	"	"		
7	"	7	124	"		
8	"	8	"	"		
9	"	9	"	"		
2070	"	110	"	"		
1	"	1	127	"		
2	"	2	"	"		
3	"	3	"	"		
4	"	4	"	"		
5	"	5	172	"		
6	"	6	"	"		
7	"	7	"	"		
8	"	8	"	"		
9	"	9	197	"		
2080	"	120	"	"		

VEHICLE: VW Super Beetle
 VHTP # 5

VHP SAMPLE	TAPE ID	TAPE FILE	STEER LEVEL	V ₀ (mph)	t ₅	t ₆
2081	VHPTOT-1	121	197	45		
2	"	2	"	"		
3	"	3	222	"		
4	"	4	"	"		
5	"	5	"	"		
6	"	6	"	"		
2104	VHPTOT-2	122	133	"		
8	"	9	"	"		
9	"	130	"	"		
2111	"	"	"	"		
1	"	2	35	"		
2	"	3	"	"		
3	"	4	"	"		
4	"	5	"	"		
5	"	6	55	"		
6	"	7	"	"		
7	"	8	"	"		
8	"	9	"	"		
9	"	140	73	"		
2420	"	1	"	"		
1	"	2	"	"		
2	"	3	"	"		
2450	"	148	73	"		
1	"	9	"	"		
2	"	150	130	"		
3	"	1	219	"		

APPENDIX II

TAPE DESCRIPTION AND DATA FORMAT

9 Track

800 BPI

2400 Ft.

EBCDIC Characters

Unlabeled

Block Size = 6000 Bytes

Logical Record Size = 120 Bytes

50 Logical Records/Block

Each block, except the last one of every file, is 6000 bytes. The last block of every file is variable, but less than 6001 bytes, containing an integral number of logical records.

The average tape contains about 200 files. Three or more successive file marks indicate an end of tape.

FORTRAN carriage control characters are provided in the first character of each logical record.