

7.2 VDMS Output Variable List

TIME	Simulation time	sec
Steering		
STEER	Steering Wheel Angle	deg
REFSTR	SW Angle / Ave. Steering Ratio	deg
Vehicle Accelerations		
LONGACC	Longitudinal Accel. in vehicle axes	g
LATACC	Lateral Acceleration in vehicle axes	g
VERTACC	Vertical Acceleration in vehicle axes	g
XDDCG	Vehicle Long. Acc. in ground plane	g
YDDCG	Vehicle Lateral Acc. in ground plane	g
ROLLACC	Roll Acceleration in vehicle axes	deg/sec ²
PITCHACC	Pitch Acceleration in vehicle axes	deg/sec ²
YAWACC	Yaw Acceleration in vehicle axes	deg/sec ²
Vehicle Velocities		
UCG	Longitudinal Vel. in vehicle axes	ft/sec
VCG	Lateral Velocity in vehicle axes	ft/sec
WCG	Vertical Velocity in vehicle axes	ft/sec
SPEED	Speed Tangent to the Path	MPH
P	Roll Rate in vehicle axes	deg/sec
Q	Pitch Rate in vehicle axes	deg/sec
R	Yaw Rate in vehicle axes	deg/sec
Vehicle Displacements		
XCG	CG X-Position in Space	ft
YCG	CG Y-Position in Space	ft
ZCG	CG Z-Position in Space	ft
PHI	Roll Angle	deg
THT	Pitch Angle	deg
PSI	Yaw Angle	deg
BETA	Sideslip Angle	deg

Wheel Kinematics

ALPHALF	Slip Angle, LF	deg
ALPHARF	Slip Angle, RF	deg
ALPHALR	Slip Angle, LR	deg
ALPHARR	Slip Angle, RR	deg
PHIWGLF	Inclination Angle, LF	deg
PHIWGRF	Inclination Angle, RF	deg
PHIWGLR	Inclination Angle, LR	deg
PHIWGRR	Inclination Angle, RR	deg
SRLF	Slip Ratio, LF	—
SRRF	Slip Ratio, RF	—
SRLR	Slip Ratio, LR	—
SRRR	Slip Ratio, RR	—
PHIWLf	Camber Angle wrt Vehicle, LF	deg
PHIWRf	Camber Angle wrt Vehicle, RF	deg
PHIWLr	Camber Angle wrt Vehicle, LR	deg
PHIWRr	Camber Angle wrt Vehicle, RR	deg
PSIWLf	Steer Angle wrt Vehicle, LF	deg
PSIWRf	Steer Angle wrt Vehicle, RF	deg
PSIWLr	Steer Angle wrt Vehicle, LR	deg
PSIWRr	Steer Angle wrt Vehicle, RR	deg
HLF	Tire Rolling Radius, LF	in
HRF	Tire Rolling Radius, RF	in
HLR	Tire Rolling Radius, LR	in
HRR	Tire Rolling Radius, RR	in
UWLf	Wheel Center Longitudinal Velocity, LF	ft/sec
UWLr	Wheel Center Longitudinal Velocity, RF	ft/sec
UWRf	Wheel Center Longitudinal Velocity, LR	ft/sec
UWRr	Wheel Center Longitudinal Velocity, RR	ft/sec
QWLf	Wheel Spin Velocity, LF	rad/sec
QWRf	Wheel Spin Velocity, RF	rad/sec
QWLr	Wheel Spin Velocity, LR	rad/sec
QWRr	Wheel Spin Velocity, RR	rad/sec
DQWLf	Wheel Spin Acceleration, LF	rad/sec ²
DQWRf	Wheel Spin Acceleration, RF	rad/sec ²
DQWLr	Wheel Spin Acceleration, LR	rad/sec ²
DQWRr	Wheel Spin Acceleration, RR	rad/sec ²

Tire-Ground Contact Point

XPGPLF	X-Position in Space, LF	ft
XPGPRF	X-Position in Space, RF	ft
XPGPLR	X-Position in Space, LR	ft
XPGPRR	X-Position in Space, RR	ft
YPGPLF	Y-Position in Space, LF	ft
YPGPRF	Y-Position in Space, RF	ft
YPGPLR	Y-Position in Space, LR	ft
YPGPRR	Y-Position in Space, RR	ft
ZPGPLF	Z-Position in Space, LF	ft
ZPGPRF	Z-Position in Space, RF	ft
ZPGPLR	Z-Position in Space, LR	ft
ZPGPRR	Z-Position in Space, RR	ft
MULF	Surface Friction Under LF Wheel	—
MURF	Surface Friction Under RF Wheel	—
MULR	Surface Friction Under LR Wheel	—
MURR	Surface Friction Under RR Wheel	—

Tire Forces and Moments

FNLF	Normal Load, LF	lb
FNRF	Normal Load, RF	lb
FNLR	Normal Load, LR	lb
FNRR	Normal Load, RR	lb
SUMFN	Sum of the Wheel Loads	lb
FCLF	Longitudinal Force, LF	lb
FCRF	Longitudinal Force, RF	lb
FCLR	Longitudinal Force, LR	lb
FCRR	Longitudinal Force, RR	lb
FSLF	Lateral Force, LF	lb
FSRF	Lateral Force, RF	lb
FSLR	Lateral Force, LR	lb
FSRR	Lateral Force, RR	lb
WTORQLF	Net Driving/Braking Torque, LF	lb-ft
WTORQRF	Net Driving/Braking Torque, RF	lb-ft
WTORQLR	Net Driving/Braking Torque, LR	lb-ft
WTORQRR	Net Driving/Braking Torque, RR	lb-ft
TBLF	Braking Torque, LF	lb-ft

TBRF	Braking Torque, RF	lb-ft
TBLR	Braking Torque, LR	lb-ft
TBRR	Braking Torque, RR	lb-ft
TDLF	Driving Torque, LF	lb-ft
TDRF	Driving Torque, RF	lb-ft
TDLR	Driving Torque, LR	lb-ft
TDRR	Driving Torque, RR	lb-ft
NALF	Aligning Torque, LF	lb-ft
NARF	Aligning Torque, RF	lb-ft
NALR	Aligning Torque, LR	lb-ft
NARR	Aligning Torque, RR	lb-ft
NOLF	Overturning Moment, LF	lb-ft
NORF	Overturning Moment, RF	lb-ft
NOLR	Overturning Moment, LR	lb-ft
NORR	Overturning Moment, RR	lb-ft

Suspension Forces

SUSFLF	Total Suspension Force, LF	lb
SUSFRF	Total Suspension Force, RF	lb
SUSFLR	Total Suspension Force, LR	lb
SUSFRR	Total Suspension Force, RR	lb
FSPRLF	Suspension Spring Force, LF	lb
FSPRRF	Suspension Spring Force, RF	lb
FSPRLR	Suspension Spring Force, LR	lb
FSPRRR	Suspension Spring Force, RR	lb
FDELLF	Bump or Rebound Stop Force, LF	lb
FDELRF	Bump or Rebound Stop Force, RF	lb
FDELLR	Bump or Rebound Stop Force, LR	lb
FDELRR	Bump or Rebound Stop Force, RR	lb
BARFLF	Anti-Roll Bar Force, LF	lb
BARFRF	Anti-Roll Bar Force, RF	lb
BARFLR	Anti-Roll Bar Force, LR	lb
BARFRR	Anti-Roll Bar Force, RR	lb
SAFRLF	Damper (Shock) Force, LF	lb
SAFRRF	Damper (Shock) Force, RF	lb
SAFRLR	Damper (Shock) Force, LR	lb
SAFRRR	Damper (Shock) Force, RR	lb

FANTILF	Total Anti- Force, LF	lb
FANTIRF	Total Anti- Force, RF	lb
FANTILR	Total Anti- Force, LR	lb
FANTIRR	Total Anti- Force, RR	lb
APFRLF	Anti-Pitch Force, LF	lb
APFRRF	Anti-Pitch Force, RF	lb
APFRLR	Anti-Pitch Force, LR	lb
APFRRR	Anti-Pitch Force, RR	lb
ARFRLF	Anti-Roll Force, LF	lb
ARFRRF	Anti-Roll Force, RF	lb
ARFRLR	Anti-Roll Force, LR	lb
ARFRRR	Anti-Roll Force, RR	lb
ASFRLF	Anti-Squat Force, LF	lb
ASFRRF	Anti-Squat Force, RF	lb
ASFRLR	Anti-Squat Force, LR	lb
ASFRRR	Anti-Squat Force, RR	lb

Aero Forces and Moments

FDRAG	Longitudinal Aero Force	lb
FXB	Long. Aero + Rolling Drag Force	lb
FYB	Lateral Aero Force	lb
FZB	Vertical Aero Force	lb
NXB	Aero Rolling Moment	lb-ft
NYB	Aero Pitching Moment	lb-ft
NZB	Aero Yaw Moment	lb-ft
ROLLRES	Total Rolling Resistance Force	lb

Summed Forces and Moments in Vehicle Axis System

SFXT	Sum of Vehicle X-Direction Forces	lb
SFYT	Sum of Vehicle Y-Direction Forces	lb
SFZS	Sum of Sprung Mass Z-Direction Forces	lb
SNPHIR	Sum of Rear Axle Roll Moments	lb-ft
SNXFR	Sum of Chassis Torsional Moments	lb-ft
SNXS	Sum of Sprung Mass Roll Moments	lb-ft
SNYS	Sum of Sprung Mass Pitch Moments	lb-ft
SNZS	Sum of Vehicle Yaw Moments	lb-ft

Suspension Deflections

DELLF	Wheel Center Position, LF	in
DELRF	Wheel Center Position, RF	in
DELLR	Wheel Center Position—IRS, LR	in
DELRR	Wheel Center Position—IRS, RR	in
WCDELLR	Wheel Center Position—ARS, LR	in
WCDELRR	Wheel Center Position—ARS, RR	in
DELRAx	Rear Axle Heave Position—ARS	in
PHIR	Rear Axle Roll Angle wrt Body—ARS	deg
ADELLR	Deflection at spring—ARS, Left	in
ADELRR	Deflection at spring—ARS, Right	in

Suspension Velocities

DDELLF	Wheel Center Velocity, LF	in/sec
DDELRF	Wheel Center Velocity, RF	in/sec
DDELLR	Wheel Center Velocity—IRS, LR	in/sec
DDELRR	Wheel Center Velocity—IRS, RR	in/sec
WCDDELLR	Wheel Center Velocity—ARS, LR	in/sec
WCDDELRR	Wheel Center Velocity—ARS, RR	in/sec
DDELRAx	Rear Axle Heave Velocity—ARS	in/sec
PHIRD	Rear Axle Roll Vel. wrt Body—ARS	deg/sec
ADELDLR	Velocity at spring/shock—ARS, Left	in/sec
ADELDRR	Velocity at spring/shock—ARS, Right	in/sec

Suspension Accelerations

DDELDF	Wheel Center Acceleration, LF	in/sec ²
DDELDRF	Wheel Center Acceleration, RF	in/sec ²
DDELDLR	Wheel Center Acceleration—IRS, LR	in/sec ²
DDELDRR	Wheel Center Acceleration—IRS, RR	in/sec ²
DDELDRAX	Rear Axle Acceleration—ARS	in/sec ²
PHIRDD	Rear Axle Roll Acceleration—ARS	deg/sec ²