Standard Simulation Variable Names

Flight Simulation Technical Committee

Filename: Macintosh HD:AABackup These Files- Aero Geek:Sim Standards:Std variable names:simpar.AIAA

Date: December 2001

This table is meant to contain simulation variables that are independent of the particular vehicle type being simulated. These variables are tailored towards aircraft simulation.

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS ?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
1	1	R*4		PHI	Euler_Roll_Angle_deg	y	Roll Euler Angle, L (local) Frame	DEG	RWD		-180	180		2	
2	5	R*4		THET	Euler_Pitch_Angle_deg	y	Pitch Euler Angle, L (local) Frame	DEG	ANU		-90	90		2	
3	9	R*4		PSI	Euler_Yaw_Angle_deg (True_Heading_Angle)	m	Yaw Euler Angle, L (local) Frame	DEG	ANR		-180	180		2	
4	13	R*4	F	PHIR	Euler_Roll_Angle_rad	y	Roll Angle, L frame	RAD	RWD		-p	p	10) 1.3.3.3	1,2	
5	17	R*4	Q	THETR	Euler_Pitch_Angle_rad	y	Pitch Angle, L frame	RAD	ANU		-p/2	p/2	10) 1.3.3.2	1,2	
6	21	R*4	Y	PSIR	Euler_Yaw_Angle_rad (True_Heading_Angle)	m	Yaw Angle, L frame	RAD	ANR		-p	p	10) 1.3.3.1	1,2	
7	25	R*4		PHID	Euler_Roll_Angle_Rate_rad_p_s	y	Euler roll rate, L frame	RAD/SEC	RWD						
8	29	R*4		THED	Euler_Pitch_Angle_Rate_rad_p_s	y	Euler pitch rate, L frame	RAD/SEC	ANU						
9	33	R*4		PSID	Euler_Yaw_Angle_Rate_rad_p_s	y	Euler yaw rate, L frame	RAD/SEC	ANR						
10	37	R*4		SPHI	Sine_Of_Euler_Roll_Angle		Sine Of Euler Roll Angle	ND	RWD		-1.0	1.0			
11	41	R*4		CPHI	Cosine_Of_Euler_Roll_Angle		Cosine Of Euler Roll Angle	ND	RWD		-1.0	1.0			
12	45	R*4		STHT	Sine_Of_Euler_Pitch_Angle		Sine Of Euler Pitch Angle	ND	ANU		-1.0	1.0			
13	49	R*4		CTHT	Cosine_of_Euler_Pitch_Angle		Cosine Of Euler Pitch Angle	ND	ANU		-1.0	1.0			
14	53	R*4		SPSI	Sine_Of_Euler_Yaw_Angle		Sine Of Euler Yaw Angle	ND	ANR		-1.0	1.0			
15	57	R*4		CPSI	Cosine_Of_Euler_Yaw_Angle		Cosine Of Euler Yaw Angle	ND	ANR		-1.0	1.0			
16	61	R*4		T11			CTHT*CPSI (L To B)	ND							
17	65	R*4		T21			SPHI*STHT*CPSI - CPHI*SPSI (L To B)	ND							
18	69	R*4		T31			CPHI*STHT*CPSI + SPHI*SPSI (L to B)	ND							
19	73	R*4		T12			CTHT*SPSI (L to B)	ND							
20	77	R*4		T22			SPHI*STHT*SPSI + CPHI*CPSI (L to B)	ND							
21	81	R*4		T32			CPHI*STHT*SPSI - SPHI*CPSI (L to B)	ND							
22	85	R*4		T13			-STHT (L to B)	ND							
23	89	R*4		T23			SPHI*CTHT (L to B)	ND							
24	93	R*4		T33			CPHI*CTHT (L to B)	ND							
25	97	R*4		ALFA	Angle_Of_Attack_deg	s	Angle Of Attack	DEG	ANU						
26	101	R*4		BETA	Angle_Of_Sideslip_deg (Sideslip_Angle)	m	Sideslip Angle	DEG	ANL						
27	105	R*4	a	ALFAR	Angle_Of_Attack_rad	s	Angle Of Attack	RAD	ANU		-p	p	10) 1.3.2.2	3	
28	109	R*4	b	BETAR	Angle_Of_Sideslip_rad (Sideslip_Angle)	m	Sideslip Angle Ref. 10 Limits Angle of Sideslip to: - p/2 to p/2	RAD	ANL		-p	p	10) 1.3.2.1	3	
29	113	R*4		ALFD	Angle_Of_Attack_Rate_rad_p_s	s	Angle Of Attack Rate	RAD/SEC	ANU						
30	117	R*4		BETD	Angle_Of_Sideslip_Rate_rad_p_s (Sideslip_Angle_Rate)	m	Sideslip Angle Rate	RAD/SEC	ANR						
31	121	R*4		SALPH	Sine_Of_Angle_Of_Attack		Sine Of Angle Of Attack	ND	ANU		-1.0	1.0			
32	125	R*4		CALPH	Cosine_Of_Angle_Of_Attack (Cosine_Angle_Of_Attack)	m	Cosine Of Angle Of Attack	ND	ANU		-1.0	1.0			

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33	129	R*4		SBETA	Sine_Of_Angle_Of_Sideslip (Sine_Angle_Of_Attack)	m	Sine Of Sideslip Angle	ND	ANL		-1.0	1.0			
34	133	R*4		CBETA	Cosine_Of_Angle_Of_Sideslip		Cosine Of Sideslip Angle	ND	ANL		-1.0	1.0			
35	137	R*4	g	GAMV	Flight_Path_Inclination_Angle_rad (Flight_Path_Angle)	m	Flight Path Angle Above Horizon	RAD	ANU		-p/2	p/2	10) 1.3.5.2	3	
36	141	R*4	c	GAMH	Flight_Path_Azimuth_Angle_rad (Ground_Track_Velocity_Angle)	m	Flight Path Angle In Horizon Plane	RAD	CWFN		-p	p	10) 1.3.5.1	3	
37	145	R*4	p	PB s_PB	s_Body_Roll_Rate_rad_p_s	S	Aircraft Roll Velocity, Body Frame	RAD/SEC	RWD				10) 1.4.6	3	
38	149	R*4	q	QB s_QB	s_Body_Pitch_Rate_rad_p_s	S	Aircraft Pitch Velocity, B-frame	RAD/SEC	ANU				10) 1.4.6	3	
39	153	R*4	r	RB s_RB	s_Body_Yaw_Rate_rad_p_s	S	Aircraft Yaw Velocity, B-frame	RAD/SEC	ANR				10) 1.4.6	3	
40	157	R*4	p	PBD	Body_Roll_Acceleration_rad_p_s2	S	Aircraft Roll Acceleration, B-frame	RAD/SC2	RWD						
41	161	R*4	q	QBD	Body_Pitch_Acceleration_rad_p_s2	S	Aircraft Pitch Accel, B-frame	RAD/SC2	ANU						
42	165	R*4	r	RBD	Body_Yaw_Acceleration_rad_p_s2	S	Aircraft Yaw Acceleration, B-frame	RAD/SC2	ANR						
43	169	R*4	UB	UB s_UB	s_Body_X_Velocity_f_p_s	S	X-velocity B-frame. (State varaible) NLR: groundspeed along x body axis	FT/SEC m/s	FWD				10) 1.4.4	3	
44	173	R*4	VB	VB s_VB	s_Body_Y_Velocity_f_p_s	S	Y-velocity B-frame (State varaible)	FT/SEC	RT				10) 1.4.4	3	
45	177	R*4	WB	WB s_WB	s_Body_Z_Velocity_f_p_s	S	Z-velocity B-frame (State varaible)	FT/SEC	DWN				10) 1.4.4	3	
46	181	R*4	UTURB	UTURB	Body_X_Turbulence_Velocity_f_p_s	S	X-velocity Turb. Component, B-frame	FT/SEC	FWD						
47	185	R*4	VTURB	VTURB	Body_Y_Turbulence_Velocity_f_p_s	S	Y-velocity Turb. Component, B-frame	FT/SEC	RT						
48	189	R*4	WTURB	WTURB	Body_Z_Turbulence_Velocity_f_p_s	S	Z-velocity Turb. Component, B-frame	FT/SEC	DWN						
49	193	R*4	uo(FE)	VN	FE_axis_X_Velocity_f_p_s		Northward Velocity Over Fixed Earth (FE) axis system [flat, non-rotating earth]	FT/SEC	NORTH						
50	197	R*4	vo(FE)	VE	FE_axis_Y_Velocity_f_p_s		Eastward Velocity Over Fixed Earth (FE) axis system [flat, non-rotating earth]	FT/SEC	EAST						
51	201	R*4	wo(FE)	VD	FE_axis_Z_Velocity_f_p_s		Downward Velocity Toward Earth Ctr,.(FE) axis system [flat, non-rotating earth]	FT/SEC	DOWN						
			uo(GE)	U_GE	GE_axis_X_Velocity_f_p_s		X velocity component in the Geocentric Earth-fixed (GE) axis system. This is the same as the DIS "Geocentric catesian" coordinate" system , also called "World" coordinate system.	FT/SEC						1	10) 1.1.3

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			vo(GE)	V_GE	GE_axis_Y_Velocity_f_p_s Y_Velocity_Component_GE_Frame_f_p_s		X velocity component in the Geocentric Earth-fixed (GE) axis system. This is the same as the DIS "Geocentric catesian" coordinate" system , also called "World" coordinate system.	FT/SEC						1	10) 1.1.3
			wo(GE)	W_GE	GE_axis_Z_Velocity_f_p_s Z_Velocity_Component_GE_Frame_f_p_s		X velocity component in the Geocentric Earth-fixed (GE) axis system. This is the same as the DIS "Geocentric catesian" coordinate" system , also called "World" coordinate system.	FT/SEC						1	10) 1.1.3
52	205	R*4		VDOT	Total_Inertial_Accel_ f_p_s2		Rate of change of inertial velocity	FT/S2	NSC						
53	209	R*4	VRL	VT	Total_Inertial_Velocity_f_p_s		Total Velocity, L frame	FT/SEC	NSC						
54	213	R*4	VRG	VG	Ground_Speed_f_p_s	s	Ground Speed, L frame	FT/SEC	NSC						
55	217	R*4	Vrw	VRW	True_Airspeed_f_p_s	S	Vehicle Velocity relative to the.wind (true airspeed)	FT/SEC	NSC						
56	221	R*4	M	XMACH	Mach_Number	s	Mach Number	ND	NSC						
57	225	R*4		VNRW			North Relative Velocity Vn-vnw	FT/SEC	NORTH						
58	229	R*4		VERW			East Relative Velocity Ve-vew	FT/SEC	EAST						
59	233	R*4		VDRW			Down Relative Velocity Vd-vdw	FT/SEC	DOWN						
60	237	R*4		VEQ	Equivalent_Airspeed_nmi_p_h	s	Equiv. Airspeed	KNOTS	NSC						
61	241	R*4	VWNNw	VNW	Wind_North_Velocity_f_p_s (Wind_Earth_Axis_Velocity)	M	North Comp. Of Wind Velocity (STARS uses an array for all 3 compnts.)	FT/SEC	TO						
62	245	R*4	VWEEw	VEW	Wind_East_Velocity_f_p_s (Wind_Earth_Axis_Velocity)	M	East Comp. Of Wind Velocity (STARS uses an array for all 3 compnts.)	FT/SEC	TO						
63	249	R*4	VWDD/w	VDW	Wind_Down_Velocity_f_p_s (Wind_Earth_Axis_Velocity)	M	Down Comp. Of Wind Velocity (STARS uses an array for all 3 compnts.)	FT/SEC	TO						
64	253	R*4		VTW	Wind_Total_Velocity_f_p_s		Total Wind Velocity	FT/SEC	NSC						
65	257	R*4		ALTD	Altitude_Rate_f_p_s		Altitude Rate Of Change	FT/SEC	DOWN						
66	261	R*4		XLOND	Longitude_Rate_rad_p_s		Longitude Rate Of Change	RAD/SEC	WEST						
67	265	R*4		XLATD	Latitude_Rate_rad_p_s		Latitude Rate Of Change	RAD/SEC	NORTH						
68	269	R*4		ALT	Altitude_MSL_f (Height_Above_Sea_Level) (Height_Above_Mean_Sea_Level)	m	Altitude Of Aircraft Above Sea Lvl	FT	UP						
69	273	R*4		XLON	Longitude_rad (Geodetic_Longitude)	m	Longitude Of Aircraft	RAD	WEST						
70	277	R*4		XLAT	Latitude_rad (Geodetic_Latitude)	m	Latitude Of Aircraft	RAD	NORTH						
71	281	R*4		SLAT	Sine_Of_Latitude (Sine_Latitude)	m	Sine Of Aircraft Latitude	ND	NORTH						

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72	285	R*4		CLAT	Cosine_Of_Latitude		Cosine Of Aircraft Latitude	ND	NORTH						
73	289	R*4		VND			North Acceleration Over Earth	FT/SEC2	NORTH						
74	293	R*4		VED			East Acceleration Over Earth NOTE: we need fixed and rotating earth variables	FT/SEC2	EAST						
75	297	R*4		VDD			Down Acceleration Toward Earth	FT/SEC2	DOWN						
76	301	R*4		AX	Body_Axis_X_Cg_Accel_f_p_s2		X Acceleration Of A/c C.g. (body axis)	FT/SEC2	FWD						
77	305	R*4		AY	Body_Axis_Y_Cg_Accel_f_p_s2		Y Acceleration Of A/c C.g. (body axis)	FT/SEC2	RT						
78	309	R*4		AZ	Body_Axis_Z_Cg_Accel_f_p_s2		Z Acceleration Of A/c C.g. (body axis)	FT/SEC2	DOWN						
79	313	R*4		AXP	Body_Axis_X_Pilot_Accel_f_p_s2		X Acceleration Of Pilot (body axis)	FT/SEC2	FWD						
80	317	R*4		AYP	Body_Axis_Y_Pilot_Accel_f_p_s2		Y Acceleration Of Pilot (body axis)	FT/SEC2	RT						
81	321	R*4		AZP	Body_Axis_Z_Pilot_Accel_f_p_s2		Z Acceleration Of Pilot (body axis)	FT/SEC2	DOWN						
82	325	R*4		G	Accel_Due_To_Gravity_f_p_s2 (Local_Gravity) (Gravitational_Acceleration_Value)	m	Acceleration Due To Gravity (at the vehicle altitude)	FT/SEC2 (g) (g)	DOWN						
83	329	R*4		VCAL	Calibrated_Airspeed_nmi_p_h	s	Calibrated Air Speed	KNOTS	FWD						
84	333	R*4		XPR			Distance Of Pilot Down Runway	FT	DOWN						
85	337	R*4		YPR			Distance Of Pilot To Right Of Rwy	FT	RIGHT						
86	341	R*4		HPR			Height Of Pilot Above Runway	FT	UP						
87	345	R*4		DNR			Aircraft Distance North Of Runway	FT	NORTH						
88	349	R*4		DER			Aircraft Distance East Of Runway	FT	EAST						
89	353	R*4		HDG_RWY	Active_Runway_Heading_deg		Compass heading of current runway	DEG							
90	357	R*4		XRUNWAY			X-position in NED of runway (latitude)	FT	NORTH						
91	361	R*4		YRUNWAY			Y-location in NED of runway (longitude)	FT	EAST						
92	365	R*4		CLATR			Cosine Of Runway Latitude	ND	NORTH						
93	369	R*4		SHDGRWY			Sine of runway compass heading								
94	373	R*4		CHDGRWY			Cosine of runway compass heading								
95	377	R*4	Ix	XIXX	Total_Aircraft_Ixx_Moment_Of_Inertia_slug_f2	S	Vehicle X - Moment Of Inertia about Cg	SLG-FT2	NSC				10) 1.5.2		
96	381	R*4	Iy	XIYY	Total_Aircraft_Iyy_Moment_Of_Inertia_slug_f2	S	Vehicle Y - Moment Of Inertia about Cg	SLG-FT2	NSC				10) 1.5.2		
97	385	R*4	Iz	XIZZ	Total_Aircraft_Izz_Moment_Of_Inertia_slug_f2	S	Vehicle Z - Moment Of Inertia about Cg	SLG-FT2	NSC				10) 1.5.2		

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98	389	R*4	Ixz	XIXZ	Total_Aircraft_Ixz_Product_Of_Inertia_slug_f2	S	Vehicle Xz Prod Of Inertia about Cg	SLG-FT2	NSC				10) 1.5.3		
99	393	R*4	Ixy	XIXY	Total_Aircraft_Ixy_Product_Of_Inertia_slug_f2	S	Vehicle Xy Prod Of Inertia about Cg	SLG-FT2	NSC				10) 1.5.3		
100	397	R*4	Iyz	XIYZ	Total_Aircraft_Iyz_Product_Of_Inertia_slug_f2	S	Vehicle Yz Prod Of Inertia about Cg	SLG-FT2	NSC				10) 1.5.3		
101	401	R*4	MASS	XMASS	Aircraft_Gross_Mass_slug (Total_Aircraft_Mass)	m	Mass Of Vehicle (incl Fuel)	SLUGS	NSC						
102	405	R*4	CL	CL	Coefficient_Of_Lift		Coefficient Of Lift, Total	ND	UP					3	
103	409	R*4	CD	CD	Coefficient_Of_Drag		Coefficient Of Drag, Total	ND	AFT					3	
104	413	R*4	CX	CX	Aero_X_Component_Force_Coefficient (Total_Aero_X_Force_Coefficient)	m	Aero X-body Force Coeff (Body axis) = FAX/((1/2)rV2S)	ND	FWD				10) 1.6.3	3	
105	417	R*4	CY	CY	Aero_Y_Component_Force_Coefficient (Total_Aero_Y_Force_Coefficient)	m	Aero Y-body Side Force Coeff (Body axis) = FAY/((1/2)rV2S)	ND	RT				10) 1.6.3	3	
106	421	R*4	CZ	CZ	Aero_Z_Component_Force_Coefficient (Total_Aero_Z_Force_Coefficient)	m	Aero Z-body Force Coeff (Body axis) = FAZ/((1/2)rV2S)	ND	DOWN				10) 1.6.3	3	
107	425	R*4	FAX	FAX	Aero_X_Component_Force_lbf	S	Total Aero Force, X-body	LB	FWD					3	
108	429	R*4	FAY	FAY	Aero_Body_Y_Force_lbf	S	Total Aero Force, Y-body	LB	RT					3	
109	433	R*4	FAZ	FAZ	Aero_Body_Z_Force_lbf	S	Total Aero Force, Z-body	LB	DOWN					3	
110	437	R*4	FTX	FEX FTX	Thrust_X_Component_Force_lbf	S	Total Engine Force, X-body	LB	FWD					3	
111	441	R*4	FTY	FEY FTY	Thrust_Y_Component_Force_lbf	S	Total Engine Force, Y-body	LB	RT					3	
112	445	R*4	FTZ	FEZ FTZ	Thrust_Z_Component_Force_lbf	S	Total Engine Force, Z-body	LB	DOWN					3	
113	449	R*4	FGX	FGX	Landing_Gear_X_Component_Force_lbf	S	Total Gear Force, X-body	LB	FWD					3	
114	453	R*4	FGY	FGY	Landing_Gear_Y_Component_Force_lbf	S	Total Gear Force, Y-body	LB	RT					3	
115	457	R*4	FGZ	FGZ	Landing_Gear_Z_Component_Force_lbf	S	Total Gear Force, Z-body	LB	DOWN					3	
116	461	R*4	Fx	FTX FX	Sum_Of_X_Component_Forces_lbf (Total_Body_X_Force) (Total_Body_Axis_X_Force)	M	Total Forces On A/c, X-body	LB	FWD					3	
117	465	R*4	Fy	FTY FY	Sum_Of_Y_Component_Forces_lbf (Total_Body_Y_Force) (Total_Body_Axis_Y_Force)	M	Total Forces On A/c, Y-body	LB	RT					3	

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118	469	R*4	Fz	FTZ FZ	Sum_Of_Z_Component_Forces_lbf (Total_Body_Z_Force) (Total_Body_Axis_Z_Force)	M	Total Forces On A/c, Z-body	LB	DOWN					3	
119	473	R*4		FN			Total Force, North Axis	LB	NORTH						
120	477	R*4		FE			Total Force, East Axis	LB	EAST						
121	481	R*4		FD			Total Force, Down Axis	LB	DOWN						
122	485	R*4	FG	FG	Gravitational_Force_lbf		Total Force Due To Gravity (at Alt.)	LB	NSC						
123	489	R*4	Cl	CLL	Aero_Body_Roll_Moment_Coefficient (Total_Aero_Rolling_Moment_Coefficient)	m	Total Aerodynamic Rolling Moment Coef., X-body, =La/((1/2)rV2Sb)	ND	RWD					3	
124	493	R*4	Cm	CLM	Aero_Body_Pitch_Moment_Coefficient (Total_Aero_Pitching_Moment_Coefficient)	m	Total Aerodynamic Pitch Moment Coef., Y-body, =Ma/((1/2)rV2Sc)	ND	ANU					3	
125	497	R*4	Cn	CLN	Aero_Body_Yaw_Moment_Coefficient (Total_Aero_Yawing_Moment_Coefficient)	m	Total Aerodynamic Yawing Moment Coef., Z-body, =Na/((1/2)rV2Sb)	ND	ANR					3	
126	501	R*4	Max or LA	TAL	Aero_Body_Roll_Moment_f_lbf	S	Total Aerodynamic Rolling Torque, X-body Max is STARS convention LA is ANSI & general convention	FT-LB	RWD						
127	505	R*4	May or MA	TAM	Aero_Body_Pitch_Moment_f_lbf	S	Total Aerodynamic Pitch Torque, Y-body	FT-LB	ANU						
128	509	R*4	Maz or NA	TAN	Aero__Body_Yaw_Moment_f_lbf	S	Total Aerodynamic Yawing Torque, Z-body	FT-LB	ANR						
129	513	R*4	Mtx or LT	TEL	Thrust _Body_Roll_Moment_f_lbf	S	Total Engine Rolling Moment, X-body Mtx is STARS convention LT is ANSI & general convention	FT-LB	RWD						
130	517	R*4	Mty or MT	TEM	Thrust _Body_Pitch_Moment_f_lbf	S	Total Engine Pitch Moment, Y-body	FT-LB	ANU						
131	521	R*4	Mtz or NT	TEN	Thrust_Body_Yaw_Moment_f_lbf	S	Total Engine Yawing Moment, Z-body	FT-LB	ANR						
132	525	R*4	Mgx	TGL	Landing_Gear_Pitch_Moment_f_lbf	S	Total Landing Gear Rolling Moment, X-body	FT-LB	RWD						
133	529	R*4	Mgy	TGM	Landing_gear_Roll_Moment_f_lbf	S	GTotal Landing ear Pitch Moment, Y-body	FT-LB	ANU						
134	533	R*4	Mgz	TGN	Landing_gear_Yaw_Moment_f_lbf	S	Total Landing Gear Yawing Moment, Z-body	FT-LB	ANR						
135	537	R*4	Mtotx	TTL	Total_Body_Roll_Moment_f_lbf (Total_Body_Rolling_Moment) (Total_Body_Axis_Rolling_Moment)	M	Total Rolling Moment, X-body	FT-LB	RWD						

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136	541	R*4	Mtot y	TTM	Total_Body_Pitch_Moment_f_lbf (Total_Body_Pitching_Moment) (Total_Body_Axis_Pitching_Moment)	M	Total Pitching Moment, Y-body	FT-LB	ANU						
137	545	R*4	Mtot z	TTN	Total_Body_Yaw_Moment_f_lbf (Total_Body_Yawing_Moment) (Total_Body_Axis_Yawing_Moment)	M	Total Yawing Moment, Z-body	FT-LB	ANR						
138	549	R*4		HGT_RWY			Height Of Runway W/r/t Sea Level	FT	UP						
139	553	R*4		XPLT2CG			X Position Of Pilot W/r/t C.g.	FT	FWD						
140	557	R*4		YPLT2CG			Y Position Of Pilot W/r/t C.g.	FT	RT						
141	561	R*4		ZPLT2CG			Z Position Of Pilot W/r/t C.g.	FT	DWN						
142	565	R*4		XCG			C.g. X-position W/r/t Runway	FT	NORTH						
143	569	R*4		YCG			C.g. Y-position W/r/t Runway	FT	EAST						
144	573	R*4		HCG			C.g. Z-position W/r/t Runway	FT	DOWN						
145	577	R*4		WAIT	(Total_Aircraft_Gross_Weight) (Aircraft_Gross_Weight)	m	Aircraft Gross Weight	LB	NSC						
146	581	R*4		QBAR	(Dynamic_Pressure)	m	Dynamic Pressure	LB/FT2	NSC						
147	585	R*4		QBARC			Inpact Pressure	LB/FT2	NSC						
148	589	R*4		AREA	(Reference_Wing_Area_Feet2_Constant)	m	Wing Area	FT2	NSC						
149	593	R*4		SPAN	(Wing_Span_Feet_Constant)	m	Wing Span	FT	NSC						
150	597	R*4		CHORD	(Mean_Chord_Length_Feet_Constant)	m	Mean Aerodynamic Chord	FT	NSC						
151	601	R*4		RHO	(Air_Density)	M	Air Density, At Altitude	SLG/FT3	NSC						
152	605	R*4		SOUND			Velocity Of Sound At Altitude	FT/SEC							
153	609	R*4		PHIIC			Initial Roll Angle	DEG	RWD						
154	613	R*4		THETIC			Initial Pitch Angle	DEG	ANU						
155	617	R*4		PSIIC			Initial Yaw Angle	DEG	ANR						
156	621	R*4	gIC	GAMVIC			Initial Vertical Flt Path Angle	DEG	AH						
157	625	R*4	cIC	GAMHIC			Initial Horizontal Flt Path Angle	DEG	CWFN						
158	629	R*4		PBIC			Initial Roll Angular Rate	DEG/SEC	RWD						
159	633	R*4		QBIC			Initial Pitch Angular Rate	DEG/SEC	ANU						
160	637	R*4		RBIC			Initial Yaw Angular Rate	DEG/SEC	ANR						
161	641	R*4		VEQIC			Initial Equiv Air Speed	KNOTS	NSC						
162	645	R*4		XIC			Initial Distance From Runway	FT	NORTH						
163	649	R*4		YIC			Initial Distance From Runway	FT	EAST						
164	653	R*4		HIC			Initial Height Above Sea Level	FT	UP						
165	657	R*4		WAITIC			Initial Gross Weight	LB	NSC						
166	661	R*4		CG			C.g. Position W/r/t L.e. Of Mac	PCT	AFT						
167	665	R*4		SOUND_SL			Standard day speed of sound @ sea level	FT/SEC							
168	669	R*4		TIME			Time Since Start Of Operate Mode	SEC	NSC						

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS ?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
169	673	R*4		TR			Total Temperature Ratio	ND	NSC						
170	677	R*4		PR			Total Pressure Ratio	ND	NSC						
171	681	R*4		D2R			0.01745329 Deg To Rad Conversion Factor	RAD/DEG	NSC						
172	685	R*4		R2D			57.2957795 Rad To Deg Conversion Factor	DEG/RAD	NSC						
173	689	R*4		TAMB_K			Ambient Temperature, degrees Kelvin	DEG K							
174	693	R*4		PAMB	(Ambient_Air_Pressure)	m	Ambient Pressure	PSF	NSC						
175	697	R*4		TTOT_K			Total Temperature in degrees Kelvin	DEG K							
176	701	R*4		PTOT			Total Pressure	PSF	NSC						
177	705	R*4		EXMX			Ang Mom Abt X-axis Of Rotating Eng	FT#SEC	NSC						
178	709	R*4		EXMY			Ang Mom Abt Y-axis Of Rotating Eng	FT#SEC	NSC						
179	713	R*4		EXMZ			Ang Mom Abt Z-axis Of Rotating Eng	FT#SEC	NSC						
180	717	R*4	uB	UBD or sd_UBD	sd_Body_X_Acceleration_f_p_s2	S	Forward Acceleration, B-frame	FPS2	FWD						
181	721	R*4	vB	VBD or sd_VBD	sd_Body_Y_Acceleration_f_p_s2	S	Right Sideward Acceleration, B-frame	FPS2	RT						
182	725	R*4	wB	WBD or sd_WBD	sd_Body_Z_Acceleration_f_p_s2	S	Downward Acceleration, B-frame	FPS2	DOWN						
183	729	R*4		VTWN			Net wind velocity from north	FPS	NORTH						
184	733	R*4		VTWE			Net wind velocity from east	FPS	EAST						
185	737	R*4		VTWD			STAR wind velocity from below	FPS	DOWN						
186	741	R*4		VNTURB			North component of turbulence	FPS	NORTH						
187	745	R*4		VETURB			East component of turbulence	FPS	EAST						
188	749	R*4		VDTURB			Down component of turbulence	FPS	DOWN						
189	753	R*4		PAMBR	(Air_Pressure_Ratio)	m	Ratio Of Ambient to Sea Level Pressure	ND	NSC						
190	757	R*4		TAMBR			Ratio Of Ambient To Sea Level Temp.	ND	NSC						
191	761	R*4		DXCG	(Aircraft_X_CG_Position)	m	Cg Displacement From Reference	FT	FWD						
192	765	R*4		DYCG	(Aircraft_Y_CG_Position)	m	Cg Displacement From Reference	FT	RT						
193	769	R*4		DZCG	(Aircraft_Z_CG_Position)	m	Cg Displacement From Reference	FT	DWN						
194	773	R*4		PS			Stability Axis roll rate	RPS	RWD						
195	777	R*4		RS			Stability Axis yaw rate	RPS	ANR						
196	781	R*4		PBDEG	Body_Roll_Acceleration_deg_p_s2	S	Roll rate, body axis	DPS	RWD						
197	785	R*4		QBDEG	Body_Pitch_Acceleration_deg_p_s2	S	Pitch rate, body axis	DPS	ANU						
198	789	R*4		RBDEG	Body_Yaw_Acceleration_deg_p_s2	S	Yaw rate, body axis	DPS	ANR						
199	793	I*													
200	797	I*		IWEEL			Landing Gear Down	ND	NSC						
201	801	I*		IWEELC			Command Landing Gear Down	ND	NSC						
202	805	I*		ILGTRN			Landing Gear In Transit	ND	NSC						
203	809	I*		IPARAC			Activate Parachute	ND	NSC						
204	813	I*		IATCG			Cg Reference Point Moment Transfer Flag	ND	NSC						

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS ?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
205	817	R*4													
206	821	R*4													
207	825	R*4													
208	829	R*4													
209	833	R*4		NX			Acceleration at CG	Gs	FWD						
210	837	R*4		NY			Acceleration at CG	Gs	RT						
211	841	R*4		NZ			Acceleration at CG	Gs	DOWN						
212	845	R*4													
213	849	R*4													
214	853	R*4		Q0BIAS			SCOPE pitch rate QBody bias	R/S	ANU						
215	857	R*4		U0BIAS			SCOPE forward velocity UBody bias	FT/S	FWD						
216	861	R*4		W0BIAS			SCOPE vertical velocity WBody bias	FT/S	DWN						
217	865	R*4		T0BIAS			SCOPE pitch attitude THETA bias	DEG	ANU						
218	869	R*4		P0BIAS			SCOPE roll rate RB bias	R/S	RWD						
219	873	R*4		R0BIAS			SCOPE yaw rate RBody bias	R/S	ANR						
220	877	R*4		V0BIAS			SCOPE side velocity VBody bias	FT/S	RT						
221	881	R*4		PHI0BIAS			SCOPE roll attitude PHI bias	DEG	RWD						
222	885	R*4		FXBIAS			SCOPE axial force FX bias	LBS	FWD						
223	889	R*4		FZBIAS			SCOPE normal force FZ bias	LBS	DWN						
224	893	R*4		TMBIAS			SCOPE pitch moment TM bias	FT * LB	ANU						
225	897	R*4		FYBIAS			SCOPE side force FY bias	LBS	RT						
226	901	R*4		TLBIAS			SCOPE rolling moment TL bias	FT * LB	RWD						
227	905	R*4		TNBIAS			SCOPE yawing moment TN bias	FT * LB	ANR						
228	909	R*4		DTAMB_R			Delta to ambient temperature, deg Rankin	DEG R							
229	913	R*4		XCGLOC			X-location in inertial space of CG	FT							
230	917	R*4		YCGLOC			Y-location in inertial space of CG	FT							
231	921	R*4		ZCGLOC			Z-location in inertial space of CG	FT							
232	925	R*4		XPLOC			X-location in inertial space of pilot	FT							
233	929	R*4		YPLOC			Y-location in inertial space of pilot	FT							
234	933	R*4		ZPLOC			Z-location in inertial space of pilot	FT							
235	937	R*4		RR			Radius of Earth + height of rwy above SL	FT							
236	941	R*4		UUU			Inertial velocity trans to body x-axis	FT/S	+FWD						
237	945	R*4		VVV			Inertial velocity trans to body y-axis	FT/S	+RT						
238	949	R*4		WWW			Inertial velocity trans to body z-axis	FT/S	+DWN						
239	953	R*4		PTURB			Body axis roll turbulence	RAD/S	RT						
240	957	R*4		QTURB			Body axis pitch turbulence	RAD/S	ANU						
241	961	R*4		RTURB			Body axis yaw turbulence	RAD/S	RT						
242	965	R*4		PBWN			Roll rate wrt roll turbulence	RAD/S	RT						
243	969	R*4		QBWN			Pitch rate wrt pitch turbulence	RAD/S	UP						
244	973	R*4		RBWN			Yaw rate wrt yaw turbulence	RAD/S	RT						
245	977	R*4		PSWN			Stability axis roll rate w/turb	R/S	RT						

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS ?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
246	981	R*4		RSWN			Stability axis yaw rate w/turb	R/S	RT						
247	985	R*4		RALT	(Height_Above_Terrain)	m	Radar altitude (hgt above terrain)	FT							
248	989	R*4		RE	Radius_of_Smooth_Earth_f		Radius of Earth (center to smooth surface), round earth model	FT							
				H_O_T	Height_of_Terrain_f		Height of the terrain under the a/c cg. It is the terrain height above the smooth surface of of the earth, regardless whether a flat, round or oblate spheroid model is used.	FT							
				RE_OS	Radius_Of_Oblate_Spheroid_Earth_f		Radius of Earth, center to smooth surface, oblate spheroid earth model.	FT							
249	993	R*4		DTINV			Inverse of simulation time step	SEC-1							
250	997	R*4		G_INV			Inverse of acceleration due to gravity	SEC2/FT							
251	1001	R*4		FPS2KTS			Conversion from feet/sec to knots	KTS/FPS							
252	1005	R*4		KTS2FPS			Conversion from knots to feet/sec	FPS/KTS							
253	1009	R*4		TAMB_R			Ambient temperature, degrees Rankin	DEG R							
254	1013	R*4		TTOT_R			Total temperature, degrees Rankin	DEG R							
255	1017	R*4		ALT_SET			Altimeter setting (Kohlsman window)	IN HG							
256	1021	R*4		ALT_PRESSURE	Pressure_Altitude_f		Pressure altitude	FT							
257	1025	R*4		ALT_TAMB_REF			Altitude at reference temperature	FT							
258	1029	R*4		TAMB_R_REF			Ref. ambient temperature (non-standard)	DEG R							
259	1033	R*4		RHO_SL			Standard day air density at sea level	SLUG/FT3							
260	1037	R*4		TAMB_R_SL			Standard day ambient temperature	DEG R							
261	1041	R*4		PAMB_SL			Standard day ambient pressure	LB/FT2							
262	1045	R*4		CGXREF	(X_CG_Reference_Inches_Constant)	m	X-location of reference CG (fuselage sta	IN	AFT						
263	1049	R*4		CGYREF	(Y_CG_Reference_Inches_Constant)	m	Y-location of reference CG (buttline)	IN	LEFT						
264	1053	R*4		CGZREF	(Z_CG_Reference_Inches_Constant)	m	Z-location of reference CG (waterline)	IN	UP						
265	1057	R*4		PI			Constant = pi = 3.14159								
266	1061	R*4		PIOVR2			Constant PI / 2.0								
267	1065	R*4		RALT_TERRAIN			Radar alt perpendicular to terrain slope	FT							
268	1069	R*4		VNGUST			North wind gust component	FT/S	North						
269	1073	R*4		VEGUST			East wind gust component	FT/S	East						
270	1077	R*4		VDGUST			Down wind gust component	FT/S	Down						
271	1081	R*4		WIND_SPEED			Total velocity of steady wind	KNOTS							

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
272	1085	R*4		WIND_DIRECTION			Steady wind heading (blowing FROM)	DEG							
273	1089	R*4		UBURB			Body x-axis component of carrier burbleFT/S	FWD							
274	1093	R*4		VBURB			Body y-axis component of carrier burbleFT/S	RT							
275	1097	R*4		WBURB			Body z-axis component of carrier burbleFT/S	Down							
276	1101	R*4		PBURB			Roll component of carrier burble	RAD/S	RT						
277	1105	R*4		QBURB			Pitch component of carrier burb	RAD/S	ANU						
278	1109	I*		TURB_LEVEL			Level of severity of turbulence								
279	1113	I*		TURB_MODEL			DRYDEN = 1, Von Karman = 2								
280	1117	I*		TURB_TYPE			Random = 1, Repeatable = 2								
281	1121	I*		GUST_LEVEL			Step gust level - magnitude,frequency								
282	1125	I*		BURB_TYPE			Ship burble type 0-off,1-random,2:11 rpt								
283	1129	R*4		FDX			Delta to x-axis body force	LB	+FWD						
284	1133	R*4		FDY			Delta to y-axis body force	LB	+RT						
285	1137	R*4		FDZ			Delta to z-axis body force	LB	+DOWN						
286	1141	R*4		TDL			Delta to roll moment	FT-LB	+RWD						
287	1145	R*4		TDM			Delta to pitch moment	FT-LB	+ANU						
288	1149	R*4		TDN			Delta to yaw moment	FT-LB	+ANR						
289	1153	I*		IFLAPC			Flap command (0:retract, 1..n:extend)								
290	1157	I*		IFLAP			Flap status (-1:trans,0:up,1..n out)								
291	1161	I*		IWOW	(Weight_On_Wheels)	m	Weight-on-wheels flag (0:none,1:on)								
292	1165	R*4		SLOPE_RWY			Slope (ie "pitch") of runway	DEG							
293	1169	R*4		BANK_RWY			Bank (ie "roll") of runway	DEG	RT						
294	1173	R*4		CBNKRWY			Cosine of runway Euler bank angle								
295	1177	R*4		SBNKRWY			Sine of runway Euler bank angle								
296	1181	R*4		CSLPRWY			Cosine of runway Euler pitch angle								
297	1185	R*4		SSLPRWY			Sine of runway Euler pitch angle								
298	1189	R*4		PBGUST			Body axis roll gust	RAD/S	RT						
299	1193	R*4		QBGUST			Body axis pitch gust	RAD/S	RT						
300	1197	R*4		TAMB_C			Ambient temp.- used for non-standard day	CELSIUS							

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
301	1201	R*4		ALT_DENSITY			Density altitude	FT							
302	1205	R*4		PAMB_ST			Ambient pressure, standard day	LB/FT2							
303	1209	R*4		TAMB_R_ST			Ambient temperature, standard day	DEG R							
304	1213	R*4		RHO_ST			Ambient density, standard day	SLUG/FT3							
305	1217	R*4		DELTA_PAMB			Ambient pressure delta from standard day	LB/FT2							
306	1221	R*4		DELTA_TAMB			Ambient temp. delta from standard day	DEG R							
307	1225	R*4		DELTA_RHO			Ambient density delta from standard daySLUG/FT3								
308	1229	L*1		NS_PAMB			Non-standard ambient pressure flag								
309	1230	L*1		NS_ALTP			Non-standard pressure altitude flag								
310	1231	L*1		NS_TAMB			Non-standard ambient temperature flag								
311	1232	L*1		NS_DENS			Non-standard ambient density flag								
312	1233	R*4		ALFA_TRIM			Target angle of attack for trim	DEG	ANU						
313	1237	R*4		BETA_TRIM			Target angle of sideslip for trim	DEG	ANL						
					Trailing_Edge_Flap_Deflection	STAR	Trailing edge flap deflection	ND							
					Leading_Edge_Flap_Deflection	STAR	Leading edge flap deflection	deg							
					Spoiler_Deflection	STAR	Spoiler deflection	deg							
					Aileron_Deflection	STAR	Aileron deflection	deg							
					Rudder_Deflection	STAR	Rudder deflection	deg							
					Stabilizer_Deflection	STAR	Stabilizer deflection	deg							
					Speedbrake_Deflection	STAR	Speedbrake deflection	deg							
					Canard_Deflection	STAR	Canard Deflection	deg							
					Elevator_Deflection	STAR	Elevator deflection	deg							
					Aircraft_Landing_Gear_Status_Position	STAR	array of gear positions (array)								
					Ownship_Linear_Velocity	STAR	Ownship linear velocity VECTOR								
					Ownship_Linear_Acceleration	STAR	Ownship linear acceleration VECTOR								
					Ownship_Angular_Position	STAR	Ownship angular position VECTOR								
					Ownship_Angular_Velocity	STAR	Ownship angular velocity VECTOR								
					Ownship_Angular_Acceleration	STAR	Ownship angular acceleration VECTOR								
					Ownship_Earth_Axis_Velocity	STAR	Ownship earth axis velocity VECTOR								
					Ownship_Earth_Axis_Acceleration	STAR	ownship earth axis acceleration VECTOR								
					Ownship_Attitude_Relative_To_Deck	STAR	Ownship attitude relative to deck VECTOR								
					Quaternion_E1	STAR	Quaternion E1								
					Quaternion_E2	STAR	Quaternion E2								

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
					Quaternion_E3	STAR	Quaternion E3								
					Quaternion_E4	STAR	Quaternion E4								
					Last_Times_Quaternion_E1_Rate	STAR	previous Quaternion E1 dot								
					Last_Times_Quaternion_E2_Rate	STAR	previous Quaternion E2 dot								
					Last_Times_Quaternion_E3_Rate	STAR	previous Quaternion E3 dot								
					Last_Times_Quaternion_E4_Rate	STAR	previous Quaternion E4 dot								
					Delta_Time	STAR	Time step								
					Body_To_Earth_Transformation_Matrix	STAR	Transformation matrix from body axis to earth axis								
					Direction_Cosine_Matrix	STAR	matrix of direction cosines								
					Angle_Of_Attack_At_Stall_Onset	STAR	Angle of attack at stall onset	deg							
					Body_Air_Velocity	STAR	Body air velocity VECTOR								
					Body_Air_Acceleration	STAR	Body air acceleration VECTOR								
					Normal_Load_Factor	STAR	(Fxb*Sin(alpha)-Fzb*Cos(alphs))/Wgross	G							
					Platform_Velocity	STAR	platform velocity VECTOR (see CRAFT_RA.A)								
					Air_Density_Ratio	STAR	Air density ratio (Rho_amb/Rho_std_SL)								
					Meridional_Earth_Radius	STAR	(see EAR_RAD.A)	ft							
					Normal_Earth_Radius	STAR	round or oblate spheroid earth model? (see EAR_RAD.A)	ft							
					Geodetic_Altitude	STAR	(see CRAFT_RA.A)	ft							
					Wander_Angle	STAR	(see CRAFT_RA.A)	rad							
					Earth_Rotation_X_Rate	STAR	Earth rotation x rate (see EAR_RO_R.A)	rad/sec							
					Earth_Rotation_Y_Rate	STAR	Earth rotation y rate (see EAR_RO_R.A)	rad/sec							
					Earth_Rotation_Z_Rate	STAR	Earth rotation z rate (see EAR_RO_R.A)	rad/sec							
					Coriolis_Acceleration	STAR	Coriolis acceleration VECTOR								
					Craft_X_Velocity	STAR	Craft x velocity (see CRAFT_RA.A)	ft/sec							
					Craft_Y_Velocity	STAR	Craft y velocity (see CRAFT_RA.A)	ft/sec							
					Fuel_Tank_Quantities	STAR	Array of fuel weights of each tank	lb							
					Drift_Angle	STAR	= (true heading) - (ground track)	rad							
					X_CG_Location	STAR		in							
					Lift_Due_Do_Angle_Of_Attack	STAR	lift due to angle of attack								
					Lift_Due_To_Angle_Of_Attack_Rate	STAR	Lift due to angle of attack rate	ND							
					Pitching_Moment_Due_To_Elevator	STAR	Pitching moment due to elevator	ND							
					Yawing_Moment_Due_To_Rudder	STAR	yawing moment due to rudder								
					Oscillatory_Roll_Rate	STAR	Oscillatory roll rate	rad/sec							
					Oscillatory_Pitch_Rate	STAR	Oscillatory pitch rate	rad/sec							
					Oscillatory_Yaw_Rate	STAR	Oscillatory yaw rate	rad/sec							
					Oscillatory_Roll_Rate_Stability_Derivative	STAR	Oscillatory roll rate stab. deriv.	rad/sec							
					Oscillatory_Yaw_Rate_Stability_Derivative	STAR	Oscillatory yaw rate stab. deriv.	rad/sec							

Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed
					Last_Times_Linear_Velocity	STAR	linear velocities from N-1 (array)								
					Last_Times_Angular_Position	STAR	previous angular position VECTOR								
					Last_Times_Angular_Velocity	STAR	angular velocity VECTOR (N-1)								
					Last_Times_Angular_Acceleration	STAR	angular accelration VECTOR (N-1)								
					Fuel_X_Moment	STAR	array of x-momt for each tank (array)								
					Fuel_Y_Moment	STAR	array of y-momt for each tank (array)								
					Fuel_Z_Moment	STAR	array of z-momt for each tank (array)								
					Total_X_Moments	STAR	total x moments	ft-lb							
					Total_Y_Moments	STAR	total y moments	ft-lb							
					Total_Z_Moments	STAR	total z moments	ft-lb							
					Cargo_X_Position	STAR	cargo x position	ft							
					Cargo_Y_Position	STAR	cargo y position	ft							
					Cargo_Z_Position	STAR	cargo z position	ft							
					Cargo_X_Moment	STAR	cargo x moment	ft-lb							
					Cargo_Y_Moment	STAR	cargo y moment	ft-lb							
					Cargo_Z_Moment	STAR	cargo z moment	ft-lb							
					Aircraft_Empty_Weight_X_Moment	STAR	A/C empty weight x moment	ft-lb							
					Aircraft_Empty_Weight_Y_Moment	STAR	A/C empty weight y moment	ft-lb							
					Aircraft_Empty_Weight_Z_Moment	STAR	A/C empty weight z moment	ft-lb							
					Total_Ground_Reaction_Body_Axis_X_Force	STAR	Total ground reaction x force (body axis)	lb							
					Total_Ground_Reaction_Body_Axis_Y_Force	STAR	Total ground reaction y force (body axis)	lb							
					Total_Ground_Reaction_Body_Axis_Z_Force	STAR	Total ground reaction z force (body axis)	lb							
					Total_Ground_Reaction_Body_Axis_Rolling_Moment	STAR	Total ground reaction pitch momt (body axis)	ft-lb							
					Total_Ground_Reaction_Body_Axis_Pitching_Moment	STAR	Total ground reaction roll momt (body axis)	ft-lb							
					Total_Ground_Reaction_Body_Axis_Yawing_Moment	STAR	Total ground reaction yaw momt (body axis)	ft-lb							
					Engine_Thrust	STAR	array of engine thrusts (array)	lb							
					Thrust_Coefficient	STAR	Thrust coefficient	ND							

KEY TO LISTING ABBREVIATIONS

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+--------------------+
|   TypeExplanation  |
|   ---------------  |
|   L*1 LOGICAL*1    |
|   I*4 INTEGER*4    |
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Row	Index	Type	Symbol	Short Name 8 Character	Long Name 33 Character name	Same as STARS ?	Description (including axis system if applicable)	Units	Sign Convention	Initial Value	Minimum Value	Maximum Value	Reference	Note	Date Last Changed

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|    R*4   REAL*4      |
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Notes: (1) Axis Systems Used:

GE = Geo-centric earth fixed axis sytem which is the

ANSI/AIAA 1.1.3 Geocentric Earth-fixed axis system [Ref 10]

DIS Geocentric Cartesian Coordinate System (also referred to as World Coordinate System) [Ref. 38]

The DIS and AIAA axis systems are identical.

Rotating Earth with axis system origin at Earth's center, $X_{(GE)}$ axis intersects the surface at Greenwich Meridian and the Equator,

$Z_{(GE)}$ axis is cooincindent with the Earth's spin axis North, and $Y_{(GE)}$axis completing the right handed triad.

When referred to in a variable name it is ..._GE_... and in a symbol it is $_{(GE)}$. The parenthesis indicating

the letters GE refer to an axis system.

(2) NASA Ames[Ref 39] , DIS [Ref 38], ANSI/AIAA [ref 10], and NAWC-TSD agree on this definition,

This is a generally accepted definition.

(3) NASA Ames[Ref 39] , ANSI/AIAA [ref 10], and NAWC-TSD agree on this definition. Not defined by DIS.

This is a generally accepted definition.

(4) Axis Systems Used:

L (Local) frame is defined by NASA Ames [Ref. 10] as:

The Local (L) frame is situatied on the earth's surface, directly under the vehicle. Its X_L axis points Northward

and its $Y_{(L)}$ axis points Eastward: both are paralel to the Earths's surface.

The $Z_{(L)}$ axis pointstowards the Earth's center. It moves with the aircraft, the $-Z_{(L)}$ axis passes through the aircraft cg.

Since it move with the aircraft it is not an inertial frame. The Local frame's origin is always a constant

distance from the Earth's center.

(5) Axis Systems Used:

B = Body Axis

which both ANSI/AIAA [Ref 10, 1.1.7] and NASA Ames [Ref 39] call "Body Axis" and DIS calls "Entity Coordinate System'

[Ref 38]. All definitions are identical and normally accepted throughout industry.

The origin of the Body axis system is at the CG of the vehicle.

The $X_{(B)}$ axis passes is parallel to the horizontal (XY) reference plane of the vehicle and is positive forward,

The $Y_{(B)}$ axis is parallel to the horizontal (XY) reference plane and is positive to the right.

The $Z_{(B)}$ axis is positive down, completing the right handed triad.

When referred to in a variable name it is ..._B_... and in a symbol it is $_{(B)}$. The parenthesis indicating

the letter B refers to an axis system.