Generic Data for Representing Truck Tire Characteristics in Simulations of Braking and Braking-in-a-Turn Maneuvers

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Table of Contents

Structure of the Spreadsheet Discussion of the Input Parameters	2 3 5 5 7
	3 3
	3
Generic Truck Tire Properties for a Good Dry Road	
Generic Truck Tire Properties for a Wet, Slippery Surface	5
Concluding Statements	5
Acknowledgements/References	7
Appendix A - Modeling the Truck Tire for Vehicle Dynamics Analysis	
Introductory Remarks	A-1
Inputs to the Tire Representation	A-2
A Semiempirical Model of the Braking Properties of Truck Tires .	A-2
A Semiempirical Model of the Lateral Force Properties of Truck Tires.	A-8
Combined Longitudinal and Lateral Slip	A-10
Summary	A-12
Appendix B - Tire Equations Used in the Spreadsheet	
A. Sliding Velocity	B-1
B. Friction	B- 1
C. Direction of Sliding and Friction Factors for Combined Slip	B-1
D. Longitudinal and Lateral Fractions of the Contact Patch that are in Adhesion	B-2
E. Longitudinal and Lateral Forces	B-3
Appendix C - Generic Truck Tire Data for a "0.9 Surface"	C-1

.9-3000-22-0 -----C-2 .9-3000-22-1 -----C-3 .9-3000-22-2 -----C-4 .9-3000-22-4 -----C-5 .9-3000-44-0 -----C-6

Fz = 3000 lbs.

.9-3000-22-2	C-4	.9-6000-22-2	C-21
.9-3000-22-4	C-5	.9-6000-22-4	C-22
.9-3000-44-0	C-6	.9-6000-44-0	C-23
.9-3000-44-1	C-7	.9-6000-44-1	C-24
.9-3000-44-2	C-8	.9-6000-44-2	C-25
.9-3000-44-4	С-9	.9-6000-44-4	C-26
.9-3000-66-0	C-10	.9-6000-66-0	C-27
.9-3000-66-1	C-11	.9-6000-66-1	C-28
.9-3000-66-2	C-12	.9-6000-66-2	C-29
.9-3000-66-4	C-13	.9-6000-66-4	C-30
.9-3000-88-0	C-14	.9-6000-88-0	C-31
.9-3000-88-1	C-15	.9-6000-88-1	C-32
.9-3000-88-2	C-16	.9-6000-88-2	C-33

Fz = 6000 lbs.

.9-6000-22-0 -----C-19

.9-6000-22-1 -----C-20

Appendix D - Generic Truck Tire Data for a "0.5 Surface"

.9-3000-88-4 ------C-17 .9-6000-88-4 ------C-34

Fz = 3000 lbs.

.5-3000-22-0	D-2
.5-3000-22-1	D-3
.5-3000-22-2	D-4
.5-3000-22-4	D-5
.5-3000-44-0	D-6
.5-3000-44-1	D-7
.5-3000-44-2	D-8
.5-3000-44-4	D-9
.5-3000-66-0	D-10
.5-3000-66-1	D-11
.5-3000-66-2	D-12
.5-3000-66-4	D-13

Fz = 6000 lbs.

.5-6000-22-0	D-15
.5-6000-22-1	D-16
.5-5000-22-2	D-17
.5-6000-22-4	D-18
.5-6000-44-0	D-19
.5-6000-44-1	D-20
.5-6000-44-2	D-21
.5-6000-44-4	D-22
.5-6000-66-0	D-23
.5-6000-66-1	D-24
.5-6000-66-2	D-25
.5-6000-66-4	D-26

Fz = 9000 lbs.

.9-9000-22-0	C-36
.9-9000-22-1	C-37
.9-9000-22-2	C-38
.9-9000-22-4	C-39
.9-9000-44-0	C-40
.9-9000-44-1	C-41
.9-9000-44-2	C-42
.9-9000-44-4	C-43
.9-9000-66-0	C-44
.9-9000-66-1	C-45
.9-9000-66-2	C-46
.9-9000-66-4	C-47
.9-9000-88-0	C-48
.9-9000-88-1	C-49
.9-9000-88-2	C-50
.9-9000-88-4	C-51

D-1

GENERIC DATA FOR REPRESENTING TRUCK TIRE CHARACTERISTICS IN SIMULATIONS OF BRAKING AND BRAKING-IN-A-TURN MANEUVERS

Introduction

The generic data presented in this report are intended for use in studying the performance of trucks (including articulated vehicles) in braking and braking-in-a-turn maneuvers, such as those included in recent versions of FMVSS 121 [1]. These data are based on a semiempirical tire model that uses simplified theoretical concepts in conjunction with measured or specified tire stiffnesses and tire-road frictional qualities. (See Appendix A for a discussion of the physical reasoning and equations used in the semi-empirical tire model.)

The main body of this report provides a users manual for spread sheet calculations that compute longitudinal and lateral tire forces as functions of vertical load, velocity, longitudinal slip, and slip angle. The results of these calculations are tables of data containing values of tire forces that are suitable for use in computer simulations of heavy trucks (e.g. Phase 4 [2]).

Structure of the Spread Sheet

The particular spread sheet application used in this study is EXCEL [3]. Figure 1 shows a typical example of a calculation representing a truck tire that has a rib tread pattern and radial construction (tire designation 295 75R.XL4).

In order for the equations implemented in the spread sheet to compute tire forces, one needs to enter values for longitudinal slip, slip angle, speed, and vertical load. In addition, one needs parametric values for longitudinal stiffness Cs, lateral stiffness Calpha, and friction parameters muo, muf, and Vf. The spread sheet program will compute a number of intermediate variables pertaining to the tire model as well as the longitudinal force Fx, which is in the direction of the wheel plane, and the lateral force Fy, which acts perpendicularly to the wheel plane. (Appendix B contains a list summarizing the equations used in the spread sheet calculations. The equations in Appendix B are labelled with letters to indicate the applicable columns of the spread sheet shown in Figure 1.)

Although the equations in the tire model may seem difficult to understand, they are typical of those used in semiempirical tire models [4]. This model differs from previous models in the manner in which friction is treated.

	A		B	ပ	٥	Ш	Ŀ	g	н
۲	S	tar	tan alpha	n	Fz	Cs	Calpha	Vs	nm
8	0.00001		0.069926787	99	6000	48000	43200	4.61516798	0.8467696
e	0	0.05 (0.069926787	99	6000	48000	43200	5.673603356	0.835383621
4		0.1	0.069926787	99	6000	48000	43200	8.053556671	0.810830157
2		0.2 (0.069926787	99	6000	48000	43200	13.98355373	0.75550731
9	0	0.25 (0.069926787	99	6000	48000	43200	17.13329434	0.729218897
2		0.3 (0.069926787	99	6000	48000	43200	20.33075933	0.704519742
ø	0	0.35 (0.069926787	99	6000	48000	43200	23.55652298	0.681479257
ი		0.4	0.069926787	99	6000	48000	43200	26.80036893	0.660067331
10		0.5	0.069926787	99	6000	48000	43200	33.32116107	0.62182679
11		0.6	0.069926787	99	6000	48000	43200	39.86802949	0.589088874
12	0	0.75 (0.069926787	99	6000	48000	43200	49.7146837	0.548718438
13	0.99999	_	0.069926787	99	6000	48000	43200	66.16050677	0.499577596
14									
15	alpha (deg)=4	ig)= 4		muo= 0.9	0.9	muf= 0.4	0.4	V f = 41	41

sin	-		2	1	Z	2	>	L
	n theta	cos theta	xsy/L'	xsy/L	Fy	xsx/r,	XSX/L	Fx
	0.99999999	0.000143007	0.840920318	0.840920318	2944.420287	0.756828286	0.756828286	0.451620925
	0.813445643	0.581640942	0.641109236	0.641109236	2770.258492	0.576998313	0.576998313	2074.281025
	0.573059596	0.819513697	0.415304012	0.415304012	2209.006	0.373773611	0.373773611	3241.816053
2	0.330042564	0.943966051	0.198103681	0.198103681	1347.906217	0.178293313	0.178293313	3897.577448
9	0.269368391	0.963037211	0.146305194	0.146305194	1092.355588	0.131674675	0.131674675	3936.178078
	0.227004209	0.973893777	0.11117805	0.11117805	906.2319139	0.100060245	0.100060245	3910.802132
8	0.195918894	0.980620103	0.086185906	0.086185906	766.5667278	0.077567316	0.077567316	3854.1253
6	0.172205388	0.985061066	0.067729857	0.067729857	658.9069258	0.060956871	0.060956871	3782.336088
10	0.138505616	0.990361648	0.042766209	0.042766209	505.709103	0.038489588	0.038489588	3623.890907
-	0.115761125	0.993277082	0.027089281	0.027089281	403.6195973	0.024380353	0.024380353	3467.973948
12 0	0.092833095	0.995681684	0.012646965	0.012646965	303.7027036	0.011382269	0.011382269	3259.437319
13 0	0.069757143	0.997564003	3.46087E-07	3.46087E-07	209.0945988	3.11479E-07	3.11479E-07	2990.163296
14								
15								

Discussion of the Input Parameters

To use the spread sheet effectively one should know what the input parameters mean. Briefly, Cs is the longitudinal stiffness of the tire. It is an elastic property of the tire that changes with vertical load Fz. (The following equation has been used to estimate Cs as a function of vertical load: $Cs = 10 \text{ Fz} - \text{Fz}^2/3000 \text{ lbs.}$) The cornering stiffness Calpha is also an elastic property of the tire that changes with vertical load. (Calpha has been estimated using Calpha = 0.9 Cs.) With regard to test data Calpha is the slope of the longitudinal force curve in the vicinity of zero slip angle, while Cs is the slope of the longitudinal force curve in the vicinity of zero longitudinal slip. Both Cs and Calpha are functions of tread wear and inflation pressure. If suitable test data exist over a range of pertinent vertical loads, Cs and Calpha can be estimated from the slopes of the curves for longitudinal force versus longitudinal slip and lateral force versus slip angle.

The frictional characteristics of the tire depend on properties of both the tire and the road surface. The friction "mu" also depends upon vertical load and sliding velocity. The quantities used in the spread sheet to represent frictional characteristics (that is, muo, muf, and Vf) might be estimated or determined for each vertical load. However, for providing generic data we have considered mu to be a function of sliding velocity per equation (H) in Appendix B.

A recommended procedure for determining friction related quantities at a given load is to choose a measured μ -slip curve (Fx/Fz versus longitudinal slip s) and to use this curve in estimating how friction varies with sliding velocity at that load. (Equations (H) and (H15) in Appendix B express the ideas involved.)

As a function of sliding velocity, friction decreases as sliding velocity increases. Hence the specifications involving peak or slide values of longitudinal tire force need to state speed and load at which the specifications are to be met.

Generic Truck Tire Properties for a Good Dry Road

Appendix C provides generic tire data for a "0.9 surface" at Fz = 3000, 6000, and 9000lbs and forward speeds ("u" in the direction of the wheel plane) of 22, 44, 66, and 88 ft/sec. The example results given in Figure 2 provide longitudinal and lateral force characteristics at near rated load (6000 lbs), 66 ft/sec, and 4 degrees of slip angle for values of longitudinal slip varying from 0 to 1. The spread sheet can be used to make similar calculations at different loads, speeds, and slip angles. See Appendix C for numerous examples.

	A	8	ပ	0	ш	L	σ	I
-	S	tan alpha	п	Fz	ප	Calpha	Vs	nm
7	0.0000	01 0.06992679	99	6000	48000	43200	4.61516798	0.8467696
3	0.05	05 0.06992679	99	6000	48000	43200	5.67360336	0.83538362
4	0	0.1 0.06992679	99	6000	48000	43200	8.05355667	0.81083016
Ŋ	0.15	15 0.06992679	66	6000	48000	43200	10.9229014	0.78306162
ဖ	0	0.2 0.06992679	66	6000	48000	43200	13.9835537	0.75550731
2	0.25	25 0.06992679	66	6000	48000	43200	17.1332943	0.7292189
8	0	0.3 0.06992679	99	6000	48000	43200	20.3307593	0.70451974
6	0	0.4 0.06992679	66	6000	48000	43200	26.8003689	0.66006733
10	0	0.5 0.06992679	66	6000	48000	43200	33.3211611	0.62182679
11	0	0.6 0.06992679	66	6000	48000	43200	39.8680295	0.58908887
12	0.75	75 0.06992679	66	6000	48000	43200	49.7146837	0.54871844
13	66666.0	99 0.06992679	66	6000	48000	43200	66.1605068	0.4995776
14								
15	alpha (deg))= 4	muo=	0.9	muf=	0.4	∠f=	41
16								
17	S	Fy	Fx		1			
18		0 2944.42029	0	4 000				
19	0.0	.05 2770.25849	2074.28103	3500 +		•		
20	0	0.1 2209.006	3241.81605	3000	L			
21	0.1	15 1707.94507	3723.18072	2500+	\times			
22	0	0.2 1347.90622	3897.57745		Ĺ			Ţ
23	0.25	25 1092.35559	3936.17808		٦			
24	0	0.3 906.231914	3910.80213	1500 + /	þ			Ę
25	0	0.4 658.906926	3782.33609	1000 + /		/		
26	0	0.5 505.709103	3623.89091	500 +/]] /	ا لے	•
27	o	0.6 403.619597	3467.97395			-		
28	0.7	75 303.702704	3259.43732					- •
29		1 209.094599	2990.1633	>	0.2	4.0	0.0	-
30								

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Generic Truck Tire Properties for a Wet, Slippery Surface

The model provides results that are in qualitative agreement with those measured by Ervin many years ago [5]. Unfortunately, recent tire measurements do not include tests on wet surfaces (nor do they include tests at speeds other than 45 mph). Nevertheless, we can use the tire model to produce generic data for use in simulations of braking-in-a-turn maneuvers on a wet, slippery surface.

Since the surface conditions do not influence the elastic properties of the tire, the values of Cs and Calpha used previously can be used again. In order to represent a poor, wet road we have chosen muo = 0.5, muf = 0.3 and Vf = 37 ft/sec. Examination of Figure 3 shows that this combination of parameters gives a peak normalized force of 2363/6000 = 0.39 at 66 ft/sec (45 mph) and alpha = 0.

Appendix D contains a generic set of tire data for a "0.5 surface." The values of Fx and Fy in Appendix D can be used directly to make tables for use in the Phase 4 simulation program. Or, these results can be processed to generate "roll-off tables" for use along with tables of longitudinal force at alpha = 0 and lateral force at s = 0.

Concluding Statements

Basic data for representing a generically reasonable set of truck tire shear force characteristics have been developed in this study. These data need to be structured to put them into the user's version of the Phase 4 simulation program.

Another alternative is to replace the tire model currently existing in Phase 4 with the tire model described in Appendices A and B. This would take some programming effort, however.

It is recommended that the generic data used in the simulations cover the ranges of velocities and vertical loads pertinent to the vehicle situation to be studied. For example, in a braking-in-a-turn maneuver at 30 mph (44 ft/sec) on a 500 ft radius turn, the lateral acceleration required to follow the curve on a level surface is equal to $V^2/R = (44)^2/500 = 3.87$ ft/sec² or 0.12 g. For an 80,000 lb vehicle with 18 tires this would mean approximately 535 lbs of lateral force per tire. For a cornering stiffness of about 37,500 lbs at 4400 lbs of load, this would mean just under one degree of slip angle at each tire. Even if slip were to be around 0.3, the tires would not need more than about a 3 degree slip angle in order for the vehicle to negotiate the turn. Hence, for vehicles with ABS systems that keep longitudinal slip below 0.3, there would be limited use for lateral force data exceeding 4 degrees of slip angle. However, if wheel lock or vehicle spinning or swinging were to occur, large slip angles would be involved.

The data need to be concentrated at the smaller slip angles for the purpose of studying vehicle performance in 121 like maneuvers. Also, static vertical loads around 4500 lbs per tire seem appropriate for these simulations.

	Ť	tan alnha		<u>ل</u>	Ľ		Ve	114
		tan alpha 1 7462E 00	n ee				VS 0 00066	MU 0 40000465
50	0.05	1.7453E-08				43200	3.3	0.47440175
	0.1	1.7453E-08	99				6.6	0.45098774
0	0.15	1.7453E-08	66	6000	48000	43200	9.9	0.42957159
	0.2	1.7453E-08	99	6000	48000	43200	13.2	0.40998282
0	.25	1.7453E-08	66	6000	48000	43200	16.5	0.39206551
	0.3	1.7453E-08	99	9009	48000	43200	19.8	0.37567705
	0.4	1.7453E-08	66	6000	48000	43200	26.4	0.34697595
	0.5	1.7453E-08	99	6000	48000	43200	33	0.32296387
	0.6	1.7453E-08	99	6000	48000	43200	39.6	0.30287475
0	0.75	1.7453E-08	99	9009	48000	43200	49.5	0.27872373
66	66666	1.7453E-08	99	6000	48000	43200	65.99934	0.25040128
alpha (de	(deg)= (0.000001	=onm	= 0.5	muf=	0.2	∠f=	37
	_	Fy	FX	0600				
	0	0.00075399	0					L
0	.05	0.00068262	2044.64487					
	0.1	0.00040571	2362.70592		–			
0	0.15	0.00027455	2381.36454				•	
	0.2	0.00020244	2333.83249					
0	.25	0.00015752	2265.92819					Ä
	0.3	0.00012714	2192.31648	1000				
	0.4	8.9196E-05	2047.99536					Fy
	0.5	6.6883E-05	1918.22592					
	0.6	5.2491E-05	1805.78185					
0	.75	3.8792E-05	1667.48695	>]]]]]	ן	ב]
	-	2.6222E-05	1502.40755		0.2	0.4	0.0	_

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Figure 3. Example results for a 0.5 surface

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Acknowledgement

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APPENDIX A

MODELING THE TRUCK TIRE FOR VEHICLE DYNAMICS ANALYSIS

Introductory Remarks

This appendix examines the modeling of truck tires from the perspective of analyzing and simulating the braking and handling responses of commercial vehicles. The overall thesis underlying the following discussion is that a semiempirical model of the shear force properties of truck tires aids in understanding the interaction between tire properties and vehicle response variables.

The development of methods for representing the longitudinal and lateral force properties of pneumatic tires has received considerable attention in recent years [1,2]. A curve fitting approach associated with the so-called "magic formula" [3] has been the basis for many studies and papers on representing tire force and moment data in a manner suitable for use in analyses of the dynamics of pneumatic-tired vehicles. Nevertheless, there is still discussion concerning the advantages and disadvantages of different methods for representing tires in general, and truck tires are no exception. A particularly difficult situation has been the representation of tire force characteristics when the tire is simultaneously generating both longitudinal and lateral force, such as in a braking-in-a-turn maneuver. Since there are now new requirements in FMVSS 121 concerning the performance of heavy trucks in a braking-in-a-turn maneuver, there is renewed interest in understanding how tire characteristics influence vehicle dynamics.

Rather than emphasizing either curve fitting or pure empiricism, this lecture will emphasize a combined theoretical and empirical approach to modeling the truck tire. This approach involves considering the deformations that take place in the tire contact patch. The goal is to develop insight into the concepts of longitudinal and lateral slip. The discussion explores ideas concerning whether tread elements are adhering to the road surface or sliding over the road surface. Even though the tire is a very complex structure and the phenomena involved with sliding friction are difficult to understand, a simple set of equations for describing tire deformation and frictional characteristics is developed here.

Inputs to the Tire Representation

In addition to vertical load and the velocity of the wheel center, two primary inputs to a computerized representation of tire shear force properties are lateral and longitudinal slip, or as they are commonly referred to, slip angle and slip. In a computerized model of a vehicle, slip angle is calculated from the ratio of (a) the component of velocity normal to the wheel plane to (b) the component of velocity lying along the wheel plane. These velocity components are determined from the variables describing the motions of the entire vehicle plus the characteristics of any steering system associated with particular wheels. Hence, the solutions to the basic equations of motion of the vehicle provide the information needed to determine slip angle.

On the other hand, the determination of longitudinal slip requires knowledge of the rotational speed of the wheel. Hence, wheel rotational degrees of freedom are included in computerized models involving braking dynamics.

A Semiempirical Model of the Braking Properties of Truck Tires

For braking studies, the development of a method for representing the longitudinal force properties of tires is clearly essential. Prior to the availability of data from an overthe-road, truck-tire dynamometer, semiempirical models were developed and used. A semiempirical model consists of a phenomenological description of the deflection and shear force characteristics of a tire [4,5]. Empirical data (or estimated shear force characteristics of the tire) are needed to evaluate the parameters used in this type of model. The values of the parameters are selected so that the forces predicted by the model match test results or a desired set of tire properties.

In this type of model, a quasistatic analysis of the rotating tire is made. The tread is envisioned as a continuum of elastic elements that touch the ground in the contact patch. Even through the wheel is rotating, some tread element is assumed to be deflected by a determinable amount at each point in the contact patch. The following sketches (Figures 1 and 2) and the subsequent analysis are intended to clarify the form of the tire model.

As shown in Figure 1, tread elements are assumed to become elongated longitudinally as they pass through the contact patch. For an arbitrary element at a distance, x, from the front of the contact patch (see Figure 2), the deflection, δ , of that element may be determined from the longitudinal slip, using the following reasoning. For an element entering the contact patch Δt_x seconds ago, the carcass end of the element has traveled a distance equal to R $\omega \Delta t_x$. The road-contact end of this element has traveled a distance equal to V Δt_x if this end of the element adheres to the road. (The case of sliding friction between tire elements and the road will be treated later.) Hence, the deflection of the element at point x in the carcass is given by:

 $\delta(\mathbf{x}) = (\mathbf{V} - \mathbf{R}\boldsymbol{\omega})\Delta t_{\mathbf{x}}$

By noting that $x = R \omega \Delta t_x$, it is possible to express the deflection as a function of slip, viz.:

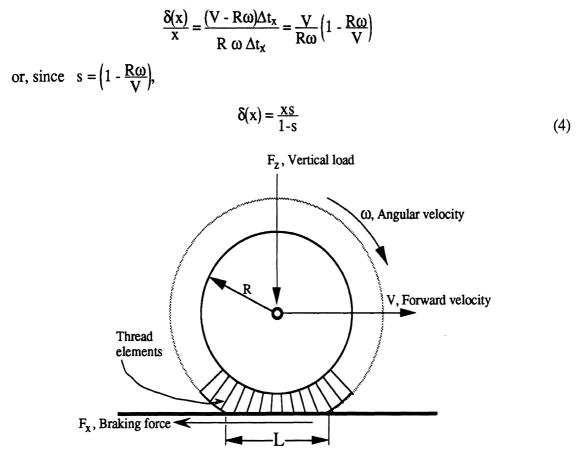


Figure 1. Sketch of an idealized tire.

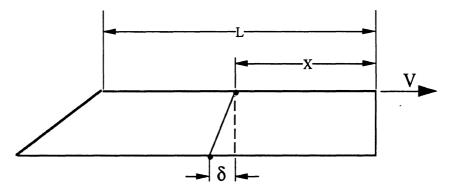


Figure 2. The longitudinal deflection, δ , of a tread element at location x in the contact patch.

-

Figure 3 illustrates the predicted form of the deflection pattern along the length of the contact patch for a situation in which no elements are sliding with respect to the road.

For simplicity, variations in deformation over the width, w, of the contact patch are assumed to be averaged out, and the deflection pattern in Figure 3 may be thought of as an average over the lateral direction.

To compute the total shear force due to the deflection pattern, the tire is assumed to be characterized by a stiffness per unit area of the contact patch. This stiffness parameter, k_x , will be replaced by an empirically determined longitudinal stiffness parameter, C_s , in the final form of the brake-force model. Nevertheless, k_x serves as a means for converting deflection into shear stress. Specifically, the following integral defines the braking force, F_x , when no sliding occurs:

$$F_{x} = \int_{x+\infty}^{L} \delta(x) k_{x} w dx$$

Substituting for $\delta(x)$ from (4) and on evaluating the above integral, we obtain

$$F_{x} = \left(\frac{k_{x}L^{2}w}{2}\right)\left(\frac{s}{1-s}\right) = \frac{C_{s}s}{1-s}$$
(5)

The quantity $\frac{K_x L^2 w}{2}$ in Equation (5) is equal to $\frac{\partial F_x}{\partial s} |_{s=0}$, and it is defined as the longitudinal stiffness parameter, C_s . Furthermore, C_s may be evaluated empirically from the slope of test data for F_x versus s without knowing k_x or the dimensions of the contact patch.

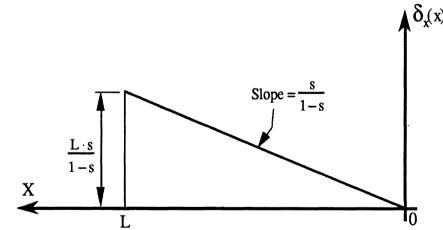


Figure 3. Tire deflection pattern, no sliding.

Sliding starts to occur in the contact patch at the point where the frictional potential per unit area cannot support any more deflection. That is, sliding starts when

$$\frac{\mu F_Z}{A} = \frac{k_x x_s s}{l \cdot s} \tag{6}$$

where

 μ is the tire-road friction coefficient,

A is the area of the contact patch (A = Lw),

 F_z is the vertical load (a uniform pressure distribution of magnitude F_z/A is assumed in developing the simplest model),

and x_s is the value of x at which sliding starts.

Figure 4 illustrates the estimated form of a deflection pattern with sliding at the rear of the contact patch.

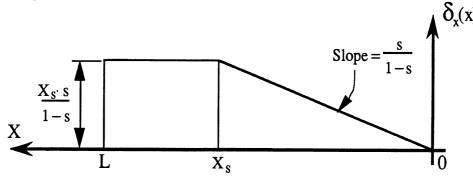


Figure 4. Tire deflection pattern, with sliding.

For the deflection pattern shown in Figure 4, the longitudinal shear force, F_x , is given by

$$F_{x} = \int_{x=0}^{x} \delta(x)k_{x}wdx + \frac{\mu F_{z}}{A}w(L - x_{s})$$

$$F_{x} = \frac{k_{x}x_{s}^{2}w}{2}\left(\frac{s}{1-s}\right) + \mu F_{z}\left(1 - \frac{x_{s}}{L}\right)$$
(7)

or

It is convenient to re-express (7) in terms of C_s , the longitudinal stiffness, and x_s/L , the fraction of the contact patch which is not sliding. Using Equation (6), we see that

$$\frac{x_{s}}{L} = \frac{\mu F_{z}}{k_{x} A L \frac{s}{1-s}} = \frac{\mu F_{z}(1-s)}{2C_{s}s}$$
(8)

and, using Equations (8) and (7), we find that

$$F_{x} = \frac{(\mu F_{z})^{2}}{4C_{s}} \left(\frac{1-s}{s}\right) + \mu F_{z} \left(1 - \frac{x_{s}}{L}\right)$$
(9)

In numerical computations, x_s/L , is evaluated from Equation (8) if s > 0. If x_s/L is greater than 1.0, then no sliding takes place in the contact patch and F_x is evaluated using Equation (5). Note that for a locked wheel (i.e., s = 1.0), all of the contact patch is sliding ($x_s/L = 0$), and F_x is determined exclusively by tire-road friction (i.e., $F_x = \mu F_z$).

If the friction coefficient, μ is treated as a constant, then the model will predict that the maximum braking force occurs at locked-wheel conditions. However, in practice, μ is not constant and the braking force reaches a maximum at some intermediate value of slip, usually around s = 0.2 to 0.3. Experiments with pieces of tire tread indicate that tire-road

friction tends to decrease with sliding velocity. A simple method for including this phenomenon in the model is to make μ an exponential function of sliding velocity; viz.,

$$\mu = \text{muf} + (\text{muo} - \text{muf}) \exp(-V_s / Vf)$$
(10)

where

muf = the minimum friction for the surface, and

muo = the maximum friction for the surface, and

Vf determines the shape of the friction function,

and V_s is the sliding velocity of the tread elements with respect to the ground (i.e., $V_s = Vs$).

Insight into the frictional process and what is going on in the sliding region can be obtained by using the model to study tire deflection and sliding velocity. The assumption of a nearly uniform pressure distribution makes the discussion much easier to understand. Figure 5, which is similar to Figure 4, shows where the ends of the tread elements in the sliding region would have been if they had adhered to the ground. However, once an element enters the sliding region it is sliding by an amount that depends upon the distance from the adhesion point (where the sliding velocity would be zero) to the amount of deflection that can be supported by its local friction factor. In steady state, the sliding velocity of an arbitrary point in the sliding region is given by its virtual displacement divided by the length of time it takes the tire to rotate to that arbitrary point. See Figure 6. Translating these words into equations yields:

$$Vs(x') = [x' (s/(1-s))]/[x'/R\omega] = V - R\omega$$
(11)

where the time to rotate an amount x' is given by $\Delta t' = x'/R\omega$.

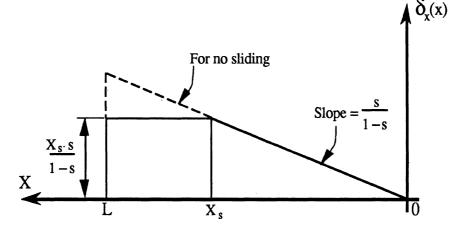


Figure 5. The difference between sliding and no sliding.

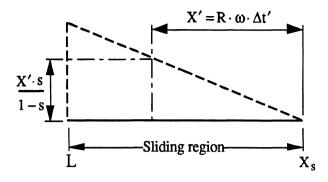


Figure 6. Examination of the sliding velocity in the sliding region.

Equation 11 is an extraordinary result even if it seems obvious once it is understood. The point is that each element in the contact patch is sliding at the same sliding velocity. Clearly, if the pressure distribution is not uniform and friction varies with vertical pressure and sliding velocity, the result would not be so simple. Nevertheless, to first approximation, the steady state sliding velocity is approximately equal for the tread elements that have nearly the same vertical load in the heavily laden area of the contact patch. This means that a single friction factor can be used to represent the entire sliding region. (There does not need to be a different value of μ for each tread element in this simplified model.)

Equations (5), (8), (9), and (10) represent a very simplified model of highly complicated elastic and frictional processes between the tire (a complex structure) and the road, which may have random frictional characteristics due to dirt, liquid contamination, variable composition, and nonuniform texture from one contact patch area to another. Nevertheless, this model has proven to be quite satisfactory for simulating passenger car tires and, when combined with lateral slip (slip angle) effects, it has been very useful in simulating combined braking and steering maneuvers [4].

As a practical matter, given the assumptions made in the model, its parameters need to be evaluated as functions of vertical load and forward velocity. Vertical load influences the contact patch length and the rolling radius of the tire. This means that the longitudinal stiffness Cs needs to be evaluated as a function of vertical load. It also means that the value of longitudinal slip varies because the rolling radius changes as the vertical load changes. In addition, the friction factor varies with load and sliding velocity, thereby making it necessary to account for these effects as a function of load and velocity. Fortunately, test data are often measured at various loads and velocities, thereby facilitating the determination of the friction factor given by equation 10. In practice, it is convenient to determine muo, muf, and Vf such that the model does a good job of fitting the peak and slide longitudinal force values for a given set of data or for a desired set of tire characteristics.

In addition to the longitudinal force characteristics of tires, a vehicle braking simulation must account for the change in the rolling radius of tires and thus the radial compliance of tires must be modeled. Specifically, the locations and velocities of the wheel centers are computed, and these quantities are used to determine the vertical forces between the tire and the road and the "equal but opposite" forces accelerating the unsprung masses. The vertical force versus deflection property of the tire is represented by a spring constant measured

under rolling conditions. A small amount of viscous damping (approximately 35 lbs-sec/in for a 10 x 20 truck tire) is included, thereby providing a relatively small, dissipative force opposing wheel-hop motions. This small amount of tire damping is included to prevent the prediction of transient wheel-hop oscillations in response to rapid changes in vertical motion. Experimental results from tire tests under conditions of varying vertical load, as well as the examination of vehicle test data from antilock braking studies, indicate that a certain amount of damping is present in the tire.

A Semiempirical Model of the Lateral Force Properties of Truck Tires

A nonobvious, but nevertheless, straightforward analogy exists between the role of longitudinal slip in determining braking force and the role of slip angle in determining lateral force. Again the concept of an adhesion region is central to the arguments leading to the development of a semiempirical model. The basic idea is that points along the "equatorial" line of the tire-road contact patch lie along the direction of the velocity vector of the wheel, that is, a point at the bottom of the tread adheres to the ground as long as that point remains in the adhesion region of the contact patch. These points, that are adhering to the ground, represent the end of tread elements that are connected to a section of the carcass is deflected out of the wheel plane in the vicinity of the contact patch). If there is no longitudinal slip present and the tire is operated at a small slip angle, α , the lateral deformation of the tread is approximated by the situation illustrated in Figure 7.

Point C represents the location of the carcass end of a tread element that entered the contact patch at a time equal to x/u seconds ago. The end of this tread element is contacting the ground at point P. That is, the tread element at a distance x from the front of the contact patch is deflected laterally by a distance equal to x tan α ; hence, $\delta_v(x) = x \tan \alpha$

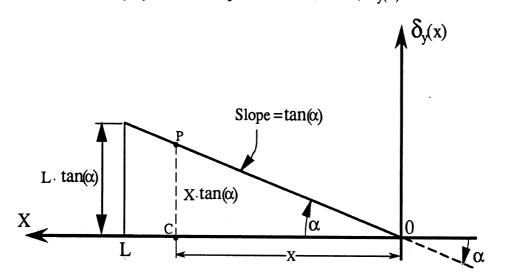


Figure 7. Lateral deformation of the tread elements, no sliding in the contact patch, s = o.

Now let us define a lateral stiffness, k_y , per unit area of the contact patch. Then the lateral shear force can be calculated by integrating the shear stresses, $k_y \delta_y(x)$, over the contact patch; viz.,

$$F_{y(\alpha)} = -\int_{0}^{L} k_{y}(x \tan \alpha) Lwdx$$
$$= -\frac{k_{y}L^{2}w}{2} \tan \alpha$$
$$= C_{\alpha} \tan \alpha$$

where

$$C_{\alpha} = - \left(k_y \, L^2 w/2 \right)$$

(Note that the algebraic signs have been chosen in this case, such that

$$C_{\alpha} = \frac{\partial F_{y}}{\partial \alpha} \Big|_{a=0}$$

i.e., lateral force is of a polarity opposite to the polarity of the slip angle.)

At this point, the analogy between modeling longitudinal and lateral force should be fairly apparent. The quantity, C_{α} , the tire cornering stiffness, is similar to C_s , the longitudinal stiffness. The analysis of lateral force can be extended to include a sliding region as before. The resulting equations are the same as those for longitudinal force except that C_s is replaced with C_{α} and s/l-s is replaced by tan α .

The difficulties in knowing how to represent the limiting frictional characteristics of truck tires pertain to lateral force properties as well as to longitudinal force properties. However, the limiting values of tire lateral force are rarely encountered by heavy vehicles except on slippery surfaces. In practice, the frictional qualities derived from longitudinal force data are often used in lateral force calculations.

In computerized models for simulating the directional response to steering, the truck tire is often represented by its cornering and aligning torque stiffnesses with these stiffnesses varying as functions of vertical load. Clearly, the exclusive use of these stiffness coefficients is only appropriate for simulating small disturbances or moderate maneuvers. Although the influence of vertical load on contact patch length was not considered in the development of the semiempirical models, the influence of vertical load variations can be included by treating the model parameters as functions of load. The essential idea behind this simplified approach is to represent tire characteristics as accurately as possible over a limited range of values adequate for studying particular steering maneuvers of special interest.

Combined Longitudinal and Lateral Slip

Only a small amount of shear force data has been gathered on truck tires undergoing combined longitudinal and lateral slip [6]. To make predictions of vehicle performance in maneuvers, such as braking-in-a-turn, for example, the influences of both longitudinal and lateral slip on both longitudinal and lateral force need to be represented in a computerized model of the vehicle. Since little or no data are available for this situation, simulation users and developers have resorted to simple theoretical approaches for extrapolating from the available longitudinal and lateral force data to the combined slip case.

A tabular function approach can be used to provide a very general means for representing the influence of combined longitudinal and lateral slip on the shear force characteristics of truck tires. In this approach, "roll-off" factors are defined in tabular form as functions of two variables, namely, longitudinal slip and slip angle. One roll-off factor multiplies the "free-rolling" lateral force to estimate the lateral force under braking slip and the other roll-off factor multiplies the longitudinal force, computed without considering slip angle, to obtain a "rolled-off" value of force corresponding to the combined slip situation. Since little or no test data are available, the roll-off values in these tables are usually obtained from theoretical considerations, such as those used in a semiempirical model of the combined slip case.

The concepts employed in the previously described semiempirical models that are applicable to a longitudinally slipping tire or a laterally slipping tire have been extended to treat the combined slip case. Figure 8 illustrates the deflection pattern that is predicted for the adhesion region. Note that the presence of longitudinal slip increases the amount of lateral deflection at an arbitrary point in the adhesion region. Hence, a small amount of braking can cause an increase in side force at low slip angles. Aside from this interaction and the need to treat friction as a two-dimensional quantity, the development of the semiempirical model is straightforward even though it requires considerable attention to algebraic detail.

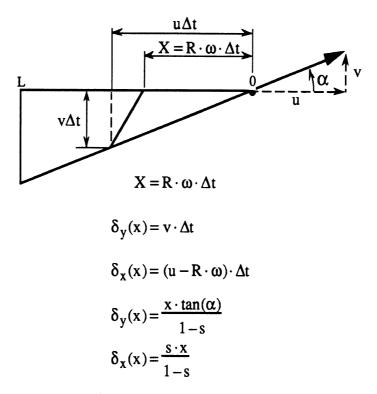


Figure 8. Combined slip model

When there is both longitudinal and lateral slip and their levels are sufficient to cause sliding in the contact patch, the friction factor has a directional aspect. The total sliding velocity is given by the following equation:

$$V_{s} = [(u - R\omega)^{2} + (v)^{2}]^{0.5}$$
(12)

The angle of friction θ pertains to the direction of sliding such that:

 $\sin \theta = v/Vs$ and $\cos \theta = (u - R\omega)/Vs$.

To account for the directional influence of the friction factor, there is a longitudinal component and a lateral component of the friction such that:

$$\mu_{\rm X} = \mu \cos \theta$$
 and $\mu_{\rm V} = \mu \sin \theta$.

These directional friction factors are used in dividing the contact patch into regions of adhesion and sliding (either longitudinally, laterally, or both) per the following equations for the fraction of the contact patch that is in adhesion longitudinally or laterally:

$$(x_s/L)_x = \mu_x Fz(1-s)/2 C_s s$$
 (13)

$$(x_s/L)_y = \mu_y Fz(1-s)/2 C_{\alpha} \tan \alpha$$
(14)

Based upon equations 13 and 14, the equations for longitudinal and lateral force under combined slip are now as follows:

$$Fx = C_{S} (x_{S}/L)_{X}^{2} s/(1-s)] + [(1 - (x_{S}/L)_{X}) \mu_{X} Fz]$$
(15)

$$Fy = -[C_{\alpha} (x_s/L)_y^2 \tan \alpha/(1-s)] - [(1 - (x_s/L)_y) \mu_y Fz] sign\{\alpha\}$$
(16)

(where sufficient checks are made to avoid dividing by zero or using values of $(x_s/L) > 1$).

The aligning torque is difficult to predict accurately using a simple theoretical model. However, semiempirical results can be obtained using empirically obtained values of Xp (the pneumatic trail) and Cy (the lateral deflection stiffness of the tire). In this approach, the aligning torque, A_T, is approximated as follows:

$$A_T = -Xp \{Fya [4(x_s/L)_V - 3] + Fys 3 (x_s/L)_V\} + Fx Fy / Cy$$

where $Fya = -[C_{\alpha} (x_s/L)_y^2 \tan \alpha/(1-s)]$ and $Fys = -[(1 - (x_s/L)_y) \mu_y Fz] sign\{\alpha\}$. (Further study of tire modeling is needed to develop a better understanding of the factors influencing aligning torque.)

Summary

This Appendix addresses the subject of representing the shear force properties of truck tires in computerized models of commercial vehicles. Emphasis has been placed on interpreting the meaning of slip angle and longitudinal slip in terms of simplified descriptions of the elastic properties of the tire and the adhesion characteristics of the tireroad interface. This approach to interpreting slip angle and longitudinal slip serves to illustrate the analogies that exist between longitudinal and lateral slip and the generation of longitudinal and lateral force.

Semiempirical models for representing the longitudinal, lateral, and combined longitudinal and lateral force situations have been presented. The derivation of the equations for the tire model is detailed, but straightforward (once the assumptions are understood). The primary assumptions are:

- 1) The contact patch can be divided into a sliding region and an adhesion region,
- the shear force generated in the adhesion region depends upon elastic properties of the tire, and
- 3) the shear force generated in the sliding region depends upon the frictional properties of the tire-road interface.

The simplified tire model described here differs from previous versions in three main respects: (1) aligning torque is approximated even in the case of combined longitudinal and lateral slip, (2) the resultant force produced by the sliding portion of the contact patch opposes the direction of sliding, and (3) frictional characteristics are computed to match a desired μ -slip curve.

The insights into tire performance properties as provided by these models should be very useful in (a) interpreting differences in the measured characteristics of various tires and (b) understanding how tire properties interact with vehicle motion variables in dynamic maneuvers.

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APPENDIX B

TIRE EQUATIONS USED IN THE SPREAD SHEET

The letters in parentheses at the right border (for example, (G) after the equation for Vs) indicate the applicable columns of the example spread sheet shown in Figure 1.

A. Sliding Velocity

$$V_{\rm S} = (({\rm s})^2 + (\tan \alpha)^2)^{0.5} {\rm u} \tag{G}$$

where Vs = sliding velocity, s = longitudinal slip, α = slip angle, and u = forward velocity component in the wheel plane.

B. Friction

$$mu = muf + (muo - muf)e^{-VS/Vf}$$
(H)

_ _ _ _ _

where mu = frictional potential, muf = minimum friction at high sliding velocity, muo = maximum friction at zero sliding velocity, Vf = exponential velocity constant for "shaping" the mu versus s curve.

In general,
$$Vf = [Vs/(ln((muo - muf)/(mu - muf))]$$
 (H15)

Example 1. For muo = 0.9, muf = 0.4, and mu = 0.5 at 45 mph (66 ft/sec),

 $0.5 = 0.4 + (0.9 - 0.4) e^{-66/Vf}$

or, $Vf = 66/(\ln(0.5/0.1)) = 41$ ft/sec. for a "0.9 surface."

Note:

• For this example, 0.5 = the locked wheel (s =1) value when the tire is sliding at 66 ft/sec. In the next example, 0.25 = the locked wheel value.

Example 2. For muo = 0.5, muf = 0.2, and mu = 0.25 at 45 mph (66 ft/sec),

$$0.25 = 0.2 + (0.5 - 0.2) e^{-66/Vf}$$

or,
$$Vf = \frac{66}{(\ln(0.3/0.05))} = 36.8$$
 ft/sec for a "0.5 surface."

C. Direction of Sliding and Friction Factors for Combined Slip

$$V_{s} = ((u - R\omega)^{2} + (v)^{2})^{0.5}$$
(G)

where $v = u \tan \alpha$, $\omega =$ the angular velocity of the wheel, and R = the rolling radius.

The angle of friction θ defines the direction of sliding such that:

$$\sin \theta = v/Vs \tag{I}$$

and,
$$\cos \theta = (u - R\omega) / Vs$$
 (J)

The longitudinal friction factor is:

$$mux = mu\cos\theta \tag{N}$$

The lateral friction factor is:

$$muy = mu \sin \theta \tag{K}$$

Notes:

• Force components under total sliding oppose the direction of sliding. That is, θ defines the direction of sliding with respect to the wheel plane.

• The total friction is divided into lateral and longitudinal friction factors (capabilities). These factors determine the maximum amount of frictional force that can be generated in any direction.

D. Longitudinal and Lateral Fractions of the Contact Patch that Are in Adhesion

Longitudinally, for $1 \ge s > 0$,

$$(xsx/L)' = [(mux) Fz (1 - s)] / [2 C_s s]$$
 (N)

where xsx = the point in the contact where longitudinal sliding starts (and adhesion ends), L = the length of the contact patch, Fz = the vertical load, C_s = the longitudinal stiffness of the tire.

Note:

In the spread sheet,
$$C_s = 10 \text{ Fz} - \text{Fz}^2/3000 \text{ lbs.}$$
 (E)

Laterally, for $\alpha \neq 0$,

$$(xsy/L)' = [(muy) Fz (1 - s)] / [2 Calpha | tan \alpha |]$$
(N)

where xsy = the point in the contact where lateral sliding starts (and adhesion ends), L = the length of the contact patch, Fz = the vertical load, C_{alpha} = the lateral stiffness of the tire.

Note:

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In the spread sheet,
$$C_{alpha} = 0.9 C_{s}$$
 lbs. (F)

If (xsx/L)' > 1, (xsx/L) = 1; otherwise, (xsx/L) = (xsx/L)' (O)

If
$$(xsy/L)' > 1$$
, $(xsy/L) = 1$; otherwise, $(xsy/L) = (xsy/L)'$ (L)

Notes:

• If $(xsx/L)' \ge 1$, the entire contact patch is in adhesion longitudinally.

• If $(xsy/L)' \ge 1$, the entire contact patch is in adhesion laterally.

• The regions of adhesion can be different longitudinally and laterally. In the longitudinal adhesion region, C_s applies, and in the lateral adhesion region, C_{alpha} applies.

E. Longitudinal and Lateral Forces

$$Fx = [C_s (xsx/L)^2 (s/(1 - s)) + (1 - (xsx/L)) (mux) Fz]$$
(P)

where Fx = the braking force for 1 > s > 0. If s = 0, Fx = 0. If s = 1, Fx = (mux) Fz.

$$Fy = [C_{alpha} (xsy/L)^{2} (tan \alpha/(1 - s)) + (1 - (xsy/L)) (muy) Fz]$$
(M)

where Fy = the magnitude of the lateral force for s < 1. If $\alpha > 0$, the lateral force is negative. If $\alpha < 0$, the lateral force is positive. If s = 1, Fy = (muy) Fz.

Notes:

• The spread sheet is set up to use positive slip angles and return positive values for the magnitude of the lateral force. The idea that positive slip angle produces negative lateral force (and vice versa) needs to be used in applying the spread sheet results in a simulation context.

• Aligning torque AT may also be calculated using empirically obtained values for the pneumatic trail xp and the lateral deflection stiffness Cy for the tire: viz.,

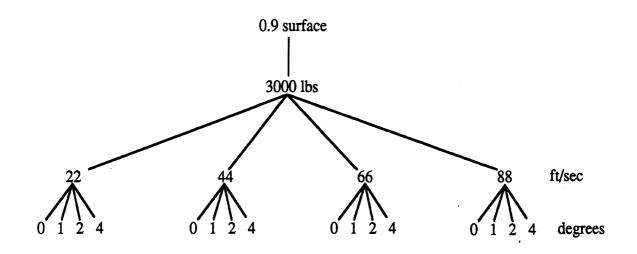
$$AT = -xp{Fya[(4) (xsy/L) - 3] + 3 Fys (xsy/L)} + Fx Fy / Cy$$

where Fya = -[Calpha (xsy/L)²tan $\alpha/(1-s)$] and Fys = -[(1 - (xsy/L))(muy)Fz] sign(α).

APPENDIX C

GENERIC TRUCK TIRE DATA FOR A "0.9 SURFACE"

The first set of data is for Fz = 3000 lbs per the following chart. There are similar sets of data for Fz = 6000 and 9000 lbs.



.9 - 3000 - 22 - 0

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	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	1.7453E-08	22	3000	27000	24300	0.00022	0.89999732
3	0.05	1.7453E-08	22	3000	27000	24300	1.1	0.88676372
4	0.1	1.7453E-08	22	3000	27000	24300	2.2	0.87387784
5	0.2	1.7453E-08	22	3000	27000	24300	4.4	0.84912041
6	0.25	1.7453E-08	22	3000	27000	24300	5.5	0.83723104
7	0.3	1.7453E-08	22	3000	27000	24300	6.6	0.82565642
8	0.35	1.7453E-08	22	3000	27000	24300	7.7	0.8143882
9	0.4	1.7453E-08	22	3000	27000	24300	8.8	0.80341829
10	0.5	1.7453E-08	22	3000	27000	24300	11	0.78234197
11	0.6	1.7453E-08	22	3000	27000	24300	13.2	0.76236677
12	0.75	1.7453E-08	22	3000	27000	24300	16.5	0.73434356
13	0.99999	1.7453E-08	22	3000	27000	24300	21.99978	0.69237233
14								
15	alpha (deg)=	0.000001	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	0.00042412	0.2700027					
19	0.05	0.00044644	1415.23716					
20	0.1	0.00034649	2048.88666	,				
21	0.2	0.000199	2307.02607					
22	0.25	0.00016176	2336.45417					
23	0.3	0.00013554						
24	0.35	0.00011615	2340.52216					
25	0.4	0.00010126	2329.56974					
26	0.5	7.9948E-05	2296.02099					
27	0.6	6.5485E-05	2254.81125					
28	0.75	5.088E-05	2188.05121					
29	0.99999	3.6253E-05	2077.1166					
30								

.

.9 - 3000 - 22 - 1

1

	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Os	Calpha	Vs	mu
2	0.00001	0.01745506	22	3000	27000	24300	0.38401135	0.8953388
3	0.05	0.01745506	22	3000	27000	24300	1.16510286	0.88599141
4	0.1	0.01745506	22	3000	27000	24300	2.23326323	0.87349354
5	0.2	0.01745506	22	3000	27000	24300	4.41672556	0.84893723
6	0.25	0.01745506	22	3000	27000	24300	5.51338958	0.83708828
7	0.3	0.01745506	22	3000	27000	24300	6.61116213	0.82554055
8	0.35	0.01745506	22	3000	27000	24300	7.70956968	0.81429149
9	0.4	0.01745506	22	3000	27000	24300	8.80837469	0.80333589
10	0.5	0.01745506	22	3000	27000	24300	11.0067009	0.78227949
11	0.6	0.01745506	22	3000	27000	24300	13.2055846	0.76231742
12	0.75	0.01745506	22	3000	27000	24300	16.504468	0.73430712
13	0.99999	0.01745506	22	3000	27000	24300	22.0031312	0.69234843
14								·
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
	S	Fy	Fx					
18	0.00001	424.162168	0.2700027					
19	0.05	446.3219	1401.58518					
20	0.1	342.891307	2026.12632					
21	0.2	198.312261	2298.75179					
22	0.25	161.387154	2330.83672					
23	0.3	135.317177	2340.37005					
24	0.35	116.00657	2337.47872					
25	0.4	101.16319	2327.20107					
26	0.5	79.9028211	2294.47501					
27	0.6	65.4606404	2253.72753					
28	0.75	50.8685053	2187.35514					
29	0.99999	36.2497805	2076.72855					
30								

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	1)	,					
-	S	tan alpha	n	Fz	පී	Calpha	Vs	nm
2	0.00001	0.03492076	22	3000	27000	24300	0.76825669	0.89071825
e	0.05	0.03492076	22	3000	27000	24300	1.34172213	
4	0.1	0.03492076	22	3000	27000	24300	2.33028288	
S	0.2	0.03492076	22	3000	27000	24300	4.46656672	0.84839182
9	0.25	0.03492076	22	3000	27000	24300	5.553397	0.83666198
~	0.3	0.03492076	22	3000	27000	24300	6.64456306	0.82519402
ω	0.35		22	3000	27000	24300	7.73823095	0.81400198
6	0.4	0.03492076	22	3000	27000	24300	8.83347147	0.80308908
0	0.5	0.03492076	22	3000	27000	24300	11.0267955	0.78209217
	0.6		22	3000	27000	24300	13.2223379	0.7621694
4	0.75	0.03492076	22	3000	27000	24300	16.5178757	0.73419782
13	0.99999	0.03492076	22	3000	27000	24300	22.0131901	0.69227672
4								
15	alpha (deg)=	2	=onw	0.9	muf=	0.4	_f=	41
16								
17	S	Fy	FX					
8	0.00001	848.582881	0.2700027					
19	0.05	873.11429	1342.52094					
20	0.1	665.428218	1962.06436					
21	0.2	392.605263	2274.41898					
22	0.25	320.590409	2314.20027					
23	0.3	269.335422	2328.34314					
24	0.35	231.187901	2328.40677					
25	0.4	201.775539	2320.12892					
2 e	0.5	159.532962	2289.85007					
27	0.6	130.772895	2250.48197					
28	0.75	101.671018	2185.26867					
29	0.99999	72.4810098	2075.56459					
ר מ								

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.9 - 3000 - 22 - 4

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		A	В	С	D	E	F	G	Н
	1	S	tan alpha	u	Fz	Os	Calpha	Vs	mu
	2	0.00001	0.06992679	22	3000	27000	24300	1.53838933	0.88158676
	3	0.05	0.06992679	22	3000	27000	24300	1.89120112	0.87746041
	4	0.1	0.06992679	22	3000	27000	24300	2.68451889	0.86831073
	5	0.2	0.06992679	22	3000	27000	24300	4.66118458	0.84626845
,	6	0.25	0.06992679	22	3000	27000	24300	5.71109811	0.83498564
	7	0.3	0.06992679	22	3000	27000	24300	6.77691978	0.82382362
	8	0.35	0.06992679	22	3000	27000	24300		
	9	0.4	0.06992679	22	3000	27000	24300	8.93345631	0.80210728
	10	0.5	0.06992679	22	3000	27000	24300	11.1070537	0.78134495
	11	0.6	0.06992679	22	3000	27000	24300	13.2893432	0.761578
	12	0.75	0.06992679	22	3000	27000	24300	16.5715612	0.7337605
	13	0.99999	0.06992679	22	3000	27000	24300	22.0535023	0.69198949
_	14			: :					
C-5	15	alpha (deg)=	4	muo=	0.9	muf=	0.4	Vf=	41
0.	16								
	17			Fx					
	18	0.00001	1615.65822	0.24576682					
	19	0.05	1500.4313	1118.68294					
	20	0.1	1197.71136	1755.00466					
	21	0.2	755.276003	2183.82631					
	22	0.25	624.516728	2250.71358					
	23	0.3	528.617719	2281.78385					
	24	0.35	455.931355	2292.96922					
	25	0.4	399.223572	2292.33684					
	26	0.5	316.90804	2271.5432					
	27	0.6	260.366698	2237.58343					
	28	0.75	202.815789	2176.94889					
	29	0.99999	144.813598	2070.91101					
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-	s		tan alpha	n	Fz	පී	Calpha	Vs	nm
2		0.00001	1.7453E-08	44	3000	27000	24300	0.00044	0.89999463
ო		0.05	1.7453E-08	44	3000	27000	24300	2.2	0.87387784
4		0.1	1.7453E-08	. 44	3000	27000	24300	4.4	0.84912041
5		0.2	1.7453E-08	44	3000	27000	24300	8.8	0.80341829
9		0.25	1.7453E-08	44	3000	27000	24300	11	0.78234197
2		0.3	1.7453E-08	44	3000	27000	24300	13.2	
ω		0.35	1.7453E-08	44	3000	27000	24300	15.4	0.74343516
6		0.4	1.7453E-08	44	3000	27000	24300	17.6	0.72549263
10		0.5	1.7453E-08	44	3000	27000	24300	22	0.69237076
11		0.6	1.7453E-08	44	3000	27000	24300	26.4	0.66261935
12		0.75	1.7453E-08	44	3000	27000	24300	33	0.62357123
13		0.999999	1.7453E-08	44	3000	27000	24300	43.99956	0.57096316
14									
15	alpha	ha (deg)=	0.000001	=onm	0.9	muf=	0.4	Vf=	41
16									
17	S		Fy	Fx					
18		0.00001	0.00042412	0.2700027					
19		0.05	0.00044644	1412.50126					
20		0.1	0.00033973	2006.60713					
21		0.2	0.00018947	2195.09454					
22		0.25	0.00015198	2194.01117					
23		0.3	0.00012575	2174.0886					
24		0.35	0.00010648	2144.76923					
25		0.4	9.1777E-05	2110.68543					
26		0.5	7.0955E-05	2037.16418					
27		0.6	5.7036E-05	1963.46559					
28		0.75	4.3254E-05	1859.91254					
29		0.999999	2.9896E-05	1712.88921					
30									

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	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.01745506	44	3000	27000	24300	0.76802271	0.89072105
3	0.05	0.01745506	44	3000	27000	24300	2.33020572	0.87237531
4	0.1	0.01745506	44	3000	27000	24300	4.46652647	0.84839226
5	0.2	0.01745506	44	3000	27000	24300	8.83345112	0.80308928
6	0.25	0.01745506	44	3000	27000	24300	11.0267792	0.78209232
7	0.3	0.01745506	44	3000	27000	24300	13.2223243	0.76216952
8	0.35	0.01745506	44	3000	27000	24300	15.4191394	0.74327488
9	0.4	0.01745506	44	3000	27000	24300	17.6167494	0.72535968
10	0.5	0.01745506	44	3000	27000	24300	22.0134018	0.69227521
11	0.6	0.01745506	44	3000	27000	24300	26.4111692	0.66254782
12	0.75	0.01745506	44	3000	27000	24300	33.008936	0.6235225
13	0.99999	0.01745506	44	3000	27000	24300	44.0062625	0.57093521
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
17		Fy	Fx					
18	0.00001	424.162168	0.2700027					
19	0.05		1396.80962					
20	0.1	336.043823	1983.40179					
21	0.2		2186.78527					
22	0.25		2188.40364					
23	0.3		2170.07592					
24	0.35		2141.76956					
25	0.4		2108.36677					
26	0.5							
27	0.6		1962.43632					
28	0.75		1859.26751					
29	0.99999	29.8928631	1712.5445					
30								

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	A	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	44	3000	27000	24300	1.53651337	0.8816088
3	0.05	0.03492076	44	3000	27000	24300	2.68344427	0.868323
4	0.1	0.03492076	44	3000	27000	24300	4.66056575	0.84627518
5	0.2	0.03492076	44	3000	27000	24300	8.93313344	0.80211045
6	0.25	0.03492076	44	3000	27000	24300	11.106794	0.78134737
7	0.3	0.03492076	44	3000	27000	24300	13.2891261	0.76157991
8	0.35	0.03492076	44	3000	27000	24300	15.4764619	0.74279528
9	0.4	0.03492076	44	3000	27000	24300	17.6669429	0.72496161
10	0.5	0.03492076	44	3000	27000	24300	22.0535909	0.69198886
11	0.6	0.03492076	44	3000	27000	24300	26.4446757	0.66233335
12	0.75	0.03492076	44	3000	27000	24300	33.0357514	0.62337636
13	0.99999	0.03492076	44	3000	27000	24300	44.0263802	0.57085136
14								
15	alpha (deg)=	2	muo=	0.9	muf=	0.4	Vf=	41
16								
17		Fy	Fx					
18	0.00001		0.2700027					
19	0.05		1333.25485					
20	0.1	651.249171	1918.12919					
21	0.2	373.517541	2162.35331					
22	0.25		2171.79869					ana
23	0.3	249.774482	2158.1458					
24	0.35	211.862721	2132.82901					
25	0.4	182.827643	2101.44459					
26	0.5	141.554731	2031.21155					
27	0.6	113.879805	1959.35406					
28	0.75	86.4236306	1857.33418					
29	0.99999	59.7678407	1711.51055					
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- S	S	tan alpha	n	Fz	ප	Calpha	Vs	nm
2	0.00001	0.06992679	44	3000	27000	24300	3.07677865	0.86385162
e	0.05	0.06992679	44	3000	27000	24300	3.78240224	0.85593688
4	0.1	0.06992679	44	3000	27000	24300	5.36903778	
5	0.2	0.06992679	44	3000	27000	24300	9.32236916	0.79831105
6	0.25	0.06992679	44	3000	27000	24300	11.4221962	0.77842502
7	0.3	0.06992679	44	3000	27000	24300	13.5538396	0.75925292
8	0.35	0.06992679	44	3000	27000	24300	15.7043487	0.74089524
6	0.4	0.06992679	44	3000	27000	24300	17.8669126	0.72338053
0	0.5	0.06992679	44	3000	27000	24300	22.2141074	0.69084794
	0.6	0.06992679	44	3000	27000	24300	26.5786863	0.6614773
12	0.75	0.06992679	44	3000	27000	24300	33.1431225	0.62279215
13	0.99999	0.06992679	44	3000	27000	24300	44.1070045	0.57051572
14								
15	alpha (deg)=	4	=onw	0.9	muf=	0.4	Vf=	41
16								
17 s	(0)	Fy	Fx					
18	0.00001	1603.44181	0.24343362					
19	0.05	1478.96117	1101.11057					
20	0.1	1166.51224	1707.55235					
21	0.2	716.892722	2071.44206					
22	0.25	585.38556	2108.46214					
23	0.3	489.526686	2111.98078					
24	0.35	417.331347	2097.91834					
25	0.4	361.381552	2074.25178					
26	0.5	280.997149	2013.55834					
27	0.6	226.614449	1947.10801					
28	0.75	172.340633	1849.62688					
29	0.99999	119.392619	1707.37757					
30								

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	r				r	r		30
					671606.6641	2.61786E-05	66666`0	50
					11011.0491		92.0	58
ł					763626.1371	6.08902E-05	9.0	22
					1838.310256	6.40434E-05	9.0 9.0	56
					1932.91035	8.40758E-05	7 .0	52
					96298.1861		95.0	54
					2027.860183	945711000.0	0.3E	53
				·····	2023 15.8902		0.25	55
					5093 365949	0.000180802	2.0	51
					1965.687862	0.000333162	1°0	50
					1409.332671		90.0	61
					7200072.0	0.000424119	10000.0	81
					Fx	Fy	\$	
							(Cam) mudum	91
41	= 1 V	4.0	=}ทพ	6'0	=onɯ	100000.0	alpha (deg)=	91
								14
967696664.0	72666.39	54300	00072	3000	99		66666 0	13
861667679.0	9.64	54300	00022	3000	99		92.0	15
0.590329054	9.65	54300	00072	3000	99	1.74533E-08	9.0	11
0.623571226	33		22000	3000	99	1.74533E-08	9.0	10
0.662619354	56.4	54300	00072	3000	99	1.74533E-08	0.4	6
0.68463096	53.1	54300	00072	3000	99		3£.0	8
0.708487483	8.61	54300	22000	3000	99	1.74533E-08	£.0	2
0.734343556	9.91	54300	52000	3000	99	1.74633E-08	0.25	9
0.762366771	13.2	54300	27000	3000	99	1.74533E-08	2.0	9
0.825656417	9.9	54300	52000	3000	99	1.74533E-08	۲.0	4
82022233078	3.3	54300	52000	3000	99	1.74533E-08	90.0	3
196166668.0	100099000.0	54300	00022	3000	99	1.74533E-08	0.00001	5
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Г	Γ				[30
					12703.6041	12699321	66666 0	56
					1639.523304		92.0	58
					1750.666043	60.86745248	9.0	22
					1836,893603	1787000.48	9 [.] 0	59
					1930,733755	83.98720477	4.0	52
					1978.428626	85659992.86	95.0	54
					5023.916769	117,1301549	£.0	53
					2062.65916	142.9754791	0.25	55
					2082.068434	180.1126369	0.2	51
					1945.096698	329,3953594	1.0	50
					1391.666333	445.424424	90.0	61
					7200072.0	424.1621677	10000.0	81
					FX	Fy	S	21
								91
41	=1V	4.0	=Jum -	6.0	=onɯ	•	alpha (deg)=	91
								14
0.499945285	¢286800.99	54300	22000	3000	99	690994710.0	66666'0	13
0.54945033	49.51340406	54300	22000	3000	99	690994210.0	92.0	15
0.590251296	39.6167538	54300	22000	3000	99	690994710.0	9.0	11
0.623461634	33.0201027	54300	22000	3000	99	690994710.0	9 [.] 0	10
0.662458475	26.42512407	54300	22000	3000	99	690994210.0	4.0	6
0.684431725	23.12870904	54300	52000	3000	99	690994710.0	95.0	8
0.708235632	10.83348638	54300	52000	3000	99	650554710.0	0.3	2
131910457.0	16.54016874	54300	22000	3000	99	650554710.0	0.25	9
0.76192357	13.25017668	54300	22000	3000	99	690997210.0	0.2	9
0.824621674	6.699789702	54300	22000	3000	99	690994210.0	٢.0	4
789011638.0	3.495308577	54300	22000	3000	99	690994210.0	90.05	3
0.886146348	1.152034062	54300	52000	3000	99	690994210.0	10000.0	5
ทพ	s V	enqle)	so	LZ.	n		S	L
Н	9	E	Е	D)	8	∀	

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	A	В	C	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha		mu
2	0.00001	0.034920757	66	3000	27000	24300	2.304770056	0.872668452
3	0.05	0.034920757	66	3000	27000	24300	4.025166404	0.853245222
4	0.1	0.034920757	66	3000	27000	24300	6.990848631	0.82161796
5	0.2	0.034920757	66	3000	27000	24300	13.39970017	0.76060607
6	0.25	0.034920757	66	3000	27000	24300	16.66019101	0.733039791
7	0.3	0.034920757	66	3000	27000	24300	19.93368919	0.707483232
8	0.35	0.034920757	66	3000	27000	24300	23.21469286	0.68383585
9	0.4	0.034920757	66	3000	27000	24300	26.50041442	0.661976951
10	0.5	0.034920757	66	3000	27000	24300	33.0803864	0.623133312
11	0.6	0.034920757	66	3000	27000	24300	39.66701356	0.59001822
12	0.75	0.034920757	66	3000	27000	24300	49.55362716	0.549303783
13	0.99999	0.034920757	66	3000	27000	24300	66.0395703	0.499871751
14								
15	alpha (deg)=	2	muo=	0.9	muf=	0.4	V f =	41
16								
17	S	Fy	Fx					
18	0.00001	848.5828808	0.2700027					
19	0.05	864.4340779	1323.795143					
20	0.1	637.52892	1875.784887					
21	0.2	356.1713383	2060.676087					
22	0.25	283.7755487	2046.208505					
23	0.3	232.9820934	2012.190396					
24	0.35	195.7310225	1969.713821					
25	0.4	167.4453107	1924.043479					
26	0.5	127.745612	1832.656378					
27	0.6	101.5989096	1747 789533					
28	0.75	76.21270467	1637.764587	-				
29	0.99999	52.33631351	1498.701502					
					1			1

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					7495.081671	104.5473014	66666.0	50
					1630.755108	151.9587229	92.0	28
					1736.364581	202.1176845	9.0	22
		-			1815.895983	523.4684355	9.0	56
					1897.773805	330,7365729	0.4	52
					1936.701998	385.2012109	95.0	54
					1966.843412	456.0793884	5.0	53
					62009.5861	2979796.067	0.25	55
					190186.6961	1859531	2.0	51
					1662.302608	1136.665112	1.0	50
					911788.5801	1467.739062	90.05	61
					0.24108499	697788.0621	10000.0	81
	•				Fx	F y	S	21
								91
41	= † V	0.4	=]nm	6.0	=onw	4	alpha (deg)=	91
								14
969778664.0	22909091'99	54300	22000	3000	99	78792990.0	66666 0	13
0.548718438	49.7146837	54300	27000	3000	99	787826990.0	92.0	15
¢78880688.0	39.86802949	54300	27000	3000	99	78782690.0	9.0	11
0.62182679	33.32116107	54300	27000	3000	99	787926690.0	9.0	10
0.660067331	26.80036893	54300	27000	3000	99	787926690.0	Þ.0	6
0.681479257	53.55652298	54300	22000	3000	99	78792990.0	9.35	8
0.704519742	20.33075933	54300	22000	3000	99	787926690.0	6.0	2
0.729218897	17.13329434	54300	22000	3000	99	78792990.0	0.25	9
18703887.0	13.98355373	54300	22000	3000	99	787926690.0	0.2	9
731058018.0	179933520.8	54300	27000	3000	99	787926690.0	1.0	4
0.835383621	995209229 9	54300	27000	3000	99	787926690.0	90.05	3
9692978'0	86781818.4		. 27000	3000	99	787926690.0	10000.0	5
ոա	s V	Calpha	so	Z	n			L
Н	e	F	Э	D	Э	8	V	

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.9 - 3000 - 88 - 0

2 0.00001 1	B	С	D				
2 0.00001 1				E	F	G	Н
		u		Cs	Calpha		mu
3 0.05 1	1.7453E-08	88	3000	27000	24300	0.00088	
	1.7453E-08	88	3000	27000	24300	4.4	
	1.7453E-08	88	3000	27000	24300	8.8	0.80341829
5 0.2 1	1.7453E-08	88	3000	27000	24300	17.6	
6 0.25 1	1.7453E-08	88	3000	27000	24300	22	
7 0.3 1	1.7453E-08	88	3000	27000	24300	26.4	0.66261935
	1.7453E-08	88	3000	27000	24300	30.8	0.63589542
	1.7453E-08	88	3000	27000	24300		0.6118909
	1.7453E-08	88	3000	27000	24300	44	
11 0.6 1	1.7453E-08	88	3000	27000	24300	52.8	0.53793785
12 0.75 1	1.7453E-08	88	3000	27000	24300		
13 0.99999 1	1.7453E-08	88	3000	27000	24300	87.99912	0.4584568
14		······································					
15 alpha (deg)= 0.0	000001	muo=	0.9	muf=	0.4	Vf=	41
16							
17 s Fy		Fx					
	.00042412	0.2700027					
19 0.05 0.	.00044643	1405.76923					
20 0.1 0.	.00032679	1926.14415					
	.00017292	2001.03136					
	.00013571	1957.26797					
	.00011013	1902.48443					
	9.1662E-05	1845.10628					
	7.7827E-05	1788.87139					
26 0.5 5	5.8737E-05	1685.71757					
27 0.6 4	4.6424E-05	1597.73704					
28 0.75 3	3.4725E-05	1492.961					
29 0.99999 2	2.4005E-05	1375.37024					
30							

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.9 - 3000 - 88 - 1

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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.01745506	88	3000	27000	24300	1.53604542	0.8816143
3	0.05	0.01745506	88	3000	27000	24300	4.66041144	0.84627686
4	0.1	0.01745506	88	3000	27000	24300	8.93305294	0.80211124
5	0.2	0.01745506	88	3000	27000	24300	17.6669022	0.72496193
6	0.25	0.01745506	88	3000	27000	24300	22.0535583	0.69198909
7	0.3	0.01745506	88	3000	27000	24300	26.4446485	0.66233352
8	0.35	0.01745506	88	3000	27000	24300	30.8382787	0.63567529
9	0.4	0.01745506	88	3000	27000	24300	35.2334988	0.61171785
10	0.5	0.01745506	88	3000	27000	24300	44.0268036	0.5708496
11	0.6	0.01745506	88	3000	27000	24300	52.8223384	0.53786272
12	0.75	0.01745506	88	3000	27000	24300	66.0178721	0.49992462
13	0.99999	0.01745506	88	3000	27000	24300	88.012525	0.4584377
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	424.162168	0.2700027					
19	0.05	444.714778	1386.19332					
20	0.1	322.952291	1902.22305					
21	0.2	172.234805	1992.78419					
22	0.25	135.35053	1951.79418					
23	0.3	109.91961	1898.63355					
24	0.35	91.5316313	1842.27721					
25	0.4	77.7420155	1786.7228					
26	0.5	58.6968183	1684.38347					
27	0.6	46.4031992	1596.84734					
28	0.75	34.7159775	1492.42925					
29	0.99999	24.0027509	1375.10344					
30								

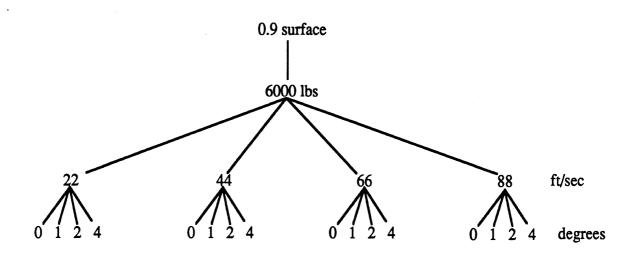
.9 - 3000 - 88 - 2

	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	88	3000	27000	24300	3.07302674	0.86389407
3	0.05	0.03492076	88	3000	27000	24300	5.36688854	0.83865287
4	0.1	0.03492076	88	3000	27000	24300	9.32113151	0.79832308
5	0.2	0.03492076	88	3000	27000	24300	17.8662669	0.72338562
6	0.25	0.03492076	88	3000	27000	24300	22.213588	0.69085163
7	0.3	0.03492076	88	3000	27000	24300	26.5782522	0.66148006
8	0.35	0.03492076	88	3000	27000	24300	30.9529238	0.63501721
9	0.4	0.03492076	88	3000	27000	24300	35.3338859	0.6112001
10	0.5	0.03492076	88	3000	27000	24300	44.1071819	0.57051498
11	0.6	0.03492076	88	3000	27000	24300	52.8893514	0.53763757
12	0.75	0.03492076	88	3000	27000	24300	66.0715029	0.499794
13	0.99999	0.03492076	88	3000	27000	24300	88.0527604	0.45838038
14								
15	alpha (deg)=	2	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	848.582881	0.2700027					
19	0.05	859.757116	1314.17924					
20	0.1	624.276995	1835.03343					
21	0.2	340.431665	1968.54579					
22	0.25	268.552836	1935.59139					
23	0.3	218.587787	1887.18824					
24	0.35	182.28453	1833.84754					
25	0.4	154.974899	1780.30998					
26	0.5	117.151766	1680.39356					
27	0.6	92.6799938	1594.1835					
28	0.75							
29	0.99999	47.9921886	1374.30324					
30								

.9 - 3000 - 88 - 4

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		A	ß	ပ	٥	Ш	u.	J	н
0.00001 0.06992679 88 3000 27000 24300 6.15355 1 0.0.0 0.06992679 88 3000 27000 24300 10.7380 1 0.0.2 0.06992679 88 3000 27000 24300 10.7380 1 0.0.2 0.06992679 88 3000 27000 24300 10.7380 1 0.0.2 0.06992679 88 3000 27000 24300 13.430 1 0.0.3 0.06992679 88 3000 27000 24300 31.432 1 0.0.4 0.06992679 88 3000 27000 24300 31.432 1 0.0.5 0.06992679 88 3000 27000 24300 31.432 1 0.0.9 0.06992679 88 3000 27000 24300 31.432 1 0.0.9 0.05992679 88 3000 27000 24300 31.432 1 0.0.9<	-	S	tan alpha	n	Fz	නී	Calpha	Vs	nm
1 0.05 0.06992679 88 3000 27000 24300 7.56480 1 0.1 0.06992679 88 3000 27000 24300 10.7380 1 0.0.2 0.06992679 88 3000 27000 24300 10.4300 1 0.0.2 0.06992679 88 3000 27000 24300 27.1076 1 0.0.3 0.06992679 88 3000 27000 24300 31.4086 1 0.0.5 0.06992679 88 3000 27000 24300 31.4086 1 0.0.5 0.06992679 88 3000 27000 24300 53.153 2 0.0.5 0.06992679 88 3000 27000 24300 53.153 2 0.0.5 0.06992679 88 3000 27000 24300 53.153 2 0.0.75 0.06992679 88 3000 27000 24300 54.1425 3	2	0.00001	.0699267	88	3000		24300	6.15355731	0.83031665
1 0.1 0.06992679 88 3000 27000 24300 10.7380 1 0.2 0.06992679 88 3000 27000 24300 16.64473 1 0.3 0.06992679 88 3000 27000 24300 27.1076 1 0.3 0.06992679 88 3000 27000 24300 31.4086 1 0.35 0.06992679 88 3000 27000 24300 35.7338 1 0.05 0.06992679 88 3000 27000 24300 31.4086 1 0.05 0.06992679 88 3000 27000 24300 51.473 2 0.059 0.06992679 88 3000 27000 24300 51.473 1 0.05 0.06992679 88 3000 27000 24300 51.473 2 0.05992679 88 3000 27000 24300 51.428 2 0.05 <td< th=""><th>ო</th><th>0.05</th><th></th><th>88</th><th>3000</th><th>27000</th><th></th><th>7.56480448</th><th>0.81575688</th></td<>	ო	0.05		88	3000	27000		7.56480448	0.81575688
6 0.2 0.06992679 88 3000 27000 24300 21.0763 7 0.25 0.06992679 88 3000 27000 24300 27.1076 7 0.35 0.06992679 88 3000 27000 24300 21.0763 8 0.35 0.06992679 88 3000 27000 24300 35.7388 9 0.6 0.6992679 88 3000 27000 24300 35.7388 1 0.6 0.6992679 88 3000 277000 24300 35.7388 1 0.6 0.6992679 88 3000 277000 24300 35.7388 2 0.03939 0.06922679 88 3000 277000 24300 35.7388 2 0.09399 0.06992679 88 3000 277000 24300 56.3622 2 0.09399 0.06932674 $Mufa$ </th <th>4</th> <th>0.1</th> <th></th> <th>88</th> <th></th> <th></th> <th></th> <th>10.7380756</th> <th>0.78479234</th>	4	0.1		88				10.7380756	0.78479234
0 0.25 0.06992679 88 3000 27000 24300 27.1076 0 0.3 0.06992679 88 3000 27000 24300 27.1076 0 0.3 0.06992679 88 3000 27000 24300 37.1076 0 0.5 0.06992679 88 3000 27000 24300 37.1086 1 0.05 0.06992679 88 3000 27000 24300 37.1086 1 0.05 0.06992679 88 3000 27000 24300 53.1573 2 0.059999 0.06992679 88 3000 27000 24300 53.1573 4 0.09999 0.06992679 88 3000 27000 24300 53.1573 4 0.90999 0.06992679 88 3000 27000 24300 53.1573 4 4 8 3000 27000 24300 53.1573 5 0.099581721	2	0.2	0.0699267	88				18.6447383	0.71730339
r 0.03 0.06992679 BB 3000 27000 24300 37.1076 0 0.35 0.06992679 BB 3000 27000 24300 31.4086 0 0.0 0.06992679 BB 3000 27000 24300 31.4086 1 0.0.6 0.06992679 BB 3000 27000 24300 53.1573 1 0.0.6 0.06992679 BB 3000 27000 24300 53.1573 1 0.0.75 0.06992679 BB 3000 27000 24300 53.1573 2 0.0.75 0.06992679 BB 3000 27000 24300 53.1573 2 0.0.75 0.06992679 BB 3000 27000 24300 53.1573 4 M M M M M M 4.4282 5 Jpha (deg) A M M A A A 5 M M	9	0.25		88		27000	24300	22.8443925	0.68641099
0 0.35 0.06992679 88 3000 27000 24300 31.4086 0 0.0.4 0.06992679 88 3000 27000 24300 35.7338 0 0.0.5 0.06992679 88 3000 27000 24300 35.7338 1 0.0.5 0.06992679 88 3000 27000 24300 53.1573 1 0.0.5 0.06992679 88 3000 27000 24300 53.1573 1 0.0.5 0.06992679 88 3000 27000 24300 53.1573 2 0.09399 0.06992679 88 3000 27000 24300 53.1573 2 0.09399 0.06992679 88 3000 27000 24300 53.1573 2 0.09001 1578.06547 0.23872882 0.9 700 24300 53.1573 3 0.00001 1578.06547 0.23872882 7000 24300 52.2 7000 24300<	2	0.3	0.0699267	88				27.1076791	0.65812532
0 0.4 0.06992679 88 3000 27000 24300 35.7338 1 0.0.5 0.06992679 88 3000 27000 24300 31.4282 1 0.0.6 0.06992679 88 3000 27000 24300 53.1573 2 0.0.75 0.06992679 88 3000 27000 24300 53.1573 2 0.0.99999 0.06992679 88 3000 27000 24300 66.2862 4 1 mud 1 mud 0.4.4282 53.1573 2 0.0.99999 0.06992679 88 3000 27000 24300 66.2862 4 1 mud 0.1 mud 0.4 2700 24300 66.2862 4 1 mud 1 mud 0.4 1<0	ω	0.35		88				31.4086973	0.63241912
0 0.05 0.06992679 88 3000 27000 24300 53.1573 1 0.06 0.06992679 88 3000 27000 24300 53.1573 2 0.075 0.06992679 88 3000 27000 24300 66.2862 4 0.09999 0.06992679 88 3000 27000 24300 66.2862 4 0.09999 0.06992679 88 3000 27000 24300 66.2862 4 P muc 0.9 90.0 27000 24300 66.2862 4 P muc 0.9 90.0 27000 24300 66.2862 4 P muc 0.9 90.0 27000 24300 66.2862 5 alpha (deg) A Muc 0.9 P P P P P P P P P P P P P P P P P P<	ŋ	0.4		88		27000		35.7338252	0.60914993
1 0.6 0.60992679 88 3000 27000 24300 53.1573 2 0.75 0.60992679 88 3000 27000 24300 66.2862 4 0.9999 0.06992679 88 3000 27000 24300 66.2862 4 0.99999 0.06992679 88 3000 27000 24300 66.2862 5 0.99999 0.06992679 88 3000 27000 24300 66.2862 6 100001 178.06547 0.23872882 0.9 0.6 100 100001 1578.06547 0.23872882 0.9 7 0.0001 1578.06547 0.23872882 0.9 0.9 0.9 0.0001 1578.06547 0.23872882 0.9 8 0.00001 1578.06547 0.23872882 0.9 0.9 0.9 0.9 0.9 0.9 9 0.0001 1578.06547 0.23872882 0.9 0.9 0.9 0.9 0.9 0.9 9 0.0001 1578.06547 0.23872882 0.9 0.9 0.9 0.9 0.9 0.9 9 0.035 520.74102 $184.2.95447$ 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 9 0.035 358.495346 1867.97472 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	10	0.5	0.0699267	88				44.4282148	0.56918505
2 0.75 0.06992679 88 3000 27000 24300 66.2862 4		0.6		88		27000	24300	53.1573726	0.53674075
3 0.99999 0.06992679 88 3000 27000 24300 88.214 4 mude 4 mude 0.4 24300 88.214 5 alpha (deg)= 4 mude 0.9 24300 88.214 6 h mude 0.9 mude 0.4 10.4 7 s Fy mude 0.4 10.4 10.4 7 s Fy mude 0.4 10.4 10.4 8 0.00001 1578.06547 0.23872882 10.4 10.4 10.4 9 0.0.5 1436.81721 10.66.97856 10.2 10.4 10.4 1 10.0 1108.16104 1619.21464 10.4 10.4 10.4 2 0.0.5 520.741028 1873.87472 10.4 10.4 10.4 2 0.23 358.495346 1872.95285 1872.95285 10.0 10.4 10.4 4 0.3 <	12	0.75		88			24300	66.2862449	0.49927268
4 muoe 0.9 mudf 0.4 5 alpha (deg)= 4 muoe 0.9 muff 0.4 7 s Fy Fx muoe 0.9 muff 0.4 s 7 s Fy Fx muoe 0.9 muff 0.4 s 9 0.0001 1578.06547 0.23872882 0.23872882 s s s s s 9 0.05 1436.81721 1066.97856 0.23872882 s		•	0.0699267	88	3000			88.214009	0.45815122
5 alpha (deg)= 4 muo= 0.9 muf= 0.4 6 Fy Fx muo= 0.9 muf= 0.4 7 s Fy Fx muo= 0.9 muf= 0.4 8 0.00001 1578.06547 0.23872882 0.0 0.0 1 108.16104 1619.21464 0.0 1 108.16104 1619.21464 0.0 1 108.16104 1619.21464 0.0 1 108.16104 1619.21464 1 1 1 1 1 108.16104 1619.21464 1 <									
6 Fy Fy Fx 7 s 0.00001 1578.06547 0.2 8 0.00001 1578.06547 0.2 9 0.05 1436.81721 106 0 0.05 1436.81721 106 1 100.05 1436.81721 106 1 0.105 1436.81721 161 1 0.25 520.741028 187 3 427.503783 184 4 0.35 358.495346 186 5 0.25 520.741028 187 6 0.35 358.495346 187 7 0.35 358.495346 187 6 0.4 305.954401 175 7 0.5 232.39122 166 7 0.6 184.356356 166 8 0.75 138.335946 148 9 0.99999 95.8779475 137		1	ł	=onw	0	=Jum	o.	Vf=	41
7 s Fy Fx 9 0.00001 1578.06547 0.2 9 0.005 1436.81721 106 0 0.015 1436.81721 106 1 0.015 1436.81721 106 1 0.01 1108.16104 161 1 0.025 520.741028 187 2 0.25 520.741028 187 3 0.25 520.741028 187 4 0.25 358.495346 187 5 0.35 358.495346 187 6 0.35 358.495346 187 7 0.5 232.39122 166 7 0.5 232.39122 166 7 0.5 138.335946 148 8 0.75 138.335946 148 9 0.95.9779475 137 147	16								
80.000011578.065470.290.051436.8172110610.11108.1610416110.2650.85177618720.25520.74102818730.3427.50378318440.35358.49534618750.35358.49534618760.35358.49534618770.35358.3912216670.5232.3912216680.75138.33594614890.9999995.8779475137	17	S	Fy	Ъ					
90.051436.8172110600.11108.1610416110.2650.85177618720.25520.74102818430.35358.49534618440.35358.49534618650.35358.49534618760.35358.3912216670.6184.35635615880.75138.33594614890.9999995.8779475137		0.00001	1578.06547	0.23872882					
0 0.1 1108.16104 161 1 0.2 650.851776 187 2 0.25 520.741028 187 3 0.25 520.741028 187 4 0.35 358.495346 180 5 0.35 358.495346 180 6 0.35 358.495346 180 7 0.35 358.495346 180 6 0.35 358.495346 180 7 0.04 305.954401 175 8 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137	19	0.05		1066.97856					
1 0.2 650.851776 187 2 0.25 520.741028 187 3 0.35 520.741028 187 4 0.35 358.495346 180 5 0.35 358.495346 180 6 0.35 358.495346 180 7 0.4 305.954401 175 6 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137		0.1		1619.21464					
2 0.25 520.741028 187 3 0.3 427.503783 184 4 0.35 358.495346 180 5 0.35 358.495346 180 6 0.35 358.495346 175 6 0.4 305.954401 175 7 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.999999 95.8779475 137 0 0 95.8779475 137		0.2		1878.50414					
3 0.3 427.503783 184 4 0.35 358.495346 180 5 0.4 305.954401 175 6 0.4 305.954401 175 7 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137 0 0 95.8779475 137		0.25		1873.87472					
4 0.35 358.495346 180 5 0.4 305.954401 175 6 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137 0 0 95.8779475 137		0.3		1842.95285					
5 0.4 305.954401 175 6 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137 0 0 95.8779475 137		0.35		1800.96698					
6 0.5 232.39122 166 7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137 0 1 1 1 1		0.4	305.95440	1755.14217					
7 0.6 184.356356 158 8 0.75 138.335946 148 9 0.99999 95.8779475 137 0 0 99.897 137 137		0.5		1664.61742					
8 0.75 138.335946 148 9 0.99999 95.8779475 137 0		9.0	184.35635	58					
9 0.99999 95.8779475 137 0		0.75	138.33594	48					
		9999.	95.877947	37					



.9 - 6000 - 22 - 0

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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	1.7453E-08	22	6000	48000	43200	0.00022	0.89999732
3	0.05	1.7453E-08	22	6000	48000	43200	1.1	0.88676372
4	0.1	1.7453E-08	22	6000	48000	43200	2.2	0.87387784
5	0.2	1.7453E-08	22	6000	48000	43200	4.4	0.84912041
6	0.25	1.7453E-08	22	6000	48000	43200	5.5	0.83723104
7	0.3	1.7453E-08	22	6000	48000	43200	6.6	0.82565642
8	0.35	1.7453E-08	22	6000	48000	43200	7.7	0.8143882
9	0.4	1.7453E-08	22	6000	48000	43200	8.8	0.80341829
10	0.5	1.7453E-08	22	6000	48000	43200	11	0.78234197
11	0.6	1.7453E-08	22	6000	48000	43200	13.2	0.76236677
12	0.75	1.7453E-08	22	6000	48000	43200	16.5	0.73434356
13	0.99999	1.7453E-08	22	6000	48000	43200	21.99978	0.69237233
14								
15	alpha (deg)=	0.000001	muo=	0.9	muf=	0.4	Vf=	41
16								
17	s	Fy	Fx					
18	0.00001	0.00075399	0.4800048					
19	0.05	0.00079367	2526.31579					
20	0.1	0.00066521	3954.5866					
21	0.2	0.00039217	4553.96836					
22	0.25	0.00032011	4629.09861					
23	0.3	0.00026893						
24	0.35	0.00023087	4655.3837					
25	0.4	0.00020153	4638.9682					
26	0.5	0.0001594	4579.29076					
27	0.6	0.00013071	4501.55024					
28	0.75		4372.35756					
29	0.99999	7.2506E-05	4154.23309					
30								

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.9 - 6000 - 22 - 1

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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.01745506	22	6000	48000	43200	0.38401135	0.8953388
3	0.05	0.01745506	22	6000	48000	43200	1.16510286	0.88599141
4	0.1	0.01745506	22	6000	48000	43200	2.23326323	0.87349354
5	0.2	0.01745506	22	6000	48000	43200	4.41672556	0.84893723
6	0.25	0.01745506	22	6000	48000	43200	5.51338958	0.83708828
7	0.3	0.01745506	22	6000	48000	43200	6.61116213	0.82554055
8	0.35	0.01745506	22	6000	48000	43200	7.70956968	0.81429149
9	0.4	0.01745506	22	6000	48000	43200	8.80837469	0.80333589
10	0.5	0.01745506	22	6000	48000	43200	11.0067009	0.78227949
11	0.6	0.01745506	22	6000	48000	43200	13.2055846	0.76231742
12	0.75	0.01745506	22	6000	48000	43200	16.504468	0.73430712
13	0.99999	0.01745506	22	6000	48000	43200	22.0031312	0.69234843
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	754.066076	0.4800048					
19	0.05	793.745827	2526.20324					
20	0.1	658.857039	3913.42172					
21	0.2	390.844583	4537.89971					
22	0.25	319.393275	4618.09109					
23	0.3	268.499824						
24	0.35	230.595075	4649.36658					
25	0.4	201.350409	4634.27334					
26	0.5	159.311716	4576.21634					•
27	0.6	130.660606	4499.39066					
28	0.75	101.640233	4370.96781					
29	0.99999	72.4995591	4153.45701					
30								

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	A	8	C	0	Ш	u	σ	I
-	S	tan alpha	п	Fz	ප		Vs	mu
2	0.00001	0.03492076	22	6000	48000	43200	0.76825669	0.89071825
ო	0.05	0.03492076	22	6000	48000	43200	1.34172213	0.88390237
4	0.1	0.03492076	22	6000	48000	43200	2.33028288	0.87237442
5	0.2	0.03492076	22	6000	48000	43200	4.46656672	0.84839182
ဖ	0.25	0.03492076	22	6000	48000	43200	5.553397	0.83666198
2	0.3	0.03492076	22	6000	48000	43200	6.64456306	0.82519402
ω	0.35	0.03492076	22	6000	48000	43200	7.73823095	0.81400198
თ	0.4	0.03492076	22	6000	48000	43200	8.83347147	0.80308908
- 10	0.5	0.03492076	22	6000	48000	43200	11.0267955	0.78209217
+	0.6	0.03492076	22	6000	48000	43200	13.2223379	0.7621694
12	0.75	0.03492076	22	0009	48000	43200	16.5178757	0.73419782
13	0.99999	0.03492076	22	6000	48000	43200	22.0131901	0.69227672
14								
15	alpha (deg)=	2	=onm	0.9	muf=	0.4	_ff=	41
16								
17	S	Fy	FX					
18	0.00001	1508.59179	0.4800048					
19	0.05	1584.92192	2477.17699					
20	0.1	1281.50767	3796.94392					
21	0.2	773.918274	4490.63175					
22	0.25	634.520589	4585.48762					
23	0.3	534.446856	4624.02729					
24	0.35	459.561788	4631.42996					
25	0.4	401.610813	4620.25553					
26	0.5	318.081839	4567.01891					
27	0.6	261.025805	4492.92309					
28	0.75	203.148793	4366.80206					
29	0.99999	144.962016	4151.12907					
30								

.9 - 6000 - 22 - 4

1stan alpha20.000010.0699267930.050.0699267940.10.0699267950.0250.0699267970.250.0699267970.350.0699267990.350.0699267990.350.0699267990.350.06992679100.350.06992679110.050.06992679120.050.06992679130.0999990.06992679140.050.0699267915alpha (deg)= 4 16 7 7 17s 0.999999 18 0.099999 0.06992679 19 0.055992679 11 200.0592679 12 0.05992679 13 0.999999 0.06992679 14 0.05 0.06992679 15 0.05992679 16 0.05932679 17 0.999999 0.06992679 21 0.099999 0.06992679 22 0.00001 2974.04092 23 0.00001 2974.04092 24 0.025 1236.47358 25 0.035 906.405599 26 0.035 906.405599 27 0.35 906.405592 28 0.35 906.405592 29 0.35 906.405592 29 0.35 906.405592 29 0.35 906.405592 29 0.35 906.405592	>				5	-
0.00001 0.00001 0.1 0.05 0.1 0.1 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.35 0.35 0.35 0.35 0.35	n e	Fz Cs		Calpha	Vs	nm
0.005 0.01 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.35 0.1 0.35 0.1 0.35 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.1 0.05 0.05 0.05	32679 22	6000	48000	43200	1.53838933	0.88158676
0.1 0.1 0.25 0.25 0.25 0.25 0.25 0.35 0.25 0.35 0.25 0.35 0.25 0.35 0.25 0.35 0.25 0.35 0.25 0.000 0.25 0.000 0.25 0.000 0.25 0.000 0.25 0.000 0.25 0.000 0.25 0.00 0.25 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 0.005 0.00 <tr< td=""><td>32679 22</td><td>6000</td><td>48000</td><td>43200</td><td>1.89120112</td><td>0.87746041</td></tr<>	32679 22	6000	48000	43200	1.89120112	0.87746041
0.25 0.25 0.25 0.25 0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.0001 0.0001 0.015 0.025 0.035 0.035 0.0001	32679 22	6000	48000	43200	2.68451889	0.86831073
0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.035 0.035 0.0001 1.1 0.0001 1.1 0.0001 1.1 0.0001 1.1 0.0001 1.1 0.25 0.1 0.035 1.1 0.25 0.1 0.25 0.035 0.1 0	32679 22	6000	48000	43200	4.66118458	0.84626845
0.35 0.35 0 0.35 0 0.35 0 0.4 0.33 0.35 33 0.99999 33 0.99999 4 0.000 5 alpha (deg)= 4 0.000 9 0.000 9 0.05 0 0.05 0 0.05 0 0.05 0 0.05 0 0.05 0 0.05 0 0.05 0 0.05 0 0.1 0 0.25 0 0.35 0 0.35	32679 22	6000	48000	43200	5.71109811	0.83498564
0 0.35 1 0.35 2 0.05 2 0.099999 3 0.999999 4 0.00001 5 alpha (deg)= 4 0.00001 7 5 3 0.099999 9 0.0001 4 0.0001 6 0.01 0 0.1 0	2679 22	6000	48000	43200	6.77691978	0.82382362
0 0.4 1 0.5 2 0.75 3 0.99999 5 alpha (deg)= 4 0.00001 5 0.00001 6 0.00001 7 5 3 0.00001 9 0.01 0 0.1 0 0.1 0 0.1 0 0.1 0 0.25 3 0.25 0 0.35 0 0.35 0 0.35 0 0.35	32679 22	6000	48000	43200	7.85217433	0.81285302
0 0.5 1 0.65 2 0.75 3 0.99999 5 alpha (deg)= 6 0.00001 7 5 3 0.00001 4 0.0001 6 0.0001 7 5 3 0.035 0 0.35 0 0.35 0 0.35 0 0.35 0 0.35 0 0.35 0 0.35 0 0.35 0 0.35	32679 22	6000	48000	43200	8.93345631	0.80210728
1 0.6 2 0.75 3 0.99999 5 alpha (deg)= 4 6 0.00001 7 s 7 s 9 0.0001 1 0.25 3 0.35 3 0.35 4 0.35 6 0.4 7 0.35 9 0.35 0 0.35 0 0.55 0 0.55 0 0.55 0 0.55	32679 22	6000	48000	43200	11.1070537	0.78134495
2 0.75 3 0.99999 5 alpha (deg)= 4 0.00001 5 0.00001 6 0.000 9 0.05 0 0.1	32679 22	6000	48000	43200	13.2893432	0.761578
3 0.99999 4 alpha (deg)= 4 5 alpha (deg)= 4 7 s 0.00001 9 0.00001 1 0 0.05 0.1 1 0.25 0.35 3 0.35 0.35 7 0.05 0.4 0 0.35 0.35 0 0.35 0.4 0 0.35 0.5 0 0.35 0.5 0 0.35 0.5 0 0.35 0.5 0 0.35 0.5 0 0.5 0.5 0 0.5 0.5 0 0.5 0.5 0 0.5 0.5	32679 22	6000	48000	43200	16.5715612	0.7337605
4 alpha (deg)= 4 5 alpha (deg)= 4 6 0 8 0.00001 9 0.05 1 0.05 3 0.25 3 0.35 6 0.35 7 0.35 8 0.35 9 0.35 0 0.35 0 0.35 0 0.35 0 0.35 0 0.35	32679 22	6000	48000	43200	22.0535023	0.69198949
5 alpha (deg)= 4 7 s 0.00001 8 0.00001 9 0.1 1 0.25 3 0.35 4 0.35 5 0.35 6 0.35 7 0.35 8 0.35 9 0.35 9 0.35 9 0.35 9 0.35						
6 7 s 7 s 0.00001 9 0.05 9 0.15 11 0.25 2 0.35 3 0.35 0.1 0.25 0.35 0.35 0.05 0.35 0.05 0.35 0.05 0.35 0.05 0.35	=onm	0.9	muf=	0.4	Vf=	41
7 s F 9 0.00001 F 0 0.05 1 0.1 1 0.25 3 0.35 4 0.35 6 0.4 0.3 0.3 6 0.3 7 0.35 9 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35						
8 0.00001 9 0.05 1 0.05 2 0.1 3 0.25 3 0.35 6 0.35 7 0.35 9 0.35 9 0.35 9 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.35 10 0.4 10 0.5 10 0.5	Ŧ					
9 0.05 1 0.1 2 0.25 3 0.25 0.35 0.35 0.14 0.35 0.15 0.35 0.16 0.35 0.16 0.35 0.05 0.35	0.45842073					
0 0.1 1 0.25 3 0.25 6 0.35 7 0.5 0.75 0.6	34566 2134.26144					
1 0.2 2 0.25 3 0.35 4 0.35 5 0.4 6 0.5 7 0.5 0.05 0.5	35522 3415.06607					
2 0.25 3 0.3 4 0.35 5 0.4 6 0.5 7 0.66 9 0.39393	431					
3 0.3 4 0.35 5 0.4 6 0.5 7 0.6 9 0.75	17358 4461.01388					
4 0.35 5 0.4 6 0.5 7 0.6 8 0.75 9 0.99999	.1313 4532.27613					
5 0.4 7 0.5 8 0.75 9 0.99999	456					
6 0.5 7 0.6 8 0.75 9 0.99999	57641 4565.1644					
7 0.6 8 0.75 9 0.99999	7592 4530.61165					
8 0.75 9 0.99999	446					
9 0.99999 289	17582 4350.19108					
	27188 4141.82193					
30						

								30
					3455.778353	90-371679.8	66666 0	56
					3717.124791	8.64386E-05	92.0	58
					3920.833071	978511000.0	9.0	52
		-			4064.341338	0.000141524	9'0	56
					4504.922755	0.000182757	Þ .0	52
					4568.154395	0.000211772	98.0	54
					4319.924273	0.000249679	£.0	53
					4349.768652	0.000301	0.25	55
					4336.399005	0.000373728	0.2	12
					3878.025728	0.000653248	1.0	50
					2626.315789	999862000.0	90.0	61
					8400084.0	0.00075399	10000.0	81
					Fx	E y	S	21
								91
41	=1V	0 .4	=1um	6.0	=onw	100000.0	alpha (deg)=	91
								14
191296078.0	43.99956	43200	48000	0009	44	1 .74533E-08	66666 0	13
0.623571226	33	43500	48000	0009	44		92.0	15
0.662619354	56.4	43200	48000	0009	44	1.74533E-08	9.0	11
0.692370763	55	43500	48000	0009	44	1 '14233E-08	9 [°] 0	10
0.725492626	9.71	43200	48000	0009	44		4.0	6
0.743435164	19.4	43500	48000	0009	74		95.0	8
0.762366771	13.2	43200	48000	0009	44	1.74533E-08	0.3	2
0.782341969	11	43500	48000	0009	74	1.74533E-08	0.25	9
0.803418285	8.8	43200	48000	0009	44	1.74533E-08	0.2	9
0.84912041	4.4	43200	48000	0009	44	1.74533E-08	1.0	4
828778578.0	2.2	43200	48000	0009	44		90.05	3
0.8999994634	100044000.0	43200	48000	0009	44	1.74533E-08	10000.0	5
ոա	s V	Calpha	so	Z	n	tan alpha	S	L
Н	e	F	Э	D	ک	В	∀	

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Н	9	E	Е	a	Э	В	A	Γ
ทพ	s۸	Galpha	SO	E Z	n	tan alpha	S	
0.890721049	0.768022708	43200	48000	0009	4 4	0.017455059	10000.0	2
0.872375307	2.330205718	43200	00087	0009	77	650554710.0	90.0	1
0.848392259	4 466526468	43500	00087	0009	*†	690997210.0	1.0	
0.803089278	8.83345112	43500	00087	0009	74		0.2	
0.782092324	91627920.11	43200	00087	0009	44		0.25	+
0.762169518	13.22232425	43500	00087	0009	44		£.0	+
0.743274881	92621617.91	43200	00087	0009	74 74		98.0	+
0.725359682	8267291971	43200	00087	0009	74 74	690997210.0	¢.0	F
0.69227527	22.0134018	43200	00087	0009	**	690997210.0	9.0	
0.662547821	26.4111692	43200	00087		7	690997710.0	9.0	ĥ
0.62352504	33.00893604	43200	00087	0009	77		92.0	ta
912926078.0	44.0062625	43200	00087	0009	74	690997/10.0	66666'0	
								1
LÞ	= 1 V	Þ.U	=jnw	6.0	=onw	L	=(bəp) eydje	4
					^_			
					FX	Fy 0660769	s	+
					0.4800048	754.0660759	10000.0	
						87525576873378	20.0 1.0	-
					4320.230803	372.3941692	0.2	$\left \right $
					4338.763459	300.2772555	0.25	ļ
					4312.008808	549.2504282	5.0	1
					4262.217313	211.500228	35.0	Ŀ
					4200.322717	182.5760687	Þ.O	ŀ
					634575.1304	141.4348964	9.0	
					3918.780986	8920728.211	9.0	1
					3715.836623	60465714.88	92.0	1
					3455.08893	46427887.68	66666 0	1
								1

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	Α	В	С	D	E	F	G	Н
1	s	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.034920757	44	6000	48000	43200	1.536513371	0.881608798
3	0.05	0.034920757	44	6000	48000	43200	2.683444269	0.868323004
4	0.1	0.034920757	44	6000	48000	43200	4.660565754	0.846275183
5	0.2	0.034920757	44	6000	48000	43200	8.933133445	0.802110447
6	0.25	0.034920757	44	6000		43200	11.10679401	0.781347367
7	0.3	0.034920757	44	6000		43200	13.28912612	0.761579911
8	0.35	0.034920757	44	6000		43200	15.47646191	0.74279528
9	0.4	0.034920757	44	6000		43200	17.66694295	0.72496161
10	0.5	0.034920757	44	6000		43200	22.05359094	0.691988856
11	0.6		44	6000		43200	26.44467571	0.662333346
12	0.75	0.034920757	44	6000	48000	43200	33.03575144	0.62337636
13	0.99999	0.034920757	44	6000	48000	43200	44.0263802	0.570851361
14								
15	alpha (deg)=	2	muo=	0.9	muf=	0.4	V f =	41 ·
16								
17		Fy	Fx					
18	0.00001	1508.591788	0.4800048					
19	0.05	1582.123843	2465.907729					
20	0.1	1256.058184	3716.569853					
21	0.2	736.9412537	4272.677709					
22	0.25	596.2712129	4306.171142					
23	0.3	495.9511284	4288.473883					
24	0.35	421.3822191	4244.521153					
25	0.4	364.0741706	4186.589369					
26	0.5	282.339065	4052.495522			-		
27	0.6	227.3669271	3912.63583					
28	0.75		3711.975597					
29	0.99999	119.5356787	3423.021035					
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		A	В	С	D	E	F	G	Н
	1	s	tan alpha	u	Fz	Cs	Calpha	Vs	mu
	2	0.00001	0.069926787	44	6000	48000	43200	3.076778653	0.86385162
	3	0.05	0.069926787	44	6000	48000	43200	3.782402238	0.855936883
	4	0.1	0.069926787	44	6000	48000	43200	5.36903778	
	5	0.2	0.069926787	44	6000	48000	43200	9.322369156	0.798311053
	6	0.25	0.069926787	44	6000	48000	43200		0.778425017
	7	0.3	0.069926787	44	6000	48000	43200	13.55383956	0.759252917
	8	0.35	0.069926787	44	6000	48000	43200	15.70434866	0.740895236
	9	0.4	0.069926787	44	6000	48000	43200	17.86691262	0.72338053
	0	0.5	0.069926787	44	6000	48000	43200	22.21410738	0.690847944
[1	1	0.6	0.069926787	44	6000	48000	43200	26.57868632	0.661477296
1	2	0.75	0.069926787	44	6000	48000	43200	33.14312246	0.622792146
[1	3	0.99999	0.069926787	44	6000	48000	43200	44.10700451	0.570515721
_ []	4								
C-96	5	alpha (deg)=	4	muo=	0.9	muf=	0.4	V f =	41
א [1	6								
	7		· 1	Fx					
1	8	0.00001	2959.855362	0.455073218					
	9	0.05		2104.112842					
	20	0.1	2264.213875	3326.541275					
	21	0.2	1415.401154	4095.560742					
	22	0.25		4181.800632					
	23	0.3							
1	24	0.35		4175.413693					
	25	0.4		4132.636					
	26	0.5		4017.364287			•		
	27	0.6		3888.220337					
	28	0.75	and the second	3696.583437					
	29	0.99999	238.7852335	3414.755076					
3	30								

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	A	В	С	D	E	F	G	Н
1	s	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	1.74533E-08	66	6000	48000	43200	0.000660001	0.899991951
3	0.05	1.74533E-08	66	6000	48000	43200	3.3	0.861333078
4	0.1	1.74533E-08	66	6000	48000	43200	6.6	0.825656417
5	0.2	1.74533E-08	66	6000	48000	43200	13.2	0.762366771
6	0.25	1.74533E-08	66				16.5	
7	0.3	1.74533E-08		6000	48000	43200	19.8	
8	0.35	1.74533E-08	66	6000			23.1	0.68463096
9	0.4	1.74533E-08					26.4	0.662619354
10	0.5	1.74533E-08					33	0.623571226
11	0.6	1.74533E-08			1		39.6	0.590329054
12	0.75	1.74533E-08	66	6000	48000	43200	49.5	0.549499198
13	0.99999	1.74533E-08	66	6000	48000	43200	65.99934	0.499969796
14								
15	alpha (deg)=	0.000001	muo=	0.9	muf=	0.4	V f =	41
16								
17		Fy	Fx					
18	0.00001	0.00075399	· · · · · · · · · · · · · · · · · · ·					
19	0.05	0.000793665						
20	0.1	0.000641537	3803.555377					
21	0.2	0.000356908						
22	0.25	0.000284071	4102.727326					
23	0.3	0.000233113						
24	0.35	0.000195798						
25	0.4	0.000167486						
26	0.5	0.000127773	3668.519657					
27	0.6	0.000101624	3498.413278					
28	0.75							
29	0.99999	5.23572E-05	2999.818306					
30								

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	A	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.017455059	66	6000	48000	43200	1.152034062	0.886146348
3	0.05	0.017455059	66	6000	48000	43200	3.495308577	0.859140687
4	0.1	0.017455059	66	6000	48000	43200	6.699789702	0.824621674
5	0.2	0.017455059		6000	48000	43200	13.25017668	0.76192357
6	0.25	0.017455059		6000	48000	43200	16.54016874	0.734016151
7	0.3	0.017455059	66	6000	48000	43200	19.83348638	0.708235632
8	0.35	0.017455059	66	6000	48000	43200	23.12870904	0.684431725
9	0.4	0.017455059	66	6000	48000	43200	26.42512407	0.662458475
10	0.5	0.017455059	66	6000	48000	43200	33.0201027	0.623461634
11	0.6		66	6000	48000	43200	39.6167538	0.590251296
12	0.75	0.017455059	66	6000	48000	43200	49.51340406	0.54945033
13	0.99999	0.017455059	66	6000	48000	43200	66.00939374	0.499945285
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	V f =	41
16								
17		Fy	Fx					
18	0.00001	754.0660759	0.4800048					
19	0.05	793.7458265	2522.898612					
20	0.1	634.7938214	3760.463032					
21	0.2	355.5694675	4122.125277					
22	0.25	283.3512892	4091.807947					
23	0.3	232.6892928	4023.530583					
24	0.35	195.531484	3938.77779					
25	0.4	167.3107277	3847.779475					
26	0.5	127.687626	3665.699055					
27	0.6	101.5786256	3496.497337					
28	0.75	76.21706884	3276.951246					
29	0.99999	52.35198541	2999.214367					
30								

C-28

.9 - 6000 - 66 - 2

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		Α	В	С	D	E	F	G	Н
	1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
	2	0.00001	0.034920757	66	6000	48000	43200	2.304770056	0.872668452
	3	0.05	0.034920757	66		48000	43200	4.025166404	0.853245222
	4	0.1	0.034920757	66		48000		6.990848631	0.82161796
	5	0.2	0.034920757	66		48000		13.39970017	0.76060607
	6	0.25	0.034920757	66		48000			0.733039791
,	7	0.3	0.034920757	66		48000		19.93368919	0.707483232
	8	0.35	0.034920757	66		48000			0.68383585
	9	0.4	0.034920757	66		48000			0.661976951
	10	0.5	0.034920757	66		48000		33.0803864	0.623133312
	11	0.6	0.034920757	66		48000			0.59001822
	12	0.75		66		48000	43200	49.55362716	0.549303783
	13	0.99999	0.034920757	66	6000	48000	43200	66.0395703	0.499871751
	14								
C-29	15	alpha (deg)=	2	muo=	0.9	muf=	0.4	V f =	41
29	16								
	17		Fy	Fx					
	18	0.00001	1508.591788						
	19	0.05	1578.556925	2453.894446					
	20	0.1	1231.284435	3638.754165					
	21	0.2	703.2664116	4074.568316					
	22	0.25	562.4384696	4059.475534					
	23	0.3	462.8593215	4000.374622					
	24	0.35	389.4760462	3921.513093					
	25	0.4	333.5723056	3834.496369					
	26	0.5	254.8665139	3657.262542					
	27	0.6	202.8862033	3490.760368					
	28	0.75	152.3172405	3273.438327					
	29	0.99999	104.672625	2997.402952					
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ทพ	s V	enqiad	so	ZE	n	tan alpha	S	1
9692978'0	86781818.4	43500	00087	0009	99	787926690.0	10000.0	2
0.835383621	99820982919	43500	00087	0009	99	787926690.0	90.05	8
731058018.0	1299999890'8	43200	00087	0009	99	787926690.0	1.0	1
12209992.0	13.98355373	43200	00087	0009	99	787926690.0	2.0	1
0.729218897	17,13329434	43200	00087	0009	99	787926990.0	0.25	T
0.704519742	20.33075933	43200	00087	0009	99	787926690.0	5.0	T
0.681479267	53.55652598		00087	0009	99	787926690.0	95.0	T
0.660067331	56.80036893	43200	00087	0009	99	78792690.0	4.0	T
0.62182679	33.32116107	43200	00087	0009	99	787926690.0	9.0	1
¥28880689'0	39.86802949	43200	00087	0009	99	0.069926787	9.0	T
0.548718438	49.7146837	43200	00087	0009	99	787926990.0	92.0	1
969229667 0	22909091.99	43200	00087	0009	99	787926990.0	66666'0	1
						······································		Ti
141	=1V	¢.0	=jnw	6.0	=onw	4	=(bəb) shqls	1
					FX	Ey	S	-
					0.451620925	28710 050100	10000.0	
						2770.258492	90.0	
						5209.006	1.0	$\frac{1}{1}$
					844778.7985	1347.906.712	2.0	t
						1092.355588	92.0	
						906.2319139	E.0	
						8727992.997	95.0	+
						8526906.829	7 .0	
						403.6195973	8.0 9.0	ť
							9.0	
							66666 [°] 0 92°0	6
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Н	9	E	Э	D	Э	В	A	
ոա	s٧	Calpha	S	ZJ	n	tan alpha	S	ŀ
726899989.0	88000.0	43200	00084	0009	88	1.7453E-08	10000.0	2
0.84912041	Þ. Þ	43200	00084	0009	88	1.7453E-08	G0.0	3
0.80341829	8.8	43200	00084	0009	88	1.7453E-08	1.0	4
0.72549263	9.71	43200	00087	0009	88	1.7453E-08	0.2	9
0.69237076	52	43200	00087	0009	88	1.7453E-08	0.25	9
0.66261935	26.4	43200	00087	0009	88	1.7453E-08	£.0	Ľ
24268263.0	8.05	43200	00087	0009	88	1.7453E-08	9 C 0	8
6068119.0	35.2	43200	00084	0009	88	1.7453E-08	4 .0	6
0.57095078.0	44 44	43200	00087	0009	88	1.7453E-08	ð.0	01
98759765.0	8.23	43200	00087	0009	88	1.7453E-08	9.0	11
<u>999699697 0</u>	99	43200	00087	0009	88	1.7453E 08	92 [.] 0	15
8954854.0	21666.78	43200	00087	0009	88	1.7453E-08	66666.0	13
	- 7 7\	V 0		00				71
1 +	=1V	+.0	=jnɯ	e.u	=onw	10000.0	alpha (deg)=	91
<u> </u>					Ex.	Ev.	3	21 91
					8400084.0	0.00075399 Fy	10000.0	81
					2526.31579	79£9700.0	90.0	61
					3731.26062	100000.0	r.0	50
				· · · · · · · · · · · · · · · · · · ·	3958.20109	0.00034159	0.2	51
					38475.4885	1692000.0	0.25	55
					3783.62544	0.00021888	£.0	53
					3674.56757	0.00018246	35.0	54
					3566.04245	0.00015509	4.0	5 2
					3364.64355	12711000.0	G.0	56
					3191.45496	9.2719E-05	9.0	27
					11981.4862	6.9405E-05	97.0	28
					2750.74043	4.801E-05	66666.0	5 6
								30

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	A		B	ပ	٥	ш	Ľ	σ	Н
F	S		tan alpha	n	Fz	න	Calpha	Vs	mu
2	0.0000	0001	0.01745506	88	6000	48000	43200	1.53604542	0.8816143
ß		0.05	0.01745506	88	6000	48000	43200	4.66041144	0.84627686
4		0.1	0.01745506	88	6000	48000	43200	8.93305294	0.80211124
5		0.2	0.01745506	88	6000	48000	43200	17.6669022	0.72496193
9		0.25	0.01745506	88	6000	48000	43200	22.0535583	0.69198909
7		0.3	0.01745506	88	6009	48000	43200	26.4446485	0.66233352
8		0.35	0.01745506	88	6000	48000	43200	30.8382787	0.63567529
0		0.4	0.01745506	88	6000	48000	43200	35.2334988	0.61171785
10		0.5	0.01745506	88	6000	48000	43200	44.0268036	0.5708496
11		0.6	0.01745506	88	6000	48000	43200	52.8223384	0.53786272
12		0.75	0.01745506	88	6000	48000	43200	66.0178721	0.49992462
13	0.99	0.999999	0.01745506	88	6000	48000	43200	88.012525	0.4584377
14									
15	alpha (d	(deg)=	ł	=onm	0.9	=Jum	0.4	Vf=	41
16									
17	S		Fy	FX					
18	0.00	.00001	754.066076	0.4800048					
19	•	0.05	793.745827	2519.69311					
20		0.1	623.199932	3687.3787					
21		0.2	340.254563	3942.10197					
22	•	0.25	268.390563	3873.8055					
23		0.3	218.465246	3776.01406					
24	0	0.35	182.199078	3668.95905					
25		0.4	154.918124	3561.77411					
26		0.5	117.130621	3361.98626					•
27		0.6	92.6766296	3189.68008					
28	U	0.75	69.3870982	2983.12386					
29	0.99	6666	48.005501	2750.20684					
30									

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		Α	В	С	D	E	F	G	Н
	1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
	2	0.00001	0.03492076	88	6000	48000	43200	3.07302674	0.86389407
	3	0.05	0.03492076	88	6000	48000	43200	5.36688854	0.83865287
	4	0.1	0.03492076	88	6000	48000	43200	9.32113151	0.79832308
	5	0.2	0.03492076	88		48000	43200	17.8662669	0.72338562
	6	0.25	0.03492076	88	6000	48000	43200	22.213588	0.69085163
	7	0.3	0.03492076	88	6000	48000	43200	26.5782522	0.66148006
	8	0.35	0.03492076	88	6000	48000	43200		
	9	0.4	0.03492076	88	6000	48000	43200	35.3338859	0.6112001
	10	0.5	0.03492076	88	6000	48000	43200	44.1071819	0.57051498
	11	0.6	0.03492076	88	6000		43200	52.8893514	0.53763757
	12	0.75		88	6000		43200	66.0715029	0.499794
	13	0.99999	0.03492076	88	6000	48000	43200	88.0527604	0.45838038
C	14								
C-33	15	alpha (deg)=	2	muo=	0.9	muf=	0.4	Vf=	41
	16								
		S	Fy	Fx					
	18	0.00001	1508.59179						
	19	0.05	1574.30034	2441.23122					
	20	0.1	1207.22756	3563.55776					
	21	0.2	672.653628	3894.77444					
	22	0.25	532.564598	3841.92391					
	23	0.3	434.461361	3753.39074					
	24	0.35	362.856499	3652.24704					
	25	0.4	308.825968	3549.03435					
	26	0.5 0.6	233.77987 185.101245	3354.03905					·
	27	0.6	138.668437	3184.3659					
	28		95.9843755	2979.94035					
	29	0.99999	95.9843/55	2748.60643					
	30								

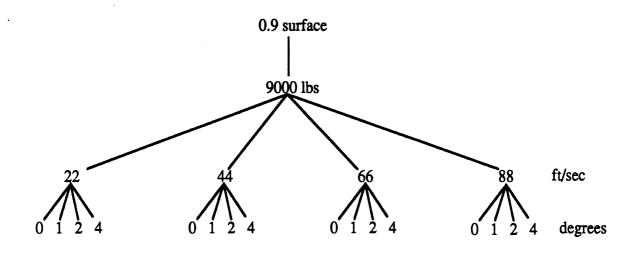
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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.06992679	88	6000	48000	43200	6.15355731	0.83031665
3	0.05	0.06992679	88	6000	48000	43200	7.56480448	0.81575688
4	0.1	0.06992679	88	6000	48000	43200	10.7380756	0.78479234
5	0.2	0.06992679	88	6000	48000	43200	18.6447383	0.71730339
6	0.25	0.06992679	88	6000	48000	43200	22.8443925	0.68641099
7	0.3	0.06992679	88	6000	48000	43200	27.1076791	0.65812532
8	0.35	0.06992679	88	6000	48000	43200	31.4086973	0.63241912
9	0.4	0.06992679	88	6000	48000	43200	35.7338252	0.60914993
10	0.5	0.06992679	88	6000	48000	43200	44.4282148	0.56918505
11	0.6	0.06992679	88	6000	48000	43200	53.1573726	0.53674075
12	0.75	0.06992679	88	6000	48000	43200	66.2862449	0.49927268
13	0.99999	0.06992679	88	6000	48000	43200	88.214009	0.45815122
14								
15	alpha (deg)=	4	muo=	0.9	muf=	0.4	Vf=	41
16								
17		Fy	Fx					
18	0.00001	2927.90982	0.4480842					
19	0.05	2735.15831	2044.84357					
20	0.1	2156.06275	3160.87188					
21	0.2	1286.86101	3718.80178					
22	0.25	1032.99425	3720.43863					
23	0.3	849.835599	3665.93579					
24	0.35	713.687388	3587.05352					
25	0.4	609.723226	3499.03247					
26	0.5	463.75375	3322.61492					
27	0.6	368.201517	3163.26498					
28	0.75	276.494107	2967.25467					
29	0.99999	191.755892	2742.21061					
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-	s	tan alpha	с с	Fz	ප	Calpha	Vs	mu
2	0.00001	1.7453E-08	22	0006	63000	56700	0.00022	0.89999732
ო	0.05	1.7453E-08	22	0006	63000	56700	1.1	0.88676372
4	0.1	1.7453E-08	22	0006	63000	56700	2.2	0.87387784
5	0.2	1.7453E-08	22	0006	63000	56700	4.4	0.84912041
9	0.25	1.7453E-08	22	0006	63000	56700	5.5	0.83723104
~	0.3	1.7453E-08	22	0006	63000	56700	6.6	0.82565642
ω	0.35	1.7453E-08	22	0006	63000	56700	7.7	0.8143882
6	0.4	1.7453E-08	22	0006	63000	56700	8.8	0.80341829
10	0.5	1.7453E-08	22	0006	63000	56700	11	0.78234197
-	0.6	1.7453E-08	22	0006	63000	56700	13.2	0.76236677
12	0.75	1.7453E-08	22	0006	63000	56700	16.5	0.73434356
13	0.99999	1.7453E-08	22	0006	63000	56700	21.99978	0.69237233
14								
15	alpha (deg)=	0.000001	=onw	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	FX					
18	0.00001	0.00098961	0.6300063					
19	0.05	0.00104169	3315.78947					
20	0.1	0.00094427	5655.73409					
21	0.2	0.00057701	6715.07666					
22	0.25	0.00047362	6859.1577					
23	0.3	0.00039926	6919.62637					
24	0.35	0.00034356	6933.58722					
25	0.4	0.00030041	6919.55054					
26	0.5	0.00023815	6844.34449					
27	0.6	0.00019556	6736.75742					
28	0.75	0.00015231	6551.31409					
29	0.99999	0.00010876	6231.34944					
30								

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	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.01745506	22	9000	63000	56700	0.38401135	0.8953388
3	0.05	0.01745506	22	9000	63000	56700	1.16510286	0.88599141
4	0.1	0.01745506	22	9000	63000	56700	2.23326323	0.87349354
5	0.2	0.01745506	22	9000	63000	56700	4.41672556	0.84893723
6	0.25	0.01745506	22	9000	63000	56700	5.51338958	0.83708828
7	0.3	0.01745506	22	9000	63000	56700	6.61116213	0.82554055
8	0.35	0.01745506	22	9000	63000	56700	7.70956968	0.81429149
9	0.4	0.01745506	22	9000	63000	56700	8.80837469	0.80333589
10	0.5	0.01745506	22	9000	63000	56700	11.0067009	0.78227949
11	0.6	0.01745506	22	9000	63000	56700	13.2055846	0.76231742
12	0.75	0.01745506	22	9000	63000	56700	16.504468	0.73430712
13	0.99999	0.01745506	22	9000	63000	56700	22.0031312	0.69234843
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
17			Fx					
18	0.00001	989.711725						
19	0.05	1041.7914						
20	0.1	936.357663						
21	0.2	575.11985						
22	0.25	472.56935						
23	0.3	398.633143						
24	0.35	343.157775						
25	0.4	300.143383						
26	0.5	238.015						
27	0.6	195.488178	6733.53322					
28	0.75	152.273707						
29	0.99999	108.749335	6230.18532					
30								

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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	22	9000	63000	56700	0.76825669	0.89071825
3	0.05	0.03492076	22	9000	63000	56700	1.34172213	0.88390237
4	0.1	0.03492076	22	9000	63000	56700	2.33028288	0.87237442
5	0.2	0.03492076	22	9000	63000	56700	4.46656672	0.84839182
6	0.25	0.03492076	22	9000	63000	56700	5.553397	0.83666198
7	0.3	0.03492076	22	9000	63000	56700	6.64456306	0.82519402
8	0.35	0.03492076	22	9000	63000	56700	7.73823095	0.81400198
9	0.4	0.03492076	22	9000	63000	56700	8.83347147	0.80308908
10	0.5	0.03492076	22	9000	63000	56700	11.0267955	0.78209217
11	0.6	0.03492076	22	9000	63000	56700	13.2223379	0.7621694
12	0.75	0.03492076	22	9000	63000	56700	16.5178757	0.73419782
13	0.99999	0.03492076	22	9000	63000	56700	22.0131901	0.69227672
14								
15	alpha (deg)=	2	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	1980.02672	0.6300063					
19	0.05		3314.88318					
20	0.1	1827.08887	5450.13092					
21	0.2	1139.0995	6623.69277					
22	0.25		6795.4708					
23	0.3		6873.05575					
24	0.35		6898.19087					
25	0.4		6891.80743					
26	0.5	475.22488	6826.07171					•
27	0.6	390.535877	6723.87728					
28	0.75		6542.99934					
29	0.99999	217.443016	6226.69342					
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	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.06992679	22	9000	63000	56700	1.53838933	0.88158676
3	0.05	0.06992679	22	9000	63000	56700	1.89120112	0.87746041
4	0.1	0.06992679	22	9000	63000	56700	2.68451889	0.86831073
5	0.2	0.06992679	22	9000	63000	56700	4.66118458	0.84626845
6	0.25	0.06992679	22	9000	63000	56700	5.71109811	0.83498564
7	0.3	0.06992679	22	9000	63000	56700	6.77691978	0.82382362
8	0.35	0.06992679	22	9000	63000	56700	7.85217433	0.81285302
9	0.4	0.06992679	22	9000	63000	56700	8.93345631	0.80210728
10	0.5	0.06992679	22	9000	63000	56700	11.1070537	0.78134495
11	0.6	0.06992679	22	9000	63000	56700	13.2893432	0.761578
12	0.75	0.06992679	22	9000	63000	56700	16.5715612	0.7337605
13	0.99999	0.06992679	22	9000	63000	56700	22.0535023	0.69198949
14								
15	alpha (deg)=	4	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	3964.88846	0.62377048					
19	0.05	3951.97869	3002.54789					
20	0.1	3340.21692	4939.49429					
21	0.2	2194.99559	6369.14773					
22	0.25	1830.48776	6613.58091					
23	0.3	1558.06753	6738.06619					
24	0.35	1349.08397	6794.62408					
25	0.4	1184.67813	6810.12155					
26	0.5	944.077875	6771.85902					
27	0.6	777.571513	6685.50131					
28	0.75		6518.13798					
29	0.99999	434.440768	6212.7327					
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.9 - 9000 - 44 - 0

	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	1.7453E-08	44	9000	63000	56700	0.00044	0.89999463
3	0.05	1.7453E-08	44	9000	63000	56700	2.2	0.87387784
4	0.1	1.7453E-08	44	9000	63000	56700	4.4	0.84912041
5	0.2	1.7453E-08	44	9000	63000	56700	8.8	0.80341829
6	0.25	1.7453E-08	44	9000	63000	56700	11	0.78234197
7	0.3	1.7453E-08	44	9000	63000	56700	13.2	0.76236677
8	0.35	1.7453E-08	44	9000	63000	56700	15.4	0.74343516
9	0.4	1.7453E-08	44	9000	63000	56700	17.6	0.72549263
10	0.5	1.7453E-08	44	9000	63000	56700	22	0.69237076
11	0.6	1.7453E-08	44	9000	63000	56700	26.4	0.66261935
12	0.75	1.7453E-08	44	9000	63000	56700	33	0.62357123
13	0.99999	1.7453E-08	44	9000	63000	56700	43.99956	0.57096316
14								
15	alpha (deg)=	0.000001	muo=	0.9	muf=	0.4	Vf=	41
16								
17		Fy	Fx					
18	0.00001	0.00098961	0.6300063					
19	0.05	0.00104169	3315.78947					
20	0.1	0.00092931	5556.31786					
21	0.2	0.00055053						
22	0.25	0.00044578	6450.87801					
23	0.3	0.000371	6425.39862					
24	0.35	0.00031537	6360.9909					
25	0.4	0.0002726						
26	0.5	0.00021154						
27	0.6	0.00017043						
28	0.75	0.00012952						
29	0.99999	8.9688E-05	5138.6674					
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	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.01745506	44	9000	63000	56700	0.76802271	0.89072105
3	0.05	0.01745506	44	9000	63000	56700	2.33020572	0.87237531
4	0.1	0.01745506	44	9000	63000	56700	4.46652647	0.84839226
5	0.2	0.01745506	44	9000	63000	56700	8.83345112	0.80308928
6	0.25	0.01745506	44	9000	63000	56700	11.0267792	0.78209232
7	0.3	0.01745506	44	9000	63000	56700	13.2223243	0.76216952
8.	0.35	0.01745506	44	9000	63000	56700	15.4191394	0.74327488
9	0.4	0.01745506	44	9000	63000	56700	17.6167494	0.72535968
10	0.5	0.01745506	44	9000	63000	56700	22.0134018	0.69227521
11	0.6	0.01745506	44	9000	63000	56700	26.4111692	0.66254782
12	0.75	0.01745506	44	9000	63000	56700	33.008936	0.6235225
13	0.99999	0.01745506	44	9000	63000	56700	44.0062625	0.57093521
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	989.711725	0.6300063					
19	0.05	1041.7914	3315.78947					
20	0.1	921.044696	5501.17741					
21	0.2	548.615735	6377.4767					
22	0.25	444.723965						
23	0.3	370.366797	6413.73736					
24	0.35	314.971729	6352.20533					
25	0.4	272.329538	6268.83461					
26	0.5	211.406356	6072.82825					
27	0.6	170.360805	5866.42331					
28	0.75	129.491518	5568.55087					
29	0.99999	89.6785849	5137.63326					
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		A	B	ပ	D	Ш	Ľ	IJ	т
-	s		tan alpha	n	Fz	න	Calpha	Vs	nm
8		0.00001	0.03492076	44	0006	63000	56700	1.53651337	0.8816088
n		0.05	0.03492076	44	0006	63000	56700	2.68344427	0.868323
4		0.1	0.03492076	44	0006	63000	56700	4.66056575	0.84627518
5		0.2	0.03492076	44	0006	63000	56700	8.93313344	0.80211045
9		0.25	0.03492076	44	0006	63000	56700	11.106794	0.78134737
2		0.3	0.03492076	44	0006	63000	56700	13.2891261	0.76157991
ω		0.35	0.03492076	44	0006	63000	56700	15.4764619	0.74279528
6		0.4	0.03492076	44	0006	63000	56700	17.6669429	0.72496161
0 F		0.5	0.03492076	44	0006	63000	56700	22.0535909	0.69198886
- -		0.6	0.03492076	44	0006	63000	56700	26.4446757	0.66233335
12		0.75	0.03492076	44	0006	63000	56700	33.0357514	0.62337636
13		0.999999	0.03492076	44	0006	63000	56700	44.0263802	0.57085136
14									
15	a	alpha (deg)=	2	=onm	0.9	muf=	0.4	Vf=	41
16									
17	s		Fy	FX					
18		0.00001	1980.02672	0.6300063					
19		0.05	2084.21781	3311.98638					
20		0.1	1794.52411	5344.02689					
21		0.2	1085.94521	6308.67508					
22		0.25	883.204367	6387.07753					
23		0.3	736.988008	6379.06236					
24		0.35	627.554257	6326.01779					
25		0.4	543.061961	6248.4487					
26		0.5	422.022831	6059.59722					
27		0.6	340.293074	5857.24291					
28		0.75	258.793263	5562.77021					
29		0.999999	179.303513	5134.53142					
30									

.9 - 9000 - 44 - 4

	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.06992679	44	9000	63000	56700	3.07677865	0.86385162
3	0.05	0.06992679	44	9000	63000	56700	3.78240224	0.85593688
4	0.1	0.06992679	44	9000	63000	56700	5.36903778	0.83862988
5	0.2	0.06992679	44	9000	63000	56700	9.32236916	0.79831105
6	0.25	0.06992679	44	9000	63000	56700	11.4221962	0.77842502
7	0.3	0.06992679	44	9000	63000	56700	13.5538396	0.75925292
8	0.35	0.06992679	44	9000	63000	56700	15.7043487	0.74089524
9	0.4	0.06992679	44	9000	63000	56700	17.8669126	0.72338053
10	0.5	0.06992679	44	9000	63000	56700	22.2141074	0.69084794
11	0.6	0.06992679	44	9000	63000	56700	26.5786863	0.6614773
12	0.75	0.06992679	44	9000	63000	56700	33.1431225	0.62279215
13	0.99999	0.06992679	44	9000	63000	56700	44.1070045	0.57051572
14								· .
15	alpha (deg)=	4	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	3963.37141	0.62129277					
19	0.05	3914.18646	2966.96038					
20	0.1	3263.61463	4819.01104					
21	0.2	2087.64632	6052.07459					
22	0.25	1718.73063	6204.96247					
23	0.3	1444.97937	6244.8158					
24	0.35	1236.44994	6223.73335					
25	0.4	1073.57735	6168.35229					
26	0.5	837.795609	6007.23824					
27	0.6	677.181389	5820.76742					
28	0.75	516.073442	5539.72524					
29	0.99999	358.17784	5122.13248					
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	Α	В	С	D	Ε	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	1.7453E-08	66	9000	63000	56700	0.00066	0.89999195
3	0.05	1.7453E-08	66	9000	63000	56700	3.3	0.86133308
4	0.1	1.7453E-08	66	9000	63000	56700	6.6	0.82565642
5	0.2	1.7453E-08	66	9000	63000	56700	13.2	0.76236677
6	0.25	1.7453E-08	66	9000	63000	56700	16.5	
7	0.3	1.7453E-08	66	9000	63000	56700	19.8	0.70848748
8	0.35	1.7453E-08	66	9000	63000	56700	23.1	0.68463096
9	0.4	1.7453E-08	66	9000	63000	56700	26.4	0.66261935
10	0.5	1.7453E-08	66	9000	63000	56700	33	0.62357123
11	0.6	1.7453E-08	66	9000	63000	56700		0.59032905
12	0.75	1.7453E-08	66	9000	63000	56700		0.5494992
13	0.99999	1.7453E-08	66	9000	63000	56700	65.99934	0.4999698
14								
15	alpha (deg)=	0.000001	muo=	0.9	muf=	0.4	Vf=	41
16								
17		Fy	Fx					
18	0.00001	0.00098961	0.6300063					
19	0.05	0.00104169	3315.78947					
20	0.1	0.0009145	5458.8224					
21	0.2	0.0005263	6114.03982					
22	0.25	0.00042106	6089.09085					
23	0.3	0.00034663	5999.92146					
24	0.35	0.00029176	5881.88177					
25	0.4	0.00024995	5751.88242					
26	0.5	0.00019105	5487.15641					
27	0.6	0.00015213	5238.28541					
28	0.75		4913.14106					
29	0.99999	7.8536E-05	4499.72736					
30								

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		A	В	С	D	Е	F	G	Н
	1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
	2	0.00001	0.01745506	66	9000	63000	56700	1.15203406	0.88614635
	3	0.05	0.01745506	66	9000	63000	56700	3.49530858	0.85914069
	4	0.1	0.01745506	66	9000	63000	56700	6.6997897	0.82462167
	5	0.2	0.01745506	66	9000	63000	56700	13.2501767	0.76192357
,	6	0.25	0.01745506	66	9000	63000	56700	16.5401687	0.73401615
	7	0.3	0.01745506	66	9000	63000	56700	19.8334864	
	8	0.35	0.01745506	66	9000	63000	56700	23.128709	
	9	0.4	0.01745506	66	9000	63000	56700		0.66245847
	10	0.5	0.01745506	66		63000	56700	33.0201027	0.62346163
	11	0.6	0.01745506	66	9000	63000	56700	39.6167538	0.5902513
	12	0.75		66	9000	63000	56700		0.54945033
	13	0.99999	0.01745506	66	9000	63000	56700	66.0093937	0.49994528
C	14								
C-45	15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
01	16								
	17		Fy	Fx					
	18	0.00001	989.711725	0.6300063			······································		
	19	0.05	1041.7914	3315.78947					
	20	0.1	905.911001	5402.0717					
	21	0.2	524.375146	6090.59413					
	22	0.25		6073.08477					
	23	0.3		5988.42975					
	24	0.35	291.365115	5873.29915					
	25	0.4	249.686134	5745.27086					
	26	0.5		5482.95001					
	27	0.6		5235.42185					
	28	0.75		4911.38581					
	29	0.99999	78.5279762	4498.82145					
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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	66	9000	63000	56700	2.30477006	0.87266845
3	0.05	0.03492076	66	9000	63000	56700	4.0251664	0.85324522
4	0.1	0.03492076	66	9000	63000	56700	6.99084863	0.82161796
5	0.2	0.03492076	66	9000	63000	56700	13.3997002	0.76060607
6	0.25	0.03492076	66	9000	63000	56700	16.660191	0.73303979
7	0.3	0.03492076	66	9000	63000	56700	19.9336892	0.70748323
8	0.35	0.03492076	66	9000	63000	56700	23.2146929	0.68383585
9	0.4	0.03492076	66	9000	63000	56700	26.5004144	0.66197695
10	0.5	0.03492076	66	9000	63000	56700	33.0803864	0.62313331
11	0.6	0.03492076	66	9000	63000	56700	39.6670136	0.59001822
12	0.75		66	9000	63000	56700	49.5536272	0.54930378
13	0.99999	0.03492076	66	9000	63000	56700	66.0395703	0.49987175
14								
15	alpha (deg)=	2	muo=	0.9	muf=	0.4	Vf=	41
16								
17		Fy	Fx					
18	0.00001	1980.02672	0.6300063					
19	0.05	2084.21781	3307.2854					
20	0.1	1762.50651	5240.55829					
21	0.2	1037.39539	6021.62646					
22	0.25	833.797636	6025.68331					
23	0.3	688.301028	5954.26432					
24	0.35	580.383929	5847.72015		· · · · · · · · · · · · · · · · · · ·			
25	0.4	497.815992	5725.53413					
26	0.5	381.094973	5470.3684					
27	0.6	303.728331	5226.84735					
28	0.75		4906.12514					
29	0.99999	157.008934	4496.10433					
30								

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	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.06992679	66	9000	63000	56700	4.61516798	0.8467696
3	0.05	0.06992679	66	9000	63000	56700	5.67360336	0.83538362
4	0.1	0.06992679	66	9000	63000	56700	8.05355667	0.81083016
5	0.2	0.06992679	66	9000	63000	56700	13.9835537	0.75550731
6	0.25	0.06992679	66	9000	63000	56700	17.1332943	0.7292189
7	0.3	0.06992679	66	9000	63000	56700	20.3307593	0.70451974
8	0.35	0.06992679	66	9000	63000	56700	23.556523	0.68147926
9	0.4	0.06992679	66	9000	63000	56700	26.8003689	0.66006733
10	0.5	0.06992679	66	9000	63000	56700	33.3211611	0.62182679
11	0.6	0.06992679	66	9000	63000	56700	39.8680295	0.58908887
12	0.75	0.06992679	66	9000	63000	56700	49.7146837	0.54871844
13	0.99999	0.06992679	66	9000	63000	56700	66.1605068	0.4995776
14								
15	alpha (deg)=	4	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	3958.87387	0.61851535					
19	0.05		2931.19035					
20	0.1	3189.45514	4703.05927					
21	0.2	1990.10407	5764.6243					
22	0.25	1620.05862	5844.82179					
23	0.3		5822.06844					
24	0.35	1142.45268	5747.86475					
25	0.4	983.41125	5648.02477					
26	0.5	756.195816	5420.59861					
27	0.6		5192.79015					
28	0.75	455.13991	4885.15825					
29	0.99999	313.64189	4485.24484					
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-	C v	tan alnha		F ₂	ා ප		Vs Vs	nm
2	0.00001	I 1.7453E-08	88			56700	0.00088	0.89998927
ო	0.05	5 1.7453E-08	88	0006	63000	56700	4.4	0.84912041
4	0.1	I 1.7453E-08	88	0006	63000	56700	8.8	0.80341829
S	0.2	2 1.7453E-08	88	0006	63000	56700	17.6	0.72549263
ဖ	0.25	5 1.7453E-08	88	0006	63000	56700	22	0.69237076
2	0.3	3 1.7453E-08	88	0006	63000	56700	26.4	0.66261935
ω	0.35	5 1.7453E-08	88	0006	63000	56700	30.8	0.63589542
თ	0.4	t 1.7453E-08	88	0006	63000	56700	35.2	0.6118909
0	0.5	5 1.7453E-08	88	0006	63000	56700	44	0.57096133
F	0.6	-	88	0006	63000	56700	52.8	0.53793785
12	0.75	5 1.7453E-08	88	0006	63000	56700	66	0.49996819
13	0.99999	9 1.7453E-08	88	0006	63000	56700	87.99912	0.4584568
14								
15	alpha (deg)=	= 0.000001	=onm	0.9	muf=	0.4	_ff=	41
16								
17	S	Fy	Ŧ					
1 8	0.00001	0.00098961	0.6300063					
19	0.05	5 0.00104169	3315.78947					
20	0.1	0.00089989	5363.48042					
21	0.2	2 0.00050418	5852.71135					
22	0.25	5 0.00039917	5769.08021					
23	0.3	3 0.00032566	5634.27588					
24	0.35	5 0.00027201	5481.67886					
25	0.4	4 0.00023154	5326.49875					
26	0.5	5 0.00017531	5033.86724					
27	0.6	5 0.00013883	4779.43126					
28	0.75	5 0.00010402	4472.93137					
29	0.99999	9 7.2015E-05	4126.11057		-			
30								

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	Α	В	С	D	E	F	G	Н
1	s	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.01745506	88	9000	63000	56700	1.53604542	0.8816143
3	0.05	0.01745506	88	9000	63000	56700	4.66041144	0.84627686
4	0.1	0.01745506	88	9000	63000	56700	8.93305294	0.80211124
5	0.2	0.01745506	88	9000	63000	56700	17.6669022	0.72496193
6	0.25	0.01745506	88	9000	63000	56700	22.0535583	0.69198909
7	0.3	0.01745506	88	9000	63000	56700	26.4446485	0.66233352
8	0.35	0.01745506	88	9000	63000	56700	30.8382787	0.63567529
9	0.4	0.01745506	88	9000	63000	56700	35.2334988	0.61171785
10	0.5	0.01745506	88	9000	63000	56700	44.0268036	0.5708496
11	0.6	0.01745506	88	9000	63000	56700	52.8223384	0.53786272
12	0.75	0.01745506	88	9000	63000	56700	66.0178721	0.49992462
13	0.99999	0.01745506	88	9000	63000	56700	88.012525	0.4584377
14								
15	alpha (deg)=	1	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	989.711725	0.6300063					
19	0.05	1041.7914	3315.78947					
20	0.1	891.012359	5305.2952					
21	0.2	502.252824	5829.3249					
22	0.25	398.129886	5753.26986					
23	0.3	325.04806	5623.03306					
24	0.35	271.631974	5473.36177					
25	0.4	231.285795	5320.15188					
26	0.5	175.188686	5029.90237					
27	0.6	138.764676	4776.77766					
28	0.75		4471.3404					
29	0.99999	72.0082499	4125.31017					
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	A	8	v	٥	E	Ľ	IJ	H
-	s	tan alpha	5	Fz	රී	Calpha	Vs	mu
8	0.00001	0.03492076	88	0006	63000	56700	3.07302674	0.86389407
n	0.05	0.03492076	88	0006	63000	56700	5.36688854	0.83865287
4	0.1		88	0006	63000	56700	9.32113151	0.79832308
S	0.2	0.03492076	88	0006	63000	56700	17.8662669	0.72338562
9	0.25	0.03492076	88	0006	63000	56700	22.213588	0.69085163
7	0.3	0.03492076	88	0006	63000	56700	26.5782522	0.66148006
œ	0.35	0.03492076	88	0006	63000	56700	30.9529238	0.63501721
6	0.4	0.03492076	88	0006	63000	56700	35.3338859	0.6112001
10	0.5	0.03492076	88	0006	63000	56700	44.1071819	0.57051498
11	0.6	0.03492076	88	0006	63000	56700	52.8893514	0.53763757
12	0.75	0.03492076	88	9000	63000	56700	66.0715029	0.499794
13	0.99999	0.03492076	88	0006	63000	56700	88.0527604	0.45838038
14								
15	alpha (deg)=	2	=onm	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	1980.02672	0.6300063					
19	0.05	2084.21781	3300.95855					
20	0.1	1731.14038	5139.92624					
21	0.2	993.147447	5760.55005					
22	0.25	790.089109	5706.45805					
23	0.3	646.457488	5589.61363					
24	0.35	540.98195	5448.57793					
25	0.4	461.071566	5301.20782					
26	0.5	349.659886	5018.04444					•
27	9.0	277.152864	4768.83247					
28	0.75	207.829954	4466.57231					
29	0.99999	143.97656	4122.90956					
30								

.9 - 9000 - 88 - 4

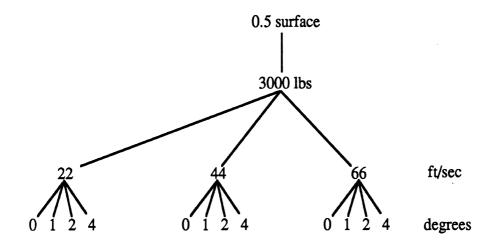
	Α	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.06992679	88	9000	63000	56700	6.15355731	0.83031665
3	0.05	0.06992679	88	9000	63000	56700	7.56480448	0.81575688
4	0.1	0.06992679	88	9000	63000	56700	10.7380756	0.78479234
5	0.2	0.06992679	88	9000	63000	56700	18.6447383	0.71730339
6	0.25	0.06992679	88	9000	63000	56700	22.8443925	0.68641099
7	0.3	0.06992679	88	9000	63000	56700	27.1076791	0.65812532
8	0.35	0.06992679	88	9000	63000	56700	31.4086973	0.63241912
9	0.4	0.06992679	88	9000	63000	56700	35.7338252	0.60914993
10	0.5	0.06992679	88	9000	63000	56700	44.4282148	0.56918505
11	0.6	0.06992679	88	9000	63000	56700	53.1573726	0.53674075
12	0.75	0.06992679	88	9000	63000	56700	66.2862449	0.49927268
13	0.99999	0.06992679	88	9000	63000	56700	88.214009	0.45815122
14								
15	alpha (deg)=	4	muo=	0.9	muf=	0.4	Vf=	41
16								
17	S	Fy	Fx					
18	0.00001	3951.72401	0.61547753					
19	0.05	3835.67639	2895.40348					
20	0.1	3117.8797	4591.73284					
21	0.2	1901.66661	5504.5187					
22	0.25	1533.12202	5527.98709					
23	0.3	1264.77889	5460.39031					
24	0.35	1064.16042	5351.88229					
25	0.4	910.369801	5226.84867					
26	0.5	693.646723	4971.15537					
27	0.6		4737.28416					
28	0.75		4447.5723					
29	0.99999	287.633831	4113.31584					
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APPENDIX D

GENERIC TRUCK TIRE DATA FOR A "0.5 SURFACE"

The first set of data is for Fz = 3000 lbs per the following chart. There is a similar set of data for Fz = 6000 lbs.



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	A	ß	ပ	٥	Ш	Ľ	U	т
-	S	tan alpha	л	Fz	ර	Calpha V	Vs	nm
2	0.00001	1.7453E-08	22	3000	27000	24300	0.00022	0.49999822
e	0.05	1.7453E-08	22	3000	27000	24300	1.1	0.49121236
4	0.1	1.7453E-08	22	3000	27000	24300	2.2	0.48268212
S	0.2	2 1.7453E-08	22	3000	27000	24300	4.4	0.46636394
9	0.25	5 1.7453E-08	22	3000	27000	24300	5.5	0.45856156
2	0.3	1.7453E-08	22	3000	27000	24300	9.9	
ω	0.35	5 1.7453E-08	22	3000	27000	24300	7.7	0.44363577
6	0.4	1.7453E-08	22	3000	27000	24300	8.8	0.43649916
0-	0.5	5 1.7453E-08	22	3000	27000	24300	11	0.42284694
	0.6	-	22	3000	27000	24300	13.2	0.40998282
12	0.75	5 1.7453E-08	22	3000	27000	24300	16.5	
13	0.99999	1.7453E-08	22	3000	27000	24300	21.99978	0.36553685
14								
15	alpha (deg)=	= 0.000001	=onu	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	Fx					
18	0.00001	0.00042412	0.2700027					
19	0.05	0.00036622	1091.59523					
20	0.1	0.00021885	1273.30984					
21	0.2	0.00011506	1326.59337					
22	0.25	5 9.1963E-05	1323.11502					
23	0.3	3 7.6156E-05	1313.41518					
24	0.35	5 6.468E-05	1300.4482					
25	0.4	t 5.5983E-05	1285.68103					
26	0.5	5 4.3703E-05	1253.64086					
27	0.6	3.5476E-05	1220.61035					
28	0.75	5 2.7261E-05	1171.92667					
29	0.99999	9 1.914E-05	1096.61044					
30								

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5								
2	S	tan alpha	n	Fz	ප	Calpha	Vs	nm
	0.00001	0.01745506	22	3000	27000	24300	0.38401135	0.4969025
ო	0.05	0.01745506	22	3000	27000	24300	1.16510286	0.49070041
4	0.1	0.01745506	22	3000	27000	24300	2.23326323	0.4824281
S	0.2	0.01745506	22	3000	27000	24300	4.41672556	0.46624356
9	0.25	0.01745506	22	3000	27000	24300	5.51338958	0.45846801
2	0.3	0.01745506	22	3000	27000	24300	6.61116213	0.45091203
ω	0.35	0.01745506	22	3000	27000	24300	7.70956968	0.44357276
თ	0.4	0.01745506	22	3000	27000	24300	8.80837469	0.43644563
10	0.5	0.01745506	22	3000	27000	24300	11.0067009	0.42280659
11	0.6				27000	24300	13.2055846	0.40995113
12	0.75	0.01745506	22	3000	27000	24300	16.504468	0.39204232
13	0.99999	0.01745506	22	3000	27000	24300	22.0031312	0.36552186
14								
15	alpha (deg)=	-	=onm	0.5	muf=	0.2	_ff=	37
16								
17 \$	S	Fy	Ř					
18	0.00001	424.162168	0.2700027					
19	0.05	353.379391	1050.01387					
20	0.1	216.008944	1256.33615					
21	0.2	114.638737	1321.5206					
22	0.25	91.7410038	1319.77048					
23	0.3	76.0268384	131					
24	0.35	64.599507	1298.6916					
25	0.4	55.9297646	1284.32668					
26	0.5	43.6765834	1252.76856		-			
27	0.6	35.4619296	1220.00452					
28	0.75	27.2547335	117					
29	0.99999	19.1378903	1096.39844					
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1 0 0 4 0 0 7 4 0 0 7 7 4 0 0 7 7 4 0 0 7 7 7 7	0.00001 0.05 0.1 0.25 0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.35	tan alpha 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	55 55 55 55 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Fz 3000	Cs 27000		Vs 0.76825669 1.34172213	mu 0.49383512
7 0 0 0 1 0 0 7 3 0 7 7	0.00001 0.05 0.1 0.25 0.25 0.35 0.35 0.35 0.4 0.6		22 22 22 22 22 22 22 22 22 22 22 22 22	3000	27000	24300	0.76825669 1.34172213	0.49383512
θ π	0.05 0.1 0.2 0.2 0.35 0.35 0.35 0.35 0.35 0.6		22 22 22 22 22 22 22 22 22 22 22 22 22	3000			1.34172213	
4 5 9 7 8 9 7 7	0.1 0.25 0.35 0.35 0.35 0.4 0.6		22 22 22	->>>>	27000	24300		0.48931606
10087021 100870	0.25 0.25 0.35 0.4 0.6 0.6		22	3000	27000	24300	2.33028288	0.4816885
6 10 9 8 7 10 8 7	0.25 0.3 0.35 0.4 0.5 0.6		22	3000	27000	24300	4.46656672	0.46588515
	0.35 0.35 0.4 0.5 0.6		22	3000	27000	24300	5.553397	0.45818869
ω 6 7	0.35 0.4 0.5 0.6		1	3000	27000	24300	6.64456306	0.45068563
6 7	0.6 0.6		22	3000	27000	24300	7.73823095	0.44338416
07	0.5		22	3000	27000	24300	8.83347147	0.43628531
Ŧ	0.6		22	3000	27000	24300	11.0267955	0.42268561
_	weather statistics of the second states of the state of the second states of the second state		22	3000	27000	24300	13.2223379	0.40985609
12	0.75	0.03492076	22	3000	27000	24300	16.5178757	0.39197274
13	0.99999	0.03492076	22	3000	27000	24300	22.0131901	0.36547686
14								
15 a	alpha (deg)=	2	=onm	0.5	muf=	0.2	<pre> √f= </pre>	37
16								
17 s		Fy	Fx					
18	0.00001	834.88079	0.25759557					
19	0.05	642.797838	948.678312					
20	0.1	416.23327	1209.17029					
21	0.2	226.778099	1306.61651					
22	0.25	182.167563	1309.86956					
23	0.3	151.287462	1304.02197					
24	0.35	128.718803	1293.45614					
25	0.4	111.542104	1280.28331					
26	0.5	87.1980272	1250.1591					
27	0.6	70.8400596	1218.19019					
28	0.75	54.4723696	1170.38703					
29	0.99999	38.26524	1095.76255					
30								

v dg over the second se	0.00001 0.05 0.1 0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.3	tan alpha 0.06992679 0.06992679 0.06992679 0.06992679 0.06992679 0.06992679 0.06992679 0.06992679 0.06992679 0.06992679	стания и с		Qs 27000 27000 27000 27000 27000 27000 27000 27000 27000 27000	Calpha 24300 24300 24300 24300 24300 24300 24300 24300 24300		mu 0.48778233 0.48505123 0.4790045 0.46449028 0.46449028 0.46449028 0.4626358 0.4426358 0.43564766
			22 23 23 23 23 23 23 23 23 25<	3000 3000 3000 3000 3000 3000 3000 300	27000 27000 27000 27000 27000 27000 27000 27000 27000 27000 27000		1.53838933 1.89120112 2.68451889 4.66118458 5.71109811 6.77691978 7.85217433 8.93345631	0.48778233 0.48505123 0.4790045 0.46449028 0.45709058 0.44979048 0.4426358 0.43564766
			50 50<	3000 3000 3000 3000 3000 3000 3000 300	27000 27000 27000 27000 27000 27000 27000 27000 27000		1.89120112 2.68451889 4.66118458 5.71109811 6.77691978 7.85217433 8.93345631	0.48505123 0.4790045 0.46449026 0.45709056 0.44979046 0.4426356 0.43564766
	0 0 0		55 55<	3000 3000 3000 3000 3000 3000 3000 300	27000 27000 27000 27000 27000 27000 27000 27000		2.68451889 4.66118458 5.71109811 6.77691978 7.85217433 8.93345631	0.4790045 0.46449028 0.45709058 0.44979048 0.4426358 0.43564766
	0 0 0		22 22 22 22 22 22 22 22 22 22 22 22 22	3000 3000 3000 3000 3000 3000 3000 300	27000 27000 27000 27000 27000 27000 27000		4.66118458 5.71109811 6.77691978 7.85217433 8.93345631	0.46449028 0.45709058 0.44979048 0.4426358 0.43564766
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		22 22 22 22 22 22 22 22 22 22 22 22 22	3000 3000 3000 3000 3000 3000 3000 300	27000 27000 27000 27000 27000 27000 27000		5.71109811 6.77691978 7.85217433 8.93345631	0.45709058 0.44979048 0.4426358 0.43564766
	0 0 0 0 0		20 20 20 20 20 20 20 20 20 20 20 20 20 2	3000 3000 3000 3000 3000 3000 3000 300	27000 27000 27000 27000 27000 27000		6.77691978 7.85217433 8.93345631	0.44979048 0.4426358 0.43564766
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		22 22 22 22 22 22 22 22 22 22 22 22 22	3000 3000 3000 3000 3000 3000	27000 27000 27000 27000 27000		7.85217433 8.93345631	0.4426358 0.43564766
8 4 9 5 7 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		22 22 22	3000	27000 27000 27000 27000		8.93345631	0.43564766
s aph	0 999		55 55 55 5	3000 3000	27000 27000 27000			
s v v	066.		22 22	3000	27000 27000		11.1070537	0.4222031
s alph	0 999(3000	27000		13.2893432	0.40947639
s alph	0.99999 a (ded)=			0000		24300	16.5715612	0.3916944
s alph	(ded)	2		3000	27000	24300	22.0535023	0.36529667
alph s	(ded)							
ø	(ア)ア/	4) =onm	0.5	muf=	0.2	_f=	37
S								
		Fy	Fx					
C I	0.00001	1148.29627	0.16871951					
2	0.05	987.85422	720.351733					
20	0.1	733.699005	1062.08018					
21	0.2	435.00948	1251.30589					
22	0.25	354.321881	1272.14275					
23	0.3	296.649838	1276.83324					
24	0.35	253.689355	1273.01462					
25	0.4	220.591174	1264.39854					
26	0.5	173.168481	1239.83162					
27	0.6	141.014263	1210.98032					
28	0.75	108.648914	1165.78376					
29 0	0.999999	76.446148	1093.22032					
30								

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	4	ß	ပ	Δ	ш	Ľ	IJ	E
-	s	tan alpha	D	Fz	ප	Calpha	Vs	nm
2	0.00001	1.7453E-08	44	3000	27000	24300	0.00044	
8	0.05	1.7453E-08	44	3000	27000	24300	2.2	0.48268212
4	0.1	1.7453E-08	44	3000	27000	24300	4.4	
2	0.2	1.7453E-08	44	3000	27000	24300	8.8	
9	0.25	1.7453E-08	44	3000	27000	24300	-	0.42284694
~	0.3	1.7453E-08	44	3000	27000	24300	13.2	0
ω	0.35	-	44	3000		24300	15.4	
6	0.4		44	3000		24300	17.6	0.3864395
0	0.5	1.7453E-08	44	3000	27000	24300	22	0.36553587
-	0.6	1.7453E-08	44	3000	27000	24300	26.4	0.34697595
12	0.75		44	3000	27000	24300	33	0.32296387
13	0.99999	1.7453E-08	44	3000	27000	24300	43.99956	0.2913415
4								
15	alpha (deg)=	0.000001	=onm	0.5	muf=	0.2	∠f=	37
9								
7	S	Fy	Fx					
8	0.00001	0.00042412	0.2700027					
19	0.05	0.00036239	1079.15815					
20	0.1	0.00021255	1235.97032					
21	0.2	0.00010812	1245.98696					
22	0.25	8.5093E-05	1223.84094					
23	0.3	6.9443E-05	1197.26509					
24	0.35	5.8163E-05	1169.08607					
25	0.4	4.968E-05	1140.65157					
26	0.5	3.7847E-05	1085.47289					
27	0.6	3.0063E-05	1034.23939					
28	0.75	2.2472E-05	965.994234					
29	0.99999	1.5255E-05	874.024415					
30								

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-	s		tan alpha	5	Fz	තී	Calpha	Vs	nu
2		0.00001	0.01745506	44	3000	27000	24300	0.76802271	0.49383697
ო		0.05	0.01745506	44	3000	27000	24300	2.33020572	0.48168909
4		0.1	0.01745506	44	3000	27000	24300	4.46652647	0.46588544
ß		0.2	0.01745506	44	3000	27000	24300	8.83345112	0.43628544
ဖ		0.25	0.01745506	44	3000	27000	24300	11.0267792	0.42268571
~		0.3	0.01745506	44	3000	27000	24300	13.2223243	0.40985616
ω		0.35	0.01745506	44	3000	27000	24300	15.4191394	0.39775897
თ		0 4	0.01745506	44	3000	27000	24300	17.6167494	0.38635512
- 10		0.5	0.01745506	44	3000	27000	24300	22.0134018	0.36547592
		0.6	0.01745506	44	3000	27000	24300	26.4111692	0.34693159
12		0.75	0.01745506	44	3000	27000	24300	33.008936	0.32293418
13		0.99999	0.01745506	44	3000	27000	24300	44.0062625	0.29132495
14									
15		alpha (deg)=	1	=onm	0.5	muf=	0.2	<pre>Vf=</pre>	37
16									
17	s		Fy	Ъ					
18		0.00001	424.162168	0.2700027					
19		0.05	349.266118	1036.85731					
20		0.1	209.689811	1218.86519					
21		0.2	107.692007	1240.93115					
22		0.25	84.8727567	1220.52847					
23		0.3	69.3153495	119					
24		0.35	58.0833252	1167.37126					
25		0.4	49.6278209	1139.34005					
26		0.5	37.8218816	1084.64274					
27		0.6	30.0497904	1033.67352					
28		0.75	22.4663661	965.644983					
29		0.99999	15.25311	873.841667					
30									

.5 - 3000 - 44 - 2

	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	44	3000	27000	24300	1.53651337	0.48779692
3	0.05	0.03492076	44	3000	27000	24300	2.68344427	0.4790126
4	0.1	0.03492076	44	3000	27000	24300	4.66056575	0.46449471
5	0.2	0.03492076	44	3000	27000	24300	8.93313344	0.43564971
6	0.25	0.03492076	44	3000	27000	24300	11.106794	0.42220466
7	0.3	0.03492076	44	3000	27000	24300	13.2891261	0.40947762
8	0.35	0.03492076	44	3000	27000	24300	15.4764619	0.39745283
9	0.4	0.03492076	44	3000	27000	24300	17.6669429	0.38610249
10	0.5	0.03492076	44	3000	27000	24300	22.0535909	0.36529628
11	0.6	0.03492076	44	3000	27000	24300	26.4446757	0.34679859
12	0.75	0.03492076	44	3000	27000	24300	33.0357514	0.32284511
13	0.99999	0.03492076	44	3000	27000	24300	44.0263802	0.29127531
14								
15	alpha (deg)=	2	muo=	0.5	muf=	0.2	Vf=	37
16								
17		Fy	Fx					
18	0.00001	832.482279	0.25645868					
19	0.05	633.338534	933.954591					
20	0.1	403.44738	1171.34793					
21	0.2	212.887059	1226.07931					
22	0.25	168.439168	1210.72391					
23	0.3	137.873317	1188.02711					
24	0.35	115.694605	1162.26103					
25	0.4	98.9453614	1135.425					
26	0.5	75.4937931	1082.15965					
27	0.6	60.01942	1031.97905					
28	0.75	44.8977199	964.598203					
29	0.99999	30.496376	873.293533					
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-	s	tan alpha	D	Fz	පී	Calpha	Vs	nm
2	0.00001	0.06992679	44	3000	27000	24300	3.07677865	0.47606223
e	0.05	0.06992679	44	3000	27000	24300	3.78240224	0.47084735
4	0.1		44	3000	27000	24300	5.36903778	0.45947837
5	0.2	0.06992679	44	3000	27000	24300	9.32236916	0.4331837
ဖ	0.25	0.06992679	44	3000	27000	24300	11.4221962	0.42031855
2	0.3	0.06992679	44	3000	27000	24300	13.5538396	0.40798428
∞	0.35	0.06992679	44	3000	27000	24300	15.7043487	0.39624044
6	0.4	0.06992679	44	3000	27000	24300	17.8669126	0.38509939
10	0.5	0.06992679	44	3000	27000	24300	22.2141074	0.36458073
-	0.6	0.06992679	44	3000	27000	24300	26.5786863	0.34626786
12	0.75	0.06992679	44	3000	27000	24300	33.1431225	0.32248914
13	0.99999	0.06992679	44	3000	27000	24300	44.1070045	0.29107663
4								
15	alpha (deg)=	4	=onm	0.5	muf=	0.2	_ff=	37
16								
17	S	Fy	FX					
18	0.00001	1128.09373	0.16561651					
19	0.05	964.493363	702.839848					
20	0.1	707.301717	1023.30469					
21	0.2	407.25474	1170.99613					
22	0.25	326.931131	1173.38502					
23	0.3	269.89211	1161.30237					
24	0.35	227.705964	1142.31807					
25	0.4	195.45457	1120.0513					
26	0.5	149.801231	1072.33621					
27	0.6	119.402046	1025.24786					
28	0.75	89.5163018	960.425631					
29	0.99999	60.9140175	871.102643					
30		-						

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	-	S	tan alpha	n	Fz	ප		Vs	nm
	2	0.00001	1.7453E-08	99		27000	24300	0.00066	0.49999465
	e	0.05		99		27000	24300	3.3	0.47440175
	4	0.1	-	99			24300	6.6	
	2	0.2		99			24300	13.2	
	ဖ	0.25		99			24300	16.5	0.39206551
	~	0.3	-	99			24300	19.8	0.37567705
	ω	0.35		99			24300	23.1	0.36068696
	6	0.4	-	99		27000	24300	26.4	0.34697595
0.6 1.7453E-08 66 3000 27000 24300 39.6 0.75 1.7453E-08 66 3000 27000 24300 49.5 0.99999 1.7453E-08 66 3000 27000 24300 49.5 0.99999 1.7453E-08 66 3000 27000 24300 49.5 1 muce 0.5 muce 0.5 999334 49.5 1 muce 0.5 muce 0.5 0.000314 10.5 10.5 1 muce 0.5 muce 0.5 muce 0.5 10.5 1 muce 0.5 muce 0.5 muce 10.5 10.5 1 muce 0.5 muce 0.5 11.3 11.3 11.5 11.5 1 0.00011 0.0002055 12004207 muce 11.3 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 <th>10</th> <th>0.5</th> <th>-</th> <th>99</th> <th></th> <th></th> <th>24300</th> <th>33</th> <th>0.32296387</th>	10	0.5	-	99			24300	33	0.32296387
0.75 1.7453E-08 66 3000 27000 24300 49.5 0.99999 1.7453E-08 66 3000 27000 24300 65.99934 alpha (deg) 1.7453E-08 66 3000 27000 24300 65.99934 alpha (deg) 0.00001 muc 0.5 mut 0.2 0.0 s Py muc 0.5 mut 0.24300 65.99934 s D0001 muc 0.5 mut 0.2 0.0 0.1 s D0001 0.00042412 0.2700027 mut 0.2 0.1 s 0.0001 0.00042412 0.270027 mut 1.2 0.1 s 0.0001 0.00042412 0.270027 D D 0.2 0.2 0.2 s 0.0001 0.00042412 0.2004207 D D 0.2 0.2 0.2 s 0.101 0.00035859 1066.86497 D D D<	++	0.6					24300	39.6	
0.99999 1.7453E-08 66 3000 27000 24300 65.99934 alpha (deg)= 0.00001 muo= 0.5 muf= 0.2 Vf= s Fy Fx mu1= 0.5 mu1= 0.24300 65.9934 s Fy Fx mu1= 0.5 mu1= 0.2 Vf= s 0.0001 0.00042412 0.2700027 0.2 0.2 Vf= s 0.05 0.00035859 1066.86497 0.2 0.2 0.2 Vf= 0.0 0.05 0.0001019 1173.91982 0.2 0.2 0.2 0.2 0.1 0.0020655 1307.7677 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.0001019 1173.91982 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.		0.75	-	99		27000	24300	49.5	
alpha (deg)= 0.00001 muo= 0.5 muf= 0.2 Vf= s Fy Fx muf= 0.2 Vf= Vf= s Fy Fx 0.0 0.0001 0.00042412 0.2700027 Vf= Vf= s 0.05 0.00035859 1066.86497 Vf= Vf= Vf= 0.05 0.0002055 1200.42077 Vf= Vf= Vf= Vf= 0.1 0.0020655 1200.42077 Vf= Vf= Vf= Vf= 0.1 0.0020655 1237.7677 Vf= Vf= Vf= Vf= 0.2 0.001019 1173.91982 Vf= Vf= Vf= Vf= 0.2 0.0201019 1173.91982 Vf= Vf= Vf= Vf= 0.2 0.0201019 1173.91982 Vf= Vf= Vf= Vf= 0.3 6.3794E-05 1099.58856 Vf= Vf= Vf= Vf= 0.4 4.4689						27000	24300	65.99934	0.25040128
alpha (deg)= 0.00001 muo= 0.5 muf= 0.2 $Vf=$ sFyFx r r r r $Vf=$ sFyFx r r r r r s r 0.00001 0.0002859 1066.86497 r r r 0.05 0.00035859 1066.86497 r r r r 0.10 0.00020655 1200.42077 r r r 0.10 0.00020655 1137.7677 r r r 0.25 $7.9133E-05$ 1099.58856 r r r 0.25 $7.9133E-05$ 1061.92713 r r r 0.35 $5.2843E-05$ 1061.92713 r r r 0.35 $5.2843E-05$ 1061.92713 r r r 0.6 0.6 0.6 0.6 0.6 r r 0.75 $1.44689E-05$ 900.199475 r r r 0.6 0.6 0.6 0.6 0.6 r r 0.75 $1.9403E-05$ 903.627									
s Fy Fx 0.00001 0.00042412 0.0 0.005 0.00035859 106 0.015 0.00035859 106 0.1 0.00020655 120 0.1 0.0001019 117 0.25 7.9133E-05 110 0.25 7.9133E-05 109 0.35 5.2843E-05 109 0.35 5.2843E-05 102 0.35 5.2843E-05 960 0.4 4.4689E-05 960 0.5 3.3484E-05 960 0.75 1.9403E-05 903 0.75 1.9403E-05 913 0.999999 1.3111E-05 751			0.00000	=onm	0	=Jum	0	∠f=	37
s Fy Fx 0.00001 0.00042412 0.2 0.05 0.00035859 106 0.1 0.00035859 106 0.1 0.00035859 106 0.1 0.00035859 106 0.1 0.00035859 106 0.1 0.00020655 120 0.25 7.9133E-05 117 0.25 7.9133E-05 109 0.25 5.2843E-05 106 0.35 5.2843E-05 106 0.35 5.2843E-05 102 0.35 5.2843E-05 102 0.36 3.3484E-05 960 0.6 2.6266E-05 903 0.059999 1.3111E-05 751 0.0999999 1.3111E-05 751	16								
0.00001 0.00042412 0.2 0.05 0.00035859 106 0.1 0.00035859 106 0.1 0.00035859 106 0.1 0.00020655 120 0.25 7.9133E-05 11 0.25 7.9133E-05 11 0.25 7.9133E-05 109 0.35 5.2843E-05 109 0.35 5.2843E-05 106 0.35 3.3484E-05 960 0.6 2.6266E-05 903 0.75 1.9403E-05 834 0.99999 1.3111E-05 751	17	S	Fy	Ţ					
0.05 0.00035859 106 0.1 0.00020655 120 0.2 0.0001019 117 0.25 7.9133E-05 11 0.25 7.9133E-05 110 0.35 6.3794E-05 109 0.35 5.2843E-05 109 0.35 5.2843E-05 100 0.35 5.2843E-05 102 0.35 5.2843E-05 102 0.35 5.2843E-05 102 0.35 5.2843E-05 102 0.4 4.4689E-05 102 0.5 3.3484E-05 960 0.6 2.6266E-05 903 0.75 1.9403E-05 834 0.099999 1.3111E-05 751 <th></th> <td>0.00001</td> <td>0.0004241</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		0.00001	0.0004241						
0.1 0.00020655 120 0.2 0.0001019 117 0.25 7.9133E-05 11 0.25 7.9133E-05 110 0.35 6.3794E-05 109 0.35 5.2843E-05 106 0.35 5.2843E-05 106 0.35 5.2843E-05 106 0.35 5.2843E-05 102 0.4 4.4689E-05 102 0.5 3.3484E-05 960 0.6 2.6266E-05 903 0.75 1.9403E-05 834 0.99999 1.3111E-05 751	19	0.05							
1 0.2 0.0001019 117 2 0.25 7.9133E-05 11 3 0.25 7.9133E-05 11 4 0.35 6.3794E-05 109 4 0.35 5.2843E-05 106 5 0.4 4.4689E-05 102 6 0.4 4.4689E-05 102 7 0.6 3.3484E-05 960 7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.99999 1.3111E-05 751 9 0.99999 1.3111E-05 751	20	0.1		120					
2 0.25 7.9133E-05 11 3 0.35 6.3794E-05 109 4 0.35 5.2843E-05 106 5 0.4 4.4689E-05 102 6 0.5 3.3484E-05 960 7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.79 1.3111E-05 751 9 0.99999 1.3111E-05 751		0.2		117					
3 0.3 6.3794E-05 109 4 0.35 5.2843E-05 106 5 0.4 4.4689E-05 102 6 0.5 3.3484E-05 960 7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.79 1.9403E-05 834 9 0.99999 1.3111E-05 751	22	0.25		11					
4 0.35 5.2843E-05 106 5 0.4 4.4689E-05 102 6 0.5 3.3484E-05 960 7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.99999 1.3111E-05 751 0 0 1.3111E-05 751	23	0.3		109					
5 0.4 4.4689E-05 102 6 0.5 3.3484E-05 960 7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.799999 1.3111E-05 751 0 9 0.99999 1.3111E-05 751		0.35				x			
6 0.5 3.3484E-05 960 7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.99999 1.3111E-05 751 0 7 7 7		0.4							
7 0.6 2.6266E-05 903 8 0.75 1.9403E-05 834 9 0.99999 1.3111E-05 751 0 0 99999 1.3111E-05 751		0.5		960					
8 0.75 1.9403E-05 834 9 0.99999 1.3111E-05 751 0	27	0.6		903					
9 0.99999 1.3111E-05 751 0	28	0.75		834					
30			-	751					
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.5 - 3000 - 66 - 1

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		tan alpha	5	Fz	පී	Calpha	Vs	nm
2	0.00001	0.01745506	66	3000	27000	24300	1.15203406	0.4908031
e	0.05	0.01745506	99	3000	27000	24300	3.49530858	0.47295711
4	0.1	0.01745506	66	3000	27000	24300	6.6997897	0.45031173
ы С	0.2	0.01745506	66	3000	27000	24300	13.2501767	0.40969825
9	0.25	0.01745506	66	3000	27000	24300	16.5401687	0.39185711
~	0.3	0.01745506	99	3000	27000	24300	19.8334864	0.37551812
∞	0.35		66	3000	27000	24300	23.128709	0.36056233
0	0.4	0.01745506	99	3000	27000	24300	26.4251241	0.34687618
10	0.5	0.01745506	66	3000	27000	24300	33.0201027	0.32289708
11	0.6	0.01745506	66	3000	27000	24300	39.6167538	0.30282818
12	0.75	0.01745506	66	3000	27000	24300	49.5134041	0.27869522
13	0.99999	0.01745506	66	3000	27000	24300	66.0093937	0.25038758
14								
15	alpha (deg)=	4	=onm	0.5	muf=	0.2	∠f=	37
16								
17 \$	S	Fy	FX					
18	0.00001	424.162168	0.2700027					
19	0.05	345.195534	1023.88992					
20	0.1	203.670204	1183.22499					
21	0.2	101.478704	1168.9124					
22	0.25	78.9157155	1134.51462					
23	0.3	63.6696046	1097.32547					
24	0.35	52.7663632	1060.27439					
25	0.4	44.6395399	1024.62735					
26	0.5	33.4599272	959.423535					
27	0.6	26.2536977	903.009923					
28	0.75	19.3975356	833.702946					
29	0.99999	13.109723	751.048293					
30								

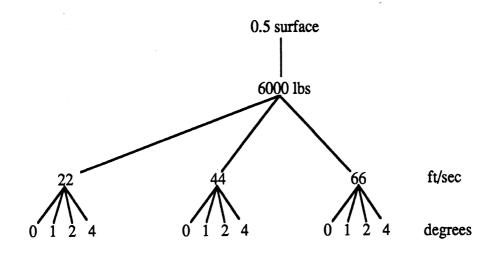
.5 - 3000 - 66 - 2

	Α	В	С	D	Е	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	66	3000	27000	24300	2.30477006	0.4818828
3	0.05	0.03492076	66	3000	27000	24300	4.0251664	0.46907609
4	0.1	0.03492076	66	3000	27000	24300	6.99084863	0.44835039
5	0.2	0.03492076	66	3000	27000	24300	13.3997002	0.40885253
6	0.25	0.03492076	66	3000	27000	24300	16.660191	0.39123577
7	0.3	0.03492076	66	3000	27000	24300	19.9336892	0.37504343
8	0.35	0.03492076	66	3000	27000	24300	23.2146929	0.36018964
9	0.4	0.03492076	66	3000	27000	24300	26.5004144	0.34657761
10	0.5	0.03492076	66	3000	27000	24300	33.0803864	0.32269701
11	0.6	0.03492076	66	3000	27000	24300	39.6670136	0.30268859
12	0.75	0.03492076	66	3000	27000	24300	49.5536272	0.27860971
13	0.99999	0.03492076	66	3000	27000	24300	66.0395703	0.25034651
14								
15	alpha (deg)=	2	muo=	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	Fx					
18	0.00001	829.94563	0.25529684					
19	0.05	624.050015	919.541198					
20	0.1	391.302317	1135.47439					
21	0.2	200.479745	1154.20613					
22	0.25	156.545201	1124.88785					
23	0.3	126.599577	1090.59993					
24	0.35	105.075662	1055.34995					
25	0.4	88.9812771	1020.89218					
26	0.5	66.7785	957.102879					
27	0.6		901.458849					
28	0.75							
29	0.99999	26.2111516	750.581944					
30								

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1 0.00001 0.06992679 66 3000 27000 24300 4.6151679 1 0.05 0.06992679 66 3000 27000 24300 5.67360336 1 0.2 0.06992679 66 3000 27000 24300 17.1332943 1 0.2 0.06992679 66 3000 27000 24300 17.1332943 1 0.25 0.06992679 66 3000 27000 24300 17.1332943 1 0.25 0.06992679 66 3000 27000 24300 17.1332943 1 0.25 0.06992679 66 3000 27000 24300 33.3211611 1 0.5 0.06992679 66 3000 27000 24300 33.321611 1 0.5 0.06992679 66 3000 27000 24300 33.321611 1 0.5 0.06992679 66 3000 27000 24300 6.61073696	-		tan alpha					Vs	nm
1 0.05 0.06992679 66 3000 27000 24300 5.6736036 1 0.1 0.06992679 66 3000 27000 24300 1.0333553 1 0.0.25 0.06992679 66 3000 27000 24300 1.713332943 1 0.0.35 0.06992679 66 3000 27000 24300 1.71332943 1 0.0.35 0.06992679 66 3000 27000 24300 20.3307593 1 0.0.5 0.06992679 66 3000 27000 24300 3.3307593 2 0.09999 0.06992679 66 3000 27000 24300 3.3307593 2 0.09999 0.06992679 66 3000 27000 24300 3.9680235 2 0.015 0.0592679 66 3000 27000 24300 6.160666 3 0.015 4 $Muthe 0.2 Muthe 0.2 0.01692619 0$	2	0.00001		99	3000		24300	4.61516798	0.46481943
1 0.1 0.06992679 66 3000 27000 24300 13.9835537 1 0.2 0.06992679 66 3000 27000 24300 13.9835537 1 0.2 0.06992679 66 3000 27000 24300 23.03355653 1 0.35 0.06992679 66 3000 27000 24300 23.556523 1 0.35 0.06992679 66 3000 27000 24300 23.556523 1 0.05 0.06992679 66 3000 27000 24300 39.501611 1 0.05 0.06992679 66 3000 27000 24300 39.502165 2 0.099396 66 3000 27000 24300 39.502165 2 alpha (deg)= 4 Muc 0.2 24300 26.1605068 2 0.09932679 66 3000 27000 24300 27.146837 2 0.0.5 0.09992679	n	0.05		99	3000	27000	24300	5.67360336	0.45735124
r 0.2 0.06992679 66 3000 27000 24300 17.132343 r 0.25 0.06992679 66 3000 27000 24300 29.3556523 r 0.35 0.06992679 66 3000 27000 24300 29.3565295 r 0.35 0.06992679 66 3000 27000 24300 29.3565295 r 0.6 0.06992679 66 3000 27000 24300 29.3565295 r 0.6 0.06992679 66 3000 27000 24300 33.3211611 r 0.5 0.06992679 66 3000 27000 24300 33.321611 r 0.75 0.06992679 66 3000 27000 24300 33.321611 r <t< th=""><th>4</th><th>0.1</th><th></th><th>99</th><th></th><th></th><th>24300</th><th>8.05355667</th><th>0.44131878</th></t<>	4	0.1		99			24300	8.05355667	0.44131878
1 0.25 0.66992679 66 3000 27000 24300 17.1332943 1 0.3 0.06992679 66 3000 27000 24300 20.3307593 1 0.4 0.06992679 66 3000 27000 24300 20.3307593 1 0.5 0.06992679 66 3000 27000 24300 30.3211611 1 0.6 0.06992679 66 3000 27000 24300 30.5805695 2 0.05 0.06992679 66 3000 27000 24300 30.5805695 2 0.05 0.06992679 66 3000 27000 24300 30.5805695 2 0.05 9.06992679 66 3000 27300 24300 40.7146837 2 0.05 9.06992679 66 3000 27300 24300 40.7146837 2 0.05 9.06992679 66 3000 27000 24300 40.7146837 <tr< th=""><th>S</th><th>0.2</th><th></th><th>66</th><th>3000</th><th></th><th>24300</th><th>13.9835537</th><th>0.40558274</th></tr<>	S	0.2		66	3000		24300	13.9835537	0.40558274
0.030.06992679663000270002430020.330759300.0350.06992679663000270002430023.55652310.050.06992679663000270002430033.55652310.050.06992679663000270002430033.680036520.750.05992679663000270002430039.68029520.750.06992679663000270002430039.68029520.750.06992679663000270002430039.68029520.750.06992679663000270002430039.680295210.750.06992679663000270002430039.74637310.0594.0592679663000270002430069.7463740.099990.0699267966300027000243002700041111115FyFx111161000111108.372110.162595881006.231116100011108.372110.162595881006.2331160.05941.985387686.000318111710.05941.985387686.00031811710.02392.3056131006.233118 <th>9</th> <th>0.25</th> <th></th> <th>99</th> <th></th> <th>27000</th> <th>24300</th> <th>17.1332943</th> <th>0.38880608</th>	9	0.25		99		27000	24300	17.1332943	0.38880608
1 0.35 0.06992679 66 3000 27000 24300 23.556523 0 0.4 0.06992679 66 3000 27000 24300 23.021611 1 0.5 0.06992679 66 3000 27000 24300 33.311611 2 0.75 0.06992679 66 3000 27000 24300 39.8680395 2 0.09999 0.06992679 66 3000 27000 24300 49.1161637 2 0.09999 0.06992679 66 3000 27000 24300 49.116837 4 0.05 0.09999 0.06992679 66 3000 27000 24300 49.116837 5 0.09999 0.06992679 66 3000 27000 24300 49.114837 6 30001 10892698 66 3000 27000 24300 49.114837 7 F mule 0.2 mule 0.2 Vf= 30.2 <th>7</th> <th>0.3</th> <th></th> <th>99</th> <th></th> <th></th> <th>24300</th> <th>20.3307593</th> <th>0.37317497</th>	7	0.3		99			24300	20.3307593	0.37317497
1 0.4 0.68992679 66 3000 27000 24300 26.8003689 1 0.5 0.06992679 66 3000 27000 24300 33.311611 2 0.75 0.06992679 66 3000 27000 24300 39.86837 2 0.75 0.06992679 66 3000 27000 24300 65.1605068 2 alpha (deg)= 4 muce 0.5 muce 90.050508 2 alpha (deg)= 4 muce 0.5 mute 0.4 1.66.1605068 2 alpha (deg)= 4 muce 0.5 mute 0.5 0.6 2 alpha (deg)= 4 muce 0.5 mute 0.5 0.5 3 0.00001 1108.37211 0.16259588 0.5 0.6 0.6 0.6 0.6 4 0.0 382.65714 0.5 mute 0.2 0.5 0.5 1 0.0 <th>ω</th> <th>0.35</th> <th></th> <th>99</th> <th></th> <th></th> <th>24300</th> <th>23.556523</th> <th>0.35871652</th>	ω	0.35		99			24300	23.556523	0.35871652
0 0.5 0.06992679 66 3000 27000 24300 33.211611 2 0.0.6 0.06992679 66 3000 27000 24300 39.680295 2 0.0.75 0.06992679 66 3000 27000 24300 49.7146837 4 0.75 0.06992679 66 3000 27000 24300 49.7146837 4 0.975 0.06992679 66 3000 27000 24300 66.1605068 4 0.971 0.099399 0.06992679 66 3000 24300 66.1605068 5 0.09001 1108.37211 0.16259588 $muc = 0.5$ $muc = 0.2$ <	ი	0.4		99		27000	24300	26.8003689	0.34539413
1 0.6 0.06992679 66 3000 27000 24300 39.8680295 2 0.75 0.06992679 66 3000 27000 24300 49.7146837 4 0.75 0.06992679 66 3000 27000 24300 66.1605068 4 mud 0.9999 0.06992679 66 3000 27700 24300 66.1605068 4 mud mud 0.0 24300 66.1605068 7 7 5 alpha (deg) 4 mud= 0.5 mud= 0.2 7 7 7 6 30001 1108.37211 0.1625958 7 7 7 7 7 7 0.05 941.985387 686.000318 7 7 7 7 7 8 0.0001 1108.37211 0.1625958 1099.7096 7 7 7 7 9 0.1 882.4939 1088.6898199 7 7		0.5		99	3000		24300	33.3211611	0.32190116
2 0.75 0.06992679 66 3000 27000 24300 49.7146837 4 0.99999 0.06992679 66 3000 27000 24300 66.1605068 6 10.99999 0.06992679 66 3000 27000 24300 66.1605068 6 10 Fy muue 0.5 muuf 0.2 49.7146837 6 10.0001 1108.37211 0.16259588 0.5 mutf 0.2 49.7146837 7 5 0.0001 1108.37211 0.16259588 0.66.1605068 66.1605068 7 5 0.0001 1108.37211 0.16259588 1096.2033 10.2 10.2 1 0.01 682.484014 986.898199 1099.70936 10.6 10.6 10.2 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6		0.6		99	3000	27000	24300	39.8680295	
3 0.99999 0.06992679 66 3000 27000 24300 66.1605068 4 muo= 0.5 muf= 0.2 v/f= v/f= 5 alpha (deg)= 4 muo= 0.5 muf= 0.2 v/f= 7 s Fy Fx muo= 0.5 muf= 0.2 v/f= 8 0.00001 1108.37211 0.16259588 e86.000318 e86.000318 e86.000318 e86.000318 e86.000318 e86.898199 e86.898199 e86.898199 e86.898199 e86.898199 e86.898199 e86.898199 e86.898199 e86.898199 e86.89818		0.75		99	3000	27000	24300	49.7146837	0.27826828
4 muo 0.5 muf 0.2 Vf 5 alpha (deg)= 4 muo 0.5 muf 0.2 Vf 3 7 s Fy Fx muo 0.5 muf 0.2 Vf 3 8 0.00001 1108.37211 0.16259588 0.0 0.0 9 0.0 9 0.0 0.0 9 0.0 0.0 9 0.0	13	•		99	3000		24300	66.1605068	0.25018221
5 alpha (deg)= muoe 0.5 mude 0.2 Vf= 3 7 s Fy Fx Fx Fx V 1									
6 Fy Fx 7 s Fy Fx 8 0.00001 1108.37211 0.10 9 0.05 941.985387 686 0 0.1 682.484014 986 1 0.2 382.597599 109 2 0.2 382.597599 108 3 0.2 382.597599 108 4 0.2 382.597599 108 5 0.2 382.597599 108 6 0.3 247.485308 106 7 0.3 247.485308 106 8 0.3 206.586928 106 9 0.35 206.586928 106 6 0.3 247.485308 106 7 0.3 247.485308 106 7 0.35 206.586928 106 8 0.3 175.625536 1 9 0.6 104.277588 895 9 0.5 7439275 947 9 0.39999 52.3559855<		1		=onu		muf=	0	Vf=	Э
7 s Fy Fx 8 0.00001 1108.37211 0.1 9 0.05 941.985387 686 0 0.1 682.484014 986 1 0.2 382.597599 109 2 0.25 303.303061 108 3 0.25 303.303061 108 4 0.35 206.586928 106 5 0.35 206.586928 106 6 0.35 206.586928 106 7 0.35 206.586928 106 8 0.35 206.586928 106 9 0.35 206.586928 106 6 0.4 175.625536 1 7 0.6 104.277588 895 8 0.5 77.2766107 829 9 0.99999 52.3559855 748	16								
80.000011108.372110.1090.05941.98538768600.1682.48401498610.2382.59759910920.25303.30306110830.25303.30306110840.35247.48530810640.35206.58692810650.35206.58692810660.35206.58692810670.6175.62536170.6104.27758889580.7577.276610782990.9999952.3559855748		S	Fy	Fx					
00.05941.98538768600.1682.48401498610.2382.59759910920.25303.30306110830.35247.48530810640.35206.58692810650.35206.58692810660.35206.58692810670.35206.58692810660.35206.58692810670.35206.58692810680.35206.58692810690.35206.58692810690.35206.58692810690.9999952.355985574800052.3559855748		0.00001	1108.3721						
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1 0.2 382.597599 109 2 0.25 303.303061 108 3 0.25 303.303061 108 4 0.3 247.485308 106 4 0.35 206.586928 10 5 0.4 175.625536 1 6 0.5 132.439275 947 7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748 9 0.99999 52.3559855 748	20	0.1		986.898199					
2 0.25 303.303061 108 3 0.25 303.303061 106 4 0.33 247.485308 106 5 0.35 206.586928 10 6 0.35 206.586928 10 7 0.4 175.625536 1 7 0.5 132.439275 947 7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748 0 0 92.3559855 748	21	0.2		1099.70936					
3 0.3 247.485308 106 4 0.35 206.586928 10 5 0.4 175.625536 1 6 0.5 132.439275 947 7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748		0.25		1088.25383					
4 0.35 206.586928 10 5 0.4 175.625536 1 6 0.5 132.439275 947 7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748 0 0 9 7 8		0.3		1064.61547					
5 0.4 175.625536 1 6 0.5 132.439275 947 7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748 0 0 92.3559855 748		0.35		1036.1439					
6 0.5 132.439275 947 7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748 0 1 1 1 1 9 0.99999 52.3559855 748		0.4		1006.233					
7 0.6 104.277588 895 8 0.75 77.2766107 829 9 0.99999 52.3559855 748 0 9 0 9 9		0.5							
8 0.75 77.2766107 829 9 0.999999 52.3559855 748 0 9 0 9 9		0.6		895.299637					
9 0.99999 52.3559855 748 0 9	28	0.75							
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-	S	tan alpha	п	Fz	ප	Calpha V	Vs	nm
2	0.00001	1.7453E-08	22	6000	48000	43200	0.00022	0.49999822
e	0.05	1.7453E-08	22	6000	48000	43200	1.1	0.49121236
4	0.1	1.7453E-08	22	6000	48000	43200	2.2	
5	0.2	1.7453E-08	22	6000	48000	43200	4.4	
9	0.25	1.7453E-08	22	6000	48000	43200	5.5	
2	0.3	1.7453E-08	22	6000	48000	43200	6.6	
ω	0.35	1.7453E-08	22	6000	48000	43200	7.7	0.44363577
6	0.4	1.7453E-08	22	6000	48000	43200	8.8	0.43649916
10	0.5	1.7453E-08	22	6000	48000	43200	11	0.42284694
-	0.6	-	22	6000	48000	43200	13.2	0.40998282
1 2	0.75	1.7453E-08	22	0009	48000	43200	16.5	
13	0.99999	1.7453E-08	22	6000	48000	43200	21.99978	0.36553685
4								
15	alpha (deg)=	0.000001	=onm	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	FX					
18	0.00001	0.00075399	0.4800048					
19	0.05	0.0006954	2087.68001					
20	0.1	0.00042922	2502.93555					
21	0.2	0.00022837	2635.06213					
22	0.25	0.00018291	2633.08761					
23	0.3	0.00015167	2616.94334					
24	0.35	0.00012894	2593.28163					
25	0.4	0.00011168	2565.40794					
26	0.5	8.7261E-05						
27	0.6	7.0876E-05	243					
28	0.75	5.4494E-05	234					
29	0.99999	3.8279E-05	2193.22085					
30		-						

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-	S	tan alpha	n	Fz	ප	Calpha	Vs	mu
2	0.00001	0.01745506	22	6000	48000	43200	0.38401135	0.4969025
ო	0.05	0.01745506	22	6000	48000	43200	1.16510286	0.49070041
4	0.1	0.01745506	22	6000	48000	43200	2.23326323	0.4824281
5	0.2	0.01745506	22	6000	48000	43200	4.41672556	0.46624356
9	0.25	0.01745506	22	6000	48000	43200	5.51338958	0.45846801
7	0.3	0.01745506	22	6000	48000	43200	6.61116213	0.45091203
ω	0.35	0.01745506	22	6009	48000	43200	7.70956968	0.44357276
6	0.4	0.01745506	22	6000	48000	43200	8.80837469	0.43644563
10	0.5	0.01745506	22	6009	48000	43200	11.0067009	0.42280659
11	0.6	0.01745506	22	6000	48000	43200	13.2055846	0.40995113
12	0.75	0.01745506	22	6000	48000	43200	16.504468	0.39204232
13	0.99999	0.01745506	22	6000	48000	43200	22.0031312	0.36552186
14								
15	alpha (deg)=	-	=onm	0.5	muf=	0.2	<f=< p=""></f=<>	37
16								
17	S	Fy	Fx					
18	0.00001	754.066076	0.4800048					
19	0.05	673.804577	2015.07017					
20	0.1	423.804719	2470.32439					
21	0.2	227.534071	2625.06289					
22	0.25	182.467805	2626.46764					
23	0.3	151.416868	2612.25124					
24	0.35	128.778224	2589.78947					
25	0.4	111.571456	2562.71202					
26	0.5	87.2088814	2501.81737					
27	0.6	70.848473	2437.67684					
28	0.75	54.4818812	2342.01626					
29	0.99999	38.2757801	2192.79686					
30								

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	Α	В	С	D	E	F	G	Н
1		tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	0.03492076	22	6000	48000	43200	0.76825669	0.49383512
3	0.05	0.03492076	22	6000	48000	43200	1.34172213	0.48931606
4	0.1	0.03492076	22	6000	48000	43200	2.33028288	0.4816885
5	0.2	0.03492076	22	6000	48000	43200	4.46656672	0.46588515
6	0.25	0.03492076	22	6000	48000	43200	5.553397	0.45818869
7	0.3	0.03492076	22	6000	48000	43200	6.64456306	0.45068563
8	0.35	0.03492076	22	6000	48000	43200	7.73823095	0.44338416
9	0.4	0.03492076	22	6000	48000	43200	8.83347147	0.43628531
10	0.5	0.03492076	22	6000	48000	43200	11.0267955	0.42268561
11	0.6	0.03492076	22	6000	48000	43200	13.2223379	0.40985609
12	0.75	0.03492076	22	6000	48000	43200	16.5178757	0.39197274
13	0.99999	0.03492076	22	6000	48000	43200	22.0131901	0.36547686
14								
15	alpha (deg)=	2	muo=	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	Fx					
18	0.00001	1508.10545	0.4735281			· · · · · · · · · · · · · · · · · · ·		
19	0.05	1236.16203	1833.65485		·			
20	0.1	817.421164	2379.56469				·	
21	0.2	450.150977	2595.68071					
22	0.25		2606.86918					
23	0.3	301.314962	2598.30217					
24	0.35		2579.38111					
25	0.4	222.511576	2554,66334					
26	0.5	174.108612	2496.61412					
27	0.6	141.529753	2434.05518					
28	0.75		2339.7094					
29	0.99999	76.530479	2191.52508					
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	A	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Cs	Calpha	Vs	mu
2	0.00001	1.7453E-08	44	6000	48000	43200	0.00044	0.49999643
3	0.05	1.7453E-08	44	6000	48000	43200	2.2	0.48268212
4	0.1	1.7453E-08	44	6000	48000	43200	4.4	0.46636394
5	0.2	1.7453E-08	44	6000	48000	43200	8.8	0.43649916
6	0.25	1.7453E-08	44	6000	48000	43200	11	0.42284694
7	0.3	1.7453E-08	44	6000	48000	43200	13.2	0.40998282
8	0.35	1.7453E-08	44	6000	48000	43200	15.4	0.3978613
9	0.4	1.7453E-08	44	6000	48000	43200	17.6	0.3864395
10	0.5	1.7453E-08	44	6000	48000	43200	22	0.36553587
11	0.6	1.7453E-08	44	6000	48000	43200	26.4	0.34697595
12	0.75	1.7453E-08	44	6000	48000	43200	33	0.32296387
13	0.99999	1.7453E-08	44	6000	48000	43200	43.99956	0.2913415
14								
15	alpha (deg)=	0.000001	muo=	0.5	muf=	0.2	Vf=	37
16								
17		Fy	Fx					
18	0.00001	0.00075399	0.4800048					
19	0.05	0.00068901	2066.09424			·		
20	0.1	0.0004172	2431.16026					
21	0.2	0.00021469	2476.0963					
22	0.25		2436.50691					
23	0.3	0.00013836	2386.35933					
24	0.35	0.00011599	2332.04768			· · · · · · · · · · · · · · · · · · ·		
25	0.4	9.9133E-05	2276.6364					
26	0.5	7.5586E-05	2168.1621					
27	0.6	6.0072E-05	2066.80666					
28	0.75		1931.26412					
29	0.99999	3.051E-05	1748.04881					
30								

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9 0			5	Fz	ട	Calpha	Vs	nu
m	0.00001	0.06992679	22	6000	48000	43200	1.53838933	0.48778233
	0.05	0.06992679	22	6000	48000	43200	1.89120112	0.48505123
4	0.1	0.06992679	22	6000	48000	43200	2.68451889	0.4790045
5	0.2	0.06992679	22	6000	48000	43200	4.66118458	0.46449028
9	0.25	0.06992679	22	6000	48000	43200	5.71109811	0.45709058
7	0.3	0.06992679	22	6000	48000	43200	6.77691978	0.44979048
8	0.35	0.06992679	22	6000	48000	43200	7.85217433	0.4426358
6	0.4	0.06992679	22	6000	48000	43200	8.93345631	0.43564766
10	0.5	0.06992679	22	6000	48000	43200	11.1070537	0.4222031
11	9.0	0.06992679	22	6000	48000	43200	13.2893432	0.40947639
12	0.75	0.06992679	22	6000	48000	43200	16.5715612	0.3916944
13	0.999999	0.06992679	22	6000	48000	43200	22.0535023	0.36529667
14								
15 alpha	(deg)=	4	=onw	0.5	muf=	0.2	_ff=	37
16								
17 s		Fy	Fx					
18	0.00001	2217.82987	0.32730179					
19	0.05	1926.74989	1409.19716					
20	0.1	1444.94917	2095.26734					
21	0.2	863.795157	2486.59096					
22	0.25	704.879917	2532.17476					
23	0.3	590.883886	2544.33868					
24	0.35	505.760512	2538.73972					
25	0.4	440.064485	2523.04206					
26	0.5	345.770958	2476.02084					•
27	0.6	281.731007	2419.66308					
28	0.75	217.188403	2330.51125					
29	0.999999	152.892294	2186.44062					
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.5 - 6000 - 44 - 1

	A	B	ပ	٥	Ш	L	σ	Ŧ
-	S	tan alpha	n	Fz	න	Calpha	Vs	nm
2	0.00001	0.01745506	44	6000	48000	43200	0.76802271	0.49383697
m	0.05	0.01745506	44	6000	48000	43200	2.33020572	0.48168909
4	0.1	0.01745506	44	6000	48000	43200	4.46652647	0.46588544
Ŋ	0.2	0.01745506	44	6000	48000	43200	8.83345112	0.43628544
ဖ	0.25	0.01745506	44	6000	48000	43200	11.0267792	0.42268571
~	0.3		44	6000	48000	43200	13.2223243	0.40985616
ω	0.35	0.01745506	44	6000	48000	43200	15.4191394	0.39775897
თ	0.4	0.01745506	44	6000	48000	43200	17.6167494	0.38635512
10	0.5	0.01745506	44	6000	48000	43200	22.0134018	0.36547592
	0.6	0.01745506	44	6000	48000	43200	26.4111692	0.34693159
12	0.75	0.01745506	44	6000	48000	43200	33.008936	0.32293418
13	0.99999	0.01745506	44	6000	48000	43200	44.0062625	0.29132495
14								
15	alpha (deg)=	+	=onw	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	Ţ					
18	0.00001	754.066076	0.4800048					
19	0.05	666.777273	1991.84876					
20	0.1	411.72006	2398.23694					
21	0.2	213.857454	2466.12012					
22	0.25	168.883444	2429.94466					
23	0.3	138.104575	2381.74083					
24	0.35	115.828293	2328.6364					
25	0.4	99.029898	2274.02426					
26	0.5	75.535954	2166.5061					
27	9.0	60.0455906	2065.67676					
28	0.75	44.9140148	1930.56615					
29	0.99999	30.5062196	1747.68332					
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.5 - 6300 - 44 - 2

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	A	В	ပ	٥	ш	L	IJ	I
F	S	tan alpha	n	Fz	ප	Calpha	Vs	nm
5	0.00001	0.03492076	44	6000	48000	43200	1.53651337	0.48779692
e	0.05	0.03492076	44	6000	48000	43200	2.68344427	0.4790126
4	0.1	0.03492076	44	6000	48000	43200	4.66056575	0.46449471
5	0.2	0.03492076	44	6000	48000	43200	8.93313344	0.43564971
9	0.25	0.03492076	44	6000	48000	43200	11.106794	0.42220466
2	0.3	0.03492076	44	6000	48000	43200	13.2891261	0.40947762
ω	0.35	0.03492076	44	6000	48000	43200	15.4764619	0.39745283
ი	0.4	0.03492076	44	6000	48000	43200	17.6669429	0.38610249
10	0.5	0.03492076	44	6000	48000	43200	22.0535909	0.36529628
+	0.6	0.03492076	44	6000	48000	43200	26.4446757	0.34679859
12	0.75	0.03492076	44	. 6000	48000	43200	33.0357514	0.32284511
13	0.99999	0.03492076	44	6000	48000	43200	44.0263802	0.29127531
14								
15	alpha (deg)=	2	=onm	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	FX					
18	0.00001	1507.23745	0.47226692					
6	0.05	1219.30334	1806.86188					
20	0.1	792.904298	2306.63875					
21	0.2	422.796544	2436.81064					
22	0.25	335.182299	2410.51999					
23	0.3	274.706545	2368.01246					
24	0.35	230.718327	2318.47043					
25	0.4	197.442247	2266.22665					
26	0.5	150.772899	2161.55276					
27	0.6	119.931183	2062.29334					
28	0.75	89.7580748	1928.47416					
29	0.99999	60.9927512	1746.58705					
30								

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	A	B	ပ	٥	ш	L	J	Ŧ
-	S	tan alpha	n	Fz	ප	Calpha	Vs	nm
2	0.00001	0.06992679	44	6000	48000	43200	3.07677865	0.47606223
3	0.05	0.06992679	44	6000	48000	43200	3.78240224	0.47084735
4	0.1	0.06992679	44	6000	48000	43200	5.36903778	0.45947837
5	0.2	0.06992679	44	6000	48000	43200	9.32236916	0.4331837
9	0.25	0.06992679	44	6000	48000	43200	11.4221962	0.42031855
2	0.3	0.06992679	44	6000	48000	43200	13.5538396	0.40798428
8	0.35	0.06992679	44	6000	48000	43200	15.7043487	0.39624044
6	0.4	0.06992679	44	6000	48000	43200	17.8669126	0.38509939
10	0.5	0.06992679	44	6000	48000	43200	22.2141074	0.36458073
1	0.6	0.06992679	44	6000	48000	43200	26.5786863	0.34626786
12	0.75	0.06992679	44	6000	48000	43200	33.1431225	0.32248914
13	0.99999	0.06992679	44	6000	48000	43200	44.1070045	0.29107663
14								
15	alpha (deg)=	4	=onm	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	Fx					
18	0.00001	2181.16423	0.32157707					
19	0.05	1882.85352	1375.99159					
20	0.1	1393.9475	2020.02395					
21	0.2	809.096371	2328.05826					
22	0.25	650.679645	2336.5295					
23	0.3	537.796636	2314.93031					
24	0.35	454.115177	2278.79466					
25	0.4	390.03564	2235.6056					
26	0.5	299.180411	2141.95639					
27	0.6	238.591335	2048.85275					
28	0.75	178.95843	1920.13527					
29	0.99999	121.828034	1742.20527					
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.5 - 6000 - 66 - 0

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s tan alpha u Fz Ca Calpha Vs 0.0001 1.1453E-08 66 6000 48000 43200 0.000 0.1 1.1453E-08 66 6000 48000 43200 0.000 0.1 1.1453E-08 66 6000 48000 43200 1.1 0.2 1.1453E-08 66 6000 48000 43200 1.1 0.3 1.1453E-08 66 6000 48000 43200 2 0.3 1.1453E-08 66 6000 48000 43200 2 0.3 1.1453E-08 66 6000 48000 43200 2 0.5 1.7453E-08 66 6000 48000 43200 2 0.6 1.1453E-08 66 6000 48000 43200 2 0.75 1.7453E-08 66 6000 48000 43200 2 1.1453E-08 66 6000 48000		A	8	ပ	٥	ш	L	g	I
	-	S	tan alpha	5	Fz	රී	Calpha	Vs	nu
	8	0.00001	1.7453E-08	66	6000	48000	43200	0.00066	0.49999465
	e	0.05	-	66	6000	48000	43200	3.3	0.47440175
	4	0.1		66	6000	48000	43200	6.6	
	2	0.2	-	66	6000	48000	43200	13.2	0.40998282
	9	0.25	-	99	6000	48000	43200	16.5	
	2	0.3	-	99	6000	48000	43200	19.8	
0.4 $1.7453E-08$ 66 6000 48000 43200 23200 2 0.5 $1.7453E-08$ 66 6000 48000 43200 43200 32200 3 0.75 $1.7453E-08$ 66 6000 48000 43200 43200 32200 3 0.75 $1.7453E-08$ 66 6000 48000 43200 43200 4 0.75 $1.7453E-08$ 66 6000 48000 43200 43200 4 0.99999 $1.7453E-08$ 66 6000 48000 43200 43200 4 $alpha$ 0.99999 $1.7453E-08$ 66 6000 48000 43200 43200 4 $alpha$ 0.90001 0.000001 0.000001 0.000016 $0.00001866-65$ 0.4487 0.5 0.4487 0.6 0.0 0.0001 0.000016241 233.83249 0.44887 0.6000165762 2265.92819 0.6000165762 2265.92819 0.00015762 2265.92819 0.00012714 2192.2062 0.00012714 2192.2062 0.00012714 2192.2062 0.00012714 2192.2062 0.00012714 2192.2062 0.00012714 2192.2062 0.00012714 0.00012714 2192.2062 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 0.00012714 <th>ø</th> <th>0.35</th> <th>-</th> <th>99</th> <th>6000</th> <th>48000</th> <th>43200</th> <th>23.1</th> <th>0.36068696</th>	ø	0.35	-	99	6000	48000	43200	23.1	0.36068696
	6	0.4	-	99	6000		43200	26.4	0.34697595
0.6 $1.7453E-08$ 66 6000 48000 43200 33200 3 0.75 $1.7453E-08$ 66 6000 48000 43200 43200 4 0.9999 $1.7453E-08$ 66 6000 48000 43200 43200 4 $1.7453E-08$ $1.7453E-08$ 66 6000 48000 43200 43200 4 $1.7453E-08$ $1.7453E-08$ 66 6000 48000 43200 43200 4 $1.7453E-08$ $1.7453E-08$ $1.7453E-08$ $1.7453E-08$ $1.7453E-08$ $1.7453E-08$ 1.745200 1.7453299 1.7453299 1.7453299 1.7453299 1.745399 1.745999 1.74599999 1.110 0.00015712 226532819 0.4800048 1.746487 1.746696 1.746696 1.746696 0.12114 2192231648 $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.802.78185$ $1.800.78196000000000000000000000000000000000000$	10	0.5	-	99	6000	48000	43200	33	
0.75 $1.7453E-08$ 66 6000 48000 43200 43200 65.99 0.99999 $1.7453E-08$ 66 6000 48000 43200 65.99 $alpha$ 0.99999 $1.7453E-08$ 66 6000 48000 43200 65.99 $alpha$ $1.7453E-08$ muc 0.5 muf 0.2 43200 65.99 $alpha$ $1.7453E-08$ 0.4800048 0.5 0.7 muf 0.2 $1.7453E-08$ s Fy Fy Fy Fy Fy Py Py Py s 0.00001 0.00075399 0.4800048 0.5 0.2 0.2 0.2 0.05 0.000075399 0.4800048 0.480076 0.2 0.2 0.2 0.10 0.00001214 2362.70592 2044.64487 0.2 0.2 0.2 0.10 0.00012714 2393.83249 0.480076 0.2 0.2 0.2 0.25 0.000102714 2393.83249 $0.265.92819$ 0.2 $0.265.92819$ 0.2 0.25 0.000102714 2192.31648 0.2 0.2 0.2 0.20000012714 0.2000012714 0.2000012714 2192.31648 0.2 0.25 0.000102714 2192.31648 0.20000012714 2192.31648 0.2 $0.200000000000000000000000000000000000$	11	0.6	-	99	6000	48000	43200	39.6	0.30287475
0.99999 1.7453E-08 66 6000 48000 43200 65.99 alpha (deg)= 0.000001 muo= 0.5 muf= 0.2 65.93 s Fy Fx muo= 0.5 mud= 0.2 65.93 s Fy Fx muo= 0.5 mud= 0.2 65.93 s Fy Fx mud= 0.5 mud= 0.2 65.93 s 0.0001 0.00075399 0.48000485 Fx mud= 0.2 65.93 0.1 0.0001571 2362.70592 0.44487 mud= 65.93 65.93 0.2 0.00016571 2362.70592 0.44.6487 mud= 66.69 66		0.75	-	99	6000			49.5	0.27872373
alpha (deg)= 0.000001 muo= 0.5 muf= 0.2 sFyFxmud= 0.5 muf= 0.2 sFyFx 0.00075399 0.4800048 0.4800048 0.600075399 0.4800048 0.05 0.00075399 0.4800048 0.4800048 0.600075399 0.4800048 0.4800048 0.1 0.00075399 0.4800048 0.4800048 0.4800048 0.4800048 0.4800048 0.1 0.00075399 0.4800048 0.4800048 0.4800048 0.4800048 0.4800068262 2044.64487 0.1 0.00012714 2333.83249 0.60012714 2192.31648 0.60012714 2192.31648 0.25 0.00012714 2192.31648 $0.2565.92819$ $0.2565.92819$ $0.2666.92836$ $0.2666.92836$ 0.35 0.000102714 2118.82082 $0.077.99536$ $0.071.99536$ $0.0766.05$ 1918.22592 $0.0766.05$ $0.0665.78185$ $0.0665.78185$ 0.075 0.075 $3.8792E-05$ 1667.48695 0.075 0.075 0.099999 $2.6222E-05$ 1502.40755 0.075 0.075 0.075 $0.0222E-05$ 1502.40755 0.075		<u>б</u> .	-	99	6000		43200	65.99934	0.25040128
alpha (deg)= 0.00001 muo= 0.5 muf= 0.2 sFyFxmuf= 0.2 muf= 0.2 sFyFxmuf= 0.2 0.00075399 0.4800048 0.4800048 0.00075399 0.4800048 0.00068262 2044.64487 0.00068262 2044.64487 0.000068262 2044.64487 0.000068262 2044.64487 0.000020244 2333.83249 0.00015752 2265.92819 0.00015752 2265.92819 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.31648 0.000105714 2192.21648 0.000105714 2192.21648 0.000105714 2192.21648 0.000105714 2102.0007 0.000105714 2102.0007 0.000105714 2102.2002 0.000105714 2102.2002 0.000105714 2102.2002 0.000105714 2102.2002 0.000105714 0.000105714 0.000105714 0.000105714 $0.00000000000000000000000000000000000$	14								
S Fy Fx s 0.00001 0.00005399 0.05 0.00068262 2 0.1 0.00068262 2 0.1 0.00040571 2 0.2 0.00015752 2 0.2 0.00015752 2 0.3 0.00015752 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.35 0.00012714 2 0.4 8.91966-05 1 0.6 5.24916-05 1 0.75 3.87926-05 1 0.99999 2.62226-05 1	15	1		=onm		muf=	0	Vf=	37
s Fy Fx 0.00001 0.00005399 Fx 0.05 0.00068262 2 0.1 0.00068262 2 0.1 0.00068262 2 0.1 0.000167571 2 0.25 0.00015752 2 0.35 0.00015752 2 0.35 0.00015752 2 0.35 0.00015752 2 0.35 0.00015752 2 0.35 0.00015752 2 0.35 0.00015752 2 0.35 0.00015752 2 0.35 0.00015714 2 0.36 0.00010541 2 0.5 6.688356.05 1 0.05 3.87926.05 1 0.099999 2.62226.05 1									
0.00001 0.00075399 0.05 0.00068262 2 0.1 0.00040571 2 0.1 0.00015752 2 0.25 0.00015752 2 0.35 0.00015752 2 0.35 0.00015714 2 0.35 0.00015714 2 0.35 0.00015714 2 0.35 0.00015714 2 0.35 0.00015714 2 0.35 0.00015714 2 0.35 0.00010541 2 0.35 0.00010541 2 0.4 8.9196E-05 1 0.5 6.6883E-05 1 0.05 3.8792E-05 1 0.99999 2.6222E-05 1		S	Fy	Ŧ					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	18	0.00001	0.00075399	0.4800048					
0.1 0.00040571 2 0.2 0.00020244 2 0.25 0.00015752 2 0.35 0.00012714 2 0.35 0.00010541 2 0.35 0.00010541 2 0.35 0.00010541 2 0.35 0.00010541 2 0.35 0.00010541 2 0.4 8.9196E-05 1 0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.05		2044.64487					
0.2 0.00020244 2 0.25 0.00015752 2 0.3 0.00015714 2 0.35 0.00010541 2 0.35 0.00010541 2 0.4 8.9196E-05 2 0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.1		2362.70592					
0.25 0.00015752 2 0.3 0.00012714 2 0.35 0.00010541 2 0.35 0.00010541 2 0.4 8.9196E-05 1 0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1	21	0.2		2333.83249					
0.3 0.00012714 2 0.35 0.00010541 2 0.35 0.00010541 2 0.4 8.9196E-05 2 0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.25		2265.92819					
0.35 0.00010541 2 0.4 8.9196E-05 2 0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.3		2192.31648					
0.4 8.9196E-05 2 0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.35		2118.82082					
0.5 6.6883E-05 1 0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.4							
0.6 5.2491E-05 1 0.75 3.8792E-05 1 0.99999 2.6222E-05 1		0.5		1918.22592					
0.75 3.8792E-05 1 0.99999 2.6222E-05 1		9.0		1805.78185					
0.99999 2.6222E-05 1		0.75		1667.48695					
30		666.		1502.40755					
	30 30								

.5 - 6000 - 66 - 1

	A	В	С	D	E	F	G	Н
1	S	tan alpha	u	Fz	Ca	Calpha	Vs	mu
2	0.00001	0.01745506	66	6000	48000	43200	1.15203406	0.4908031
3	0.05	0.01745506	66	6000	48000	43200	3.49530858	0.47295711
4	0.1	0.01745506	66	6000	48000	43200	6.6997897	0.45031173
5	0.2	0.01745506	66	6000	48000	43200	13.2501767	0.40969825
6	0.25	0.01745506	66	6000	48000	43200	16.5401687	0.39185711
7	0.3	0.01745506	66	6000	48000	43200	19.8334864	0.37551812
8	0.35	0.01745506	66	6000	48000	43200	23.128709	0.36056233
9	0.4	0.01745506	66	6000	48000	43200	26.4251241	0.34687618
10	0.5	0.01745506	66	6000	48000	43200	33.0201027	0.32289708
11	0.6	0.01745506	66	6000	48000	43200	39.6167538	0.30282818
12	0.75	0.01745506	66	6000	48000	43200	49.5134041	0.27869522
13	0.99999	0.01745506	66	6000	48000	43200	66.0093937	0.25038758
14								
15	alpha (deg)=	1	muo=	0.5	muf=	0.2	Vf=	37
16								
17	S	Fy	Fx					
18	0.00001	754.066076	0.4800048					
19	0.05		1968.85519					
20	0.1	400.184379	2329.55279					
21	0.2	201.611237	2323.94281					
22	0.25		2259.4788					
23	0.3	126.89755	2187.81923					
24	0.35	105.254693	2115.5313					
25	0.4	89.0971131	2045.50176					
26	0.5	66.835702	1916.67758					
27	0.6	52.4662595	1804.74724					
28	0.75	38.7811307	1666.8668					
29	0.99999	26.2194458	1502.09657					
30								

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.5 - 6000 - 66 - 2

1 s 3 0.0000 3 0.0000 4 0.0 5 0.0000 6 0.2 7 0 7 0 9 0.3 9 0.3 11 0 11 0 11 0 11 0 11 0 11 0 11 0 11 0 11 0 12 0.9999 14 0.0000 15 alpha (deg) 16 0.0 21 0 22 0.0000 23 0.3	- u - u u u u 4 u u u u	tan alpha 1 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076		6000 6000	Cs 48000	Calpha 43200	Vs 2.30477006	mu 0.4818828 0.46907609
0.0 4 3 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- υ - υ υ ο υ 4 υ ο υ ο	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	0 0	6000 6000	48000	43200	2.30477006	0.4818828
4 3 5 4 3 1 0	0 - 0 0 0 4 0 0 0 0	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	0 0	6000				0 46907609
4 3 2 1 0	- 0 0 0 4 0 0 0 -	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	0 0	8000	48000	43200	4.0251664	000.000.00
4 3 2 1 0 0.0	0 0 0 4 0 0 0	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	48000	43200	6.99084863	0.44835039
4 3 2 1 0	00004000	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6000	48000	43200	13.3997002	0.40885253
4 0	0 <u>0</u>	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	00000000000000000000000000000000000000	6000	48000	43200	16.660191	0.39123577
4 3 3 1 0 0 4 3 2 1 0 0	0000040	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6000	48000	43200	19.9336892	0.37504343
0 0	40000	0.03492076 0.03492076 0.03492076 0.03492076 0.03492076	000000000000000000000000000000000000000	6000	48000	43200	23.2146929	0.36018964
0 2 2 2 2 2 5 5 5 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000	0.03492076 0.03492076 0.03492076 0.03492076	000000000000000000000000000000000000000	6000	48000	43200	26.5004144	0.34657761
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0000	0.03492076 0.03492076 0.03492076	00 00 00 00	6000	48000	43200	33.0803864	0.32269701
2 0.99 6 6 10 0.99 7 8 0.00 9 0 0 0 0	0 2	0.03492076 0.03492076	66 66	6000	48000	43200	39.6670136	0.30268859
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7 S 99 10 1 1 1 1 1 1 1 1 1 1								
88 00 10 9 8		Fy	Fx					
4 3 5 7 0 0	.00001	1505.96558	0.47092298					
0 - 0 6 4	0.05	1202.67133	1780.54153					
4 3 2 4	0.1	769.569797	2237.35456					
4 0 0	0.2	398.336957	2294.89434					
4 3	0.25	311.634051	2240.3922					
4	0.3	252.326638	2174.45374					
	0.35	209.600342	2105.72981					
25	0.4	177.601199	2038.05913					
26	0.5	133.389465	1912.04684					
27	0.6	104.784462	1801.64949					
28	0.75	77.4994193	1665.00823					
29 0.99	66666.	52.4223027	1501.16388					
30								

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					12954.7941	79117.401	66666'0	50
					68103.7231	266764.431	97.0	28
					54845.9871	208.393198	9.0	27
					1893.73528	264.549529	G.O	56
					2008.84852	350.548409	4.0	52
					2067.5003	412.111081	95.0	54
					2122.81023	493.307726	£.0	23
					2167.74508	603.882835	0.25	55
					2187.2038	760.449922	5.0	21
					1949.27086	1345.91256	r.o	50
					1343.99006	1840.44434	30.0	6 L
					0.3159865	2145.22267	10000.0	81
					FX	Fy	S	
								91
25	= 1 ∨	2.0	=Jum	<u>5.0</u>	=onɯ	4	alpha (deg)=	12
								14
0.25018221	8902091.99	43200	48000	0009	99	0.06992679	66666.0	13
0.27826828	7589417.94	43200	48000	0009	99	0.06992679	97.0	15
0.30213221	39.8680295	43200	48000	0009	99	0.06992679	9.0	11
0.32190116	1191125.55	43200	48000	0009	99	0.06992679	9.0	10
0.34539413	26.8003689	43200	48000	0009	99	0.06992679	4.0	6
0.35871652	23.556523	43200	48000	0009	99	0.06992679	96.0	8
76471575.0	20.3307593	43200	48000	0009	99	0.06992679	£.0	2
809088885.0	17.1332943	43200	48000	0009	99	0.06992679	0.25	9
0.40558274	13.9835537	43200	48000	0009	99	0.06992679	2.0	9
87815144.0	29953550.8	43200	48000	0009	99	0.06992679	۲.0	4
0.45735124	5.67360336	43200	48000	0009	99	0.06992679	90.0	3
64618494.0	86781818.4	43200	48000	0009	99	0.06992679	10000.0	5
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