

# Analysis of Steve Ward's DRSSTC

June 20, 2005 Terry

## Input Parameters

ScanTesla V-7.00 June 20, 2005 Terry Fritz  
C1 4.500000e-007 4.500000e-007 1.000000e-009  
R1 1.500000e-001 1.500000e-001 1.000000e-002  
L1 1.000000e-005 2.000000e-005 1.000000e-007  
L2 1.300000e-001 1.300000e-001 1.000000e-003  
K12 1.000000e-002 9.900000e-001 1.000000e-002  
R2 5.000000e+002 5.000000e+002 1.000000e+000  
C2 4.200000e-011 4.200000e-011 1.000000e-013  
C3 6.000000e-012 6.000000e-012 1.000000e-012  
R3 2.200000e+005 2.200000e+005 1.000000e+003  
T1 0.000000e+000 5.000000e-004 -1.000000e-007  
Vrail 3.200000e+002  
VCpri\_init 0.000000e+000  
DwellTime 1.250000e-004  
Current\_Limit 1.000000e+004  
BangEnergy\_Limit 1.000000e+003  
Goal Type 2

Models Tested = 9898

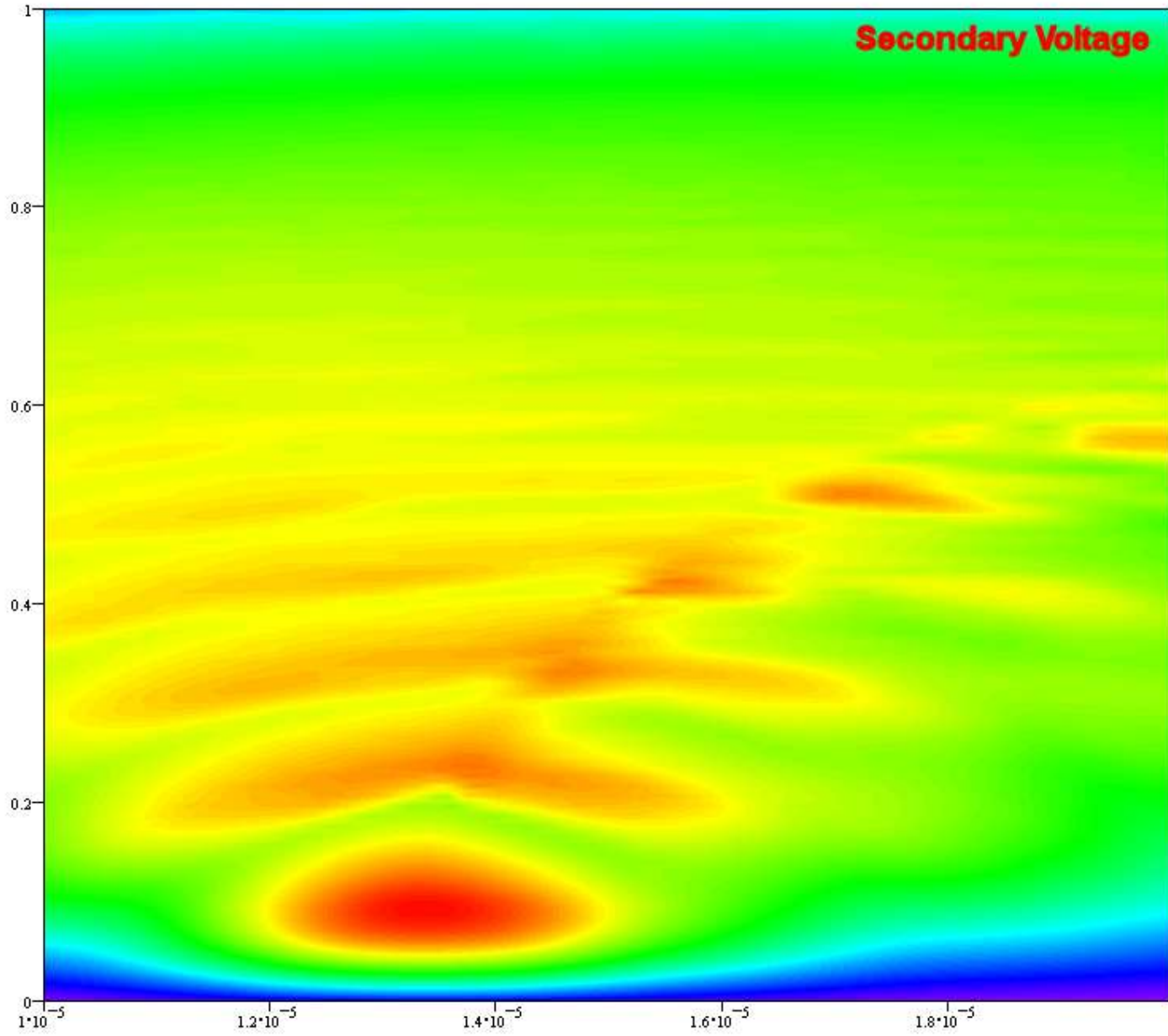
In the following contour plots, red is higher and purple is lower.

Coupling ranges from 0.01 to 0.99 in 0.001 steps.

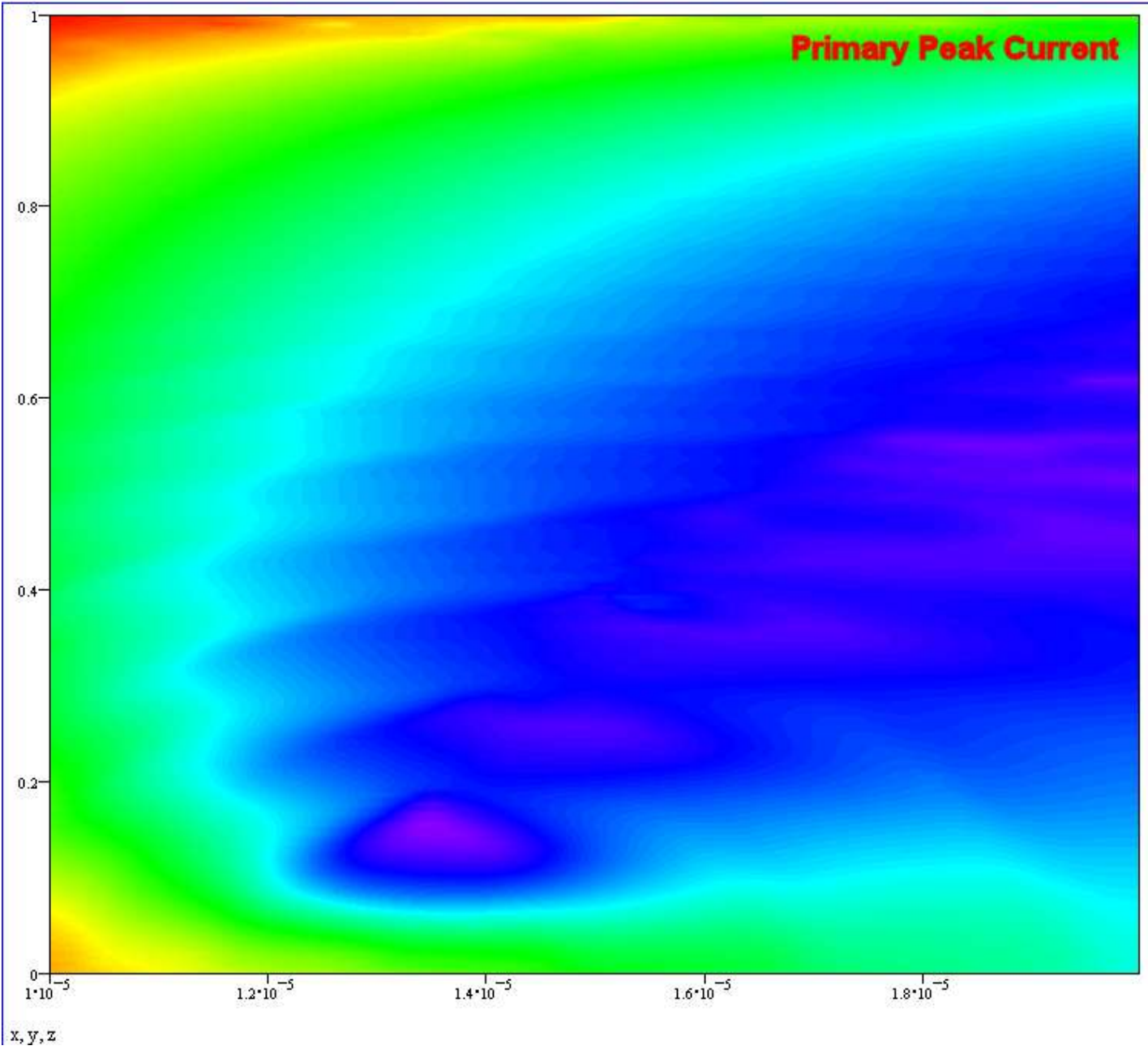
Lprimary ranges from 10uH to 20uH in 0.1uH steps.

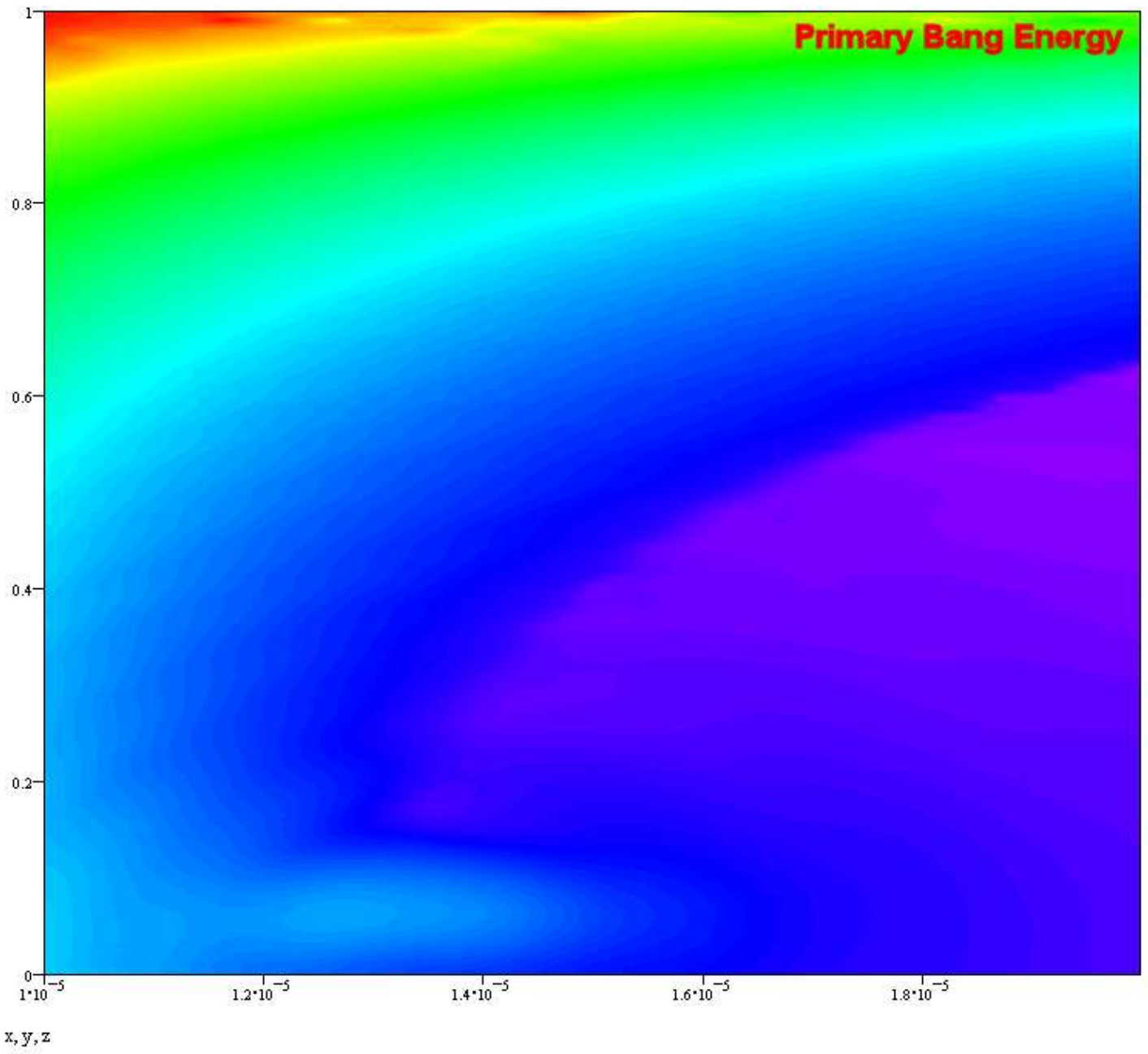


**Secondary Voltage**

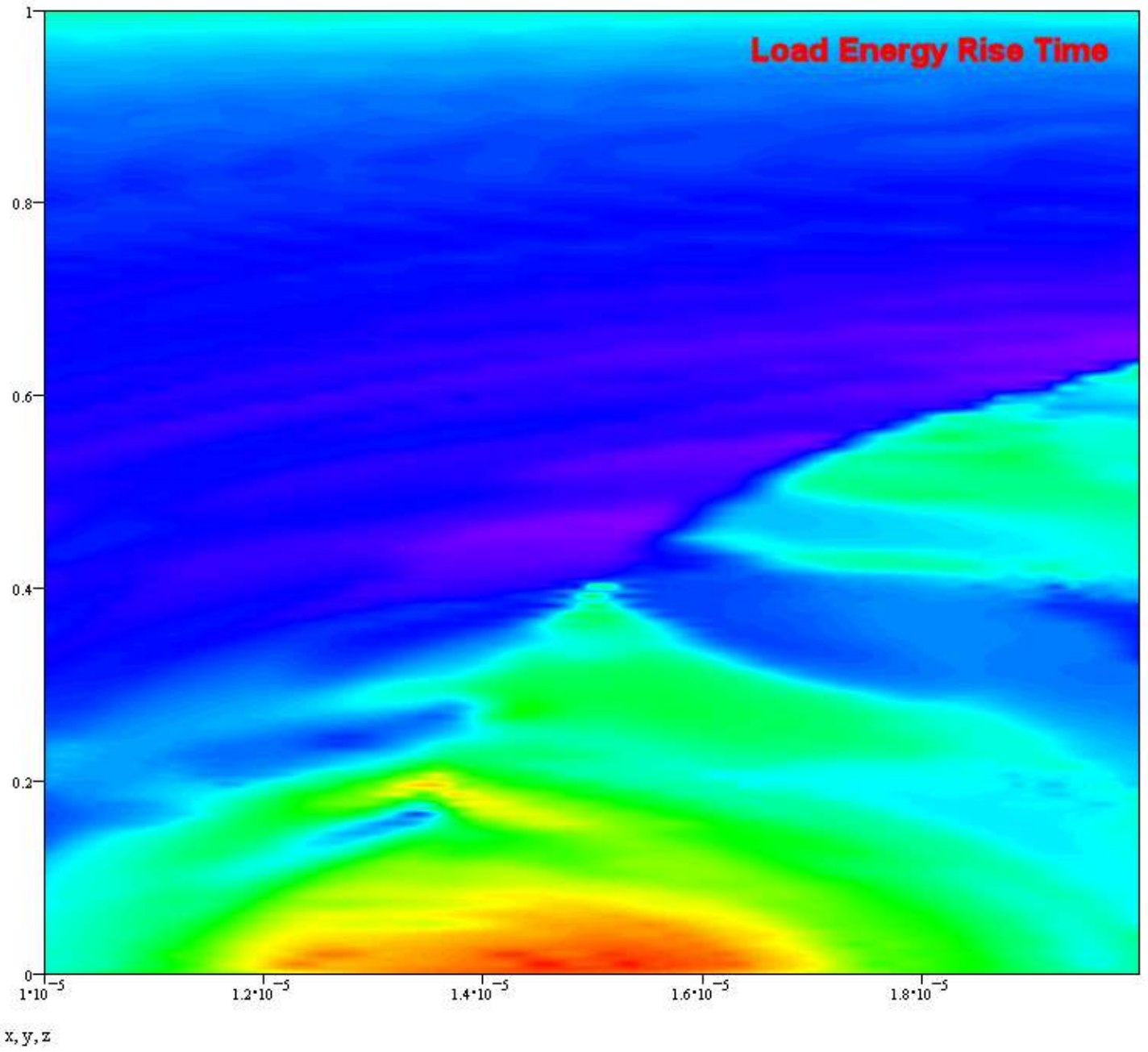


x, y, z





# Load Energy Rise Time



\* ScanTesla Parameter Input File  
\*  
\* This file should be in the same directory as the program.  
\*  
\* Lines starting with "\*" are ignored.  
\*  
\* The program expects the parameters in order and as shown.  
\*  
\* Cprimary (farads) - start, stop, Inc  
450.0e-9  
450.0e-9  
1.0e-9  
\* Rprimary (ohms) - Start, Stop, Inc  
0.15  
0.15  
0.01  
\* Lprimary (heneries) - Start, Stop, Inc  
10e-6  
20e-6  
0.1e-6  
\* Lsecondary (heneries) - Start, Stop, Inc  
130.0e-3  
130.0e-3  
1.0e-3  
\* Coupling - Start, Stop, Inc  
0.01  
0.99  
0.01  
\* Rsecondary (ohms) - Start, Stop, Inc  
500.0  
500.0  
1.0  
\* Csecondary (farads) - Start, Stop, Inc  
42.0e-12  
42.0e-12  
1.0e-13  
\* Cload (farads) - Start, Stop, Inc  
6.0e-12  
6.0e-12  
1.0e-12  
\* Rload (ohms) - Start, Stop, Inc  
220.0e3  
220.0e3  
1.0e3  
\* Time (sec) - Start, Stop, Inc - If Inc < 0 then automatic timing is used  
0.0  
500e-6  
-100.0e-9  
\* Vrail - DRSSSTC Buss Rail Voltage (volts) - 0.0 for a conventional coil.  
320.0  
\* VCprimary Initial Value (volts) - Primary capacitor voltage for a conventional coil. 0.0 for a DRSSSTC.  
0.0  
\*Dwell Time (sec) - DRSSSTC T1 time. Ignored for conventional coil.  
125.0e-6  
\* DRSSSTC Current Limit (amps) - Set very high for conventional coil.  
10000.0e0  
\* Bang Energy Limit (joules)  
1000.0  
\* Goal Type - 0=find maximum VCsecondary 1=find maximum streamer energy 2=find all  
2  
\*