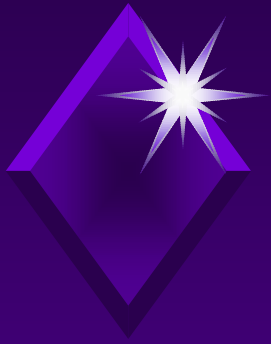


*TOP, The Output Processor*<sup>®</sup>

Electrotek Concepts<sup>®</sup>





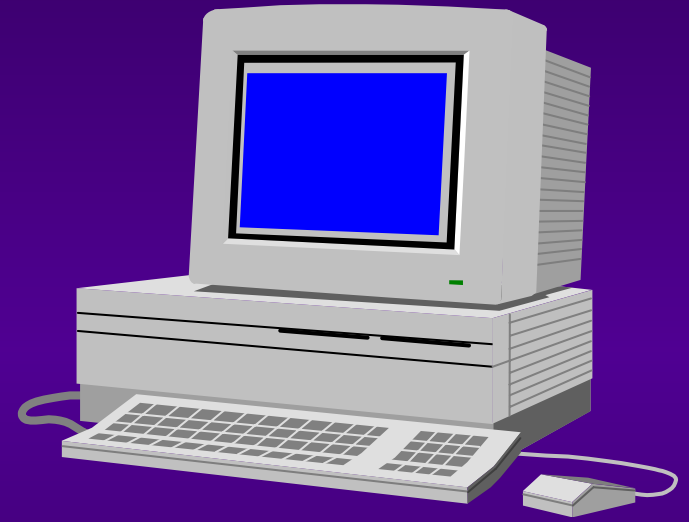
## *What is TOP?*

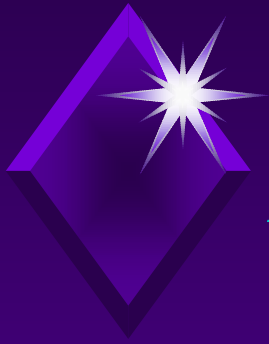
- ◆ TOP is an acronym for “The Output Processor”, a software tool which reads data from a variety of measurement instruments and simulation programs and transforms it into simplified power system analyses for inclusion in reports and documents.



# *System Requirements*

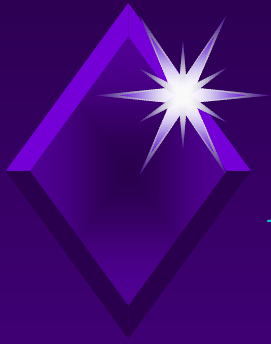
- ◆ 586 or better IBM compatible PC
- ◆ 4 MB RAM or more
- ◆ 80387 Math Co-processor
- ◆ Windows 95, 98, NT, 2000, or XP
- ◆ Windows compatible video card
- ◆ Windows compatible printer





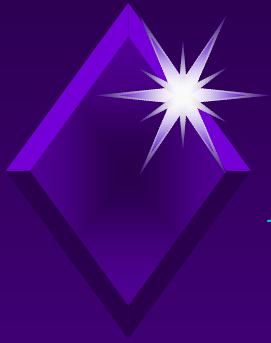
# *Data Viewing*

- ◆ TOP can read from a variety of data formats:
  - ◆ ASCII Text
  - ◆ IEEE COMTRADE (C37.111-1991, C37.111-1999)
  - ◆ PQDIF (IEEE-P1159-3)
  - ◆ Dranetz-BMI PASS<sup>®</sup> (8010 and 8020 PQNode<sup>®</sup>)
  - ◆ Dranetz-BMI 65x series
  - ◆ Square D PowerLogic<sup>®</sup> DADisp
  - ◆ Fluke 41
  - ◆ Electrotek Concepts SuperHarm<sup>®</sup>
  - ◆ Electrotek Concepts FerroView<sup>™</sup>
  - ◆ PSCAD<sup>®</sup>



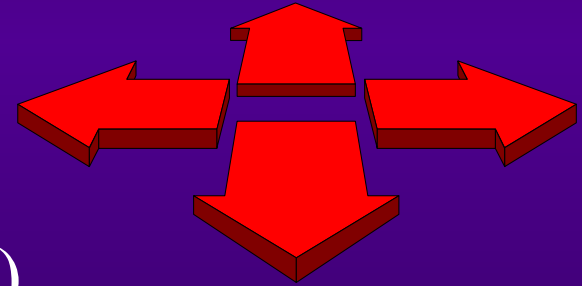
# *Data Viewing*

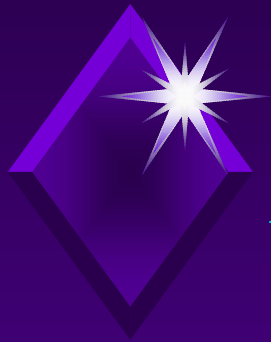
- ◆ Other data formats:
  - ◆ EPRI/DCG EMTP for Windows
  - ◆ ATP (Alternate Transients Program)
  - ◆ Cooper Power Systems V-Harm<sup>TM</sup>
  - ◆ EPRI HarmFlow for Windows
  - ◆ EPRI SDWorkstation
  - ◆ EPRI LPDW (CFlash, DFlash, TFlash)
  - ◆ EPRI Power Quality Diagnostic System



# *Data Sharing*

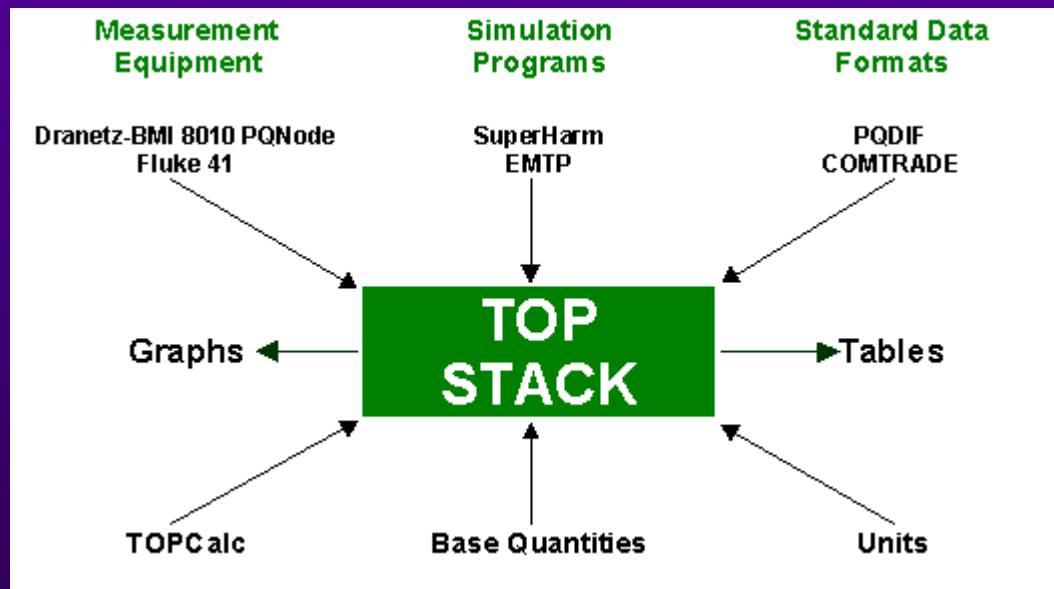
- ◆ The data being visualized in a window can be exported to a variety of other file formats:
  - ◆ IEEE PQDIF
  - ◆ IEEE COMTRADE (.CFG)
  - ◆ Windows Metafile (.WMF)
  - ◆ Portable Network Graphic (.PNG)
  - ◆ Comma Separated Variable (.CSV)
  - ◆ ASCII Tabbed Text (.TXT)





# *Data Management Capability*

- ◆ TOP uses a system called the stack to simplify handling data from various sources.





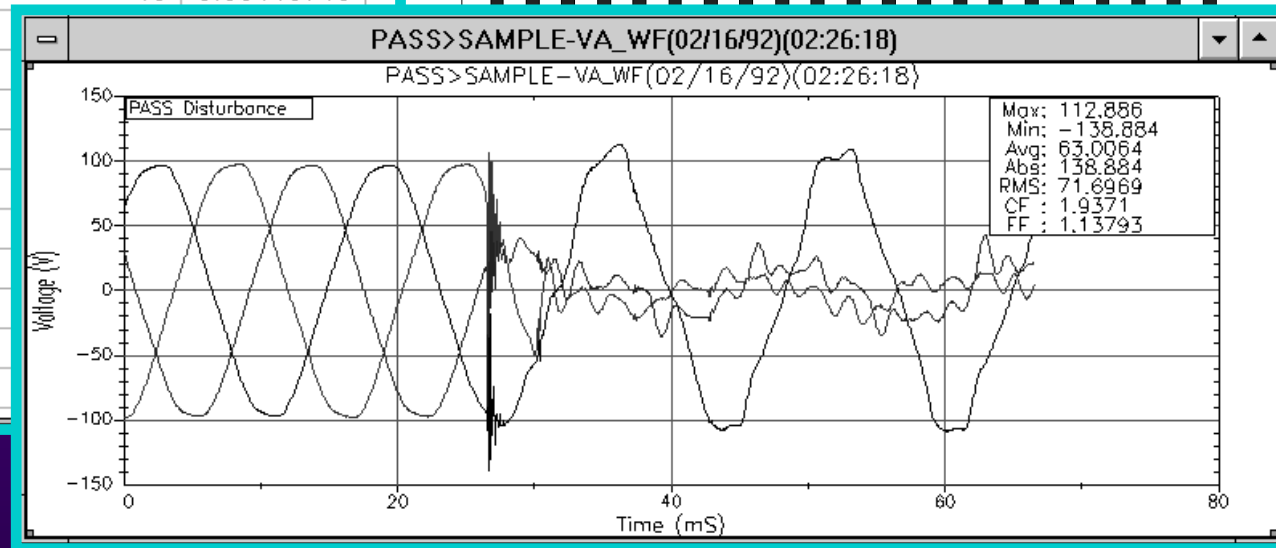
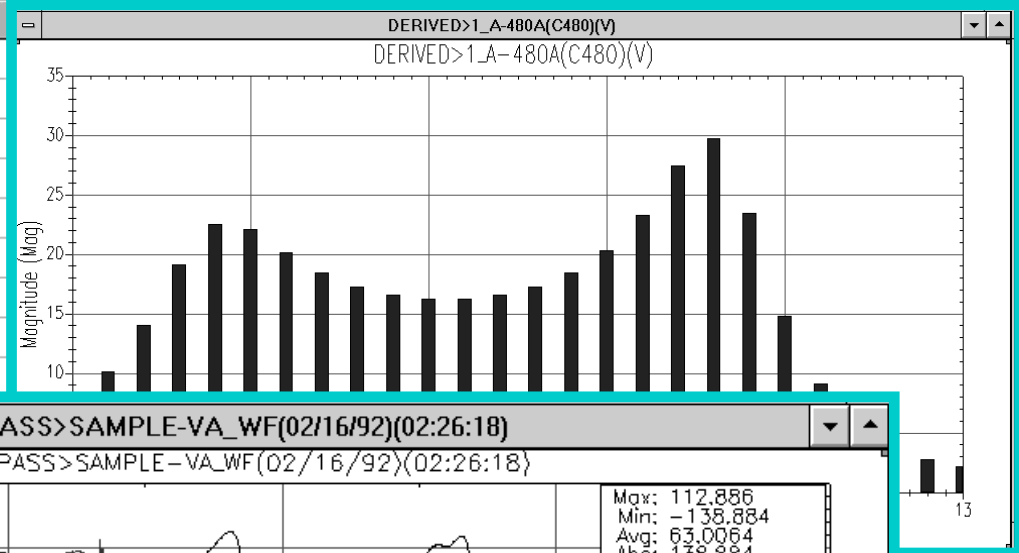
# *Data Display*

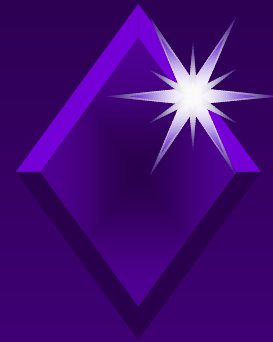
- ◆ TOP provides a variety of ways to visualize the data.
  - ◆ Waveform and spectrum plots
  - ◆ Frequency response plots
  - ◆ Summary tables (including IEEE 519 application)
  - ◆ Summary bar/volume charts
  - ◆ Cumulative probability charts
  - ◆ Probability density charts
  - ◆ 3-D Magnitude Duration Histograms (downloaded from PQWeb<sup>®</sup>)
  - ◆ Background curves for Mag Dur Plots



# Output Examples

Frequency Domain Data			
	A	B	C
1	Name	Frequency	Magnitude
2	13bus.A	1	98.1001
3	13bus.A	3	0.027528
4	13bus.A	5	0.005075
5	13bus.A	7	0.00220512
6	13bus.A	9	0.00256462
7	13bus.A	11	0.00042203
8	13bus.A	13	0.000219005
9	13bus.A	15	0.00115745
10	13bus.A		
11	13bus.A		
12	13bus.B		
13	13bus.B		
14	13bus.B		
15	13bus.B		
16	13bus.B		
17	13bus.B		
18	13bus.B		
19	13bus.B		



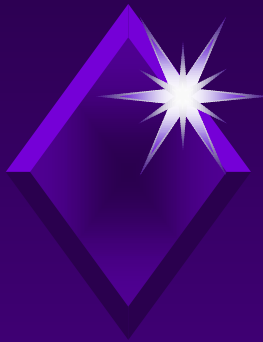


# Getting Started - Opening Files

## ◆ Opening files in TOP

.CSV files are automatically loaded on to the stack.

The screenshot shows the 'The Output Processor' application window. The 'File' menu is open, and 'Open...' is selected. The 'Open' dialog box is displayed, showing the current directory as 'c:\pass'. The file list contains 'pass.csv' and 'wave.csv', with 'wave.csv' selected. The 'File name' field contains 'wave.csv'. The 'List files of type' dropdown is set to 'PASS CSV Files'. The 'Drives' dropdown is set to 'c: dpq\_1'. The 'OK', 'Cancel', and 'Network...' buttons are visible on the right side of the dialog.



# Getting Started - Using Quick Graph

**TOP - WAVE.CSV**

File Edit Stack **Graph** Table Window Help

Data Directory:

- Quick Graph...
- Stack Items in Frame...
- New Graph...
- Scale
- Grid...
- Label...
- Annotate...
- Data Block...
- Legend...
- Animate...

Ready

**Quick Plot Quantity Select**

Stack Objects:

(1092	)	(VB_WF	)	(08/01/95)	(19:48:21)	(CLIP	)	(WAVE)
(1092	)	(VB_WF	)	(08/01/95)	(19:48:21)	(WAVE	)	(WAVE)

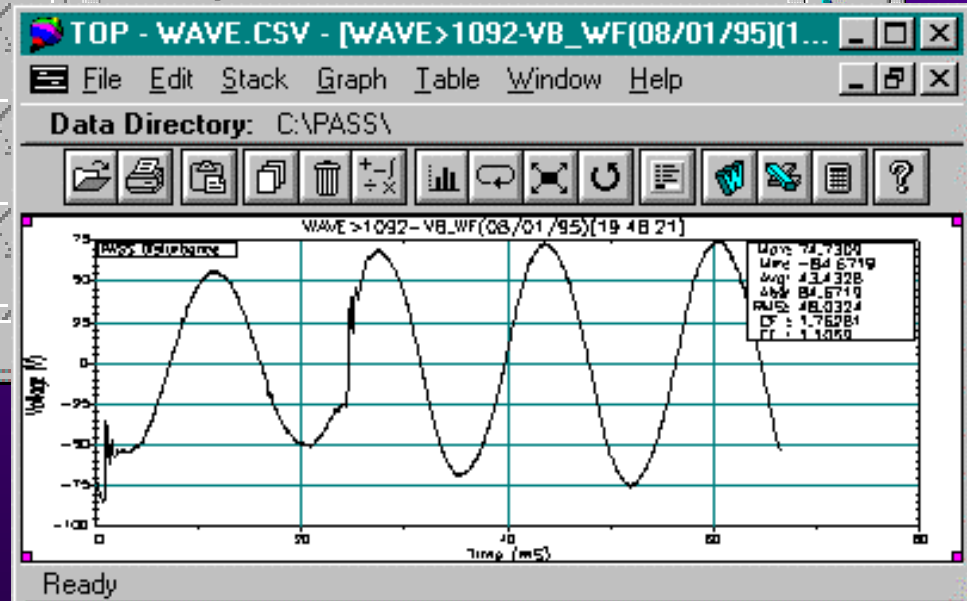
All None

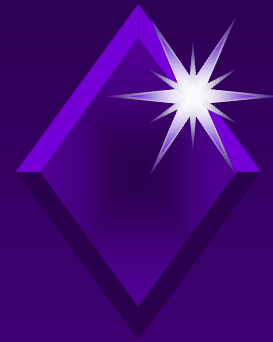
Normal  
Auto Create Windows  
Auto Create Frames  
Multi-Page Window

Across: 1  
Down: 1

OK Cancel

Help

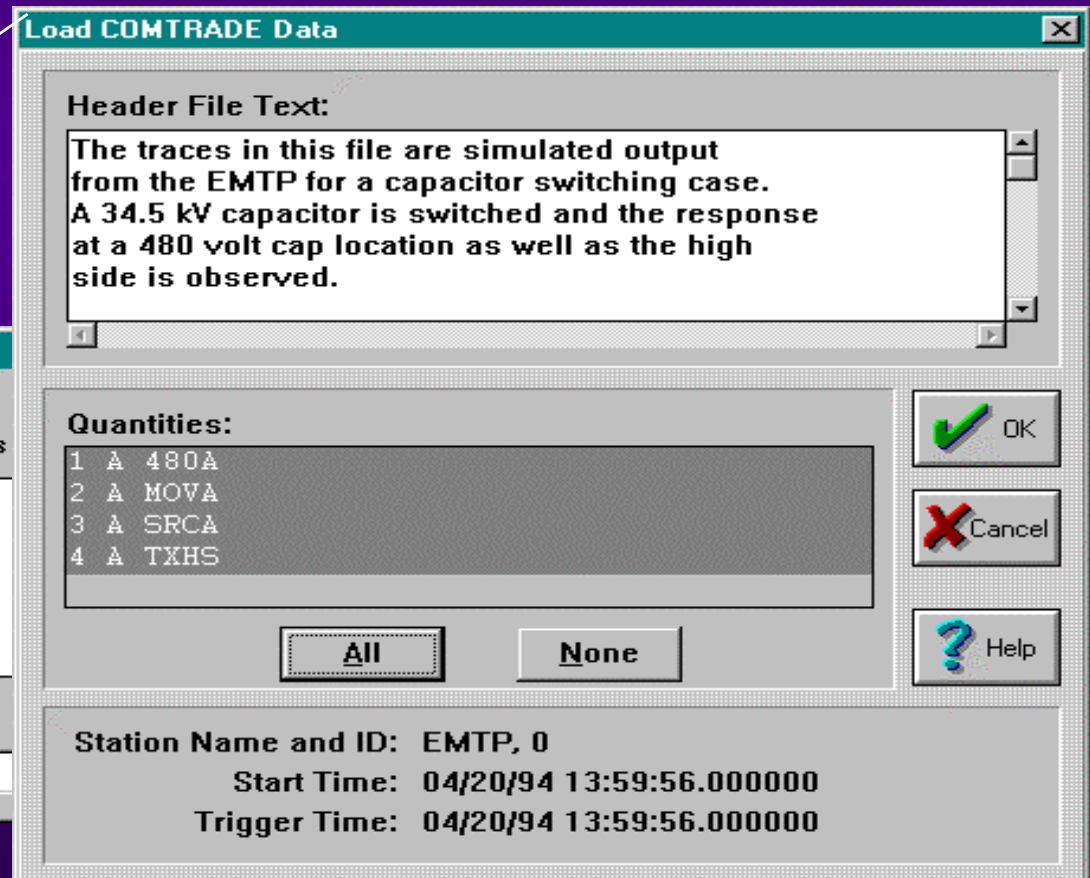
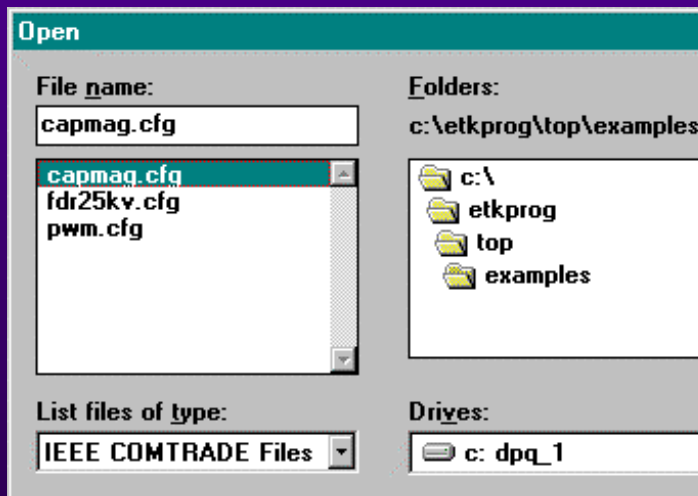


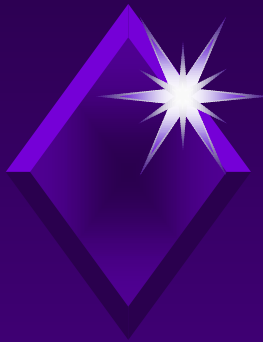


# Getting Started - Loading Data

## ◆ Opening IEEE COMTRADE files (.CFG)

Dialog Box for loading data on the stack.





# Graphical Manipulations

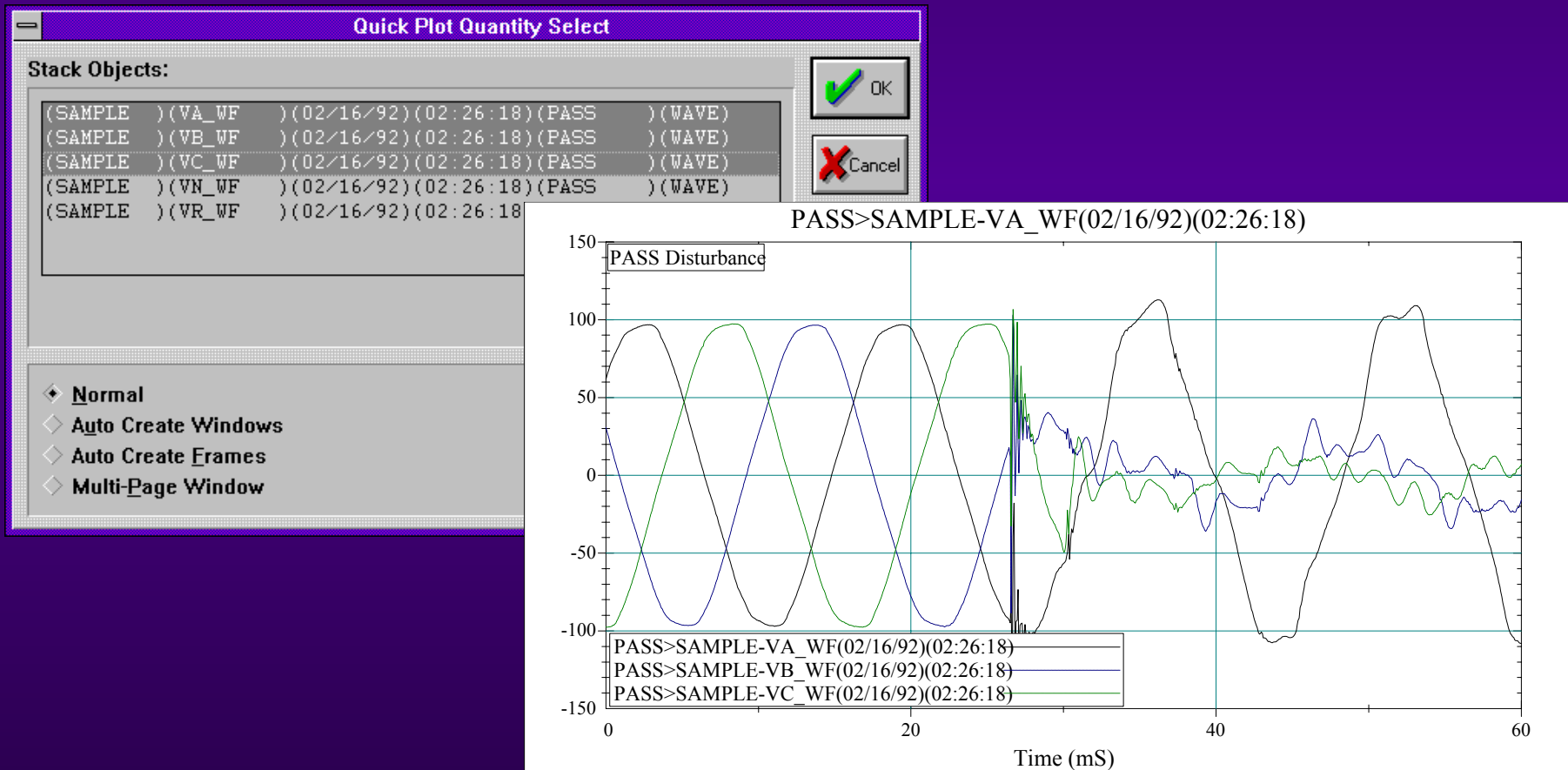
- ◆ Working with multiple graphs.
- ◆ Using the zoom feature.
- ◆ Formatting graphs

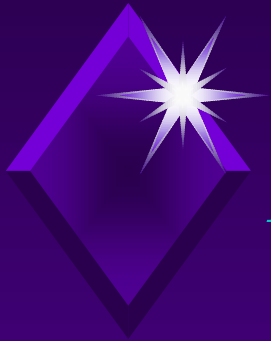
The screenshot displays two overlapping windows from a software application. The foreground window, titled "Quick Plot Quantity Select", features a list of "Stack Objects" with columns for object ID, name, date, time, and type. Below the list are "All" and "None" buttons, and a section with expandable options: "Normal", "Auto Create Windows", "Auto Create Frames", and "Multi-Page Window". It also includes "Across:" and "Down:" input fields, both set to "1", and "OK", "Cancel", and "Help" buttons. The background window, titled "The Output Processor", has a menu bar with "File", "Edit", "Stack", "Graph", "Table", "Window", and "Help". The "Graph" menu is open, showing options: "Quick Graph...", "Stack Items in Frame...", "New Graph...", "Scale", "Grid...", "Label...", "Annotate...", "Data Block...", "Legend...", and "Animate...".



# Multiple Graphs

- ◆ Plotting multiple graphs in a single frame.





# Multiple Graphs, cont.


- ◆ Plotting multiple graphs in a single window.

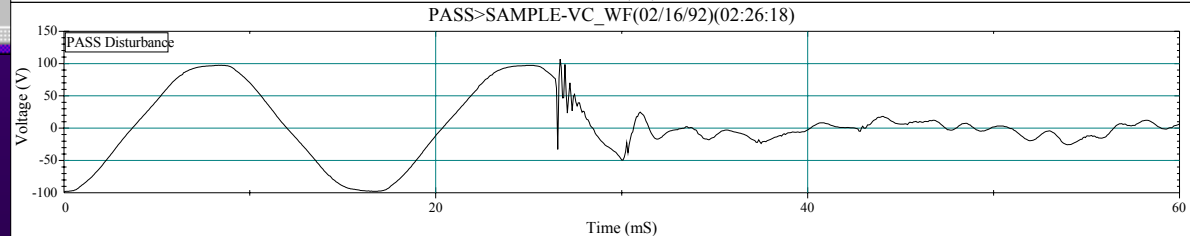
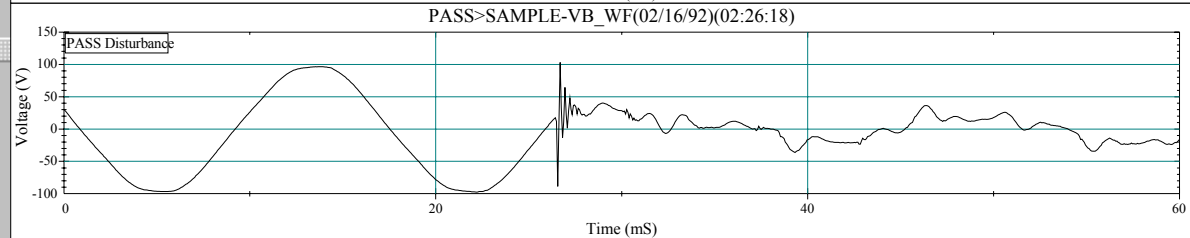
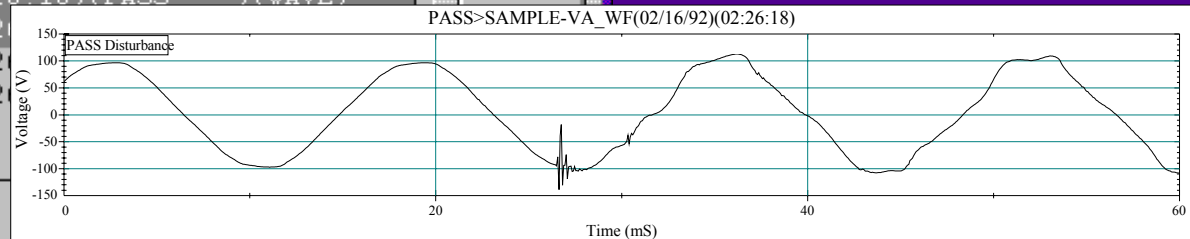
**Quick Plot Quantity Select**

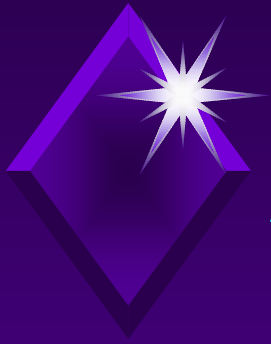
Stack Objects:

```
(SAMPLE )(VA_WF )(02/16/92)(02:26:18)(PASS )(WAVE)
(SAMPLE )(VB_WF )(02/16/92)(02:26:18)(PASS )(WAVE)
(SAMPLE )(VC_WF )(02/16/92)(02:26:18)(PASS )(WAVE)
(SAMPLE )(VN_WF )(02/16/92)(02:26:18)(PASS )(WAVE)
(SAMPLE )(VR_WF )(02/16/92)(02:26:18)(PASS )(WAVE)
```

Normal  
 Auto Create Windows  
 Auto Create Frames  
 Multi-Page Window

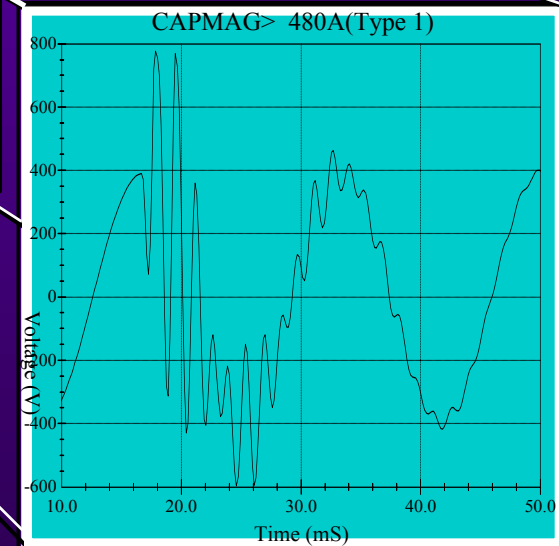
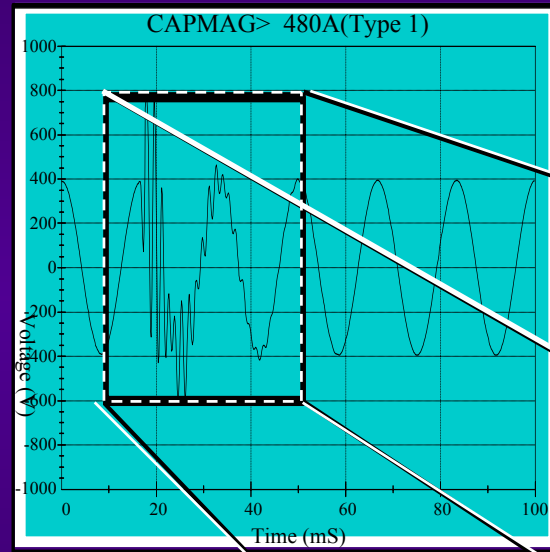






# *Zooming with the Mouse*

- ◆ To zoom in on a portion of the graph, click and drag the right mouse button to create a rectangular box around the area of interest and then release the button.

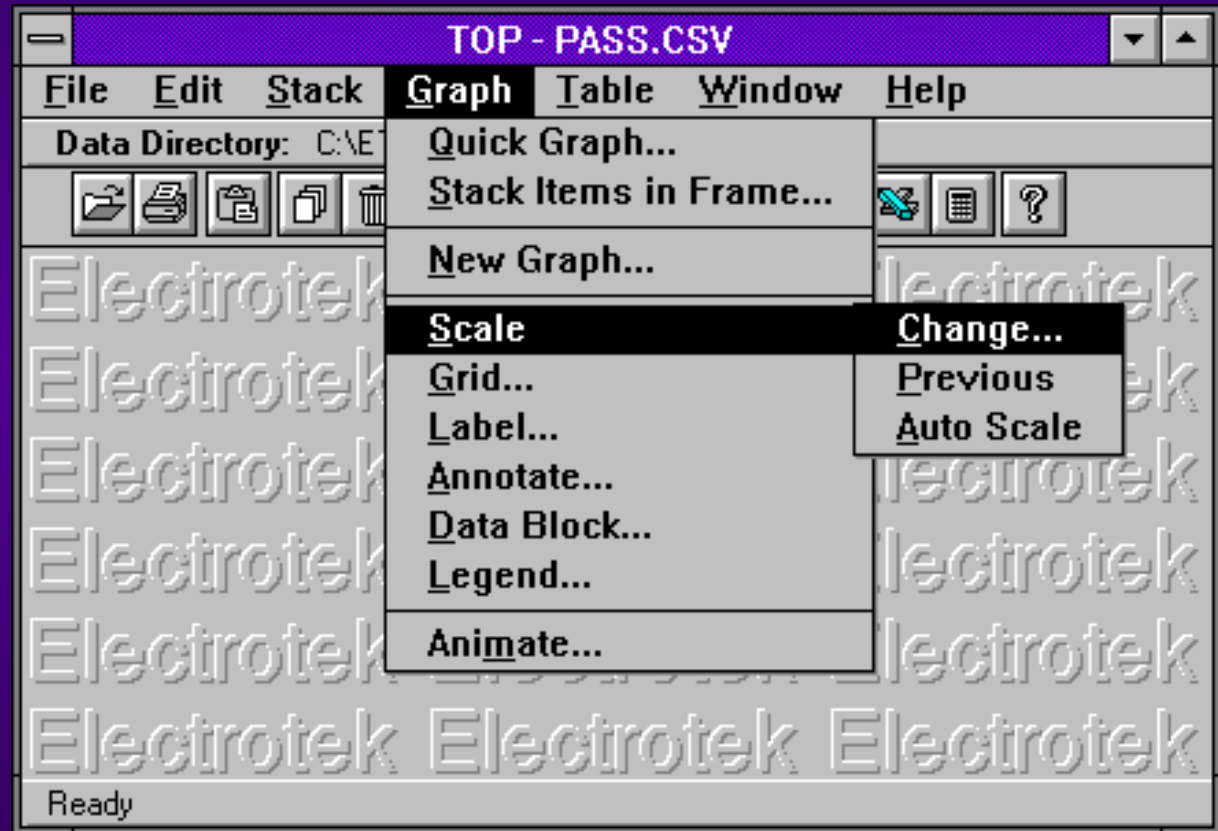


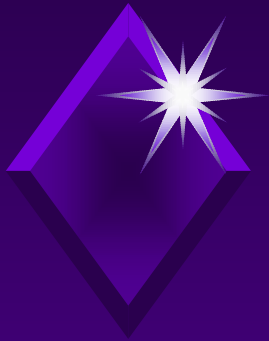




# Formatting graphs in TOP

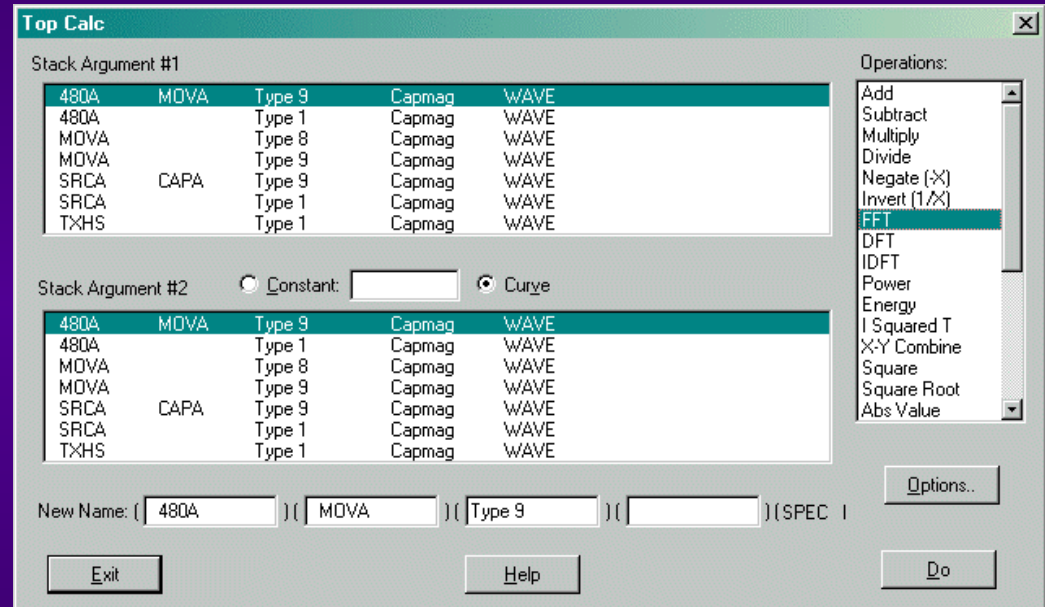
- ◆ Data labels
- ◆ Axis scaling
- ◆ Creating legends
- ◆ and more!

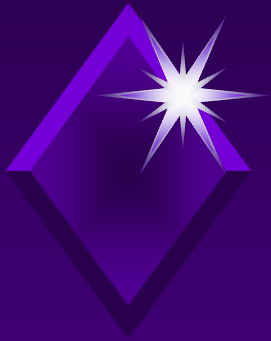




# TOPCalc™ Functions

- ◆ Add, Subtract
- ◆ Multiply, Divide
- ◆ FFT, IDFT
- ◆ Power, energy and I<sup>2</sup>t
- ◆ Integration, square, square root
- ◆ X-Y combine
- ◆ Filter, time shift
- ◆ V, I, & power dB ratio
- ◆ Cumulative probability
- ◆ Probability distribution
- ◆ Waveform sampling

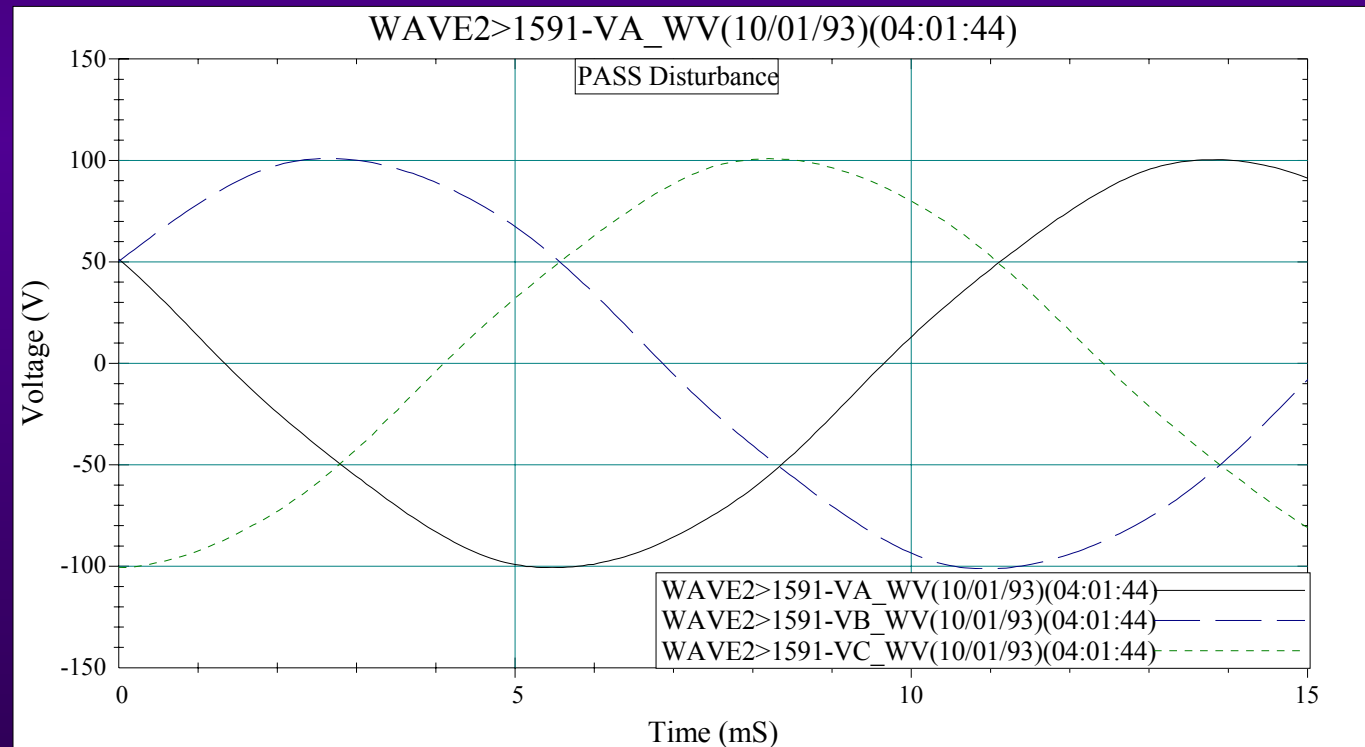




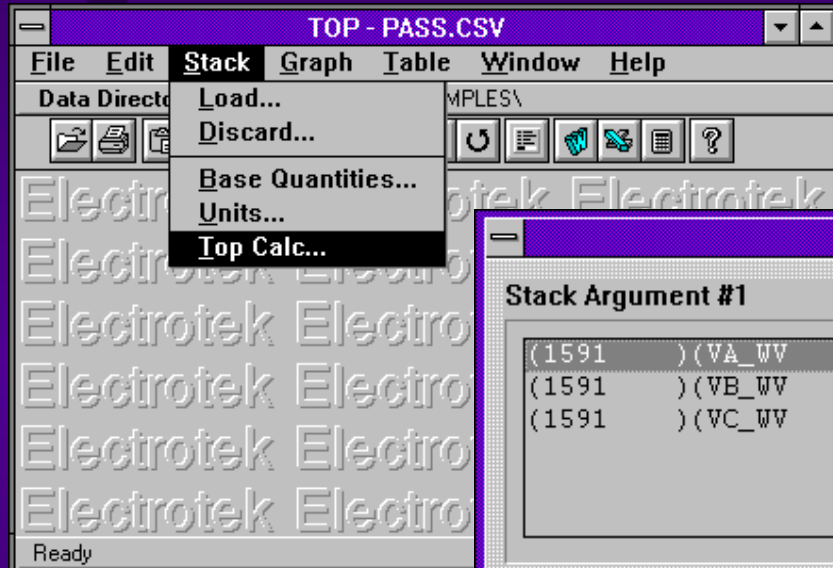
# TOPCalc Example

- ❖ Calculation of line-line voltage,  $V_{A_1-l}$ , from phase  $A_{1-g}$  voltage and phase  $B_{1-g}$  voltage waveforms.

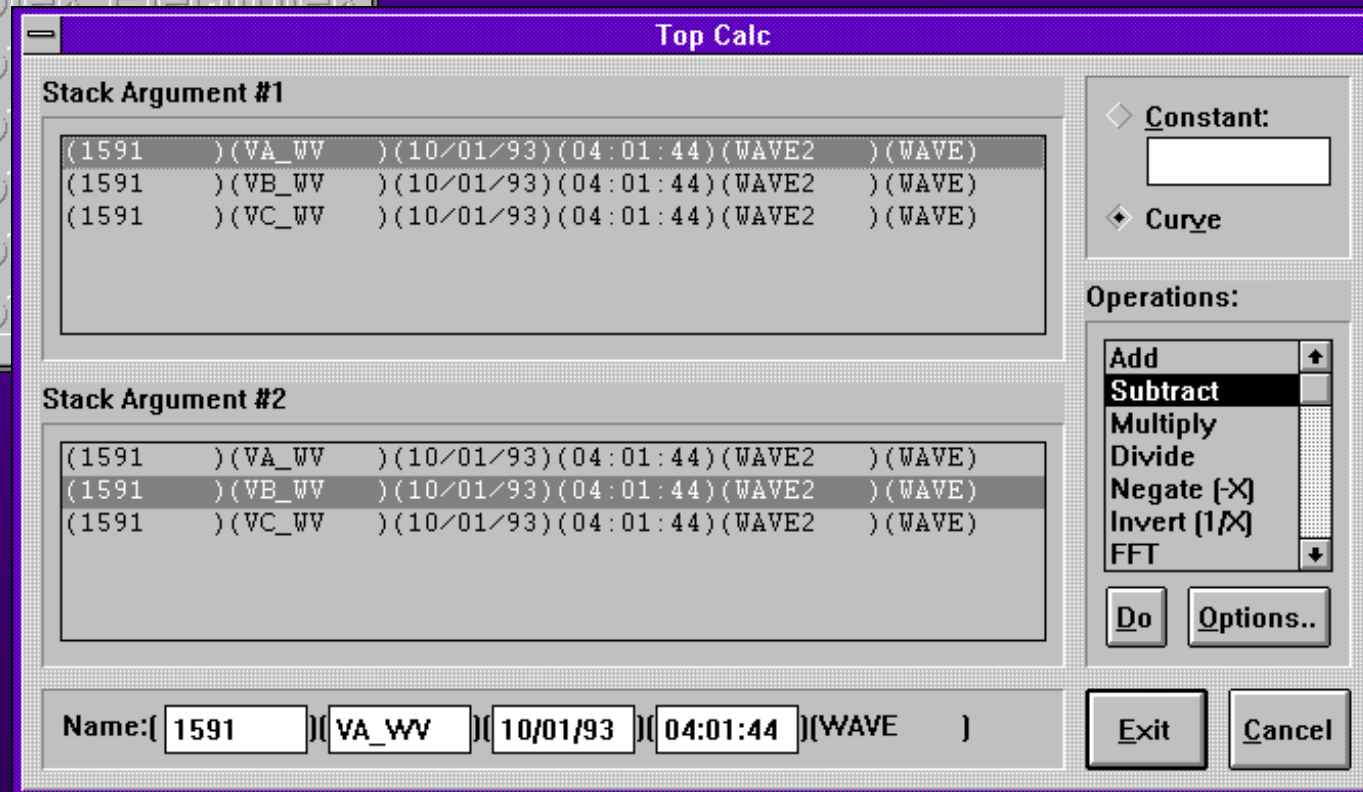
$$\begin{aligned}V_{A_{1-g}} &= 100V \\V_{B_{1-g}} &= 100V \\V_{C_{1-g}} &= 100V\end{aligned}$$

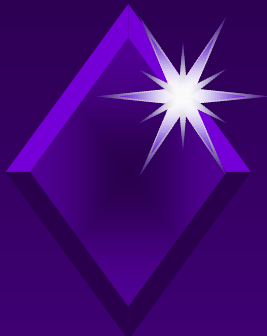


# TOPCalc Example, cont.



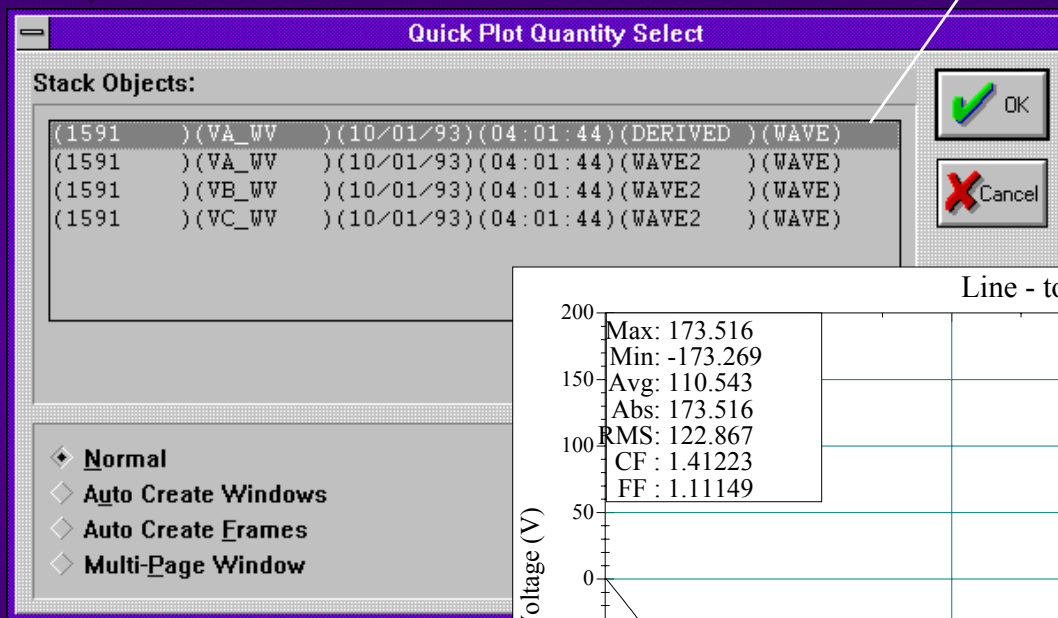
$$VA_{1-1} = VA_{1-g} - VB_{1-g}$$





# TOPCalc Example, cont.

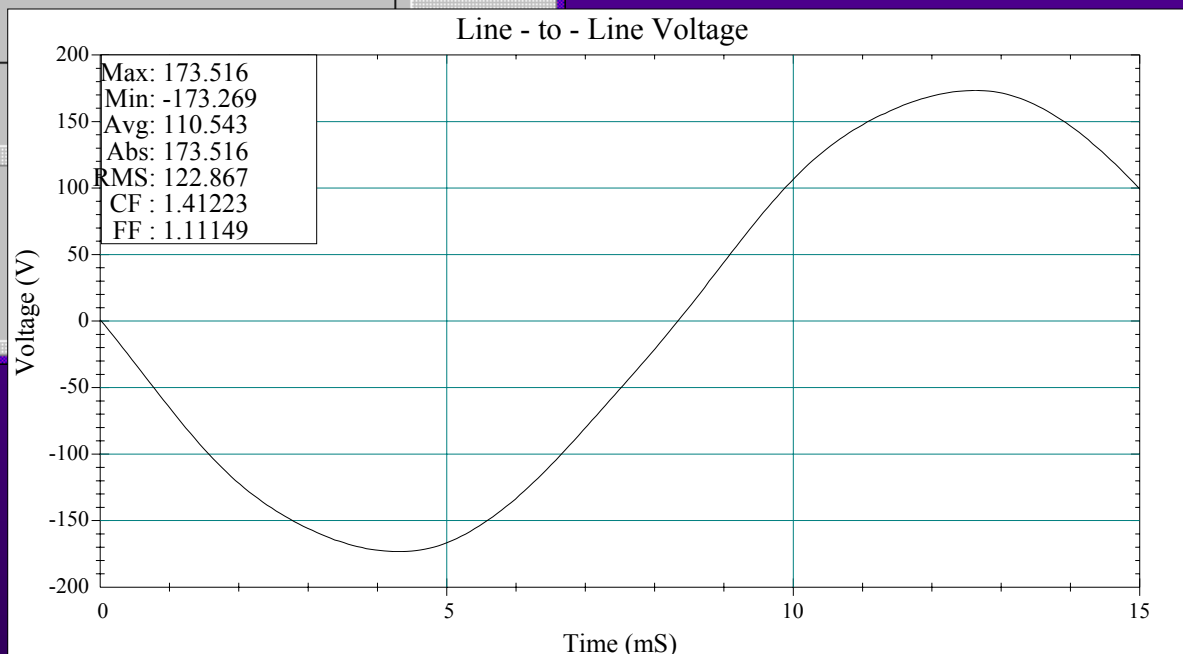
TOPCalc creates result of operation as another quantity specified with a **DERIVED** tag name.

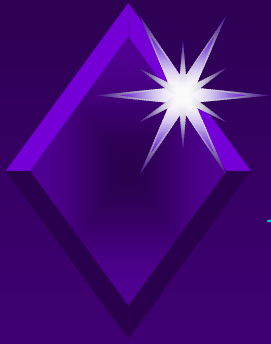


$$V_{A_{1-1}} = 173V$$

$$V_{B_{1-1}} = 173V$$

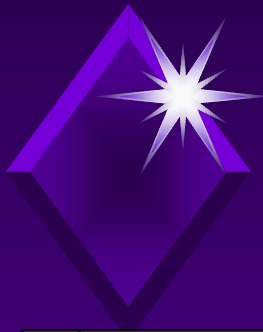
$$V_{C_{1-1}} = 173V$$



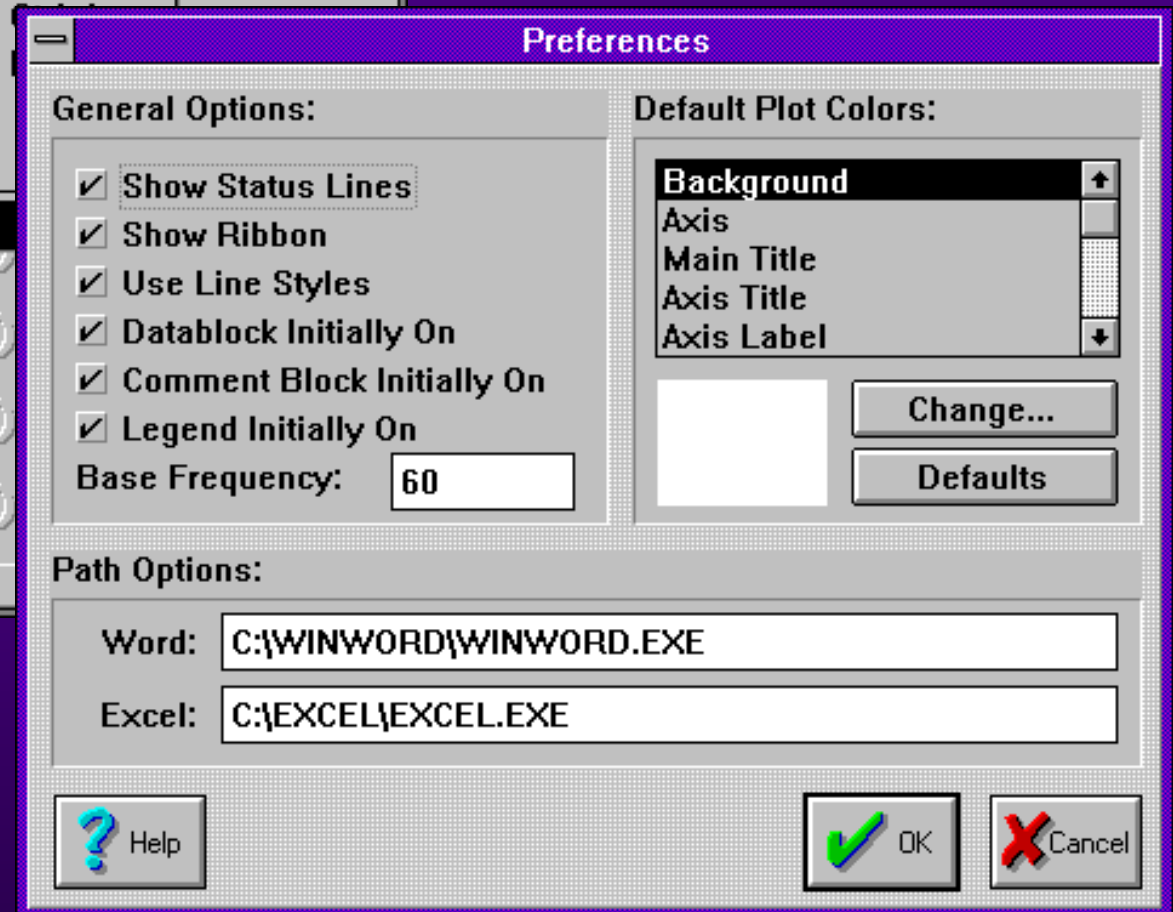
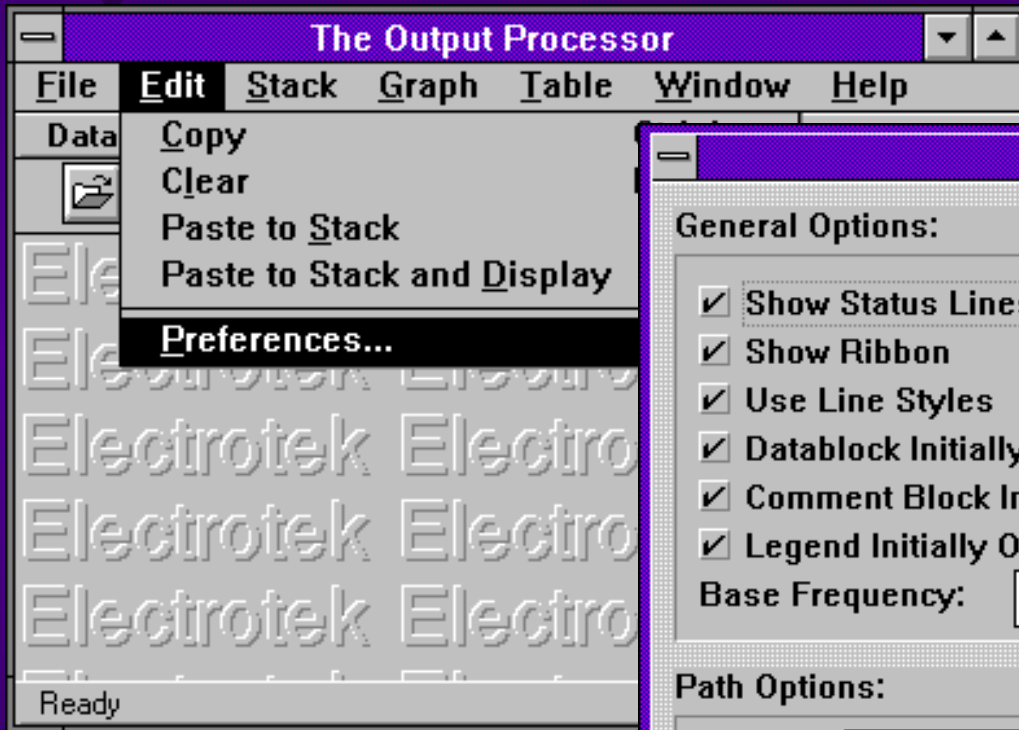


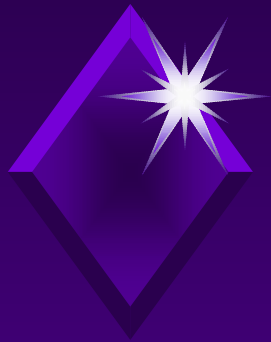
# *Data Formatting*

- ◆ Preferences can be changed to customize your output:
  - ◆ Base quantities (per unitizing)
  - ◆ Units (axis labels and multipliers)
  - ◆ Data, comment, and annotation blocks
  - ◆ Display colors
  - ◆ Cumulative probability charts
  - ◆ Axis scaling, grid lines, labels



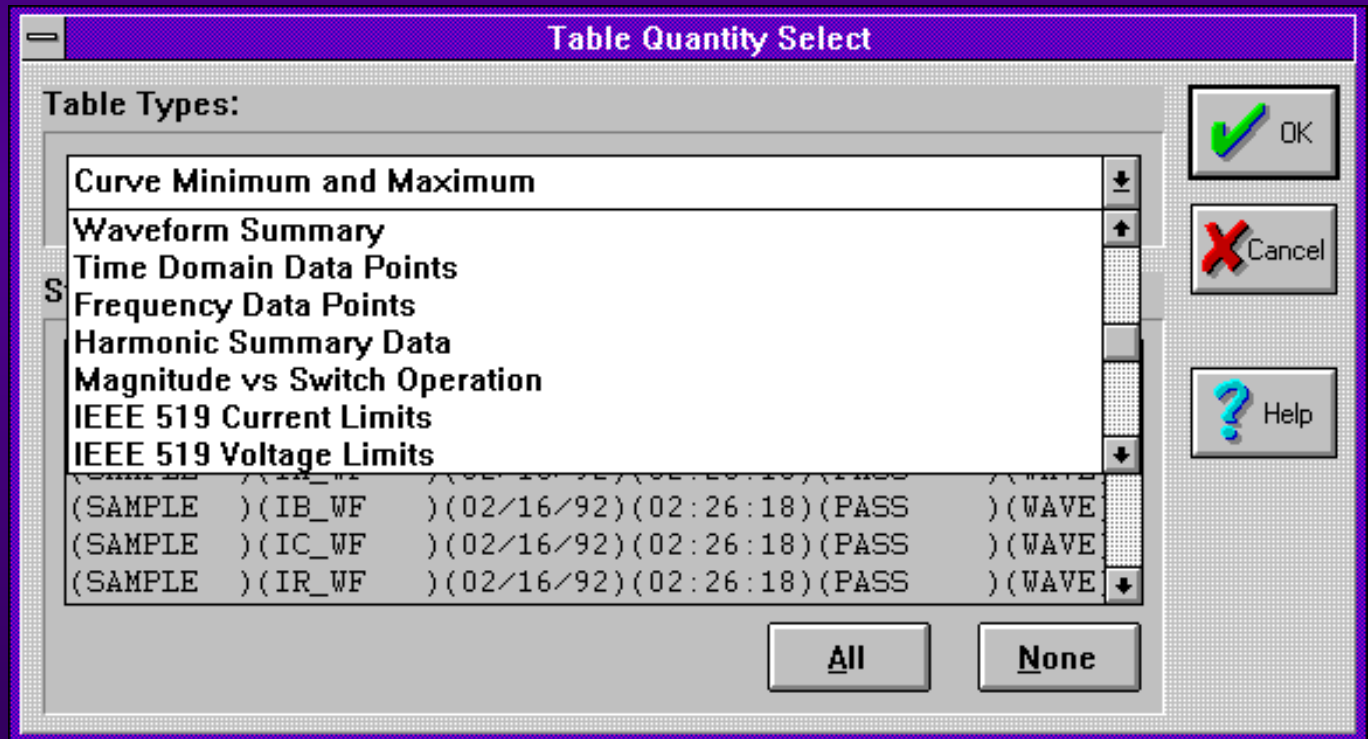
# Changing Preferences



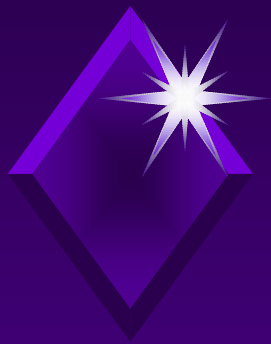


# Creating Tables

- ◆ TOP can simply provide a table for the following parameters.



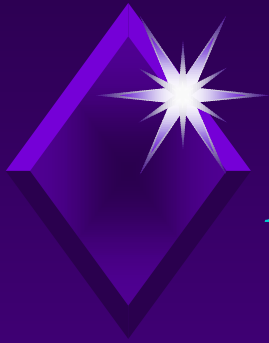




## *Creating Tables, cont.*

- ◆ Table can be utilized with any spreadsheet for further analysis.

	A	B	C	D	E
1	Name	Min	Max	Abs Max	Avg
2	VA_WV	-100.621	100.445	100.621	63.9686
3	VB_WV	-101.185	100.991	101.185	64.2618
4	VC_WV	-100.868	100.903	100.903	63.702



## *Availability*

- ◆ TOP is available for free download from Electrotek Concepts at [www.pqsoft.com/top](http://www.pqsoft.com/top)
- ◆ Support is available from Electrotek via e-mail and a “Frequently Asked Questions” page at [www.pqsoft.com/top](http://www.pqsoft.com/top).