# **CONCEPTS FOR USING TC2000/TCNET PCFs**

#### What is a PCF?

PCF stands for Personal Criteria Formula. It is a feature in TC (TC will be used here to refer to both the TC2000 and TCnet software products of Worden Brothers) that lets the user specify 'mathematical' and 'logical' conditions and then select from a watchlist those stocks which meet those conditions. A PCF can range from a very simple one such as C < 50.00 (which means "the closing price today was less than, but not equal to, \$50.00) to extremely complex ones limited only by the imagination of the author and the selection of 'variables' in the PCF language.

#### Why would I want to use a PCF?

By creating your own PCF, you can specify conditions that are not available in the 'packaged' indicators that are built into TC. The PCF is like a 'filter' that let's you sort out the limited number of stocks that are "just what you want" from the whole universe of more than 7000 stocks.

Once you have created a PCF, you can also use it as a 'filter' in an EasyScan, which then automatically creates a watchlist of all the stocks that 'fit through the filter' – not only that, the watchlist is then updated/refreshed every time you download new stock data.

In short, PCF is another tool you can use to find the stocks that match what you are looking for.

### What if I'm no good at programming or math?

TC provides 'menu' boxes and 'click to insert' features to help you build the PCF. You are shown a list of all the "operators" that are available for use, and once you select one you are then given choices to select the "parameters" (conditions) you want to use. Most creation of PCFs can be done with nothing more than mouse clicks!

BUT – It is most important that you THINK about what you want the PCF to do.

Setting up a PCF is like writing instructions to a young child who has never done what you want to get done. You must be careful to include every tiny detail. The child (computer) cannot guess or decide what you meant.

If you are no good at thinking about details, you probably will not be good at writing PCFs.

### How do I make a PCF in TCnet?

Let's do a very simple pcf first, just to go through the sequences

Suppose we want to find all stocks with a closing price of \$50.00 or less

Learning to write a pcf is similar to learning to write a new language -we must know the words (or symbols) of the new language we must know how to fit the words/symbols together properly (syntax)

The symbol that is used for the 'last closing price' isCThe symbol that is used for 'less than' is<</td>The symbol that is used for 'equal' is=

PCF language is very brief and concise; therefore if we write

C <= 50

What we have written above would mean, in English -

"the last closing price was less than or equal to \$50.00"

So now we have 'written' the PCF – next we must actually 'make' the PCF in TC

First we have to get TC into the proper 'mode' for writing a PCF

• from the main TCnet screen, at upper left corner, click the New button

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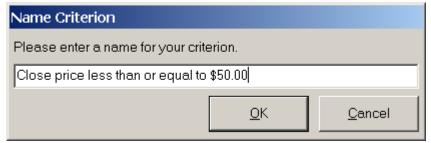
• next click on

New Chart Window	⊁
New WatchList	
New EasyScan	
New Personal Criteria Formula	
New Chart Template	

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• now decide what name you want to call this PCF (one you can easily remember)



when you have typed in the name you want, click on OK

Once in the "PCF editing mode" we have a window for creating and editing the new PCF

Editing formula for Close price le	ess than or equal to	o \$50.00		
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Test Formula Clipboard	<u>C</u> ancel	Save <u>A</u> s	<u>S</u>	ave

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• In the editing window we can either just type in the symbols we want to use, or we can pick and choose from the list at the right side ... you 'double click' on the Function or Operator you want. Let's do the first symbol (closing price) -

Editing formula	a for Close price l	ess than or eq			
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ah ... when we double click on Last Price we get another menu from which to choose – do we want today's closing price, yesterday's or some time in the past? For this example, we want today's closing price so we will just click on OK.

Editing formula for Close price les	ss than or equal t	o \$50.00	
C		Volum Moving Min Pri Stocha RSI BOP TSV OBV MS	Price rice Last Price a Average ice ce stics
Test Formula Clipboard	<u>C</u> ancel	Save <u>A</u> s	<u>S</u> ave

the result is simply that the letter C followed by a space show up in the editing window. (Note: Space and Enter characters 'do not count' in the syntax of the PCF language – so you can put lots of 'white space' to make things easier to read, and you can put 'sections' on separate lines for clarity).

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• The next 'section' of our PCF needs to say "less than or equal to" – this is not a function, it is a 'Logical Operator' so we slide down on the right side and double click on "Less Than or Equal To" --

Editing formula for Close price less than or equal to \$50	0.00		
C <=		Mulitiply Divide Add Subtract Absolute LOG EXP SQR SQR SQN LOGICAL Greater Greater Less The	Value OPERATORS Than Than or Equal To an en or Equal To
	-		Insert
Test Formula Clipboard Cancel	Sav	re <u>A</u> s	<u>S</u> ave

which, of course, inserts the symbols  $\leq$  in the edit window.

• Finally, we need to insert the value \$50.00 to complete our PCF. To do this, simply click once to the right of the <= symbols and type in 50 (do not type the \$ symbol, and if the price you want is exactly 50 you do not need to type in the decimal value .00 – although you can if you prefer to make it clearer).

Editing formula for Close price less than or equal to \$50	0.00	
C <= 50.00	Mulitip Divide Add Subtre Absoll LOG EXP SQR SQN LOGIC/ Greate Greate Less Equal	at ute Value AL OPERATORS er Than or Than or Equal To han han or Equal To
Test Formula Clipboard Cancel	Save <u>A</u> s	<u>S</u> ave

The example PCF is now completed. Click the 'Save' button to save it. However, there is a handy 'tool' built into the pcf editor – we can 'test'

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our code to see if it really does what we wanted it to do. In our example, this is rather basic – but when you grow to more complex PCFs it can be very useful to be able to see exactly how the code we wrote is being used and calculated in the PCF. If we click on the 'Test' button at the lower left corner of the editing window, all the 'variable' values and 'operators' are activated and we can see the result of our PCF.

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	Result: True	<u> </u>	Equal To	
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	Criterion Information		ual To	l
	Market Days Needed to Calculate Criterion: 1			l
	Number of Days of Data on Hard Drive: 75		-	-
	CD-ROM Is Not Required For Calculation		rt —	1
	Change Test Symbol			
<u>T</u> est			<u>S</u> ave	

As you can see above, our test result is 'True' -- hmmm ... that's interesting. Our PCF sets up a condition that is either True (last price IS less than or equal to 50.00) or False (last price IS NOT less than or equal to 50).

If we had written a PCF that just did some numerical calculations and gave a number for the result (no Logical Operators used) then the Test Result would show the number result and the window would show all the values used to calculate the result.

More importantly, in the test window we can see the actual value that was used for C (our last price). And we can clearly see that it is not equal to 50, but it IS less than 50. You can also see the ticker symbol for which the test was calculated (top of window, in blue strip) – VCO. If you want to test the calculation for a different ticker, just click on the 'Change Test Symbol' button at the lower left.

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Just to impress on you the importance of being able to see exactly what values and calculations are used when the PCF is much more complex, here is the Test result for a much more complicated PCF --Here is the actual 'formula' for the pcf ...

Editing formula for Rainbow up converged				
((AVGC60 > AVGC75 AND AVGC40 > AVGC60 AND AVGC20 > AVGC40 AND AVGC12 > AVGC20 AND AVGC20 > AVGC12 AND AVGC3 > AVGC62 AND (AVGC60.3 < AVGC12 AND AVGC3 > AVGC62 AVGC60.3 OR AVGC20.3 < AVGC40.3 OR AVGC12.3 < AVGC20.3 < AVGC40.3 OR AVGC12.3 < AVGC20.3 < AVGC40.3 OR AVGC12.3 < AVGC20.3 OR AVGC8.3 < AVGC12.3 OR AVGC3.3 < AVGC63.3 ) AND (V > 1000) AND (C > 1.00) AND ((AVGC75 / AVGC12 < 1.05) AND (AVGC75 / AVGC12 > 0.95))		FUNCTIC Open Pri High Prid Low Pric Close/Lu Volume Moving / Max Pric Noving / Max Pric Stochast RSI BOP TSV MS MATH OF Multiply Divide Add	ce se ast Price Average e	•
Test Formula Clipboard Cancel	Sav	e <u>A</u> s	<u>S</u> ave	

and here is the Test result, with values shown for every piece of the PCF.

o <sup>dl</sup> Formula Test for VCO	×
( ( 43.20 > 43.44 AND 43.07 > 43.20 AND 43.50 > 43.07 AND 44.98 > 43.50 AND 46.32 > 44.98 AND 47.52 > 46.32 ) AND ( 42.98 < 43.44 OR 42.70 < 42.98 OR 42.68 < 42.70 OR 43.37 < 42.68 OR 44.53 < 43.37 OR 46.55 < 44.53 ) ) AND (250.00 > 1000.00) AND (47.67 > 1.00) AND ( ( 43.44 / 44.98 < 1.05 ) AND (43.44 / 44.98 > 0.95 ) )	
Result: False	
Criterion Information	
Market Days Needed to Calculate Criterion: 79	
Number of Days of Data on Hard Drive: 75	
CD-ROM Is Required For Calculation	
Change Test Symbol	

In this case, the condition of the PCF for this stock at this time is False. More importantly, you can view each section to see just how it is working.

So, back to our example. We now have created a PCF and when the 'Save' button is clicked, it will be saved with the name we typed in the beginning of this procedure.

How do we use it, and where do we find it?

### Using the newly created PCF

• Before the PCF can be used in the TCnet system, it must be 'calculated.' This means that all the values for all the dates used must be fetched from the TCnet historical price database and linked to the new PCF.

The simplest way I have found to do this is to Databank button.



Then click on the 'Personal Criteria Formulas' selection. You will see another window --

🟴 Personal Criteria Formulas 💦 📐	×
Calculate For:	<u>U</u> pdate All Criteria
wen updating, include criteria which require data from CD-ROM	Cl <u>o</u> se

With the latest revision of TCnet, this update feature will spend time only updating those PCFs that have not been updated/calculated since the last data update.

The FIRST time you calculate a new PCF, I suggest that you click in the small white box at lower left – "When updating, include criteria which require data from CD-ROM"

It is easier and 'safer' to do this rather than have to decide each time if your new PCF uses data older than what is in the 'local storage' on your computer.

However, be sure to un-check this box the next time you update all your PCFs, or the update will last forever and ever and ever !!

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(Note: I find it is much faster and more reliable to run the data Update *without* the little box checked in that menu – and then run the PCF update (as above) later... this also seems to avoid a lot of crashes during the data updates.

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To update/calculate the new PCF, use the Databank sequence described above and click on the "Update All Criteria" button – as noted, this will **not** update *all* the criteria if they have been previously updated!! Just the new one.

When the updating is finished, click the "Close" button and you will be able to use your new PCF for sorting watchlists and as criteria in EzScans.

## Preliminary DRAFT Copy ©2004 Jim Cooper w2jc Using the PCF to sort a watchlist

Suppose we want to find ALL the stocks on the market that closed today at or below \$50.00

We just created a simple PCF that is 'true' for those stocks and 'false' for all other stocks.

If we start with a watchlist containing "all stocks" and then 'sort by' our new PCF, we will be able to see those stocks that are 'true' quite easily.

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All Worden Market Indicators
All Media General Industry Averages
All Flagged Items
Charts with Notes
Hard Drive Charts
Personal WatchLists
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For our example, click on the "All Stocks" line in the menu.

This will result in a watchlist with EVERY stock that TCnet has in the database (today that is 6762 stocks!)

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If you have not made changes to it, Tab 1 of the watchlist area will look like the screen shown above. This tab is particularly useful for sorting by PCFs.

As shown above, the stocks are listed alphabetically by their ticker symbol. We can change that by clicking on the 'Sorted by:' button and picking a different sorting criteria.

For this example, we want to Sort By the new PCF that is 'true' for all stocks that closed at or below \$50.00

When we click on the 'Sorted by:' button, we will get a pull-down menu showing not only the PCFs available but also all the EzScans, and all the 'system criteria' supplied by Worden as part of TCnet.

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# Users Viewing Chart	2/26/2004 10:57 PM
News Dates	2/26/2004 10:57 PM
Beta	02/25/2004 Close
BOP Value Today- H	02/25/2004 Close
Capitalization	02/25/2004 Close
Growth Rate 5-Yr	02/25/2004 Close
Yield	02/25/2004 Close
Earnings	
(\$Millions) 1-Yr	02/25/2004 Close
as Percent of Sales 1-Yr	02/25/2004 Close
1	

You can see some of the choices for sorting in the screen above.

To make it easier to find things, and with shorter lists, there are five buttons at the top of this menu list – All, System, PCFs, Real Time, and Indicator. If we click on the PCFs button, then only our PCFs will show in the list.

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BOP Net Change	01/30/2004 Close	🗞 () 🗞
Bounce off 200dma	02/23/2004 Close	🗞 () 🗞
Bullish engulfing	02/25/2004 Close	🗞 () 🎸
Close price less than or equal to \$50.00	02/25/2004 Close	🗞 🖗 🏈

You can see in this list our new PCF called "Close price less than or equal to \$50.00" – note also that for each pcf the date of the data used for the last 'calculation' is shown. If a PCF has not been initially calculated, this date will be blank (or the pcf might now show at all).

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If we click on the line for our new PCF, the watchlist of "all stocks" will be sorted so that all the 'true' ones will be together --

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As you can imagine, *most* of the stocks are at or under \$50.00 so I have adjusted the watchlist so that we see only the end of the 'true' list and the start of the 'not true' (false) list.

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At this point, you can create a new watchlist containing only those stocks that closed today at or below \$50.00 by right clicking in the grey area at the left of ZVXI (the last 'true' in the list) and selecting "Flag All Below This Item"

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	АВК		
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	- 75 A.4	<u>т</u> ,	
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Then copy all the flagged items to a new watchlist --

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by scrolling to the bottom of the Destination Chart list and selecting '[New WatchList]' – then click OK.

Type in the name you want to use for the new Watchlist (in this case, let's use the same name we used for the PCF)

	Name New Watch	/中产生 List		147
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then click on OK again ...

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The new watchlist has been created, but we are still viewing the original 'All Stocks' with the 'true' conditions shown – click the watchlist selection button and locate the 'Close price less than or equal to \$50.00' watchlist. (Note: again, there are buttons available at the top of the menu so that we can show only certain types of watchlists – All, System, Personal, Scans, Component, Industry, and Shared – if we click on 'Personal' then only those watchlists that **we** have created will be listed.)

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Click on the desired watchlist name and the new watchlist will display.

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It is always a good practice to CLEAR all the flags as soon as you are finished using them – right click on any check mark at left of list and select 'Unflag All' ...

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Notice now that ALL the stocks in this list are 'True' ... after all, that was the criteria for the list !!

By the way, if the PCF we wrote had been the type that resulted in a number value instead of True/False, we could have sorted in Tab 1 by that value and then flagged/selected only the number range we wanted.

Now you can use the watchlist to browse the charts, or select any of the other Tabs to show other information about the stocks in the list.

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	AACE 32.19	+ 7.44%		1		32.52				
	Ace Cash Express Inc	+ 2.23		1	3280	29.76				
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	Aai Pharma	-0.49	0.01	1	15449	15.32				
	AAME 3.00	0%	9000.00	1	1	3.00				
	Atlantic American C	0.00		1	2254	3.00				
	AANB 18.01	0%	9000.00	1	1	18.01				
	Abigail Adams Natl	0.00	0.01	1	4	18.01				

Note that now I have changed the 'Sorted by:' back to Ticker Symbol.

### Using a PCF in an EzScan

EzScans are a powerful tool in the TCnet system. And they are easy to set up. This is not the place for a full tutorial on using EzScan, but I will show a quick example of how to include a PCF.

Keep in mind that EzScans are a form of FILTER – that is, they select certain conditions and eliminate the rest. So we can not use a PCF that just calculates a number for the result – we can only use PCFs based on Logical Operators.

A big advantage of using EzScan is that it can create a watchlist 'automatically' instead of having to sort a watchlist manually like we did in the previous example.

Our example PCF used in this paper is not a very good example to use in an EzScan because the condition it selects could more easily be set using the slider feature of EzScan. But for this example I will continue to use it.

• To create anything 'new' in TCnet, we first click the 'New' button --

ų∰ TC	CNet	Updated thro	ugh 11:
File	WatchList	Chart Template	Reports
Clos	New Cha	art Window	N _   4 
Sort	New Eas	syScan	
1)2		sonal Criteria Form	nula
S	New Cha	art Template	

and select 'New EasyScan'

which presents the EasyScan editing window --

Editing conditions for: New I	EasyScan			
Condition		Rank	Count	
Watchlist All Items In System	•			
(Add New Condition)				
		1		
	<u>C</u> ancel		58	rve <u>A</u> s

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• The first condition to be selected is "what large group do we want to start selecting from?"

Let's select "All Stocks" like we did before --

Editing conditions for	: New EasyScan
Condition	Value Rank Count
Watchlist: All Items In	Sustam <sup>*</sup>
(Add New Condition)	🖌 All 🔇 System 🔹 Personal 🚔 Component Mindustry
	System WatchLists
	All Items In System
	<u>All Stocks</u>
	All Indexes
	All Worden Market Indicators
	All Media General Industry Averages
	All Flagged Items
	Charts with Notes
	Hard Drive Charts
	Personal WatchLists
	L 040219 2 day RSI call flate

I 1 040219 2-day RSI sell flats

click on "All Stocks"

diting conditions for:	New EasyS	can				
Condition		Value	Rank			
Watchlist: All Stocks▼				6762		
(Add New Condition)				<b>_</b>		
	$\overline{\mathcal{A}}$					
			1			-
		<u>C</u> ancel		Sa	ave <u>A</u> s	<u>S</u> ave
		<u>C</u> ancel		Sa	ave <u>A</u> s	<u>S</u> ave

and again we can see that there are 6762 stocks in this list (today).

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Next we will add our new PCF, which will 'filter' and leave only those stocks that closed today at or below \$50.00

Click on "Add New Condition" and a menu of what is available will appear – since we want to find our PCF, next click on the 'PCFs' button and then select the name of our new PCF ...

Editing conditions for: New	EasyScan			
Condition	Value Rank	Count		
¥atchlist: All Stocks▼		6762		
(Add New Condition)				
🛛 🖌 All 🔇 Syste	m 🏂 PCFs		Cancel	
004a Manning - brko	dwn after 5 days up	D 02/25/2004		
004b Manning - brik	dwn after 10 days	U 02/25/2004		
10 day movavg cro	ssing 200 day	01/30/2004		
63dReversal by hot	to 021103	02/25/2004		
AlanD 'premier pullb	ack' 030504	02/25/2004	-	
AlanDs Rolling check	#2	01/30/2004		
AlanDs Weekly Rollin	lg check	01/30/2004		
Big One		02/25/2004		
Big One 031016		02/25/2004		
BOP Net Change		01/30/2004		
Bounce off 200dma		02/23/2004		
Bullish engulfing	•	02/25/2004		
Close price less than	n or equal to \$50.	02/25/2004		
				_
	<u>C</u> ancel	Save <u>A</u> s	<u>S</u> ave	

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Only those stocks which the PCF sees as 'True' will pass through the filter.

Editing conditions for: New Easys	Scan				
Condition	Value	Rank			
Watchlist: All Stocks▼			6762		
Close price less than or equal to \$50			6272 📆		
(Add New Condition)			4		
		/	/		
	/				
	Cancel		Sa	ive <u>A</u> s	<u>S</u> ave

You can see that there are only 6272 stocks left that closed today at or under \$50.00

With EasyScan, it is very easy to add additional 'filters' to reduce the number of stocks we have to look at, and increase the likelihood that we will find stocks that are the kind we are looking for.

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Let's add one more selection criteria just for example. Volume is a very important criteria – if we buy a stock that trades very low volume, it might be next to impossible to find someone who wants to buy our shares when we decide to sell. So let's look for very 'liquid' stocks that had more than one million shares traded *today*. First we need to add this New Condition --

Editing conditions for: New Easy	/Scan			
Condition	Value Rank	Count		
Watchlist: All Stocks▼		6762		
Close price less than or equal to \$5	50.	6272 📆		
(Add Neve Condition) A All System	n 🏂 PCFs		Cancel	1
Relative Strength 1-Y	r (vs SP-500)			1
Revenue Growth Rat	e Last 4 Qtr			
Sales (\$Millions) 1-Yr				
Sales Growth Rate 5-	Yr			
Stochastic Short Terr	n- H			
Volatility				
Volume (Dollars) 1-D	ay- H			
Volume (Dollars) 5-D	ay- H			
Volume (Dollars) 90-E	Day			
Volume 1-Day- H				
Volume 5-Day- H				7
Volume 90-Day			-	
Volume Surge 5-Day-	- H			
		_		1
	<u>C</u> ancel	Save <u>A</u>	s <u>S</u> av	ve

When we select "Volume 1-Day - H" we'll next have to make a selection about the actual value of the volume ...

Editing conditions for: New	EasyScan							
	Value	Rank	Count		Volu	me 1-Day-	Н	
Watchlist: All Stocks▼			6762 6272 🕷			_		
☑ Close price less than or eq ■ Volume 1-Day- H	9975 to Max	80 to 90	584 📆					4
(Add New Condition)	3373 10 10100	03 (0 33	304 00		12031.5		90	-
(								
					3470.5		75	
					704.5		50	
					86.5		25	
					6		10	
								N
					C Val	ue 🖲 Ra	ank	-~3
	Canad	. 1			Г			
	<u>C</u> ance	31		ve <u>A</u>	<u>v</u> s	<u>S</u> ave	;	

The screen above is what we see after selecting the criteria "Volume 1-Day - H" ... the slider at the right side can be adjusted to select a 'Value' close to one million and above.

CAUTION: the current version of TCnet has a flaw in this screen so that if you try to actually slide the blue area inside the 'thermometer" the cursor (mouse) will be trapped inside the blue/white area and you will not be able to continue unless you crash TCnet and restart it, and then restart building the EzScan. Solution – use the arrow buttons on the far right side (the cursor appears over one in the screen above).

Now you can see that by selecting only stocks with more than 997500 shares of volume today, our selected stocks have dropped from 6272 to 584 - a significant reduction.

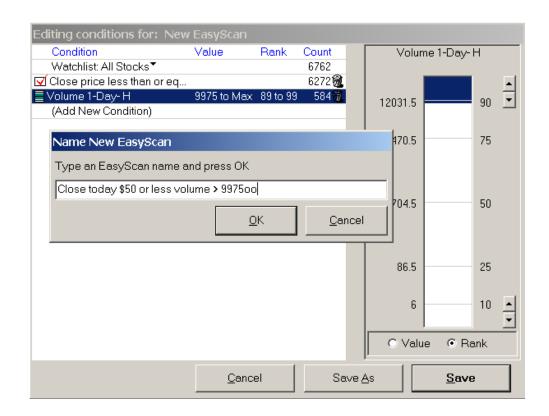
NOTE: remember that the values for volume are always shown without the last two zeros. That is why I always write the volume as done above, as 997500 – the last two zeros are small and remind you they 'don't count' in TCnet.

When you have selected all your filter conditions and set the values for them, click the 'Save' button.

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Since we have not yet selected a name for this EasyScan, now is the time to do that – type in the desired name in the text window and click OK.



When you have saved the EasyScan, it will be available as a Watchlist !!

r <sup>dl</sup> TCNet Updated through 12:37:50	AM ET - Streaming Real Time	2
File WatchList Chart Template Reports Tool	s Databank Help	
And And And And And And And And And	🖸 Profile 📲 Clubs 🌵 Alerts	😴 Share 🛛 🕾 TCMail 🛛 🕲 Upda
A - Agilent Technologies Inc vs DJ-20		A vs QQQ
🔺 All 📀 System 🔹 Personal 🕖 Scans	Component MIndustry	📑 Shared 🔻
All stocks \$1 to \$50 with vol. > 2700cc	15	502 🗞 🎯
All stocks \$1 to \$50 with vol. > 3700od	13	327 💝 ab 🕅 🔞
All stocks \$1 to \$50 with vol. $> 6700ob$	8	342 💝 ob 🕅 🔞
Big One - BUYS		11 💝տին 🔞
Big One - SHORTS	$\sim$	42 🗞 🔞
Big One 031016 - BUYS	$\sim$	5 💝 տեմ 🔞
Big One 031016 - SHORTS		26 💝 ob 🕅 🔞
Close today \$50 <u>or</u> less volume > 997500	5	i84 💝 ob 🕅 🔞
		i∩@i

To locate the new EzScan watehlist, click on the EzScan icon at top of the page, then click the 'Scans' button in the watchlist menu, scroll to find the name of the new watchlist, and click once on the watchlist name.

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The new watchlist will appear and you can sort it or do anything with it that you can do with any other watchlist – BUT it has one very important and useful feature, because it is an EzScan watchlist ...

EzScan watchlists are 'dynamic' – that is, they will change by themselves.

The next time you update closing price data, the number of stocks and which ones they are will change to meet the criteria set up in the EzScan -- that is, \$50 or less and volume more than 997500.

ր <sup>մի</sup> TCNet	Updated	d through 1	.2:47:25	AM ET	- Strean	ning Real Ti	
File WatchL	ist Chart Tem	plate Repo	orts Tool	s Datał	bank He	lp	
@New 🖓	lump 🛛 <b>1</b> Back	• • •	<i>∲</i> <b>f</b> ∞	🕵 Profil	e 🚊 Clu	bs 🚦 Alerts	
Close toda	y \$50 or less	s volume >	> 9975oc	o- ⊗			
Sorted by: Ticker Symbol (02/25/04) - abc., 1							
1 2 3 4 5 6 7 8 9 10							
Symbol			Ask-RT	Ask V	Bid Ti	High [	
Company		Net-RT				Low-RT E	
<b>A</b>	34.20	0%	35.20			34.20	
Agilent T	echnologie	0.00	33.30	4	20208	34.20	
AA	37.17	0%	37.25	10		37.17	
Alcoa Inc	:	0.00	36.72	12	36317	37.17	
AAC	0.78	0%	0.82	20		0.78	
Ableauct	ions.Com Inc	0.00	0.74	10	5727	0.78	
AAII	15.49	0%	9000.00	1	$\downarrow$	15.49	
🔹 Aai Phari	na	0.00	0.01	1	15449	15.49	
AAPL	23.11	0%	32.74	1	个	23.11	
Apple Co	mputer Inc	0.00	13.48	1	35429	23.11	
ABGX	15.02	0%	25.11	1	$\downarrow$	15.02	
Abgenix	nc	0.00	5.05	1	15123	15.02	
ABS	24.86	0%	24.86	1		24.86	
Albertsor	n's Inc	0.00	24.00		21120	24.86	
ABT	43.05	0%	43.95	2		43.05	
	aboratories	0.00	42.95	1	38189	43.05	
ABX	20.32	0%	20.48	2		20.32	
Barrick G	iold Corp	0.00	20.20		29409	20.32	
ACG	8.56	0%	25.98	1		8.56	
Acm Inco	me Fund	0.00	0.01	1	7806	8.56	
ACN	23.09	0%	23.49			23.09	
Accentur		0.00	22.86		21367	23.09	
ACS	48.89		49.68			48.89	
	Computer	0.00	0.00		14865		
ADBE	37.71	0%	56.10		个	37.71	
	ystems Inc	0.00	19.24		45928		
ADCT	2.99		9000.00	1	$\downarrow$	2.99	
Adc Tele	communic	0.00	0.01	1	155845	2.99	
A: 1 of 584 Item	is in WatchList						
🕵 Notes 🝷	💷, News 🧯	19				💝 Write	
	0.10110						

### Brainpower and Concepts for Creating a PCF

#### **Important Steps to creating a PCF**

- Know what you are trying to find.
- Sketch the chart pattern you want to find or work with.
- Label all the important points on the sketch.
- Label any calculations you will need to make.
- Build your PCF step-by-step, in little pieces, like building blocks.

#### Know what you are trying to find

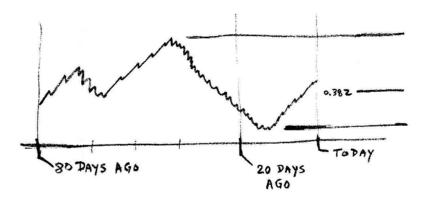
You cannot find your way to Santa's Workshop unless you know that you are going to the North Pole. Likewise, you cannot write a PCF unless you know what you want it to do.

For the purpose of this paper, let's decide that we want to find all stocks that have -

- dipped to a minimum price within the last 20 days
- had a previous peak price within the last 100 days, but <u>not</u> in the last 20 days
- recovered, after the dip, by 0.382 of the distance between the peak and dip

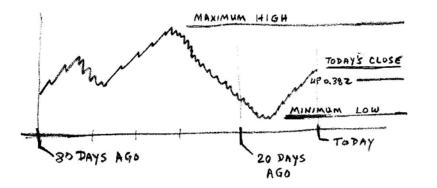
#### Sketch the chart pattern you want to work with

Here is what a sketch of these conditions would look like -

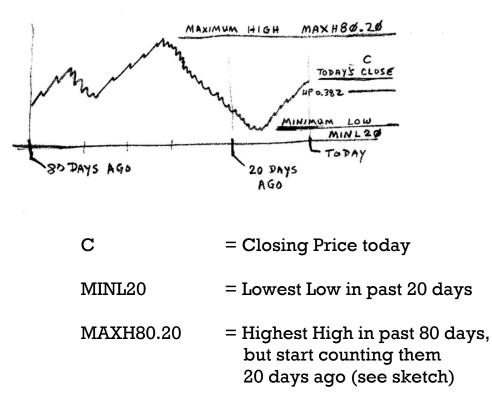


### Label all important points on the sketch

The first stage of labeling the sketch would show in words the important points -



But then we should also label these points with the PCF language 'code' we will use -

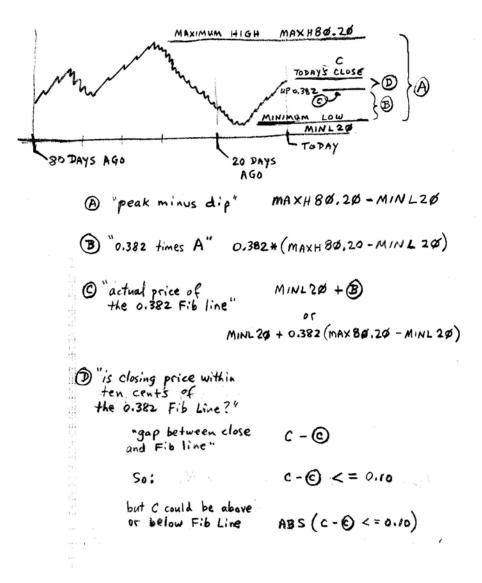


#### Label any calculations you will need to make

At this point, all this may seem like a lot of work. It is!! But it is the best way to keep track of what you are doing, to clearly see how things relate to each other, and to see what you need to calculate and how.

Since we want to know if today's closing price is close to the 0.382 Fib line up from the bottom of the dip to the top of the peak, we will need to calculate the total distance from dip to peak, and then calculate 0.382 of that distance, and then add the 0.382 distance to the value at the bottom of the dip.

We can show these calculations on the sketch like this -



For simplicity above, I used the symbol  $\odot$  instead of the pcf language symbols on the sketch. To put together the final PCF, let's put the "building blocks" together –

C - (MINL20 + 0.382 \* (MAX80.20 - MINL20)) < = 0.10

However, as mentioned on the sketch page, the closing price C might be above OR below the Fib. line, so the left part above could be positive or negative – but the 0.10 is always positive. We can solve this problem by using the "absolute value" (which simply removes the minus sign) –

#### ABS (C - ( MINL20 + 0.382 \* ( MAX80.20 - MINL20) ) ) < = 0.10

Because we used some "logical operators" in this PCF (the < and = ), the result of the PCF won't give us a number answer – it will give us either a TRUE or FALSE answer.

If a watchlist is sorted using this PCF, we'll be able to see all the stocks that meet all the conditions we set up.

#### Now for some "homework"

Now see if you can reverse the conditions and create another PCF to detect stocks where there was a peak in the last 20 days and a dip in the 80 days before that, and the closing price is within ten cents of the Fib line 0.382 <u>down</u> from the peak value.