

Jack Schwager's Guide to
Winning *with* Automated
Trading Systems

Course Manual

Jack Schwager

***An Overview of
Trading Systems -
And Why You Should
Use Them***

***The Most Important Lesson
of the Market Wizards***

Benefits of a Mechanical Trading System

Six basic advantages of trading systems:

- Eliminates emotion
- Eliminates need for constant decision making
- Ensures consistency of approach
- Risk control
- Same approach can be applied to many markets
- Approach can be tested for statistical reliability

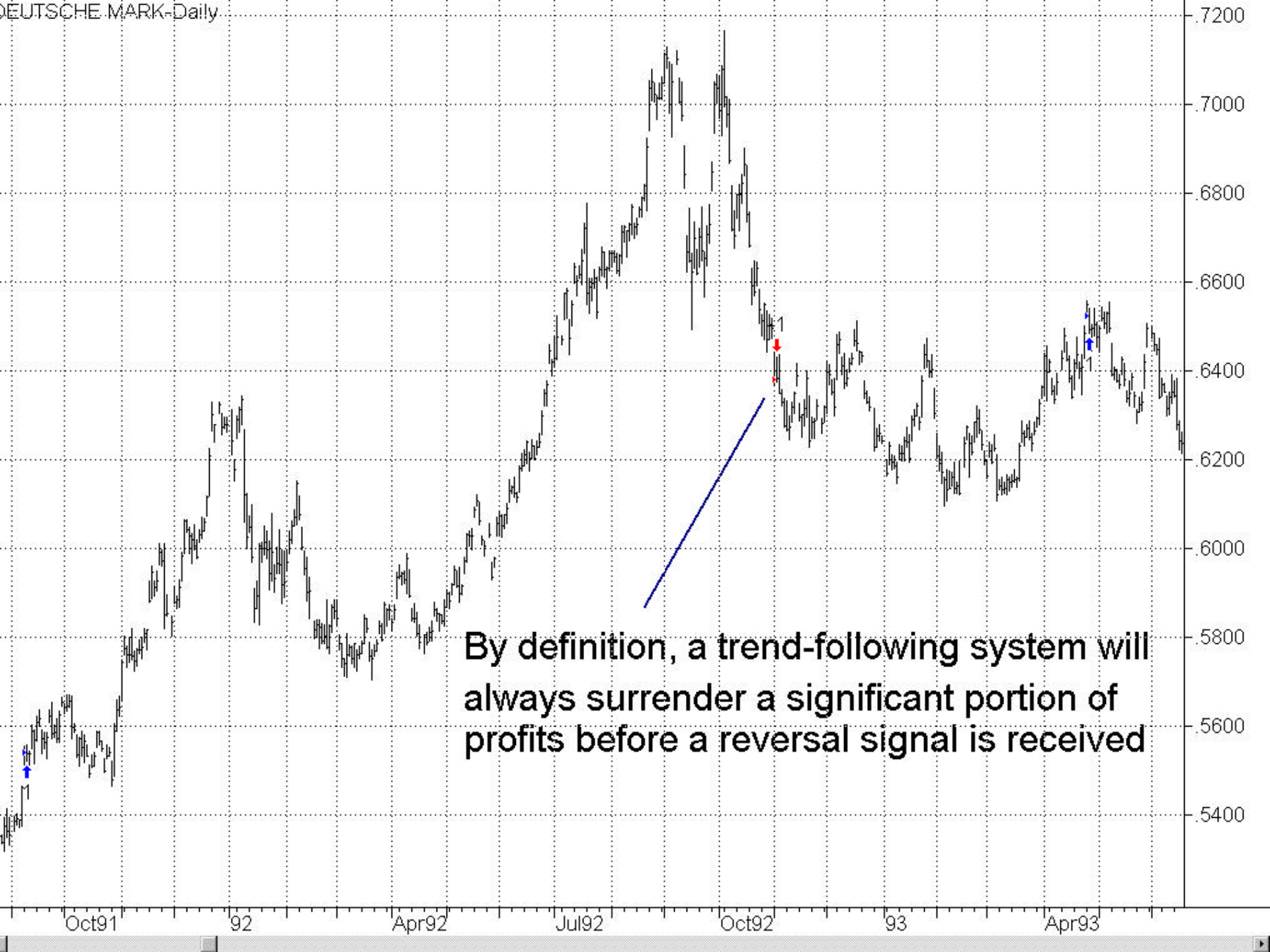
***Defining and
Illustrating the
Leading Types of
Trading Systems***

80 Day Breakout System

Close lower than lowest low during past 80 days

System works very well when there are sustained trends





By definition, a trend-following system will always surrender a significant portion of profits before a reversal signal is received

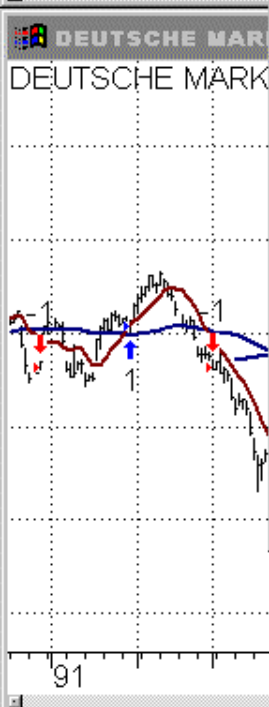
Trend-following systems will witness strings of whipsaw losses during choppy, trading range type markets





Losing period followed by large gain as major trend emerges

80 Day Breakout

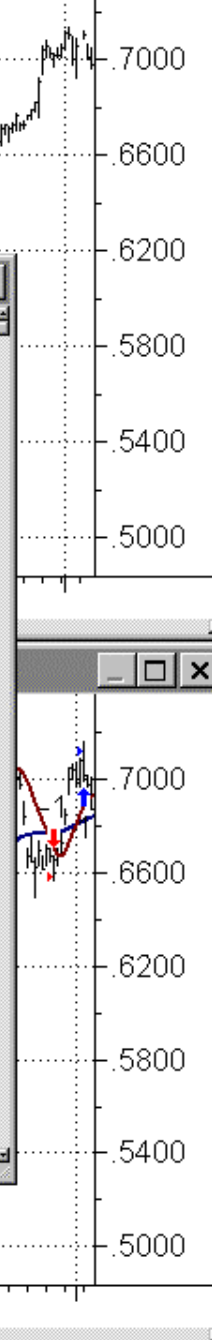


System Report: Performance Summary

jsbreakout DEUTSCHE MARK-Daily 01/02/90 - 12/31/97

Performance Summary: All Trades

Total net profit	\$ 20275.00	Open position P/L	\$ 0.00
Gross profit	\$ 44300.00	Gross loss	\$ -24025.00
Total # of trades	11	Percent profitable	45%
Number winning trades	5	Number losing trades	6
Largest winning trade	\$ 15725.00	Largest losing trade	\$ -5662.50
Average winning trade	\$ 8860.00	Average losing trade	\$ -4004.17
Ratio avg win/avg loss	2.21	Avg trade(win & loss)	\$ 1843.18
Max consec. winners	3	Max consec. losers	5
Avg # bars in winners	311	Avg # bars in losers	63
Max intraday drawdown	\$ -22212.50	Max # contracts held	1
Profit factor	1.84	Return on account	91%
Account size required	\$ 22212.50		



CALCULATING A MOVING AVERAGE

Day	Closing Price	3-Day Moving Avg.	10-Day Moving Avg.	Difference	Signal
1	8050				
2	8100				
3	8190	8113.3			
4	8140	8143.3			
5	8310	8213.3			
6	8260	8236.7			
7	8220	8263.3			
8	8310	8263.3			
9	8440	8323.3			
10	8520	8423.3	8254.0	169.3	
11	8460	8473.3	8295.0	178.3	
12	8390	8456.7	8324.0	132.7	
13	8440	8430.0	8349.0	81.0	
14	8520	8450.0	8387.0	63.0	
15	8610	8523.3	8417.0	106.3	
16	8540	8556.7	8445.0	111.7	
17	8410	8520.0	8464.0	56.0	
18	8350	8433.3	8468.0	-34.7	SELL
19	8390	8383.3	8463.0	-79.7	
20	8310	8350.0	8442.0	-92.0	
21	8280	8326.7	8424.0	-97.3	
22	8420	8336.7	8427.0	-90.3	
23	8510	8403.3	8434.0	-30.7	
24	8620	8516.7	8444.0	72.7	BUY

Crossover Moving Average (10/50)

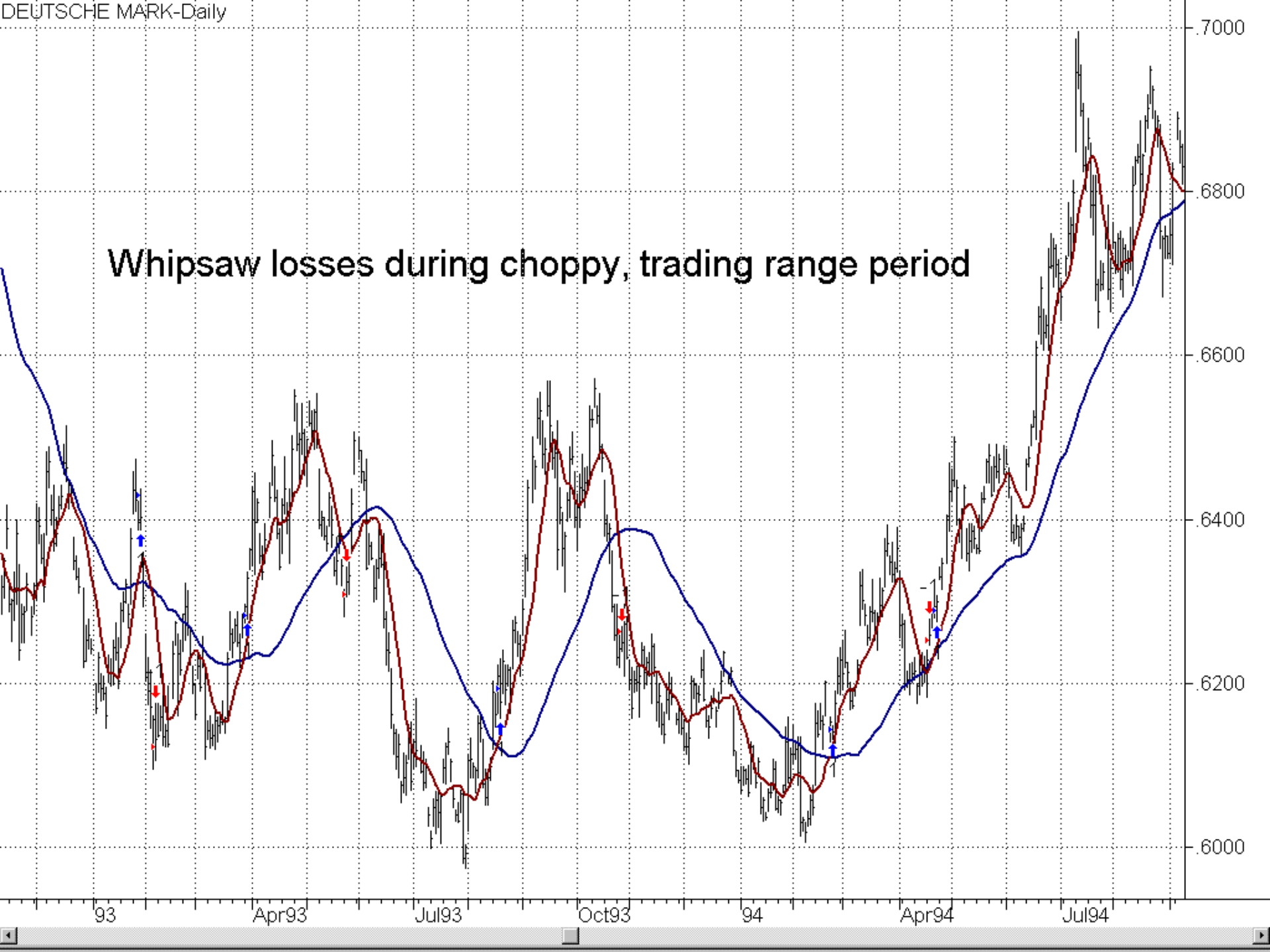


Works well in trending period



More timely
entry here

but added whipsaw here



Whipsaw losses during choppy, trading range period



Excellent signals during trending period

94

Apr94

Jul94

Oct94

95

Apr95

Jul95

6000

6200

6400

6600

6800

7000

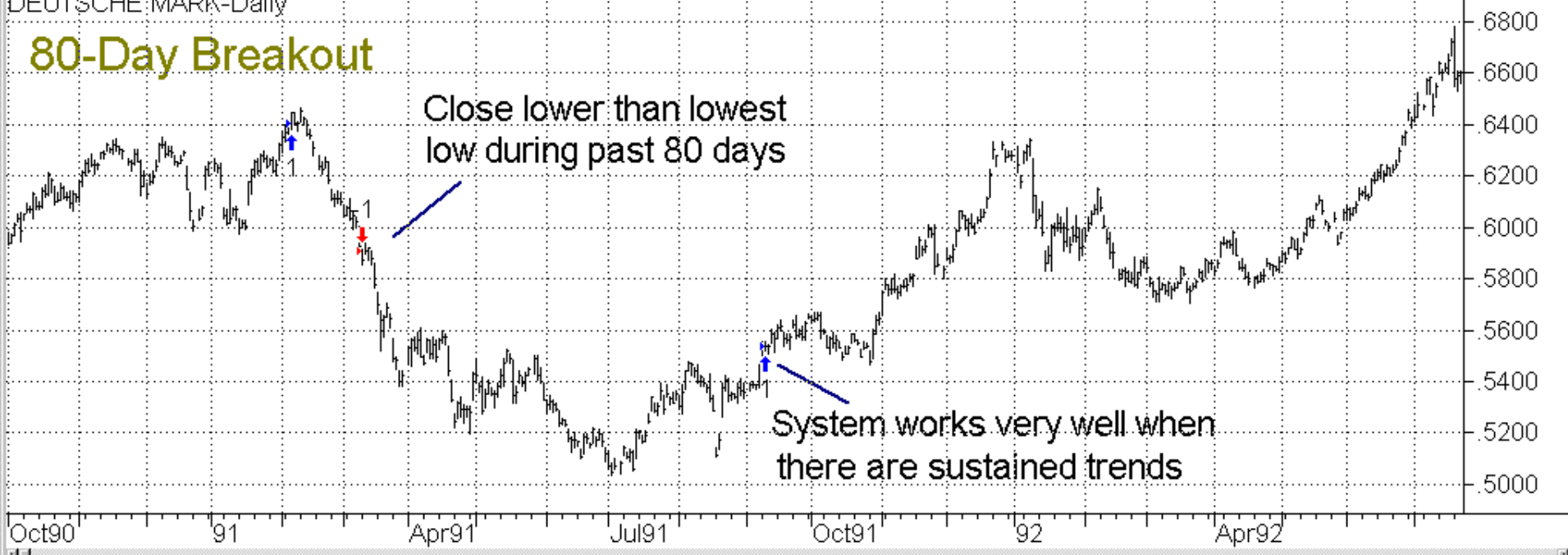
7200

7400

7600

7800

80-Day Breakout



Crossover Moving Average (10/50)



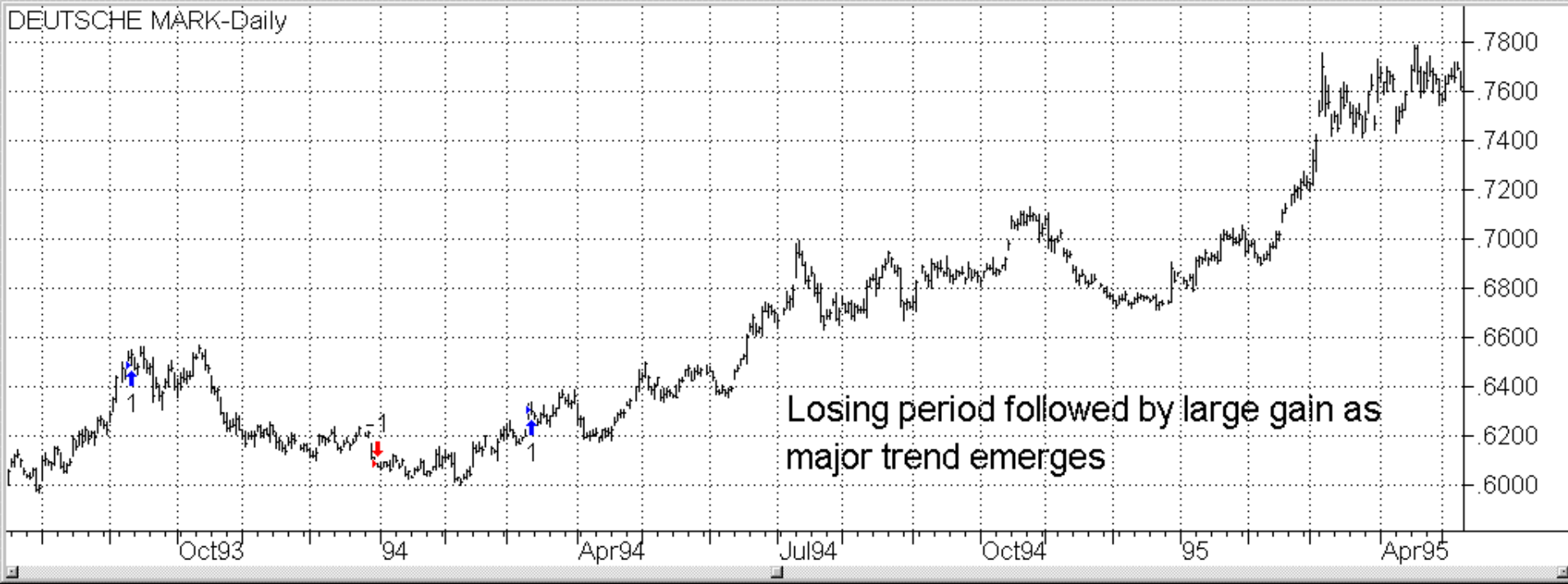
DEUTSCHE MARK-Daily



DEUTSCHE MARK-Daily



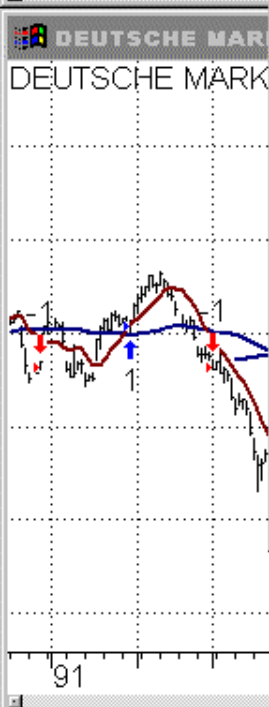
DEUTSCHE MARK-Daily



DEUTSCHE MARK-Daily



80 Day Breakout

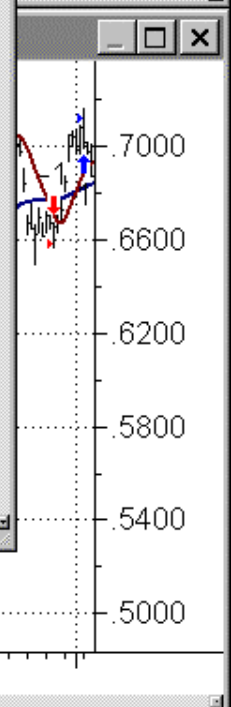
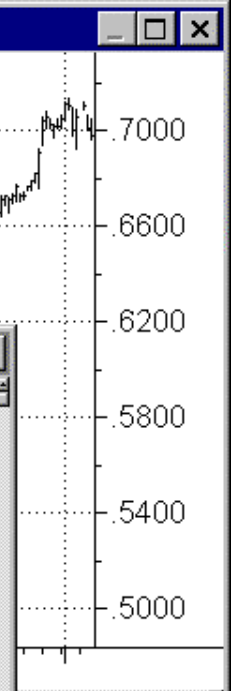


System Report: Performance Summary

jsbreakout DEUTSCHE MARK-Daily 01/02/90 - 12/31/97

Performance Summary: All Trades

Total net profit	\$ 20275.00	Open position P/L	\$ 0.00
Gross profit	\$ 44300.00	Gross loss	\$ -24025.00
Total # of trades	11	Percent profitable	45%
Number winning trades	5	Number losing trades	6
Largest winning trade	\$ 15725.00	Largest losing trade	\$ -5662.50
Average winning trade	\$ 8860.00	Average losing trade	\$ -4004.17
Ratio avg win/avg loss	2.21	Avg trade(win & loss)	\$ 1843.18
Max consec. winners	3	Max consec. losers	5
Avg # bars in winners	311	Avg # bars in losers	63
Max intraday drawdown	\$ -22212.50	Max # contracts held	1
Profit factor	1.84	Return on account	91%
Account size required	\$ 22212.50		

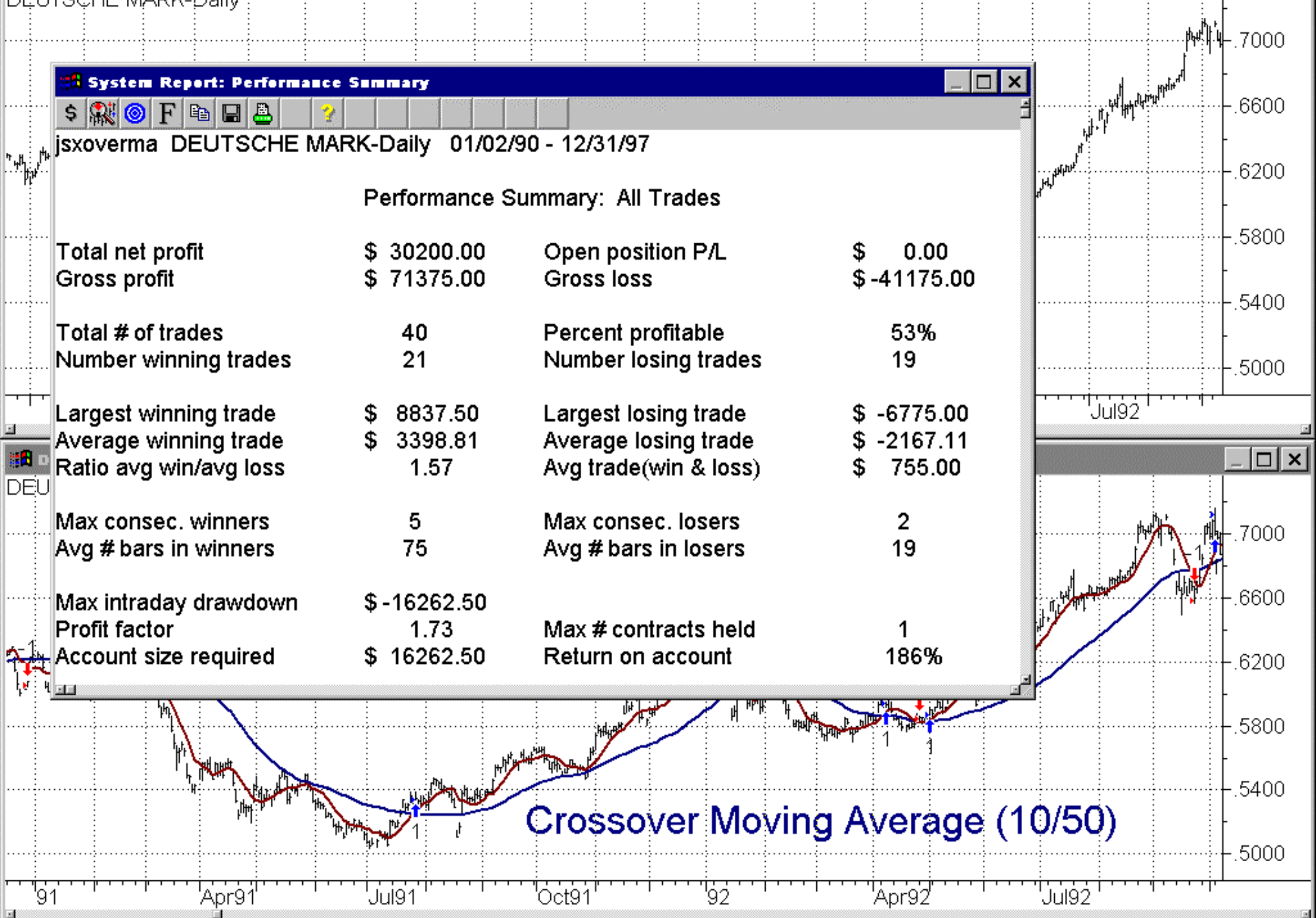


System Report: Performance Summary

jsxoverma DEUTSCHE MARK-Daily 01/02/90 - 12/31/97

Performance Summary: All Trades

Total net profit	\$ 30200.00	Open position P/L	\$ 0.00
Gross profit	\$ 71375.00	Gross loss	\$ -41175.00
Total # of trades	40	Percent profitable	53%
Number winning trades	21	Number losing trades	19
Largest winning trade	\$ 8837.50	Largest losing trade	\$ -6775.00
Average winning trade	\$ 3398.81	Average losing trade	\$ -2167.11
Ratio avg win/avg loss	1.57	Avg trade(win & loss)	\$ 755.00
Max consec. winners	5	Max consec. losers	2
Avg # bars in winners	75	Avg # bars in losers	19
Max intraday drawdown	\$ -16262.50	Max # contracts held	1
Profit factor	1.73	Return on account	186%
Account size required	\$ 16262.50		



DEU

Allied: Signal Inc-Daily

Breakout (N=80)

Because of strong upward bias,
buys tend to do very well

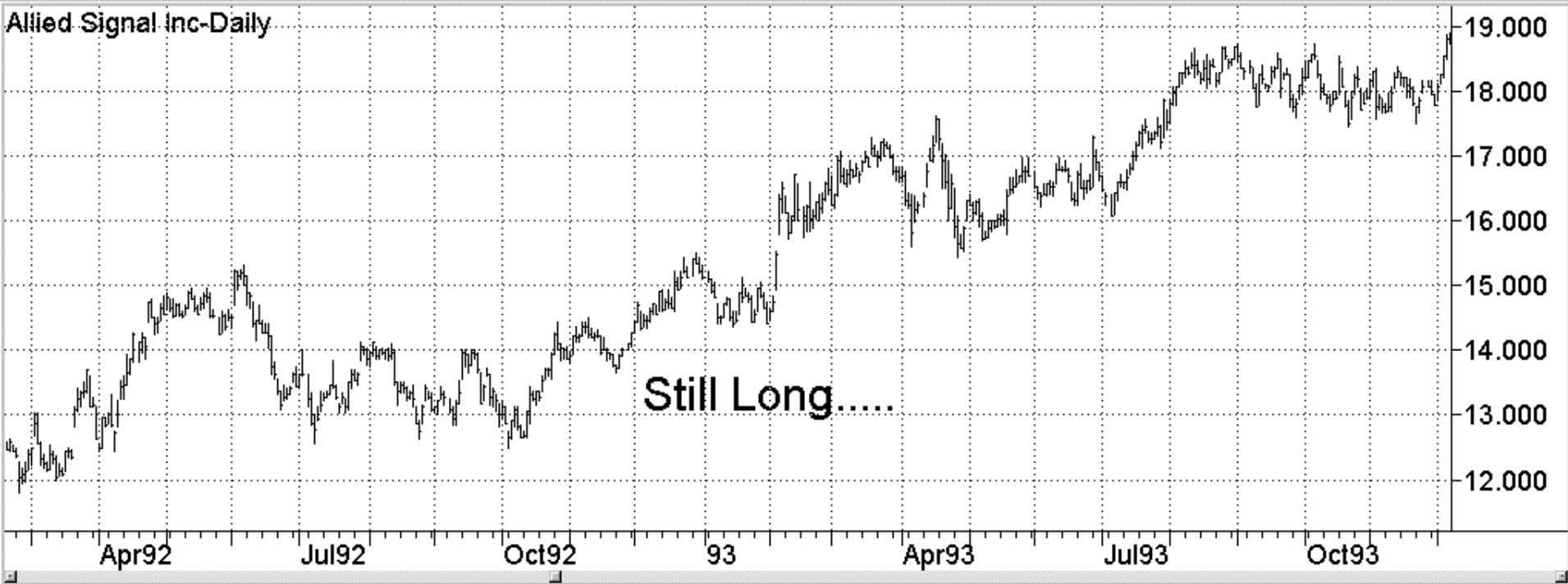


Allied: Signal Inc-Daily

Breakout (N=80)--Buys Only



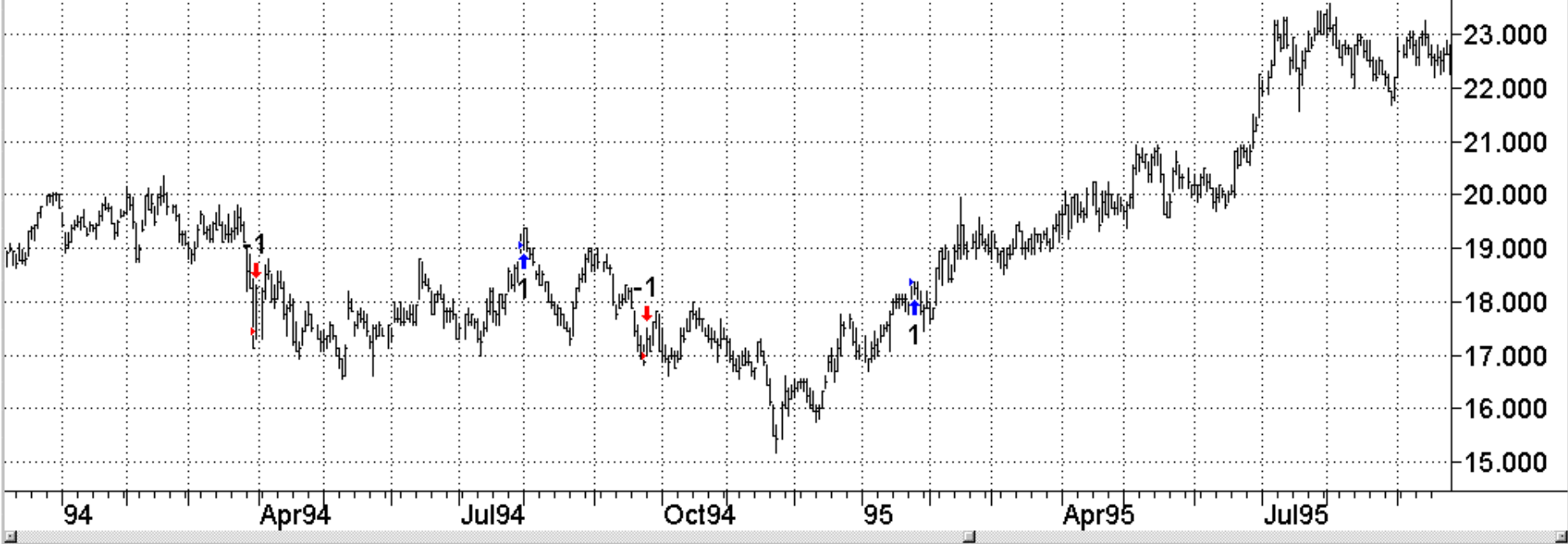
Allied Signal Inc-Daily



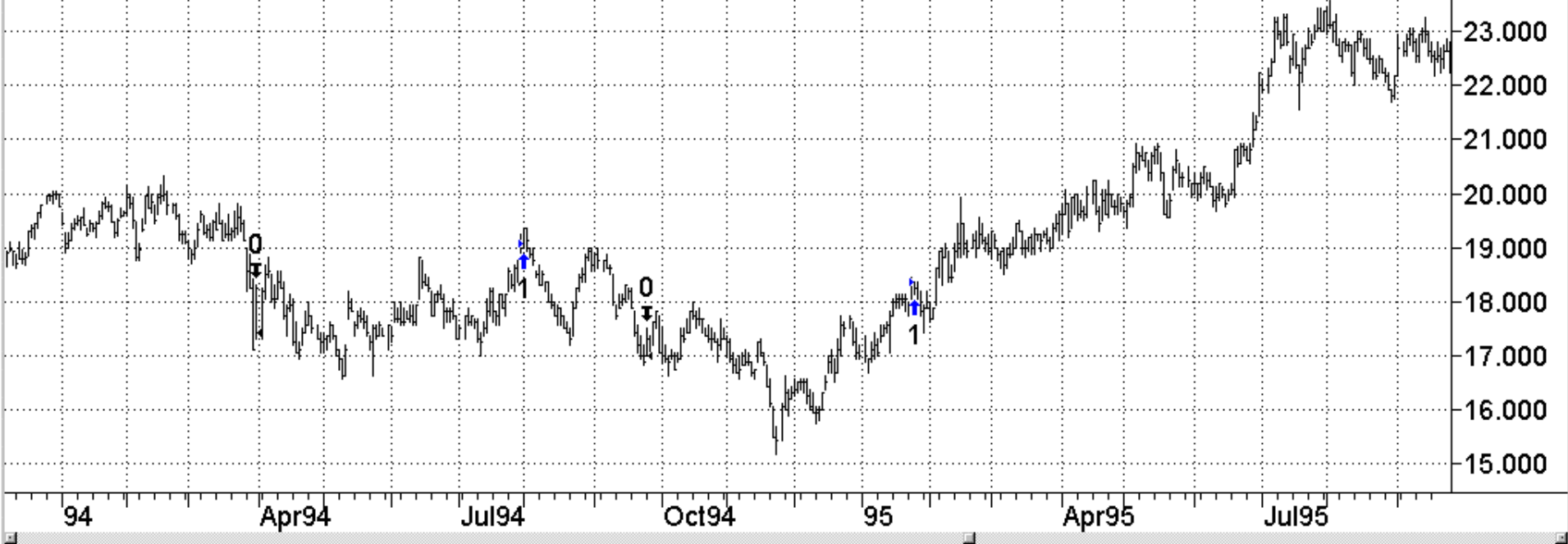
Allied Signal Inc-Daily



Allied Signal Inc-Daily



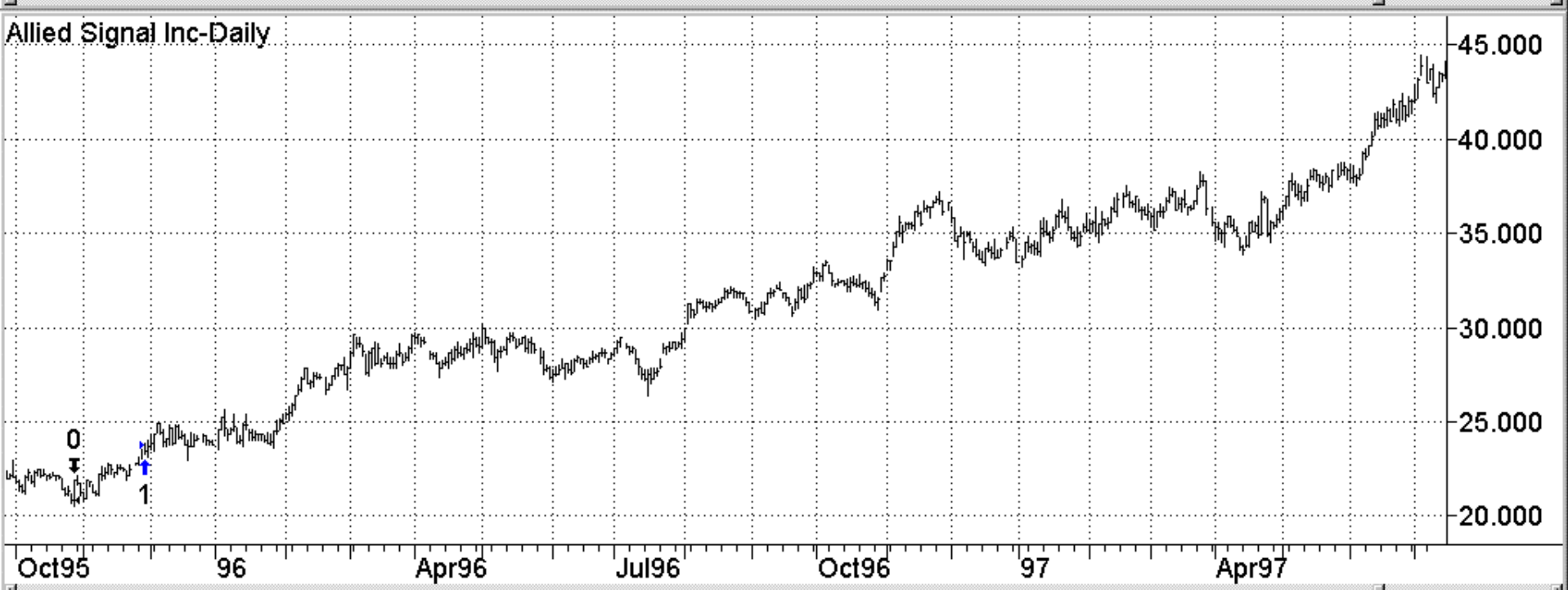
Allied Signal Inc-Daily



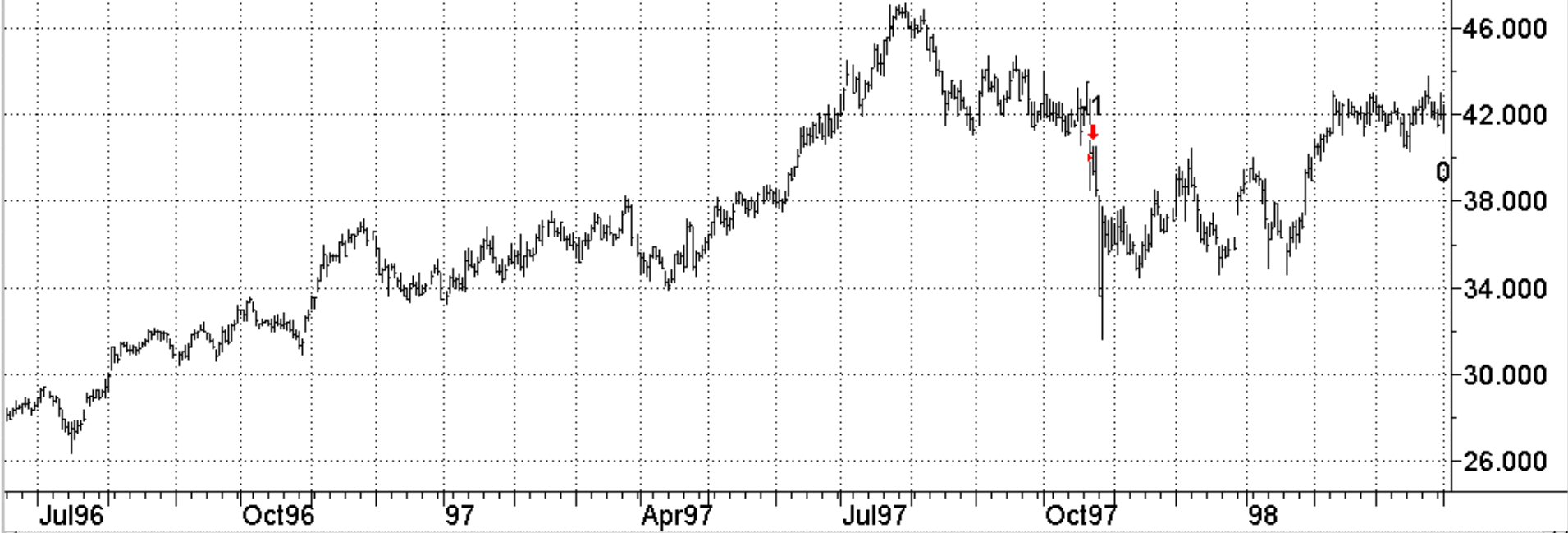
Allied Signal Inc-Daily



Allied Signal Inc-Daily



Allied Signal Inc-Daily



Allied Signal Inc-Daily



System Report: Performance Summary

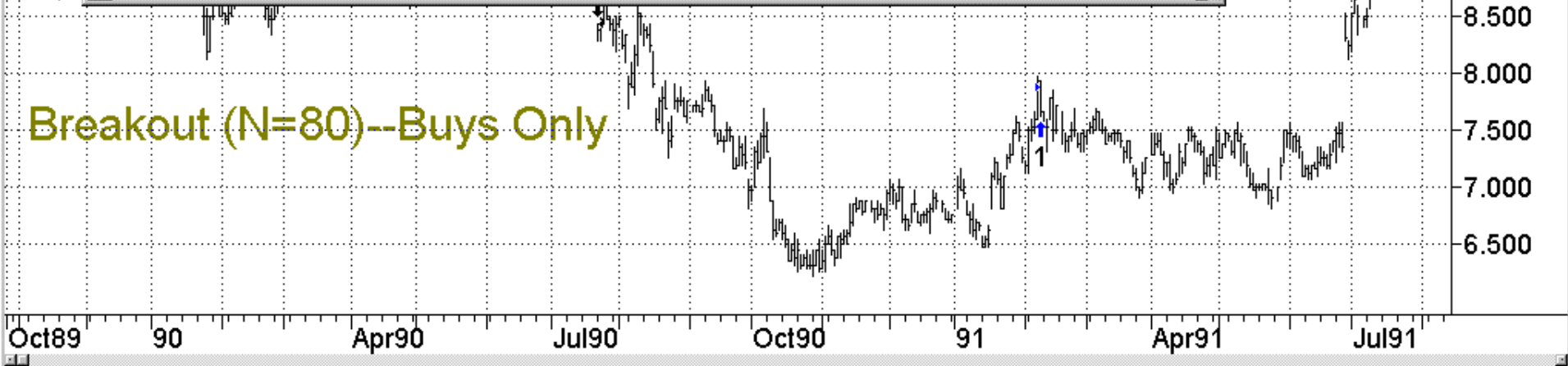
jsbreakoutStock1 Allied Signal Inc-Daily 10/26/89 - 04/01/98

Performance Summary: All Trades

Total net profit	\$ 24.03	Open position P/L	\$ 0.00
Gross profit	\$ 27.50	Gross loss	\$ -3.47
Total # of trades	5	Percent profitable	60%
Number winning trades	3	Number losing trades	2
Largest winning trade	\$ 16.00	Largest losing trade	\$ -2.31
Average winning trade	\$ 9.17	Average losing trade	\$ -1.73
Ratio avg win/avg loss	5.29	Avg trade(win & loss)	\$ 4.81
Max consec. winners	2	Max consec. losers	1
Avg # bars in winners	489	Avg # bars in losers	43
Max intraday drawdown	\$ -3.25	Max # contracts held	1
Profit factor	7.93	Return on account	739%
Account size required	\$ 3.25		



Breakout (N=80)--Buys Only



Breakout (N=80)

Oct89 90

Oct89 90

System Report: Performance Summary

jsbreakout Allied Signal Inc-Daily 10/26/89 - 04/01/98

Performance Summary: Long Trades

Total net profit	\$ 24.03	Open position P/L	\$ 0.00
Gross profit	\$ 27.50	Gross loss	\$ -3.47
Total # of trades	5	Percent profitable	60%
Number winning trades	3	Number losing trades	2
Largest winning trade	\$ 16.00	Largest losing trade	\$ -2.31
Average winning trade	\$ 9.17	Average losing trade	\$ -1.73
Ratio avg win/avg loss	5.29	Avg trade(win & loss)	\$ 4.81
Max consec. winners	2	Max consec. losers	1
Avg # bars in winners	489	Avg # bars in losers	43
Max intraday drawdown	\$ -3.25		
Profit factor	7.93	Max # contracts held	1
Account size required	\$ 3.25	Return on account	739%

10.000
9.500
9.000
8.500
8.000
7.500
7.000
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91
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7.500
7.000
6.500

Apr90

Jul90

Oct90

91

Apr91

Jul91

***An Alternative
Approach -
Counter-Trend
Systems***



True Range

True Range

Mar90

Apr90

May90

530.0
520.0
510.0
500.0
490.0
480.0

ADTR Band Counter-trend (60-day; $k = 3$)



First signal delayed because testing begins on day 126

System Equity



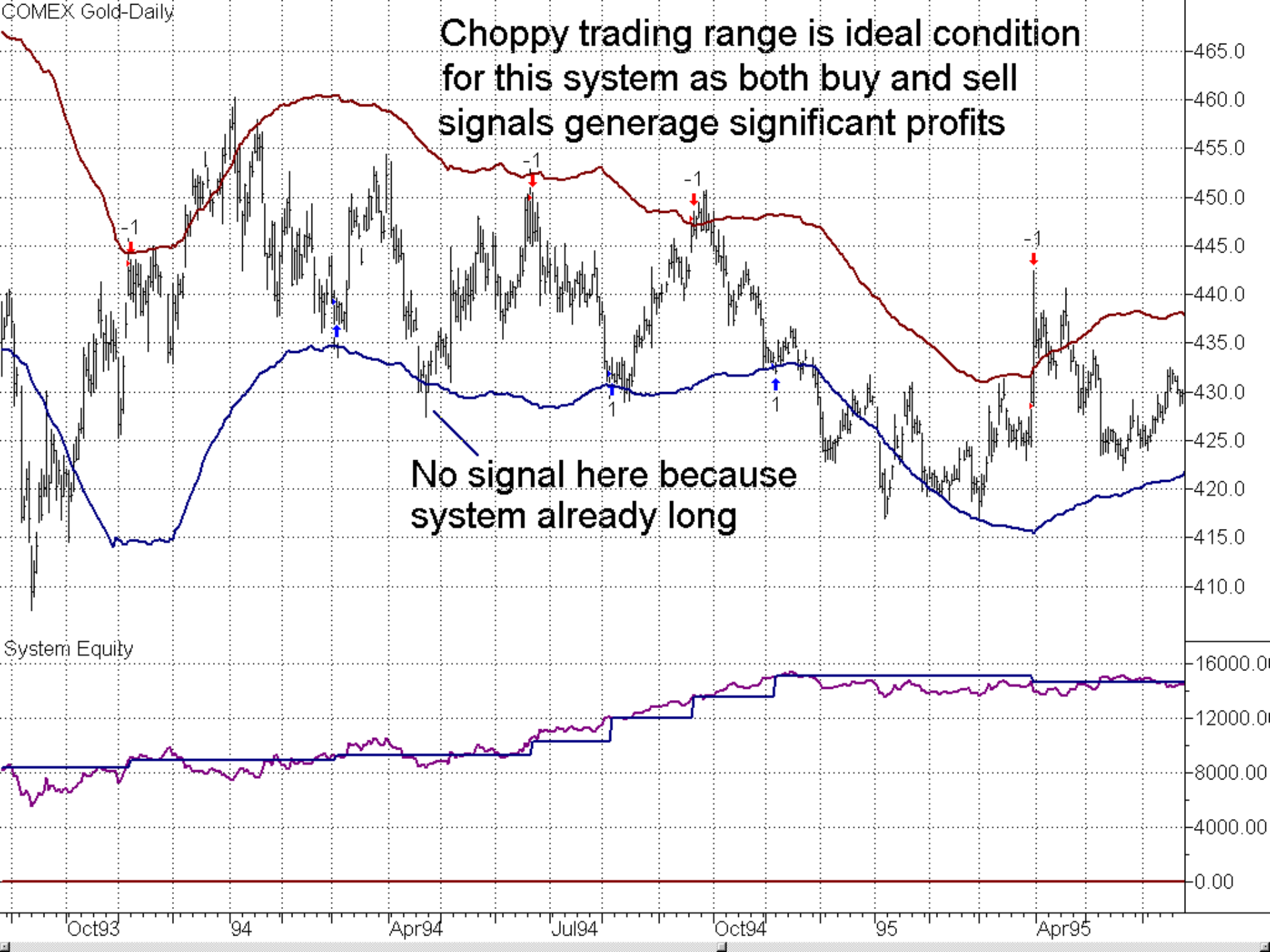


Sharp trend leads to large loss

Buy majority of maximum loss on trade recovered by exit

System Equity

Choppy trading range is ideal condition for this system as both buy and sell signals generage significant profits

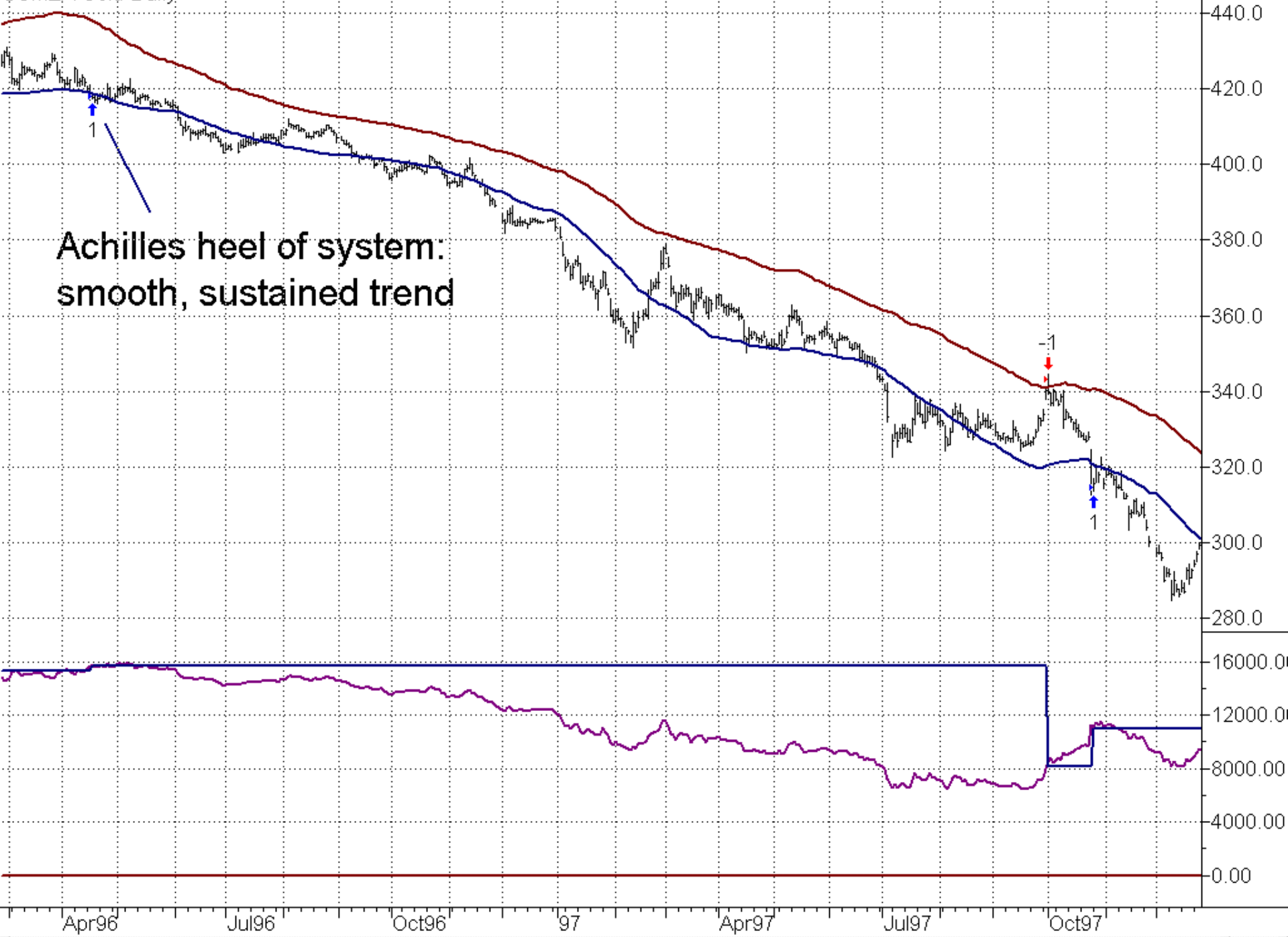


465.0
460.0
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445.0
440.0
435.0
430.0
425.0
420.0
415.0
410.0
16000.00
12000.00
8000.00
4000.00
0.00

No signal here because system already long

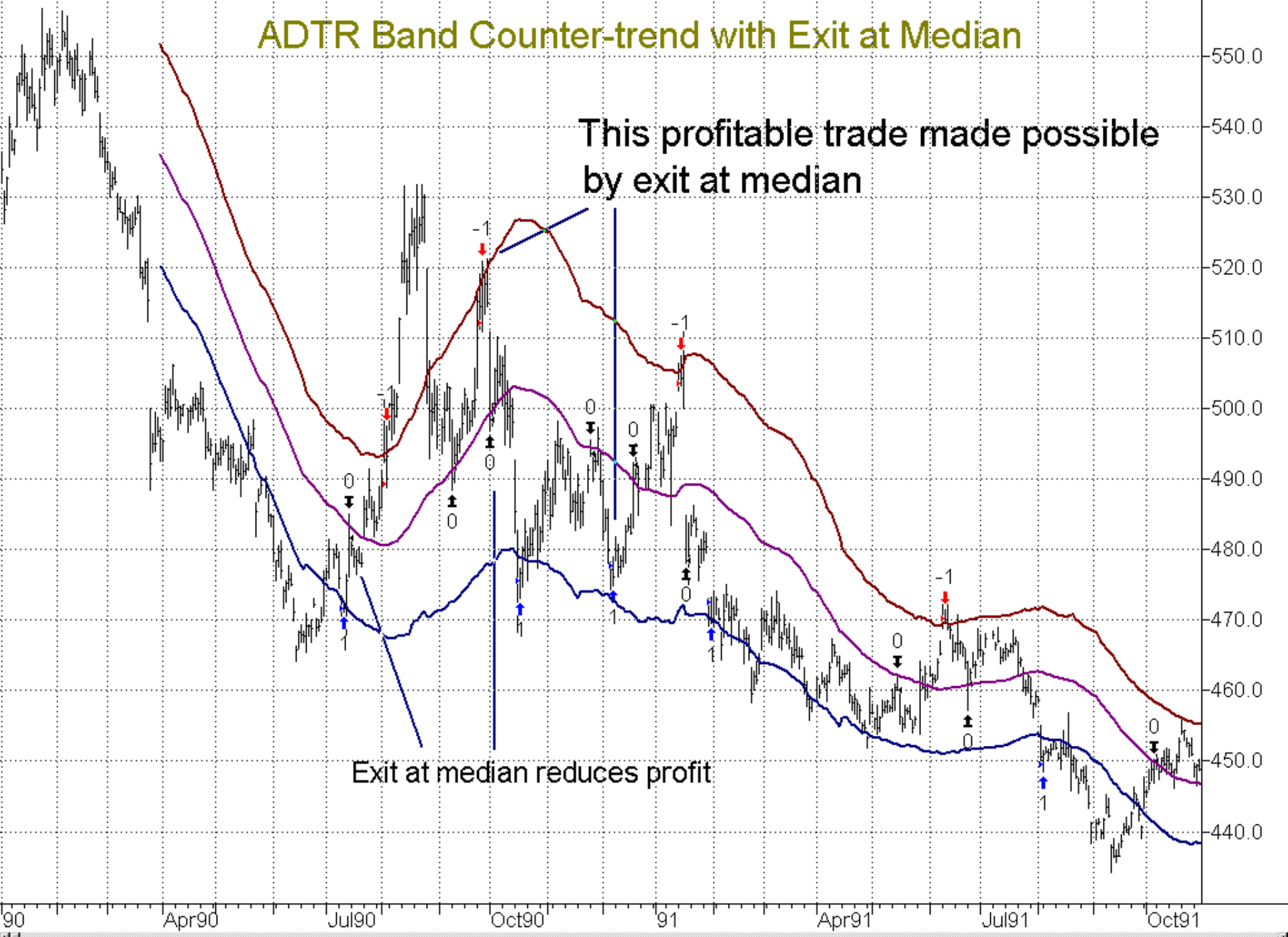
System Equity

Oct93 94 Apr94 Jul94 Oct94 95 Apr95



Achilles heel of system.
smooth, sustained trend

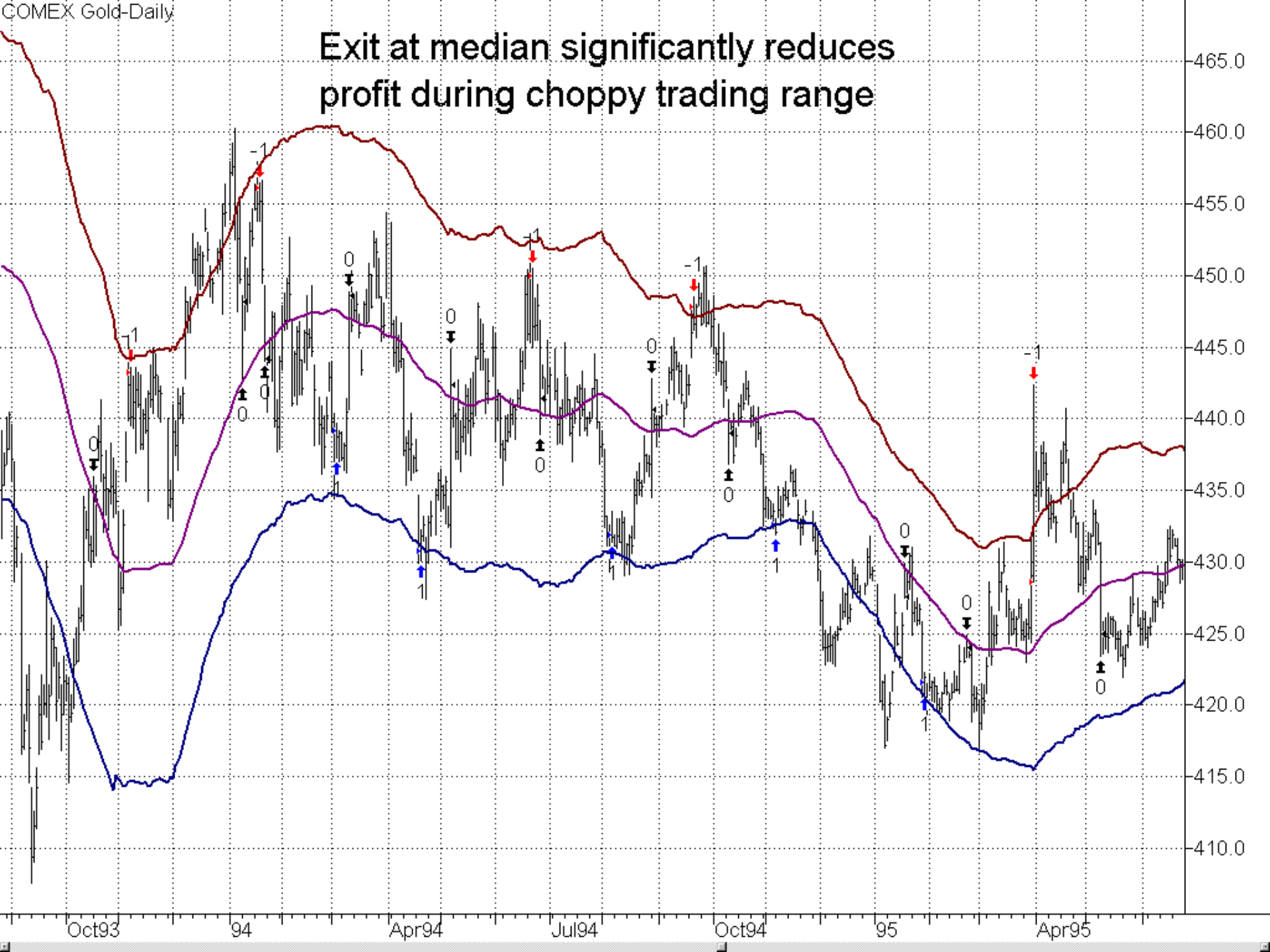
ADTR Band Counter-trend with Exit at Median



This profitable trade made possible by exit at median

Exit at median reduces profit

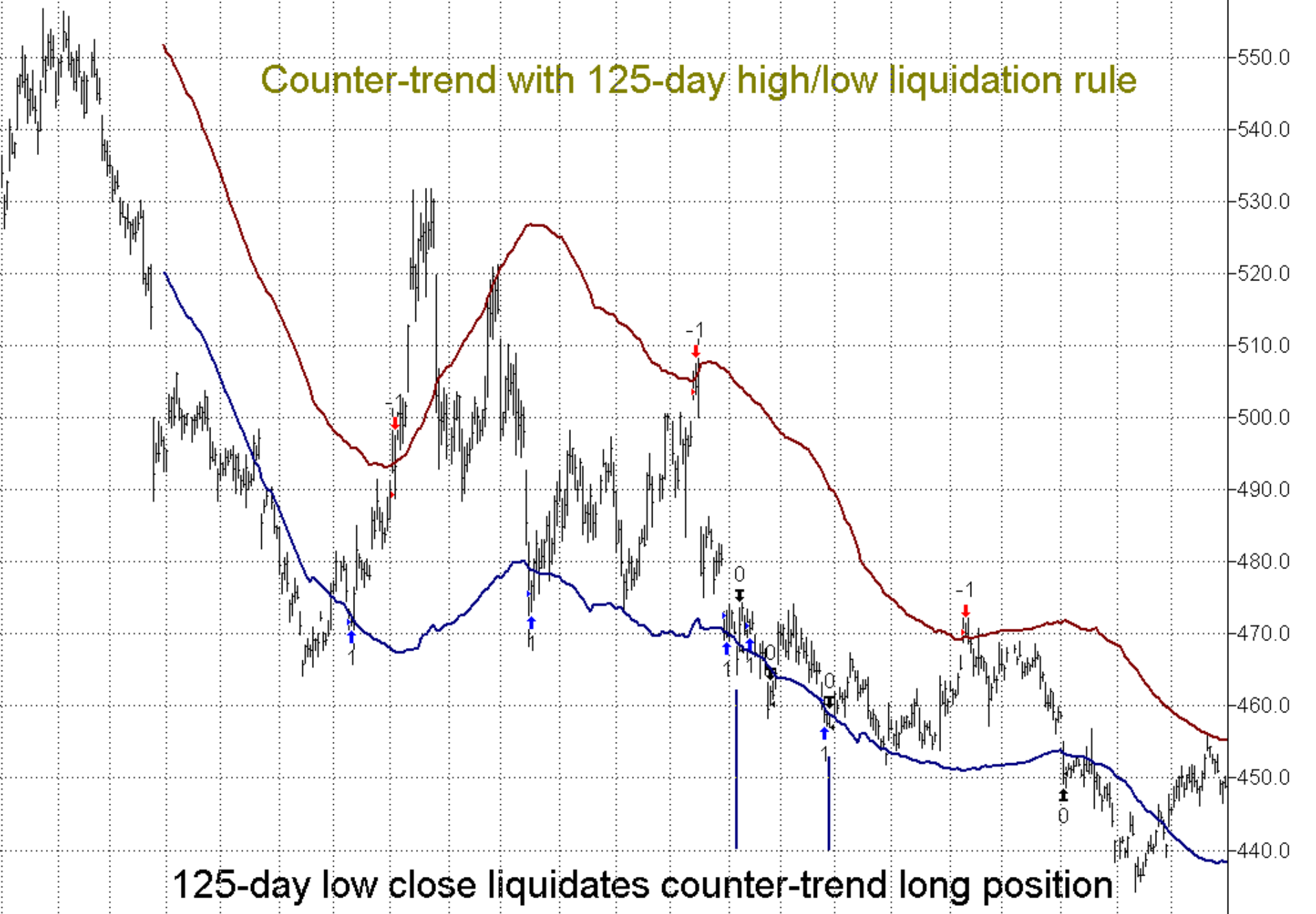
Exit at median significantly reduces profit during choppy trading range



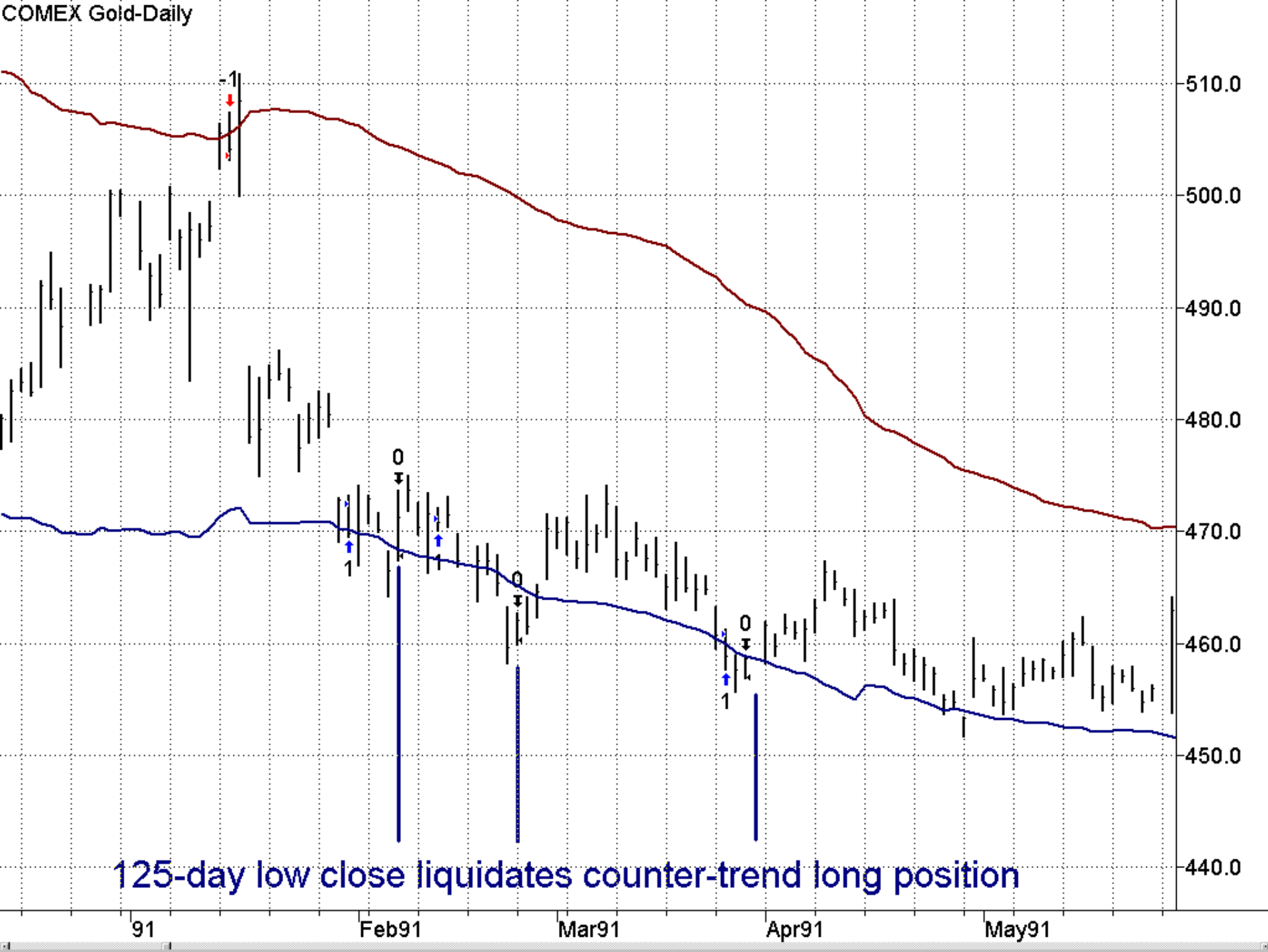


Exit at median reduces loss
during strong trending periods

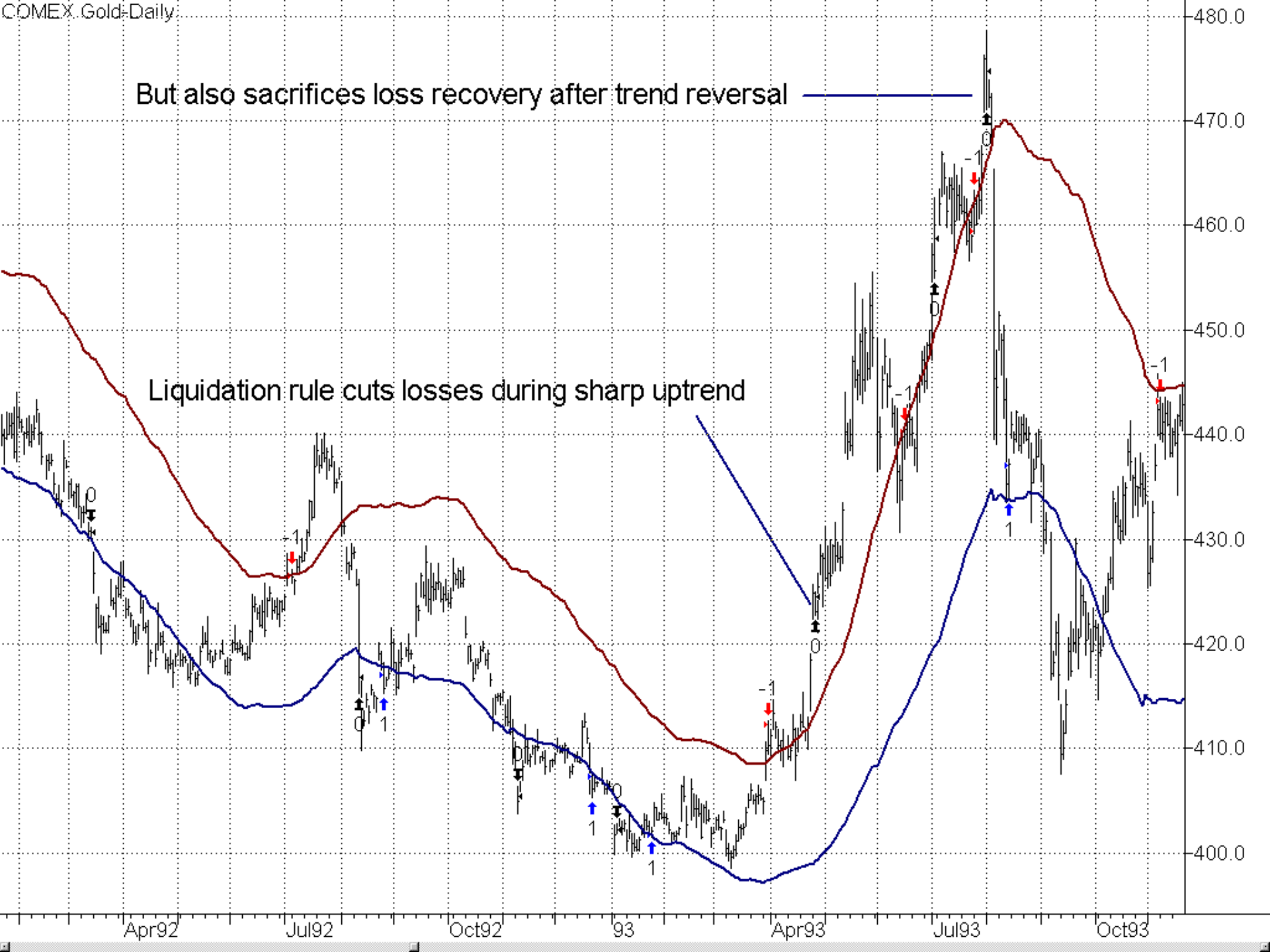
Counter-trend with 125-day high/low liquidation rule



125-day low close liquidates counter-trend long position



125-day low close liquidates counter-trend long position



But also sacrifices loss recovery after trend reversal

Liquidation rule cuts losses during sharp uptrend







Liquidation rule avoids virtually entire loss during this phase of sustained downtrend

....and actually makes money during this period

Counter-trend with 125-day high/low liquidation rule & 50-day filter screen

(e.g., no buy if 125-day low close occurred within past 50 days)



Filter eliminates new sell signals at these points





50-day wait filter eliminates re-entry

Note: filter avoids repeated buy re-entries during this period





jsmaband3 COMEX Gold-Daily 01/02/90 - 03/20/98

Performance Summary: All Trades

Total net profit	\$ 8660.00	Open position P/L	\$ 0.00
Gross profit	\$ 23720.00	Gross loss	\$ -15060.00
Total # of trades	25	Percent profitable	72%
Number winning trades	18	Number losing trades	7
Largest winning trade	\$ 3060.00	Largest losing trade	\$ -7530.00
Average winning trade	\$ 1317.78	Average losing trade	\$ -2151.43
Ratio avg win/avg loss	0.61	Avg trade(win & loss)	\$ 346.40

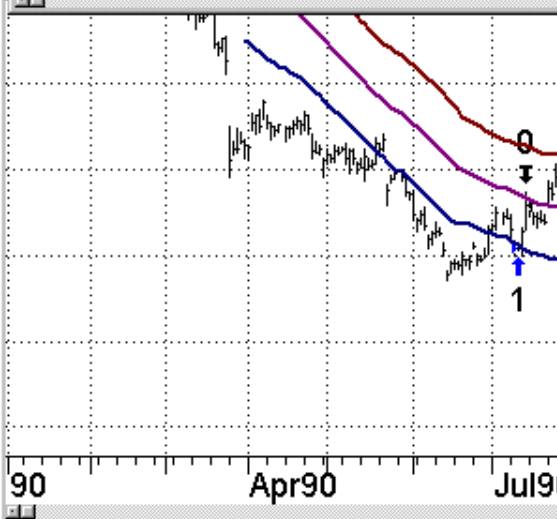


Max consec. winners	6
Avg # bars in winners	50
Max intraday drawdown	\$ -950
Profit factor	1.15
Account size required	\$ 9500

jsmaband3A COMEX Gold-Daily 01/02/90 - 03/20/98

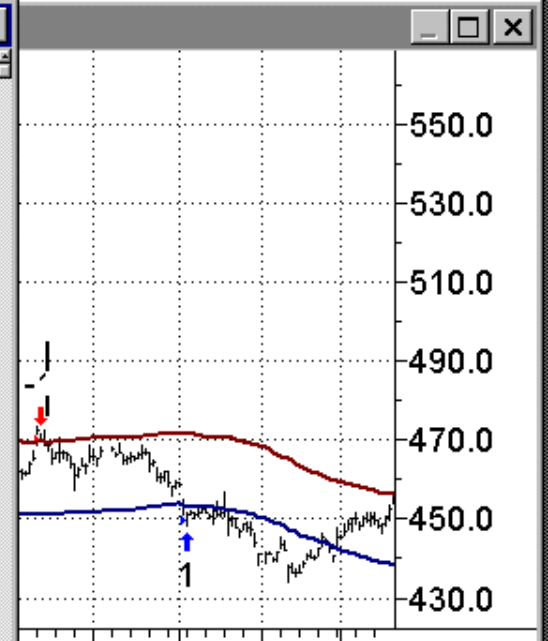
Performance Summary: All Trades

Total net profit	\$ 2410.00	Open position P/L	\$ 0.00
Gross profit	\$ 18310.00	Gross loss	\$ -15900.00
Total # of trades	37	Percent profitable	59%
Number winning trades	22	Number losing trades	15
Largest winning trade	\$ 2470.00	Largest losing trade	\$ -3350.00
Average winning trade	\$ 832.27	Average losing trade	\$ -1060.00
Ratio avg win/avg loss	0.79	Avg trade(win & loss)	\$ 65.14
Max consec. winners	6	Max consec. losers	4
Avg # bars in winners	13	Avg # bars in losers	60
Max intraday drawdown	\$ -8920.00	Max # contracts held	1
Profit factor	1.15	Return on account	27%
Account size required	\$ 8920.00		



Performance Summary: All Trades

Total net profit	\$ 8660.00	Open position P/L	\$ 0.00
Gross profit	\$ 23720.00	Gross loss	\$ -15060.00
Total # of trades	25	Percent profitable	72%
Number winning trades	18	Number losing trades	7
Largest winning trade	\$ 3060.00	Largest losing trade	\$ -7530.00
Average winning trade	\$ 1317.78	Average losing trade	\$ -2151.43
Ratio avg win/avg loss	0.61	Avg trade(win & loss)	\$ 346.40

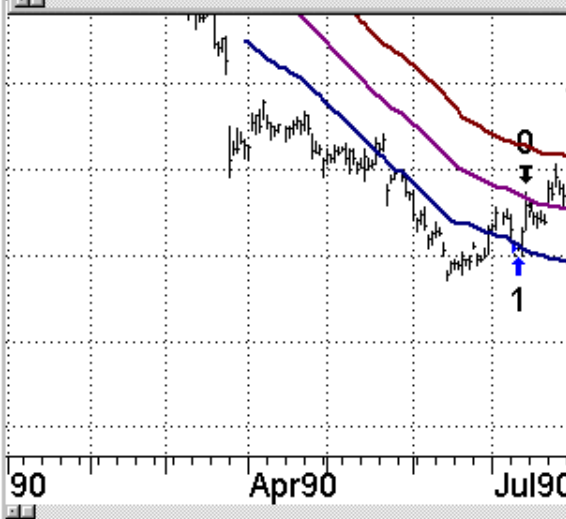


Max consec. winners	6
Avg # bars in winners	50
Max intraday drawdown	\$ -953
Profit factor	1.5
Account size required	\$ 953

jsmaband COMEX Gold-Daily 01/02/90 - 03/20/98

Performance Summary: All Trades

Total net profit	\$ 12900.00	Open position P/L	\$ 0.00
Gross profit	\$ 27540.00	Gross loss	\$ -14640.00
Total # of trades	37	Percent profitable	51%
Number winning trades	19	Number losing trades	18
Largest winning trade	\$ 3060.00	Largest losing trade	\$ -1910.00
Average winning trade	\$ 1449.47	Average losing trade	\$ -813.33
Ratio avg win/avg loss	1.78	Avg trade(win & loss)	\$ 348.65



Max consec. winners	6	Max consec. losers	5
Avg # bars in winners	42	Avg # bars in losers	20
Max intraday drawdown	\$ -8620.00	Max # contracts held	1
Profit factor	1.88	Return on account	150%
Account size required	\$ 8620.00		

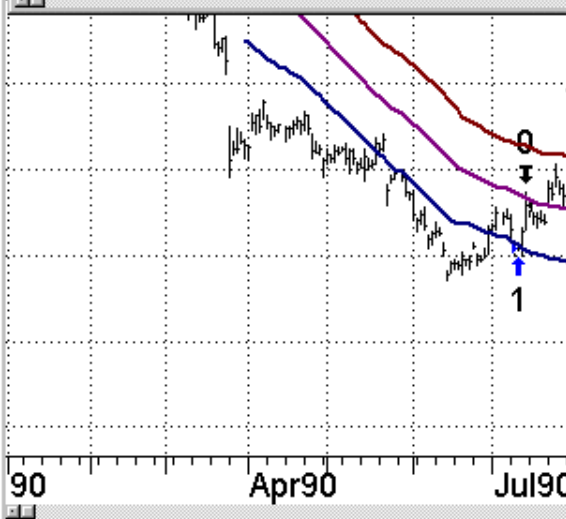
jsmaband3 COMEX Gold-Daily 01/02/90 - 03/20/98

Performance Summary: All Trades

Total net profit	\$ 8660.00	Open position P/L	\$ 0.00
Gross profit	\$ 23720.00	Gross loss	\$ -15060.00
Total # of trades	25	Percent profitable	72%
Number winning trades	18	Number losing trades	7
Largest winning trade	\$ 3060.00	Largest losing trade	\$ -7530.00
Average winning trade	\$ 1317.78	Average losing trade	\$ -2151.43
Ratio avg win/avg loss	0.61	Avg trade(win & loss)	\$ 346.40



Max consec. winners	6
Avg # bars in winners	50
Max intraday drawdown	\$ -9530
Profit factor	1.5
Account size required	\$ 9530

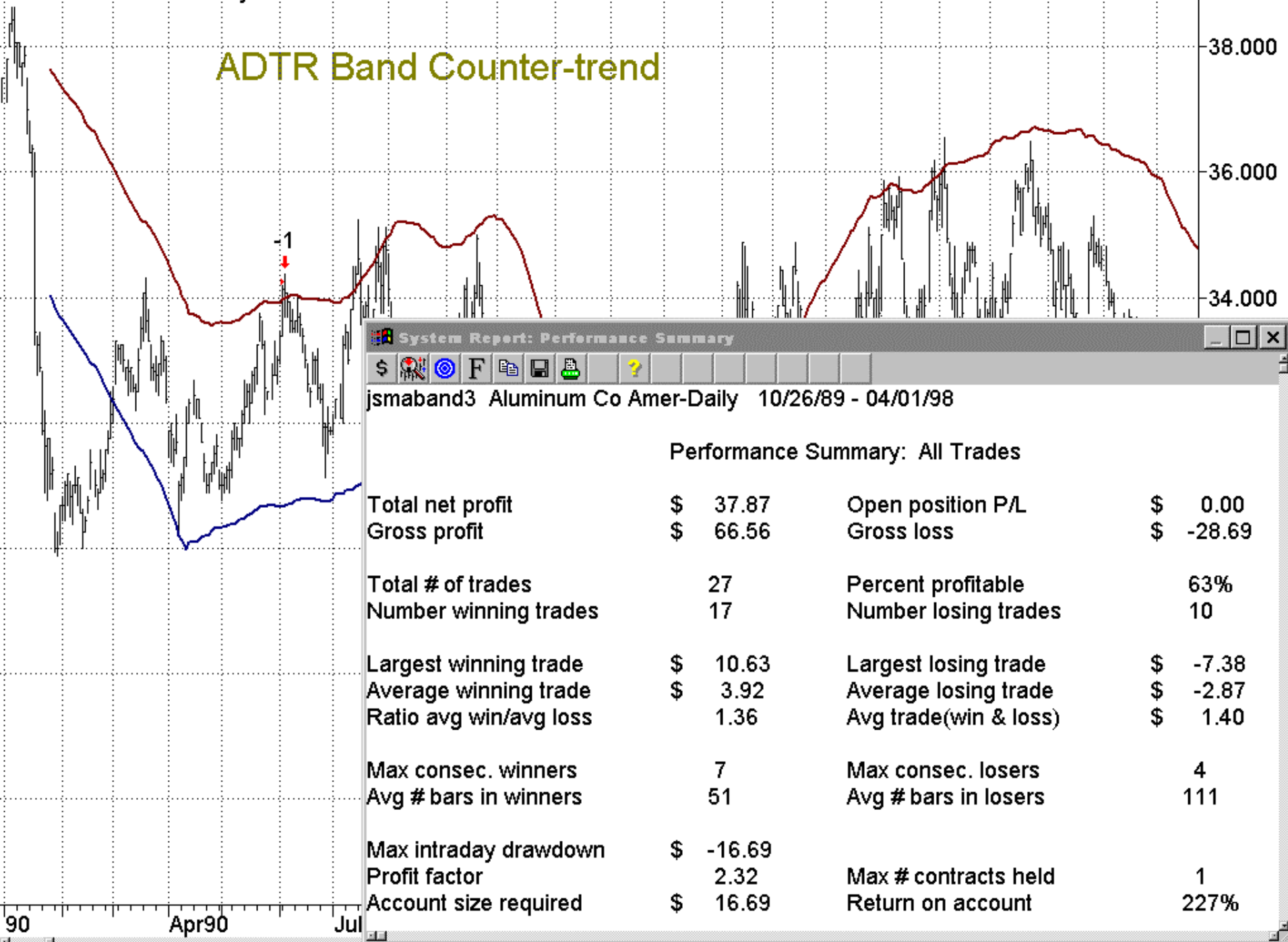


jsmaband2B COMEX Gold-Daily 01/02/90 - 03/20/98

Performance Summary: All Trades

Total net profit	\$ 21380.00	Open position P/L	\$ 0.00
Gross profit	\$ 27680.00	Gross loss	\$ -6300.00
Total # of trades	23	Percent profitable	65%
Number winning trades	15	Number losing trades	8
Largest winning trade	\$ 3990.00	Largest losing trade	\$ -1270.00
Average winning trade	\$ 1845.33	Average losing trade	\$ -787.50
Ratio avg win/avg loss	2.34	Avg trade(win & loss)	\$ 929.57
Max consec. winners	6	Max consec. losers	3
Avg # bars in winners	43	Avg # bars in losers	25
Max intraday drawdown	\$ -5230.00	Max # contracts held	1
Profit factor	4.39	Return on account	409%
Account size required	\$ 5230.00		

ADTR Band Counter-trend

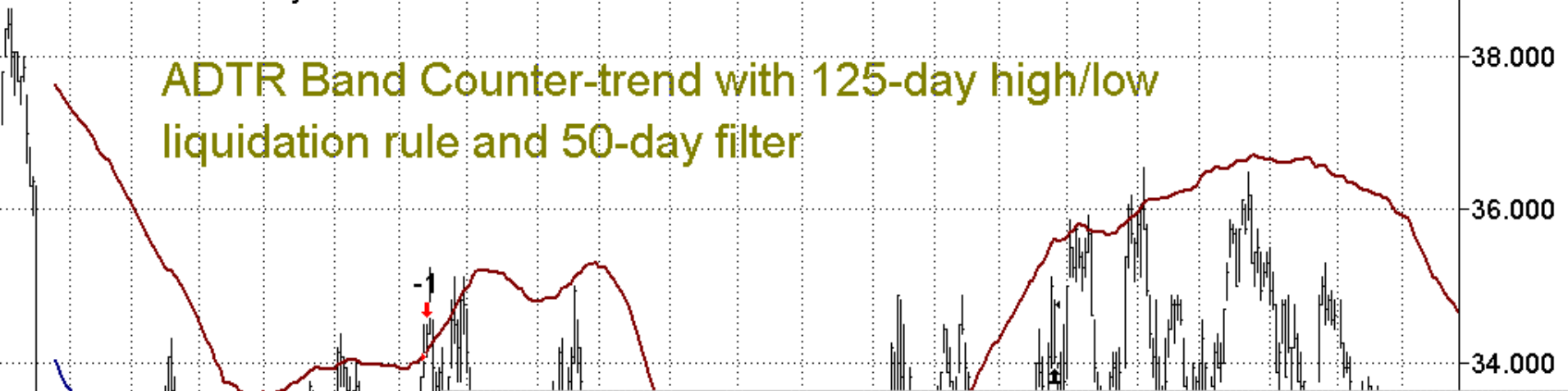


System Report: Performance Summary

jsmaband3 Aluminum Co Amer-Daily 10/26/89 - 04/01/98

Performance Summary: All Trades			
Total net profit	\$ 37.87	Open position P/L	\$ 0.00
Gross profit	\$ 66.56	Gross loss	\$ -28.69
Total # of trades	27	Percent profitable	63%
Number winning trades	17	Number losing trades	10
Largest winning trade	\$ 10.63	Largest losing trade	\$ -7.38
Average winning trade	\$ 3.92	Average losing trade	\$ -2.87
Ratio avg win/avg loss	1.36	Avg trade(win & loss)	\$ 1.40
Max consec. winners	7	Max consec. losers	4
Avg # bars in winners	51	Avg # bars in losers	111
Max intraday drawdown	\$ -16.69		
Profit factor	2.32	Max # contracts held	1
Account size required	\$ 16.69	Return on account	227%

ADTR Band Counter-trend with 125-day high/low liquidation rule and 50-day filter



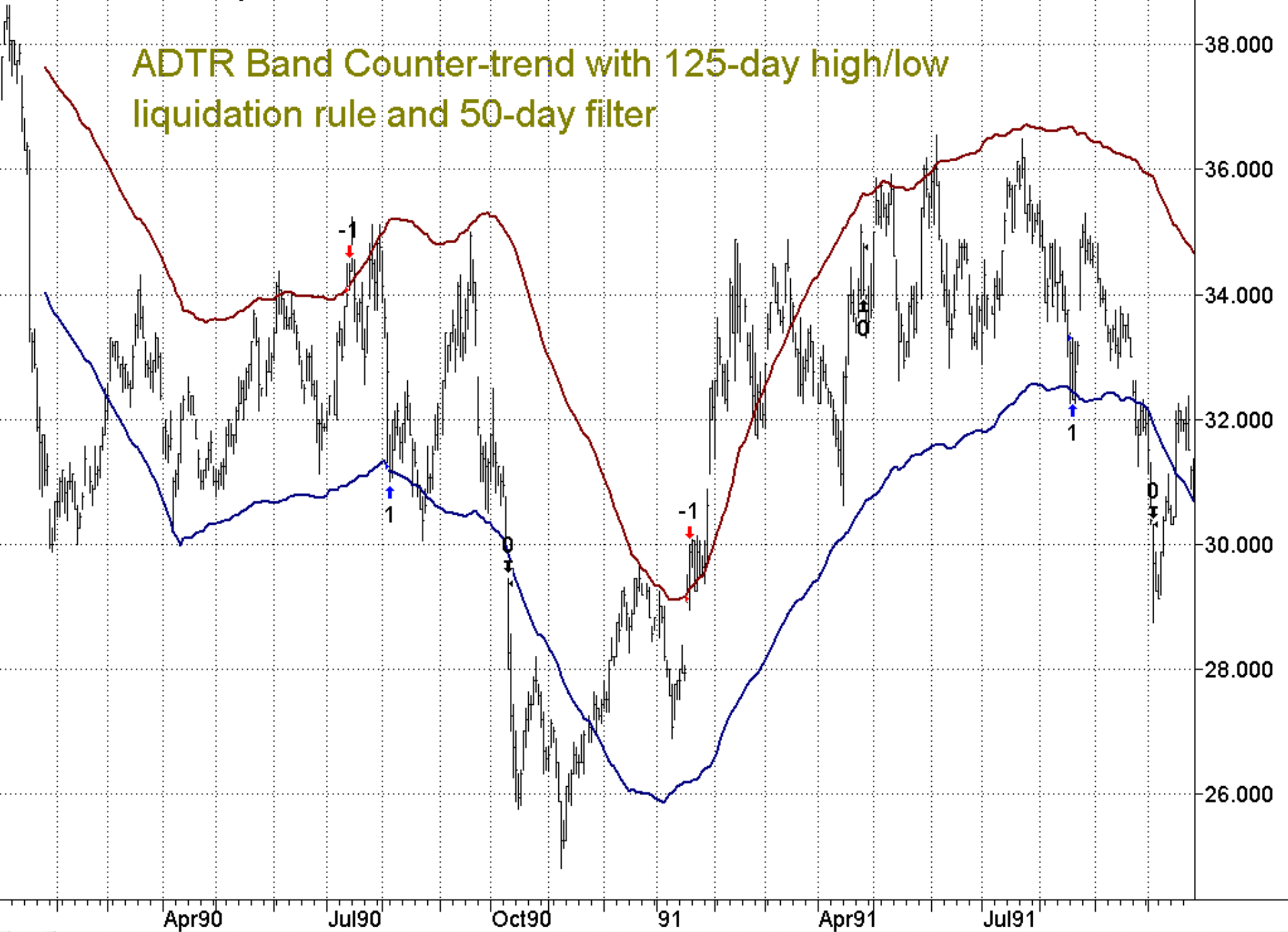
System Report: Performance Summary

jsmaband2B Aluminum Co Amer-Daily 10/26/89 - 04/01/98

Performance Summary: All Trades

Total net profit	\$ 1.31	Open position P/L	\$ 0.00
Gross profit	\$ 53.38	Gross loss	\$ -52.06
Total # of trades	25	Percent profitable	40%
Number winning trades	10	Number losing trades	15
Largest winning trade	\$ 10.63	Largest losing trade	\$ -11.25
Average winning trade	\$ 5.34	Average losing trade	\$ -3.47
Ratio avg win/avg loss	1.54	Avg trade(win & loss)	\$ 0.05
Max consec. winners	4	Max consec. losers	8
Avg # bars in winners	36	Avg # bars in losers	34
Max intraday drawdown	\$ -34.69		
Profit factor	1.03	Max # contracts held	1
Account size required	\$ 34.69	Return on account	4%

ADTR Band Counter-trend with 125-day high/low liquidation rule and 50-day filter



Aluminum Co Amer-Daily



Stops knock out good trades



Again, stops are turning potential winning trades into losers



Even during this trending phase, stops don't provide much benefit because choppiness of trend allows for near equivalent counter-trend exits

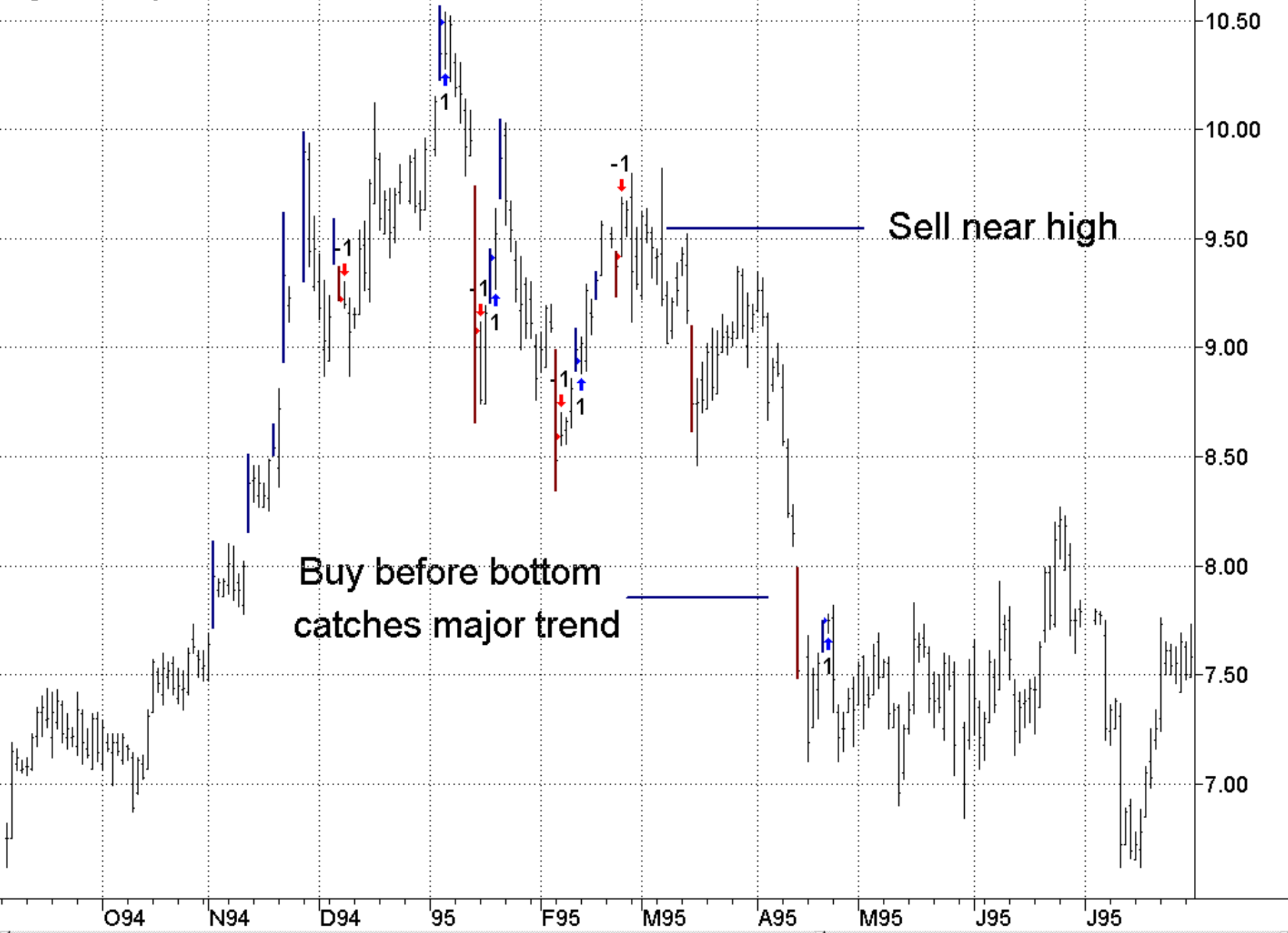
***Taking Advantage of
Charts by Using
Pattern Systems***



Gap System (1-day)

Note: No new signals
on gaps in direction of
existing position







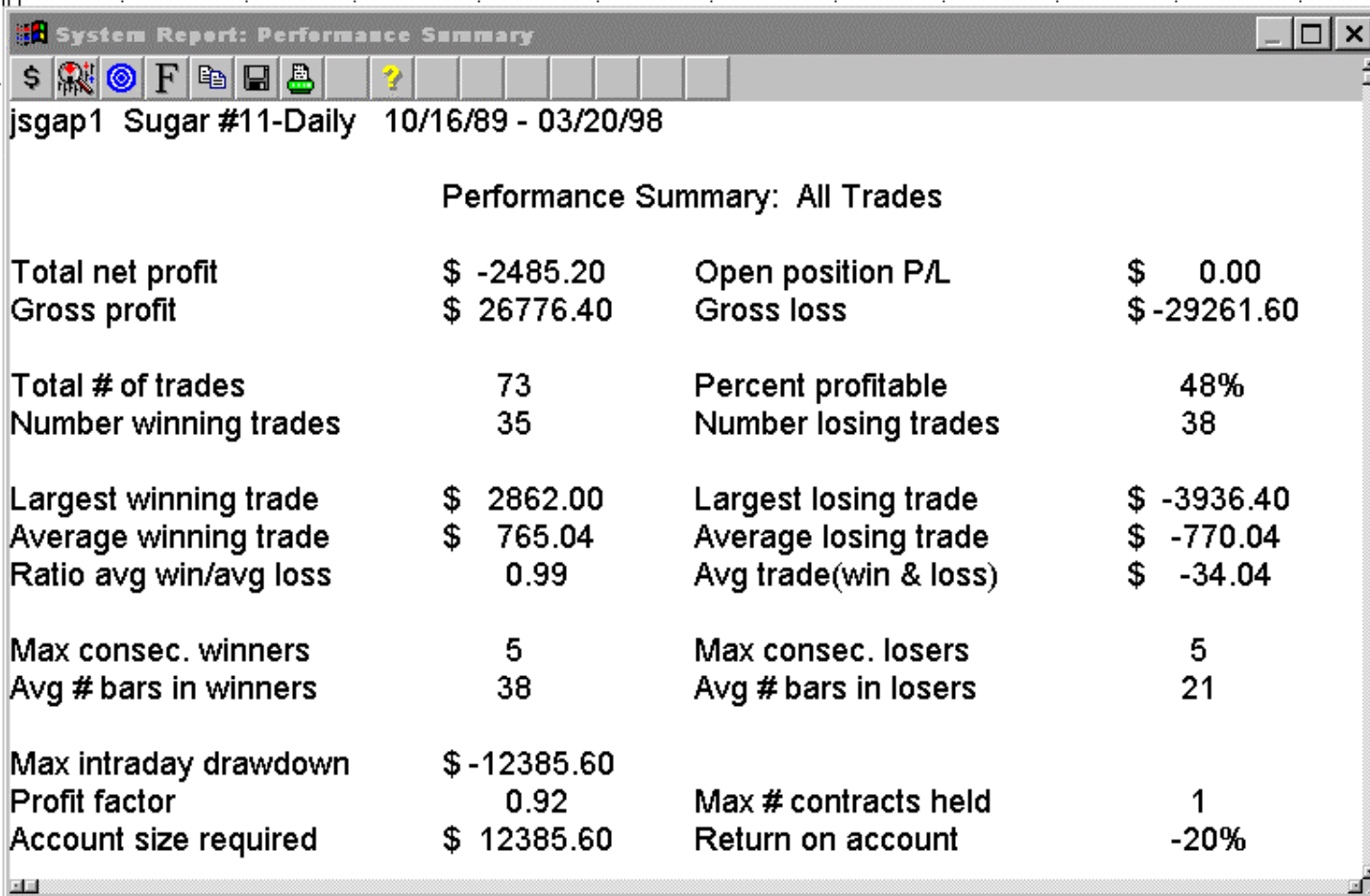
Sell near intermediate peak

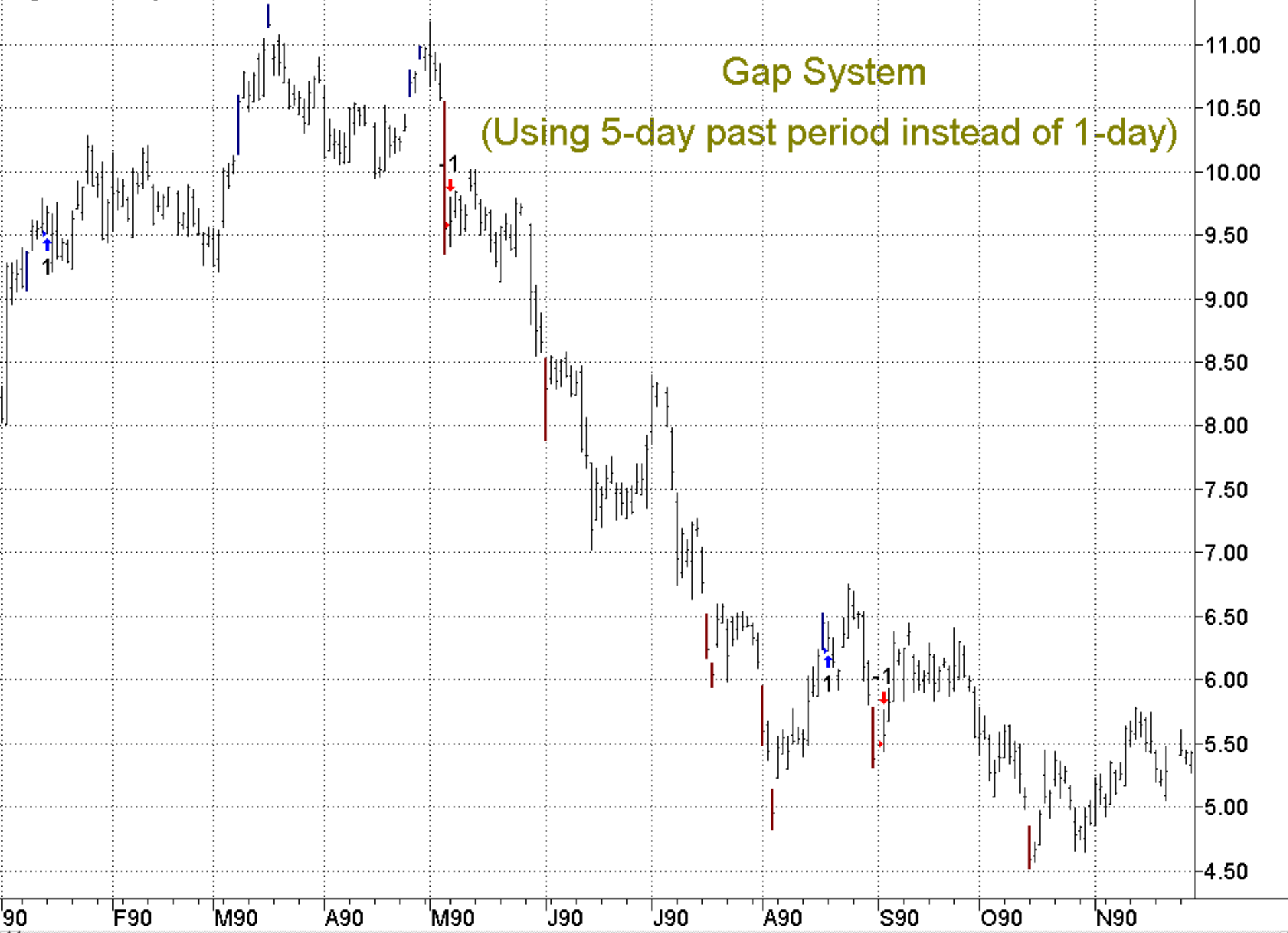
Timely re-entry





Gap System (1-day)





1-day gap but not 5-day gap



Gap System

(using 5-day past period instead of 1-day)



System Report: Performance Summary

jsgap1 Sugar #11-Daily 01/02/90 - 12/31/97

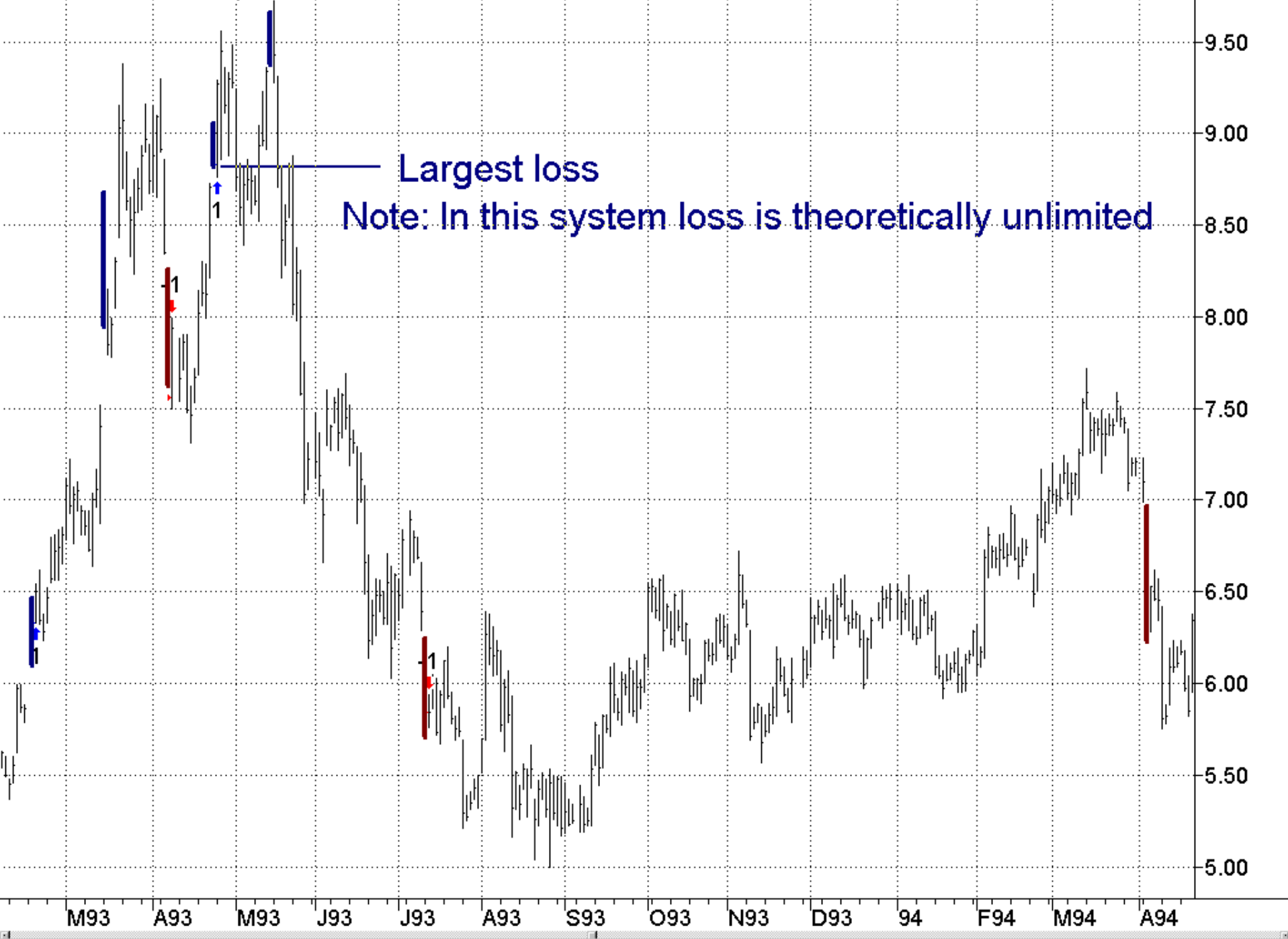
Performance Summary: All Trades

Total net profit	\$ 1361.60	Open position P/L	\$ 0.00
Gross profit	\$ 12300.80	Gross loss	\$ -10939.20
Total # of trades	16	Percent profitable	50%
Number winning trades	8	Number losing trades	8
Largest winning trade	\$ 3702.00	Largest losing trade	\$ -3398.80
Average winning trade	\$ 1537.60	Average losing trade	\$ -1367.40
Ratio avg win/avg loss	1.12	Avg trade(win & loss)	\$ 85.10
Max consec. winners	3	Max consec. losers	3
Avg # bars in winners	131	Avg # bars in losers	118
Max intraday drawdown	\$ -8268.40	Max # contracts held	1
Profit factor	1.12	Return on account	16%
Account size required	\$ 8268.40		

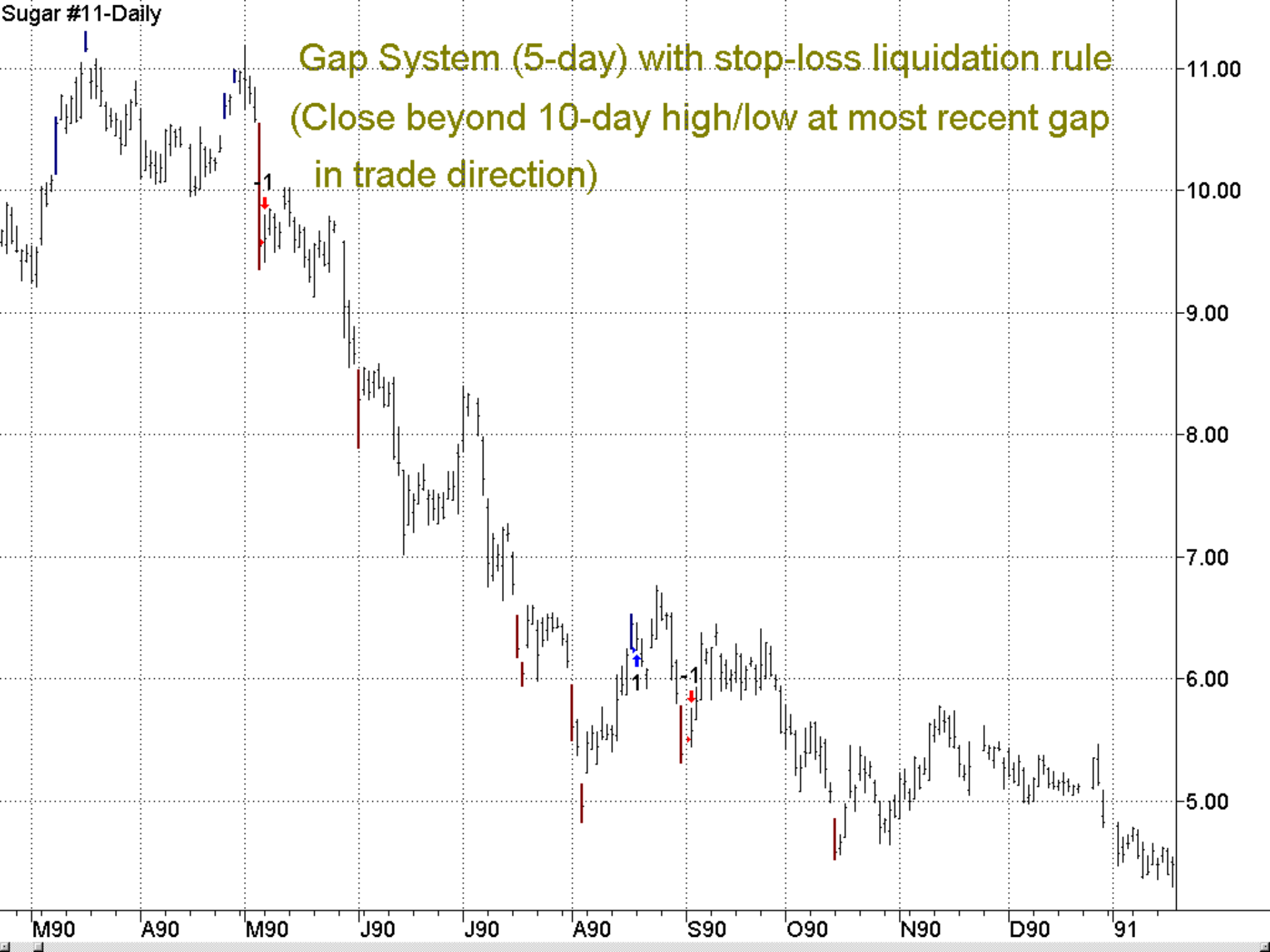
Gap System

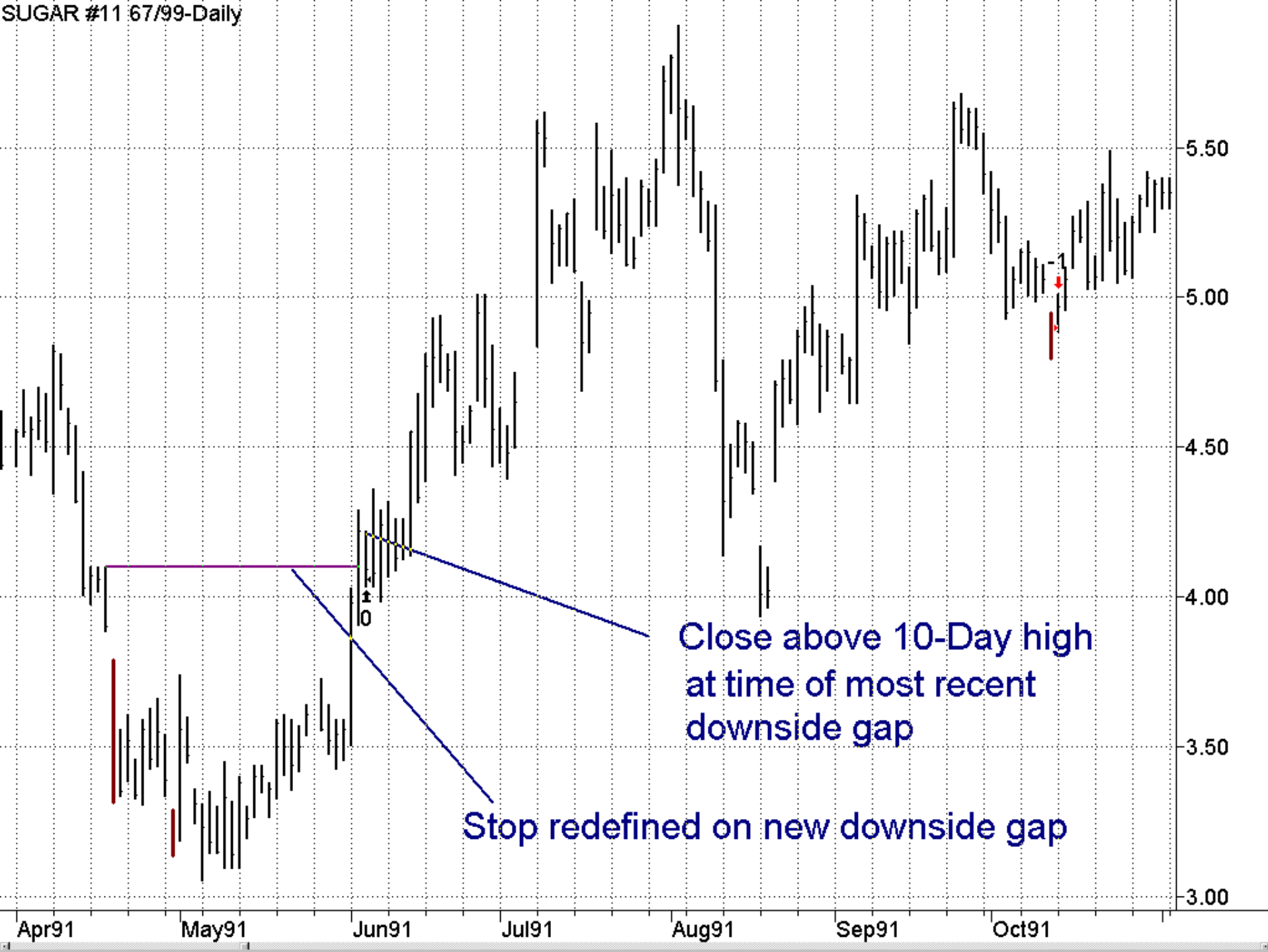
(using 5-day past period instead of 1-day)

System Report: Trade by Trade							
jsgap1 Sugar #11-Daily 01/02/90 - 12/31/97							
Date	Time	Type	Cnts	Price	Signal Name	Entry P/L	Cumulative
04/08/93		Sell	1	7.56			
04/26/93		SExit	1	8.83		\$ -1472.40	\$ 966.40
04/26/93		Buy	1	8.83			
07/13/93		LExit	1	5.84		\$ -3398.80	\$ -2432.40
07/13/93		Sell	1	5.84			
07/18/94		SExit	1	6.76		\$ -1080.40	\$ -3512.80
07/18/94		Buy	1	6.76			
01/16/95		LExit	1	9.08		\$ 2548.40	\$ -964.40
01/16/95		Sell	1	9.08			
09/28/95		SExit	1	8.00		\$ 1159.60	\$ 195.20
09/28/95		Buy	1	8.00			
03/27/96		LExit	1	10.35		\$ 2582.00	\$ 2777.20
03/27/96		Sell	1	10.35			
06/04/97		SExit	1	11.64		\$ -1494.80	\$ 1282.40
06/04/97		Buy	1	11.64			



Gap System (5-day) with stop-loss liquidation rule
(Close beyond 10-day high/low at most recent gap
in trade direction)

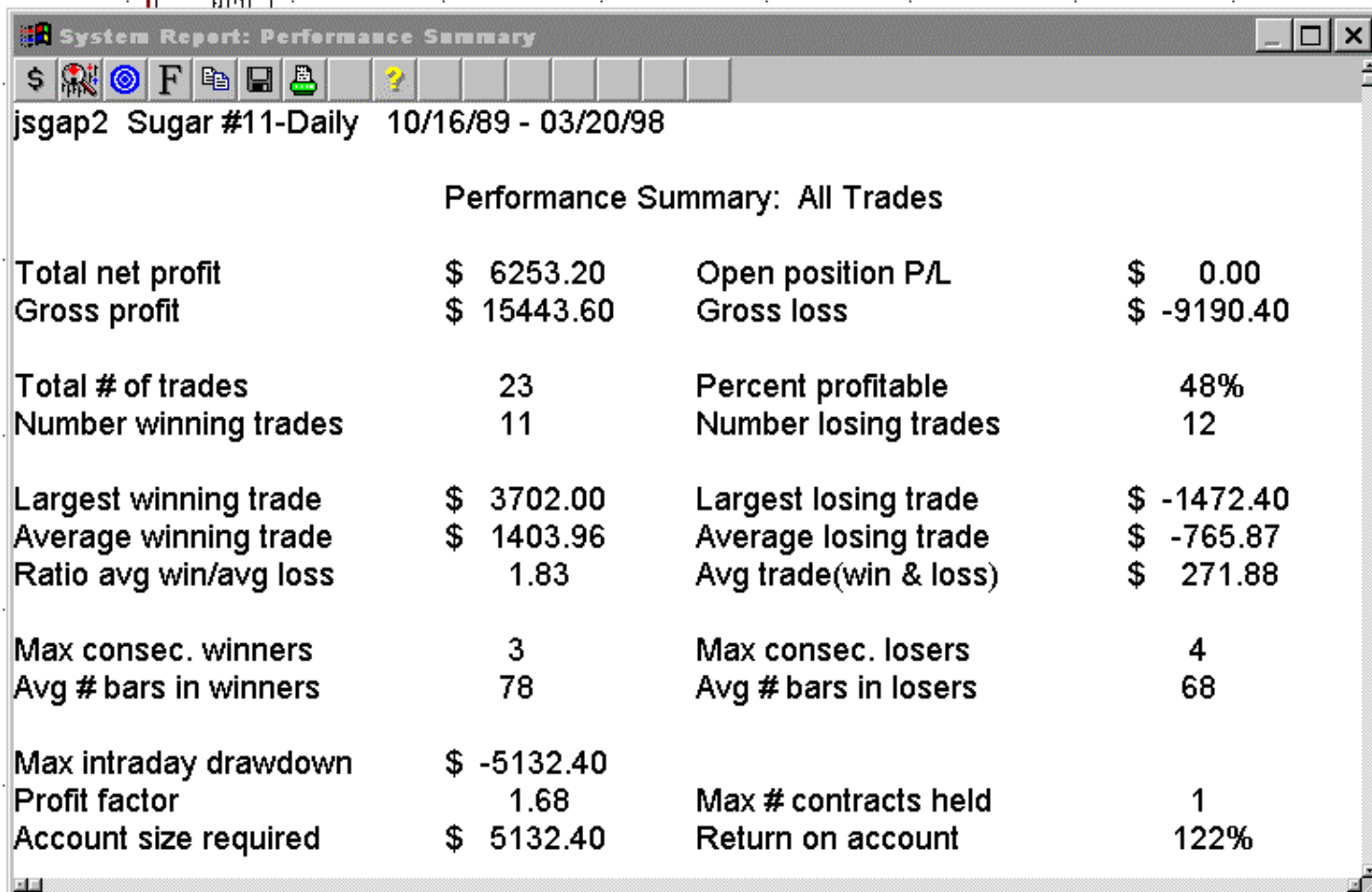








Gap System (5-day) with stop-loss liquidation rule (Close beyond 10-day high/low at most recent gap in trade direction)



Consecutive Close (N=3)



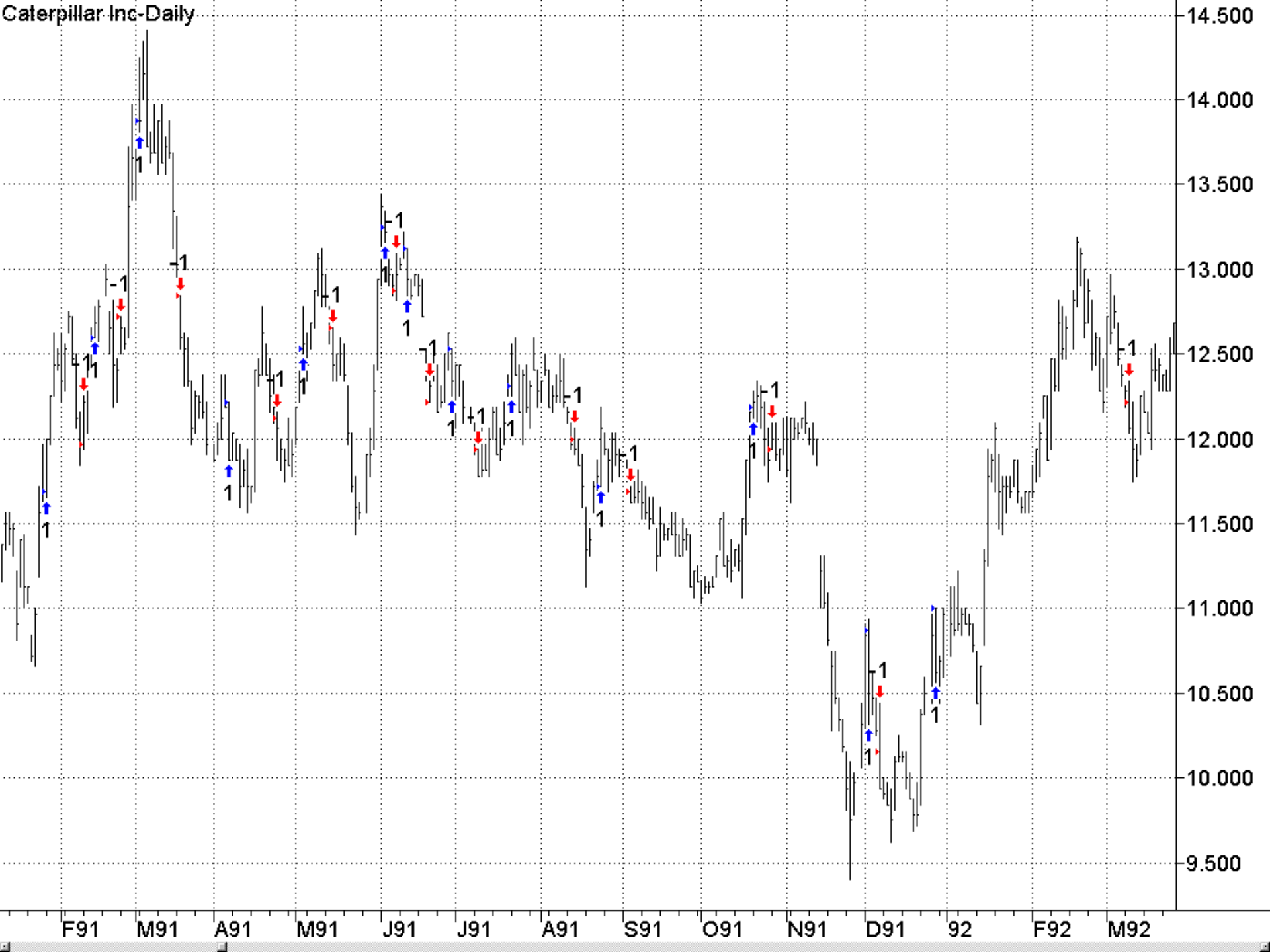
Consecutive Close (N=3)



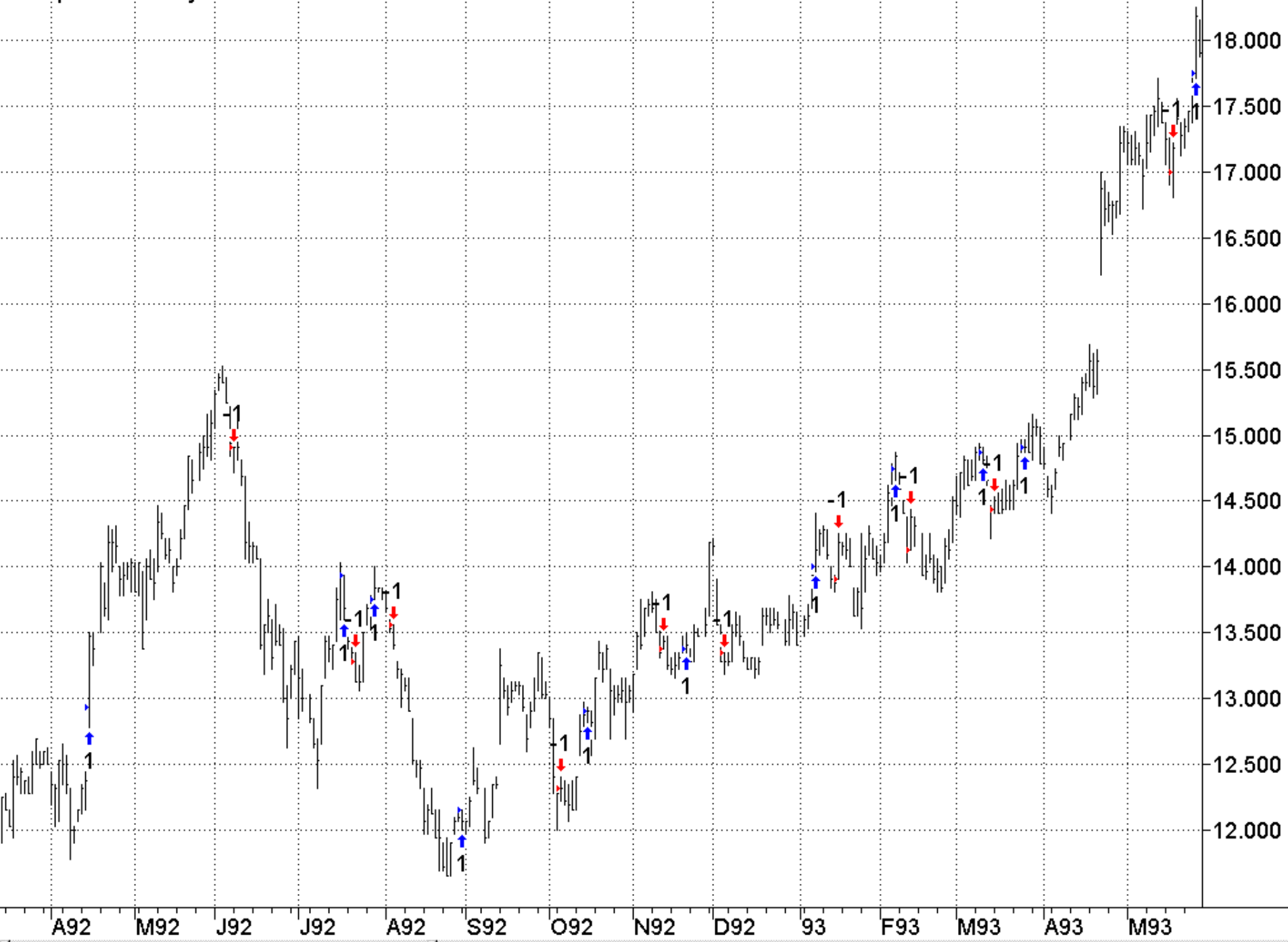
Caterpillar Inc-Daily



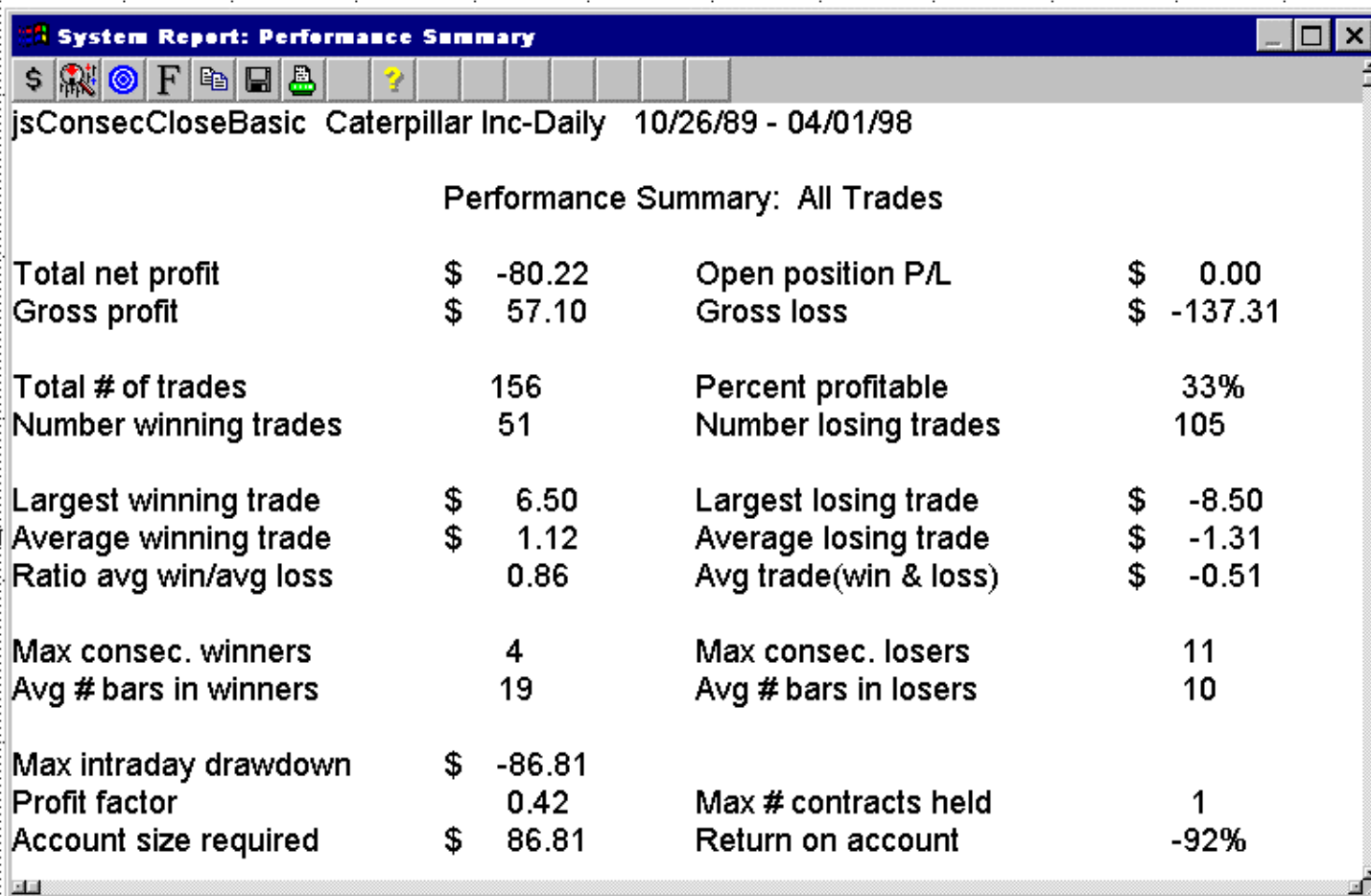
Caterpillar Inc-Daily

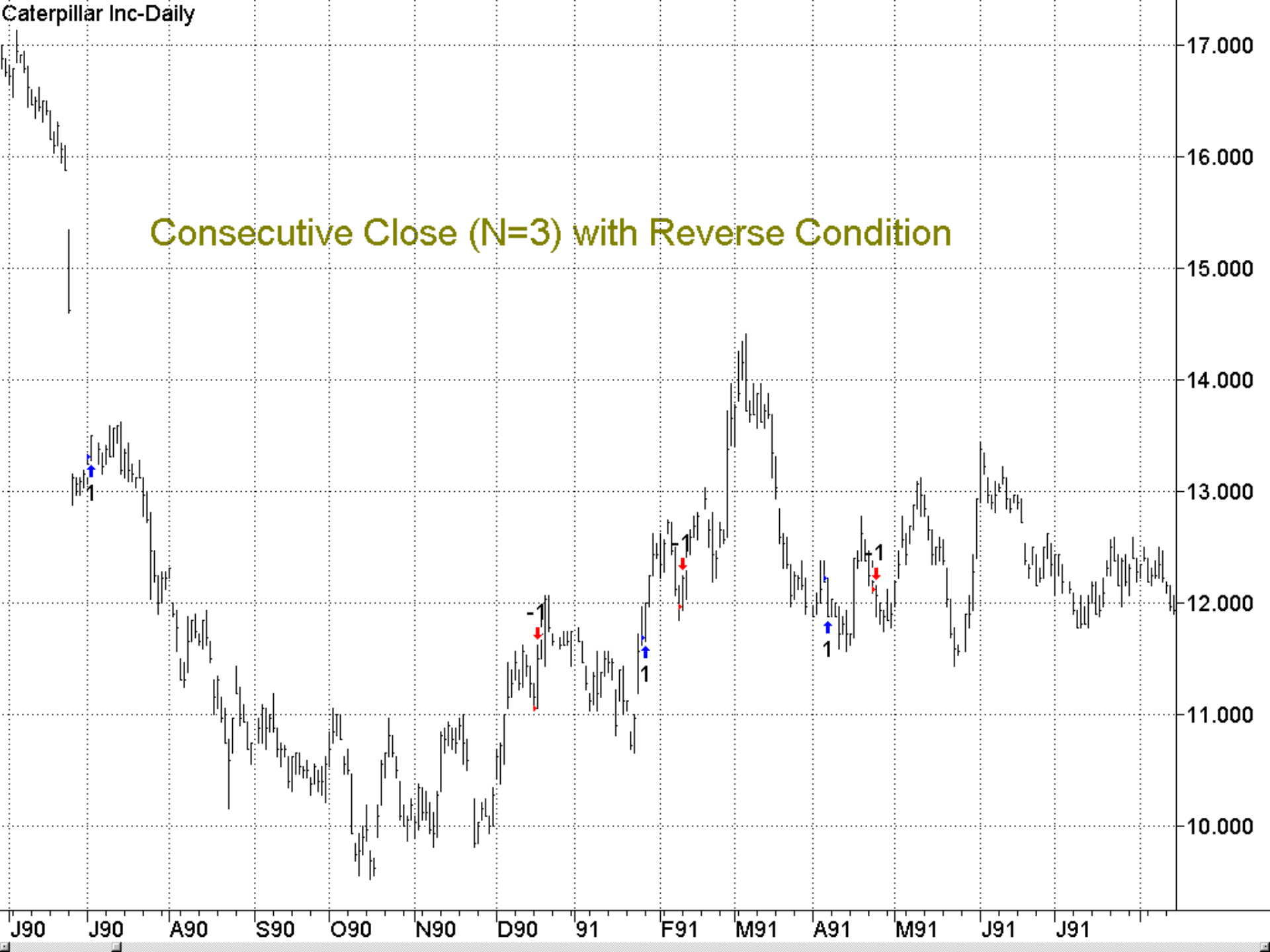


Caterpillar Inc-Daily



Consecutive Close (N=3)





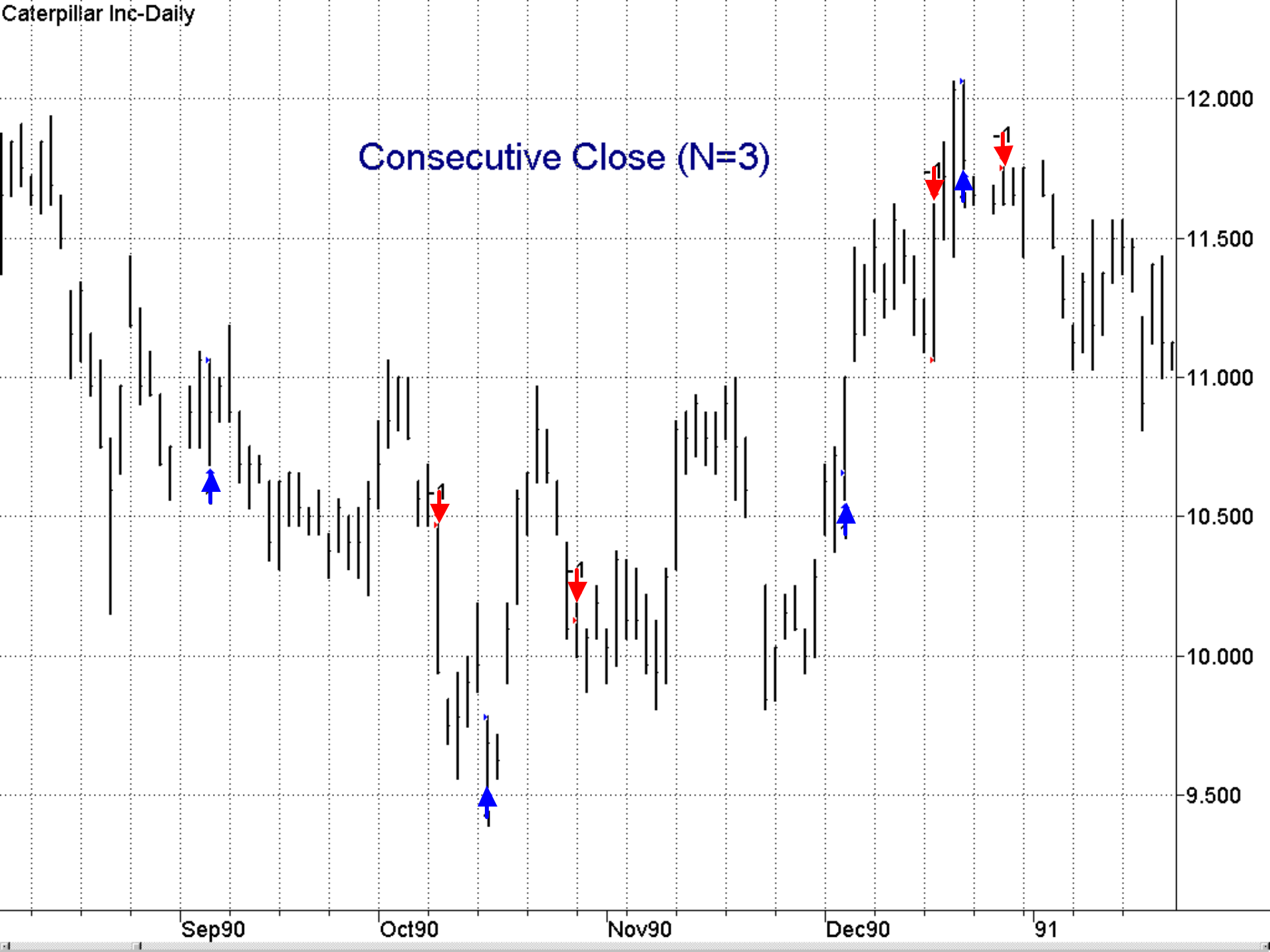
Consecutive Close (N=3) with Reverse Condition







Consecutive Close (N=3)



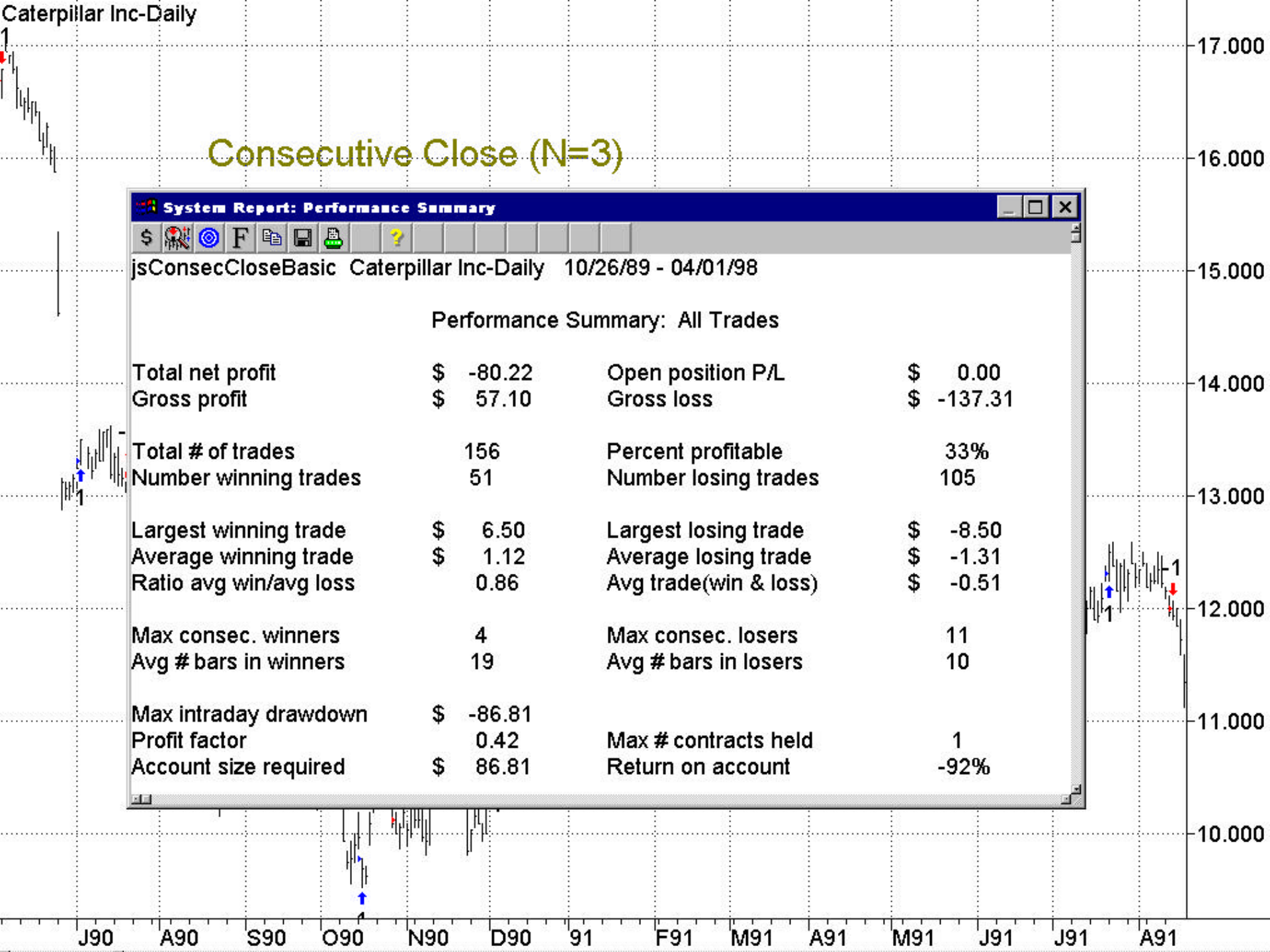
Consecutive Close (N=3)

System Report: Performance Summary

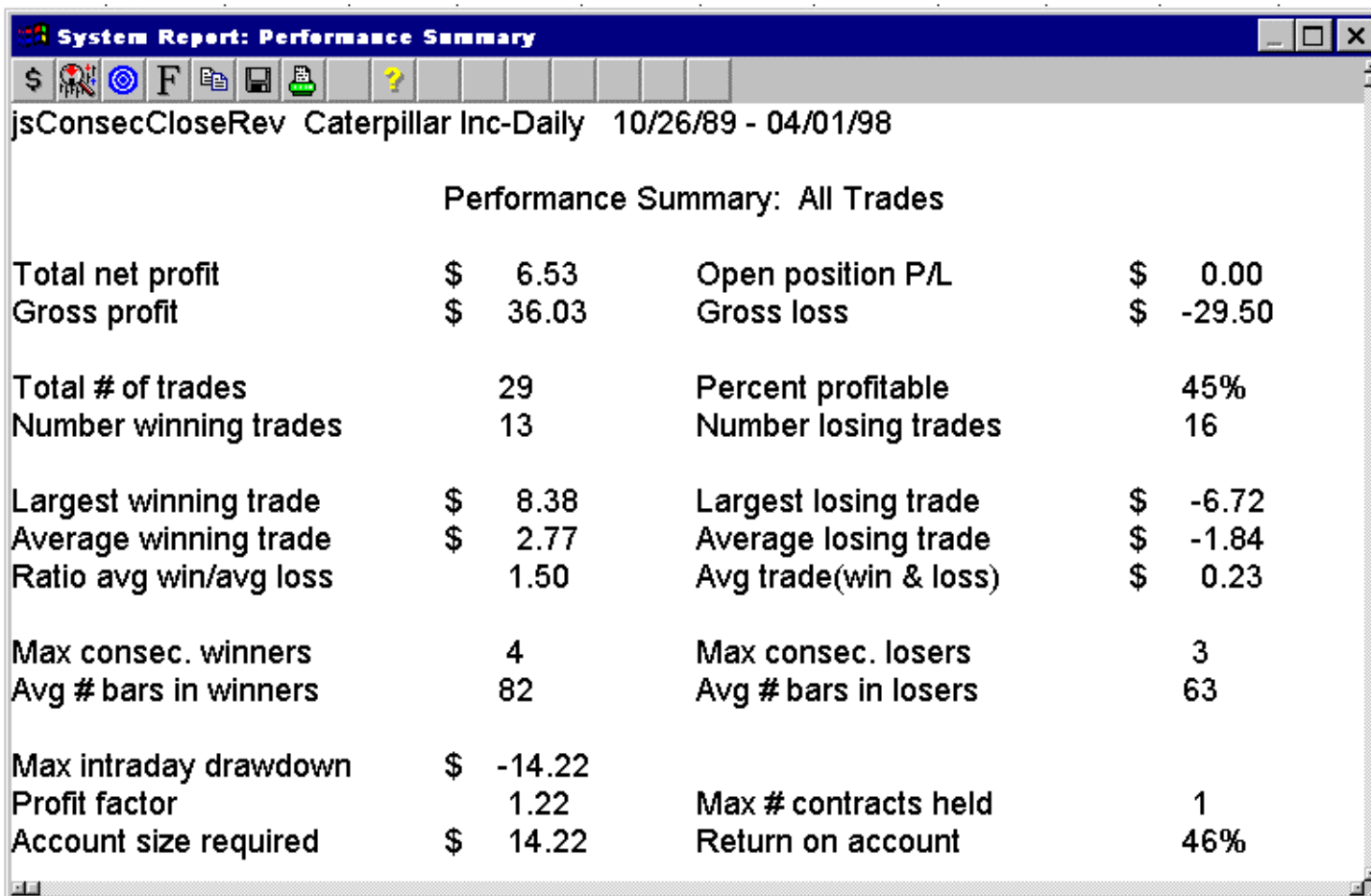
jsConsecCloseBasic Caterpillar Inc-Daily 10/26/89 - 04/01/98

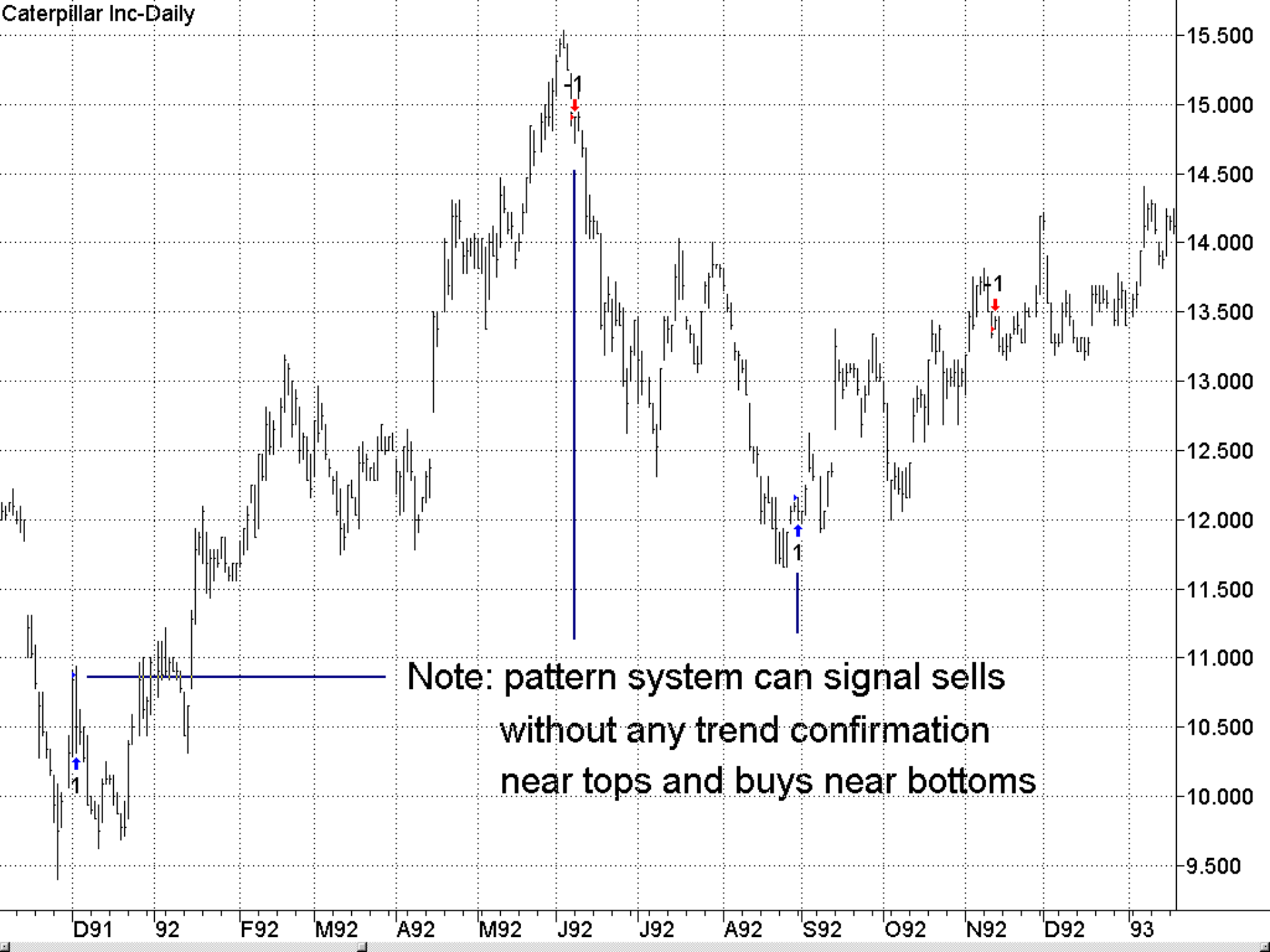
Performance Summary: All Trades

Total net profit	\$ -80.22	Open position P/L	\$ 0.00
Gross profit	\$ 57.10	Gross loss	\$ -137.31
Total # of trades	156	Percent profitable	33%
Number winning trades	51	Number losing trades	105
Largest winning trade	\$ 6.50	Largest losing trade	\$ -8.50
Average winning trade	\$ 1.12	Average losing trade	\$ -1.31
Ratio avg win/avg loss	0.86	Avg trade(win & loss)	\$ -0.51
Max consec. winners	4	Max consec. losers	11
Avg # bars in winners	19	Avg # bars in losers	10
Max intraday drawdown	\$ -86.81	Max # contracts held	1
Profit factor	0.42	Return on account	-92%
Account size required	\$ 86.81		



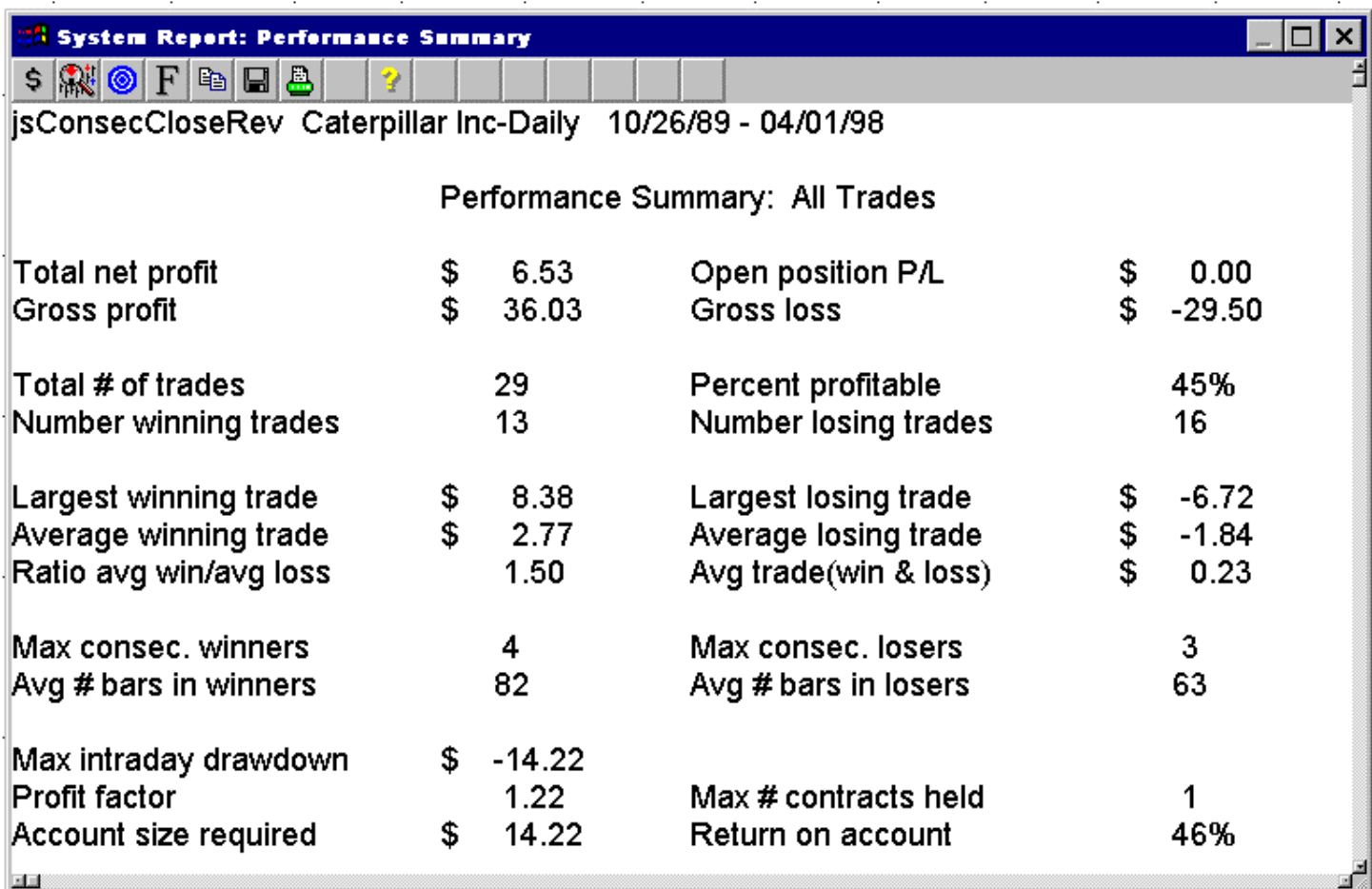
Consecutive Close (N=3) with Reverse Condition





Note: pattern system can signal sells
without any trend confirmation
near tops and buys near bottoms

Consecutive Close (N=3) with Reverse Condition



17.000

16.000

15.000

14.000

13.000

12.000

11.000

10.000

M90

J90

J90

A90

S90

O90

N90

D90

91

F91

M91

A91

M91

J91

Consecutive Close with Reverse Cond. & Liq. Rule





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Stop rule creates many whipsaws

Consecutive Close with Reverse Cond. & Liq. Rule

