

The Horn, where our world's two mightiest oceans rage against one-another, long ago wrote its own stormy passages into seafaring lore.

Its unpredictable racing currents, heaving swell and treacherous rocks and reefs, have littered the bleak coastline at the foot of South America with many wrecks.

But in the mid 19th Century the rich pickings to be made by North American clippers made captains risk their vessels and sailors, their lives, once again in the race to be fastest 'Round the Horn.

George Blank has recreated the golden age of the clippers and their most hazardous route in this computerised test of seamanship — a race between three ships from New York to California.

The discovery of gold at Sutter's Mill in 1849 triggered a hurried migration to California that lasted for several years. While few prospectors struck it rich, many shippers did by shipping men and supplies to California.

The highest freight and passenger rates went to the fastest ships, and three of the fastest were the Surprise, the Flying Cloud and the Challenge.

The Surprise was owned by A. A. Low and Brother, and her captain was Phillip Dumaesq. This clipper, displacing 1261 tons, sailed in December of 1849 on a record breaking run to San Francisco of 96 days, 15 hours.

The high demand for fast shipping, not only in the California trade but in the trans-Atlantic trade to Liverpool and the China tea and spice trade as well, led to the golden age of the clipper ship. Two of the greatest were launched within weeks of each other in 1851, and raced to California amidst great

publicity. They were the Flying Cloud and the Challenge.

The Flying Cloud, owned by Grinnell, Minturn and Company, was captained by Josiah Cressy. This ship of 1782 tons left on June 2, 1851 and set a new record for the California trade of 89 days and 21 hours. This record stood for several years, partly due to stormy weather that moved the ship to record breaking speeds of over 300 miles a day several times. (The ship did suffer damage to her masts and rigging.)

The Challenge sailed a few weeks later and ran into very calm weather, leading to a disappointing but still impressive time of 108 days. Captained by Bob "Bully" Waterman, the Challenge was the largest ship of her day at 2006 tons and was owned by N. L. & G. Griswold.

This computer program tampers with history a little to allow the three ships to sail from New York on the same day on a race to San Francisco. You will captain one of the ships and attempt to find favourable winds and currents that will allow you to get to San Francisco first. It is by no means certain you will arrive in San Francisco. The passage around Cape Horn is dangerous, and many vessels were wrecked there. If you try to sail through the doldrums at an angle and have bad luck, you could spend months right there.

The computer will display a map of North and South America, with New England indicated by the letter N and San Francisco by the letter S. Your position will be indicated by an exclamation mark, and that of the other vessels by the first letter of their name, assuming that they are not in the same square.

To win, all you have to do is sail your ship into the square containing the S in the fewest days. As soon as

NOTICE TO MARINERS

- 1) Observe special caution in Long Island Sound, Eastern U.S. coast at 40 degrees north latitude. Onshore current is treacherous, especially when combined with southerly winds.
- 2) The Cape Horn Passage is extremely dangerous. For safe passage, remain south of 55 degrees, 30 minutes until longitude 72 degrees west and south of 46 degrees latitude until longitude 84 degrees west. Dangerous polar ice is virtually certain south of 64 degrees south latitude.
- 3) The Caribbean Sea contains many unmarked reefs and is especially hazardous without local knowledge.
- 4) Vessels are advised to maintain good distance from the northeast coast of South America. Light winds and flat calms, combined with unfavourable currents, make long delays likely.
- 5) Vessels bound for California are advised to set course well west of the southern coast of Mexico. Light winds make delays likely.
- 6) Beware of all capes. Reefs often project out from them and make sudden shipwreck likely. (Computer only checks for land due north, east, south, and west. If you approach a cape from the northeast, for example, you will run aground before any land is displayed.)

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A hand-drawn map of the Atlantic Ocean, oriented with North at the top. The map includes the following elements:

- Wind Systems (Red Arrows):**
 - NE TRADES:** A large red arrow pointing southwest from the top right.
 - SE TRADES:** A large red arrow pointing northwest from the bottom right.
 - Roaring Forties:** A red arrow pointing southwest from the bottom right, below the SE Trades.
- Ocean Currents (Red Arrows):**
 - EQU. CURRENT:** A red arrow pointing west along the equator.
 - COUNTER EQU. CURRENT:** A red arrow pointing east, located south of the equatorial current.
 - BRAZIL CURRENT:** A red arrow pointing south along the eastern coast of South America.
- Geographical Features:**
 - BRAZIL:** Labeled in large, bold, underlined letters on the eastern coast of South America.
 - ARGENTINA:** Labeled on the western coast of South America.
 - CAP. HORN:** Labeled near the southern tip of South America.
 - DOLDRUMS:** Labeled near the equator.
 - HORSE LATITUDES:** Labeled in the middle of the ocean, between the equator and the Roaring Forties.
- Other Elements:**
 - A drawing of a three-masted sailing ship in the upper right.
 - A drawing of a whale in the lower middle.
 - A compass rose in the bottom right corner.
 - A red arrow labeled **DRAKES PASSAGE** pointing east from the bottom left.

NAME	NORTH-SOUTH	WEST-EAST
Japan current	48N-32N	132W
Japan current	32N-19.2N	129W-114W
Gulf Stream	48N-32N	39W
Gulf Stream	32N-19.2N	63W
Canaries current	48N-20N	39W
N. Equ. current	19.2N-8N	—
Guinea current	8N-0	24W
S. Equ. current	0-9.2S	—
Humbolt current	9.2S-27.6S	102W
Brazil current	9.2S-27.6S	48W
Benguela current	9.2S-27.6S	9W
West wind drift	44.2S-64.4S	—

NAME	DIRECTION	SPEED (KNOTS)
Japan current	South	1
Japan current	South	.7
Gulf Stream	ENE	1.9
Gulf Stream	North	1
Canaries current	SSW	1
N. Equ. current	West	1.2
Guinea current	East	1.3
S. Equ. current	West	2.1
Humboldt current	North	1.8
Brazil current	South	1.5
Benguela current	North	2
West wind drift	West	2.2

NAME	SOUTHERN LIMIT	TYPICAL WINDS
Horse Latitudes	32N	Strong and variable
Northeast Trades	8N	Moderate from Northeast
Doldrums	3S	Calm and variables
Southeast Trades	28S	Moderate from Southeast
Roaring Forties	64S	Strong and Westerly

You will begin each turn by indicating the course you wish to sail. While the computer asks for a number, it will also respond to "N", "E", "S", and "W" for North, East South, and West.

Ships cannot sail directly into the wind, and yours is no exception. In fact, it will not sail closer than 45° to the direction from which the wind is coming. The computer will automatically change your course if the wind shifts against you, and

In the centre of the screen, directly above the waves, the computer will display any land that is in sight. Don't count on seeing land before you run aground! Sometimes you will see it in time and sometimes not. It is safer (but sometimes slower) to stay away from the coast completely.

At the bottom left is information on the direction the wind is coming from and the windspeed. The bottom right displays the ship's calendar and your last navigation position. Expert players will want to depend on this latitude and longitude display extensively, for the map and land displays give only a rough indication. As a help to players, I have enclosed a table of ocean currents, a table of climatic regions, and some notices to mariners, all of which relate to the latitude and longitude.

Two other factors affect your course: leeway and current. Leeway is the result of the wind blowing you off course in the direction it is blowing. Current carries you in the direction the water is flowing.

Weather is also a factor, but there is a trick to it: the computer only checks the region at the beginning of each turn. So, you can wait just north or south of the Doldrums for a good wind, and possibly get completely across without getting stuck. If you think this is cheating enter this line in your program:

1110 GOSUB 7000:GOSUB 7600

The region will then be checked on each half-day, but the game may take longer.

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170 W$(1)=LEFT$(W$(0),16):W$(2)=MID$(W$(0),3,16):W$(3)=MID$(W$(0),6,16):W$(4)=MID$(W$(0),9,16):W$(5)=RIGHT$(W$(0),16)
190 FOR A=1 TO 3:N(A,1)=35:N(A,2)=1.1:N(A,3)=99:N(A,4)=1:N(A,5)=1:
NEXT
200 FOR A=1 TO 5:W(A,1)=29+RND(100)/100:NEXT
210 W(1,1)=W(1,1)+1:W(3,1)=W(3,1)-1
220 FOR A=1 TO 3:N(A,8)=W(1,1):NEXT
300 CLS:PRINT
310 PRINT"CLIPPER - A RACE AROUND THE HORN TO CALIFORNIA IN 1852
"
320 PRINT:PRINT"HOW MANY PLAYERS (1 TO 3) ?"
330 A$=INKEY$:IF A$="" THEN 330 ELSE P=VAL(A$)
340 IF P<1 THEN P=1
350 IF P>3 THEN P=3
360 IF P<3 THEN N(3,0)=-10
370 IF P=1 THEN N(2,0)=-10
380 PRINT P;"PLAYER";:IF P>1 THEN PRINT"S";
390 PRINT
999 'CONTROL ROUTINE
1000 IF N(1,0)=-10 AND N(2,0)=-10 AND N(3,0)=-10 THEN 2300
1010 GOSUB 7500
1020 FOR C=1 TO P
1025 IF N(C,0)=-10 THEN 1170
1030 GOSUB 7000:GOSUB 7600:GOSUB 7700
1040 GOSUB 9000
1050 GOSUB 8000
1060 FOR CL=1 TO 14
1062 IF WR=1 THEN 1150
1065 GOSUB 8200
1070 GOSUB 8040
1075 GOSUB 8200
1080 GOSUB 2060
1085 IF INT(CL/2)=CL/2 THEN D(C)=D(C)+1
1090 GOSUB 8300
1100 GOSUB 8200
1120 GOSUB 7700
1130 GOSUB 8200
1140 GOSUB 8400
1150 NEXT CL
1160 WR=0
1170 NEXT C
1190 GOTO 1000
1999 'NEW LOCATION
2000 R=N(C,4):T=0:N(C,0)=N(C,12)
2009 'PORT TACK
2010 IF N(C,0)>N(C,11) THEN T=N(C,0)-N(C,11):T(C,2)=2:IF T=1 THE
N T=2:N(C,0)=N(C,0)+1
2019 'STARBOARD TACK
2020 IF N(C,0)<N(C,11) THEN T=N(C,11)-N(C,0):T(C,2)=1:IF T=1 THE
N T=2:N(C,0)=N(C,0)-1
2025 IF N(C,0)>15 THEN N(C,0)=0
2030 IF T=0 THEN N(C,0)=N(C,0)-1:GOTO 2020
2035 IF N(C,0)<0 THEN N(C,0)=16+N(C,0)
2040 IF T>8 THEN T=16-T
2050 IF T>1 THEN M=.6:T(C,1)=1:IF T>3 THEN M=1:T(C,1)=2:IF T>5 T
HEN M=1.2:T(C,1)=3
2052 IF T(C,1)<>S(C,1) OR T(C,2)<>S(C,2) THEN GOSUB 2500
2055 M=M+N(C,5)+N(C,10)/8:GOTO 8050
2060 D=N(C,0):H=N(C,1):V=N(C,2):L=W(R,4)+8:IF L>15 THEN L=L-16
2070 H=H+(H(D)*M)/6+H(L)/600:N(C,10)+N(C,6)/30
2080 V=V+(V(D)*M)/10+V(L)/1000:N(C,10)+N(C,7)/50
2085 GOSUB 2400
2090 N(C,1)=H:N(C,2)=V:N(C,3)=INT(V)*64+INT(H)
2100 IF N(C,3)=145 THEN 2600
2190 RETURN
2200 CLS
2210 PRINT
2220 PRINT"SOS ...---... SOS ...---... SOS"
2230 PRINT
2240 PRINT" S H I P W R E C K !"
2250 PRINT
2260 PRINT"THE CLIPPER ";C$(C); " WAS LOST AT SEA WITH ALL HANDS"

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2265 GOSUB 2700
2270 N(C,0)=-10:E(C,1)=2:E(C,2)=H:E(C,3)=V:E(C,4)=D(C):N(C,3)=99
2275 PRINT"LAST REPORTED POSITION ";:PRINT USING F%;LA;:PRINT US
ING B%;LO
2280 FOR A=1 TO 2000:NEXT A
2290 WR=1:RETURN
2299 'END OF GAME
2300 CLS:PRINT:PRINT" G A M E O V E R":PRINT
2310 FOR C=1 TO P
2320 IF E(C,1)=2 THEN 2350
2330 PRINT"THE CLIPPER ";C$(C); " SAILED TO SAN FRANCISCO IN";E(
C,4); "DAYS"
2340 PRINT:GOTO 2370
2350 PRINT"THE ";C$(C); " WAS LOST AT SEA AFTER";E(C,4); " DAYS"
2360 H=E(C,2):V=E(C,3):GOSUB 2700:PRINT"NEAR ";:PRINT USING F%;
LA;:PRINT USING B%;LO
2365 PRINT
2370 NEXT C
2380 INPUT"(PRESS ENTER FOR NEW GAME)";A$
2390 RUN
2400 B$="### DAYS ":PRINT@ 951,"";
2410 PRINT USING B%;D(C);
2420 GOSUB 2700
2430 PRINT@ 1005,"";
2440 PRINT USING F%;LA;
2450 PRINT USING B%;LO;
2490 RETURN
2500 IF S(C,2)=T(C,2) THEN 2540
2510 IF S(C,2)=2 THEN X=6+S(C,1)+1:FOR B=15392 TO 15904 STEP 64:FO
R A=B+1 TO B+X:POKE A,128:NEXT A:X=X+1:NEXT B
2520 IF S(C,2)=1 THEN X=6+S(C,1)+1:FOR B=15392 TO 15904 STEP 64:FO
R A=B-X TO B-1:POKE A,128:NEXT A:X=X+1:NEXT B
2530 GOTO 8050
2540 IF T(C,1)>S(C,1) THEN 2530
2550 IF T(C,2)=2 THEN X=6+S(C,1)+9:Y=6+T(C,1):FOR B=15392 TO 15904
STEP 64:FOR A=B+Y TO B+X:POKE A,128:NEXT A:Y=Y+1:NEXT B
2560 IF T(C,2)=1 THEN X=6+S(C,1)+9:Y=6+T(C,1):FOR B=15392 TO 15904
STEP 64:FOR A=B-X TO B-Y:POKE A,128:NEXT A:Y=Y+1:NEXT B
2570 GOTO 8050
2600 CLS:PRINT
2610 PRINT"THE CLIPPER ";C$(C); " HAS JUST ARRIVED IN SAN FRANCIS
CO"
2620 PRINT"AND IS UNLOADING CHOICE EASTERN MERCHANDISE AT THE WH
ARF.":PRINT
2630 PRINT" THIS FAST SHIP,";D(C); " DAYS OUT OF NEW YORK, IS NO
W"
2635 PRINT"BOOKING PASSENGERS AND FREIGHT FOR NEW YORK."
2640 E(C,1)=1:E(C,4)=D(C):N(C,0)=-10
2650 PRINT:PRINT"TOUCH ANY KEY TO CONTINUE"
2660 A$=INKEY$:IF A$="" THEN 2660
2690 GOTO 1000
2700 IF V>6 THEN 2740
2710 F$=" ##.## N "
2720 LA=(6-V)*8.2
2730 GOTO 2760
2740 F$=" ##.## S "
2750 LA=(V-6)*8.2
2760 B$=" ###.## M "
2770 LO=174-H*3
2790 RETURN
2999 ' INSTRUCTIONS
3000 CLS:PRINT
3010 PRINT" THIS GAME SIMULATES A CLIPPER SHIP RACE AROUND THE
HORN"
3020 PRINT"DURING THE CALIFORNIA GOLD RUSH. THE FIRST PERSON TO
GO"
3030 PRINT"FROM NEW YORK (N) TO SAN FRANCISCO (S) WINS."
3040 PRINT:PRINT" TO SAIL YOUR SHIP, AT THE BEGINNING OF A TU
RN, ENTER"
3050 PRINT"YOUR INTENDED COURSE AS DIRECTED. IF YOU WANT TO CHAN
GE"

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3100 PRINT "COURSE DURING A TURN, PRESS / (OR S) FOR A TURN TO*
3110 PRINT "STARBOARD (RIGHT) OR PRESS Z (OR P) TO TURN TO PORT
(LEFT).":PRINT
3230 PRINT "ANTARCTIC ICE BEGINS AT 64.4 DEGREES SOUTH. CAPE HO
RN*"
3240 PRINT "EXTENDS FROM 69 DEGREES WEST TO 74 DEGREES WEST AT 55
.5*"
3250 PRINT "DEGREES SOUTH. IF YOU TOUCH ANY OF THESE BOUNDARIES O
R ANY*"
3260 PRINT "OTHER LAND MASS, YOU WILL SHIPWRECK.":PRINT:INPUT " (
PRESS ENTER)":A$
3270 CLS:PRINT:PRINT "THE DOLDRUMS EXTEND FROM 8.2 DEGREES NOR
TH TO 2.8 DEGREES*"
3280 PRINT "SOUTH. IF YOU FINISH A TURN IN THE DOLDRUMS, IT MAY T
AKE*"
3290 PRINT "MONTHS TO GET OUT BECAUSE OF LIGHT WINDS.*"
3300 PRINT:PRINT "THE COMPUTER CONSIDERS ANY POSITION BETWEEN
120 AND 123*"
3310 PRINT "DEGREES WEST AND 24.6 TO 32.8 DEGREES NORTH TO BE A S
AFE*"
3320 PRINT "ARRIVAL IN SAN FRANCISCO. YOUR POSITION IS AFFECTED B
Y*"
3330 PRINT "WIND, CURRENT, LEEWAY, AND YOUR SAIL POSITION.*"
3350 PRINT "SEE AN ATLAS, GLOBE, OR NAVIGATION CHARTS FOR APPROXI
MATE*"
3350 PRINT "DESCRIPTION OF WEATHER CONDITIONS AND CURRENT.*"
3340 PRINT:INPUT " (PRESS ENTER TO BEGIN)":A$
3350 RETURN
3999 'COMMANDS
4000 C$=INKEY$
4010 IF C$="Z" THEN C$="P"
4020 IF C$="P" THEN N(C,12)=N(C,12)-1
4030 IF N(C,12)<0 THEN N(C,12)=15
4035 IF C$="/" THEN C$="S"
4040 IF C$="S" THEN N(C,12)=N(C,12)+1
4050 IF N(C,12)>15 THEN N(C,12)=0
4060 IF C$="P" THEN PRINT@ 985," PORT ";
4070 IF C$="S" THEN PRINT@ 985," STARBOARD ";
4090 RETURN
4999 'SHORELINE
5000 D=N(C,0)
5010 ON D+1 GOSUB 5100,5110,5120,5130,5140,5150,5160,5170,5180,5
190,5200,5210,5220,5230,5240,5250
5020 PRINT@ 576,A$;
5090 RETURN
5100 A=DW:U=2:GOSUB 5700:A=DN:U=32:GOSUB 5700:A=DE:U=61:GOSUB 57
00:RETURN
5110 A=DN:U=16:GOSUB 5700:A=DE:U=58:GOSUB 5700:RETURN
5120 A=DN:U=10:GOSUB 5700:A=DE:U=54:GOSUB 5700:RETURN
5130 A=DN:U=6:GOSUB 5700:A=DE:U=48:GOSUB 5700:RETURN
5140 A=DN:U=2:GOSUB 5700:A=DE:U=32:GOSUB 5700:A=DS:U=61:GOSUB 57
00:RETURN
5150 A=DE:U=16:GOSUB 5700:A=DS:U=58:GOSUB 5700:RETURN
5160 A=DE:U=10:GOSUB 5700:A=DS:U=54:GOSUB 5700:RETURN
5170 A=DE:U=6:GOSUB 5700:A=DS:U=48:GOSUB 5700:RETURN
5180 A=DE:U=2:GOSUB 5700:A=DS:U=32:GOSUB 5700:A=DW:U=61:GOSUB 57
00:RETURN
5190 A=DS:U=16:GOSUB 5700:A=DW:U=58:GOSUB 5700:RETURN
5200 A=DS:U=10:GOSUB 5700:A=DW:U=54:GOSUB 5700:RETURN
5210 A=DS:U=6:GOSUB 5700:A=DW:U=48:GOSUB 5700:RETURN
5220 A=DS:U=2:GOSUB 5700:A=DW:U=32:GOSUB 5700:A=DN:U=61:GOSUB 57
00:RETURN
5230 A=DW:U=16:GOSUB 5700:A=DN:U=58:GOSUB 5700:RETURN
5240 A=DW:U=10:GOSUB 5700:A=DN:U=54:GOSUB 5700:RETURN
5250 A=DW:U=6:GOSUB 5700:A=DN:U=48:GOSUB 5700:RETURN
5700 Q=A/A
5710 IF Q>3 THEN 5790
5720 B=SQR(4-Q)
5730 X=ATN(B/A)
5740 IF X>2 THEN X=2

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5750 X=INT(X*32)
5780 GOSUB 5800
5790 RETURN
5800 Y=U-X:Z=U+X
5805 IF A<1 THEN AA=10-10*A:Y=Y-AA:Z=Z+AA
5810 IF Y>64 AND Z>64 THEN 5890
5820 IF Y<1 AND Z<1 THEN 5890
5830 IF Y<1 THEN Y=1
5840 IF Z>64 THEN Z=64
5850 IF U<32 AND Z>U+8 THEN Z=U+8
5860 IF U>32 AND Y<U-8 THEN Y=U-8
5870 L$="I":IF V>3 THEN L$="E":IF V>7 AND H<32 THEN L$="H"
5875 IF V>10 AND A=DS THEN L$="-"
5880 GOSUB 5900
5890 RETURN
5900 A=Z-Y:B$="":FOR B=1 TO A:B$=B$+L$:NEXT B:AL$="":AR$=""
5910 AL$=LEFT$(A$,Y-1)
5920 AR$=RIGHT$(A$,64-Z)
5930 A$=AL$+B$+AR$
5990 RETURN
6999 'DETERMINE REGION AND OCEAN CURRENTS
7000 H=N(C,1):V=N(C,2):N(C,6)=0:N(C,7)=0:IF V>2.5 THEN 7100
7010 N(C,4)=1
7020 IF V<2 AND H>30 AND H<45 THEN N(C,6)=1.9:N(C,7)=-.2
7030 IF H>45 THEN N(C,6)=-.4:N(C,7)=.8
7040 IF H>14 AND H<18 THEN N(C,7)=1
7090 GOTO 7490
7100 IF V>5 THEN 7200
7110 N(C,4)=2
7120 IF V>3.6 THEN N(C,6)=-1.2:GOTO 7190
7130 IF H>15 AND H<20 THEN N(C,7)=.7
7140 IF H>32 AND H<37 THEN N(C,7)=-1
7190 GOTO 7490
7200 IF V>6.3 THEN 7300
7210 N(C,4)=3
7220 IF H>45 THEN N(C,6)=1.3
7290 GOTO 7490
7300 IF V>9 THEN 7400
7310 N(C,4)=4
7320 IF V<7 THEN N(C,6)=-2.1:GOTO 7390
7330 IF H<42 AND H>32 THEN N(C,7)=1.5
7340 IF H>48 THEN N(C,7)=-2
7350 IF H>24 AND H<31 THEN N(C,7)=-1.8
7390 GOTO 7490
7400 N(C,4)=5
7410 IF V>10.8 THEN N(C,6)=2.2:GOTO 7490
7420 IF H>27 AND H<37 THEN N(C,7)=-1.8
7430 IF H>37 AND H<41 THEN N(C,7)=1.4
7490 RETURN
7499 'WEATHER BY REGION
7500 W(1,2)=RND(6)-1:IF W(1,1)>30 THEN W(1,2)=-W(1,2)
7510 A=ABS(W(1,2)):W(1,3)=RND(7)*RND(A+1)+RND(15)-1:W(1,4)=RND(1
6)-1
7520 W(2,2)=RND(6)-1:IF W(2,1)>29.5 THEN W(2,2)=-W(2,2)
7530 A=ABS(W(2,2)):W(2,3)=RND(5)*RND(A+1):IF W(2,3)<10 THEN W(2,
3)=W(2,3)+RND(15)
7535 W(2,4)=2+RND(8)-RND(8):IF W(2,4)<0 THEN W(2,4)=W(2,4)+16
7540 W(3,2)=RND(3)-1:IF W(3,1)>29 THEN W(3,2)=-W(3,2)
7550 A=ABS(W(3,2)):W(3,3)=RND(3)*A+RND(3)-1:W(3,4)=RND(16)-1
7560 W(4,2)=RND(6)-1:IF W(4,1)>30 THEN W(4,2)=-W(4,2)
7570 A=ABS(W(4,2)):W(4,3)=RND(6)*A:W(4,4)=6+RND(8)-RND(8):IF W(4
,4)<0 THEN W(4,4)=15
7575 IF W(4,3)<10 THEN W(4,3)=W(4,3)+RND(21)-1
7580 W(5,2)=RND(3)+2:IF W(5,1)>29.7 THEN W(5,2)=-W(5,2)
7590 A=ABS(W(5,2)):W(5,3)=(3+RND(7))*A:W(5,4)=11+RND(8)-RND(8):I
F W(5,4)>15 THEN W(5,4)=W(5,4)-16
7595 FOR A=1 TO 5:W(A,1)=W(A,1)+W(A,2)/7:NEXT A:RETURN
7599 'CURRENT PLAYER'S WEATHER
7600 R=N(C,4):N(C,8)=W(R,1)
7610 N(C,9)=W(R,2)/50
7620 N(C,10)=W(R,3)

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7630 N(C,11)=M(R,4)
7690 RETURN
7699 'HOURLY CHANGE IN WEATHER
7700 N(C,8)=N(C,8)+N(C,9)
7710 N(C,10)=N(C,10)+RND(3)-2:IF N(C,10)<0 THEN N(C,10)=0
7720 IF N(C,8)<28 AND N(C,9)<-.09 THEN N(C,10)=N(C,1)+RND(5):A=R
ND(12):IF (A+CL)>10 THEN N(C,9)=-N(C,9)
7730 N(C,11)=N(C,11)+RND(3)-2
7740 IF N(C,11)>15 THEN N(C,11)=0
7750 IF N(C,11)<0 THEN N(C,11)=15
7790 RETURN
7999 'VIEW FROM BOW
8000 CLS
8010 FOR A=16128TO16382:POKE A,191:NEXT
8020 FOR A=16139TO16146:POKE A,128:POKE A+32,128:NEXT
8030 POKE 16095,190:POKE 16096,189
8040 GOTO 2000
8050 IF T(C,2)=1 GOSUB 8100
8060 IF T(C,2)=2 GOSUB 8150
8070 S(C,1)=T(C,1)
8080 S(C,2)=T(C,2)
8090 RETURN
8099 'SAIL FOR STARBOARD TACK
8100 X=6:T(C,1):FOR B=15392TO15904 STEP 64:FOR A=B-X TO B:POKE A
,191:NEXT A:X=X+1:POKE B-X,186
8110 NEXT B:RETURN
8149 'SAIL FOR PORT TACK
8150 X=6:T(C,1):FOR B=15392TO15904 STEP 64:FOR A=B TO B+X:POKE A
,191:NEXT A:X=X+1:POKE B+X,181
8160 NEXT B:RETURN
8199 'WAVES
8200 W=W+1:IF W=4 THEN W=1
8210 PRINT@ 640,W$(W);W$(W);W$(W);W$(W);
8220 W$(0)=LEFT$(W$(W+1),15)
8230 PRINT@ 704,W$(W+1);W$(0);:PRINT@ 737,W$(0);W$(W+1);
8240 W$(0)=LEFT$(W$(W+2),8)
8250 PRINT@ 779,W$(0);:PRINT@ 811,W$(0);
8260 GOSUB 4000
8290 RETURN
8299 'DATA DISPLAY
8300 D=N(C,0):PRINT@ 862,D$(D);
8310 PRINT@ 985,C$(C);
8320 PRINT@ 896,"WIND ";
8330 PRINT@ 960,D$(N(C,11));
8340 B$="### KNOTS "
8350 PRINT USING B$;N(C,10);
8390 RETURN
8399 'LAND TEST - C(0)=LAND NEARBY 1=N 2=E 3=S 4=W
8400 H=N(C,1):V=N(C,2):X=INT(H):Y=INT(V)
8410 DN=H:DN=V:DE=64-H:DS=13-V
8419 'NORTH BOUNDARY
8420 IF H<16 OR H>44 THEN 8550
8430 IF H<44 THEN DN=V-8
8435 IF H<42 THEN DN=V-9
8440 IF H<38 THEN DN=V-10
8450 IF H<35 THEN DN=V-12
8460 IF H<33.5 THEN DN=V-11
8465 IF X>30 AND X<34 THEN DN=V-11
8470 IF H<31 THEN DN=V-8
8475 IF H<29 THEN DN=V-6
8480 IF H<27 THEN DN=V-5
8485 IF H<20 THEN DN=V-(X-15)
8490 IF H<34 OR V>8 THEN 8550
8499 'EASTERN ATLANTIC
8500 IF X<44 THEN DN=V:DS=6-V
8505 IF X=39 THEN DN=V
8510 IF X<39 THEN DN=V-1
8520 IF X<35 THEN DN=V-2
8530 IF X>41 AND X<45 THEN DS=7-V
8549 'WEST COAST

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8550 IF H>32 THEN 8600
8555 IF Y=12 THEN 8690
8560 IF Y<5 THEN DE=(15+Y)-H:GOTO 8690
8570 IF Y=11 THEN DE=33.5-H
8575 IF Y<11 THEN DE=31-H
8580 IF Y<8 THEN DE=29-H
8585 IF Y=5 THEN DE=27-H
8590 GOTO 8690
8599 'EAST COAST
8600 IF Y<12 THEN DN=H-36
8610 IF Y=9 THEN DN=H-38
8620 IF Y=8 THEN DN=H-42
8630 IF Y=7 THEN DN=H-44
8640 IF Y=6 THEN DN=H-43
8650 IF Y=5 THEN DN=H-36
8660 IF Y<5 AND Y>1 THEN DN=H-33.5
8665 IF Y=1 THEN DN=H-35
8670 IF Y=0 THEN DN=H-39
8680 GOSUB 8200
8690 FOR A=0TO4:C(A)=0:NEXT
8700 IF DN<2 THEN C(1)=1:C(0)=1
8710 IF DE<2 THEN C(2)=1:C(0)=1
8720 IF DS<2 THEN C(3)=1:C(0)=1
8730 IF DN<2 THEN C(4)=1:C(0)=1
8740 A$="":FOR A=1TO64:A$=A$+" ":NEXT:IF C(0)=0 THEN 8790
8750 GOSUB 8200:GOSUB 5000
8760 IF DN<0 OR DE<0 OR DS<0 OR DN<0 THEN 2200
8790 RETURN
8999 'MAP
9000 CLS:A=15360
9010 POKE A+16,162:FOR B=A+17TOA+33:POKE B,191:NEXT:POKE A+34,15
1:FOR B=A+35TOA+37:POKE B,143:NEXT:POKE A+38,142
9020 A=A+64:POKE A+17,139:FOR B=A+18TOA+32:POKE B,191:NEXT:POKE A
+33,159:POKE A+34,159
9030 A=A+64:POKE A+18,162:FOR B=A+19TOA+32:POKE B,191:NEXT:POKE
A+33,157
9040 A=A+64:POKE A+19,131:FOR B=A+20TOA+25:POKE B,191:POKE B+6,1
43:NEXT:POKE A+20,175:POKE A+21,175:POKE A+28,135:POKE A+32,175:
POKE A+33,145
9050 A=A+64:POKE A+21,133:POKE A+22,143:POKE A+23,143:FOR B=A+24
TO A+26:POKE B,191:NEXT:POKE A+33,130
9060 A=A+64:POKE A+26,139:POKE A+27,173:FOR B=A+29TOA+38:POKE B,
176:NEXT
9070 A=A+64:FOR B=A+28TOA+41:POKE B,191:NEXT:POKE A+42,180:POKE
A+43,144
9080 A=A+64:POKE A+28,138:FOR B=A+29TOA+43:POKE B,191:NEXT
9090 A=A+64:FOR B=A+31TOA+36:POKE B,191:POKE B+64,191:POKE B+128
,191:POKE B+5,191:NEXT:POKE A+41,143:POKE A+42,135
9100 A=A+64:POKE A+37,131
9110 A=A+64:POKE A+36,128
9120 A=A+64:POKE A+31,131:POKE A+32,191:POKE A+33,191:POKE A+34,
181:POKE A+35,148
9130 PRINT@ N(1,3),"C";:PRINT@ N(2,3),"F";:PRINT@ N(3,3),"S";:PR
INT@ 99,"N";:PRINT@ 145,"S";
9140 PRINT@ N(C,3),"!";
9150 PRINT@ 832,"CLIPPER ";C$(C);" ";
9170 PRINT@ WINDS ";D$(N(C,11));" AT";N(C,10);" KNOTS"
9230 PRINT@ 896,"1-N 2-NE 3-E 4-SE 5-S 6-SW 7-W 8-NW"
9240 PRINT@ 960,"CAPTAIN, WHAT HEADING DO YOU WISH (0-8)";
9250 A$=INKEY$:IF A$="" THEN 9250
9252 IF A$="N" THEN A$="1"
9253 IF A$="E" THEN A$="3"
9254 IF A$="S" THEN A$="5"
9255 IF A$="W" THEN A$="7"
9260 A=VAL(A$):IF (A<1)OR(A>8) THEN 9250
9270 N(C,12)=(A-1)*2
9490 RETURN
9999 GOTO 9999
10000 DATA " N ",0,-1,"NNE",.4,-.9," NE ",.7,-.7,"ENE",.9,-.4
10010 DATA " E ",1,0,"ESE",.9,.4," SE ",.7,.7,"SSE",.4,.9
10020 DATA " S ",0,1,"SSW",-4,.9,"SW ",-.7,.7,"WSW",-9,.4
10030 DATA " W ",-1,0,"WNW",-9,-.4,"NW ",-.5,-.7,"NNW",-4,-.9
10040 DATA " CHALLENGE ", "FLYING CLOUD", " SURPRISE "

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