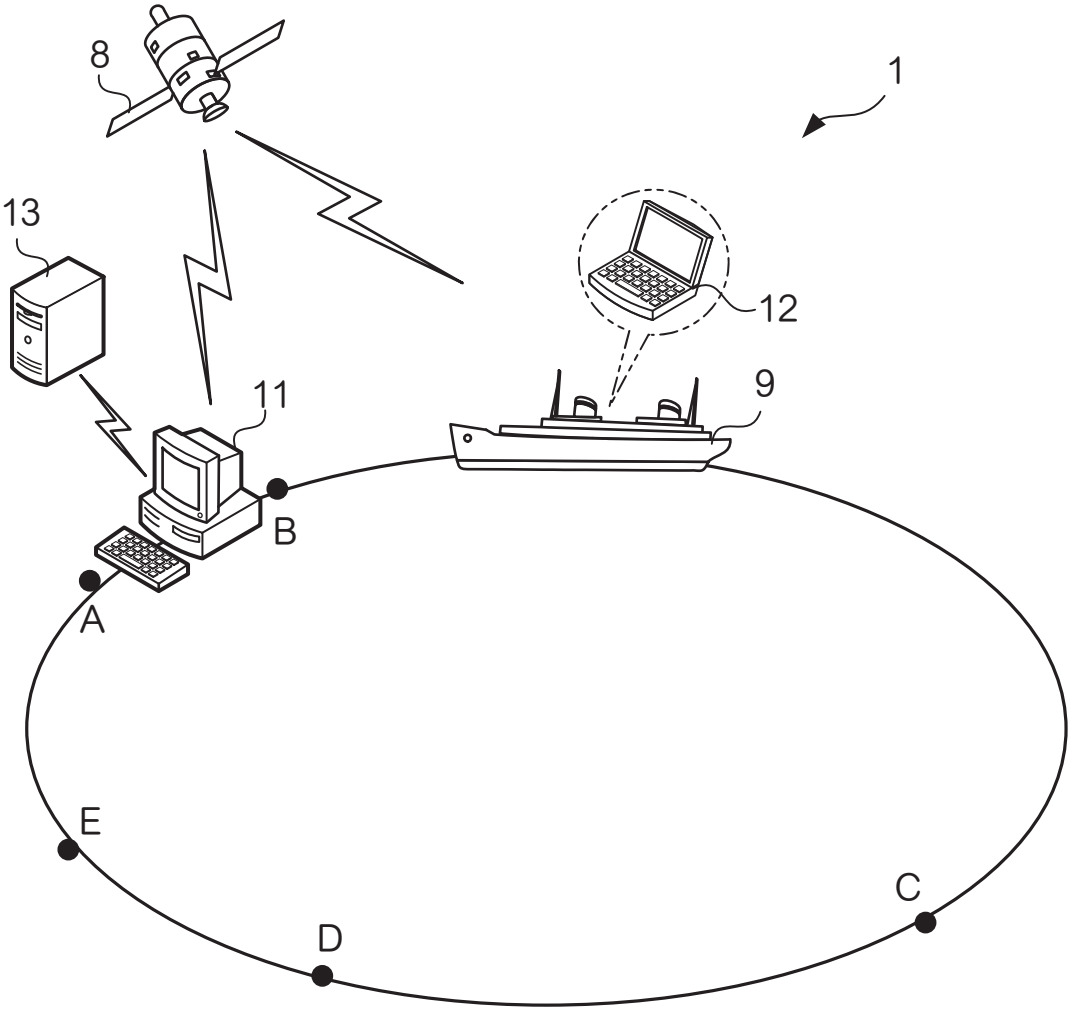
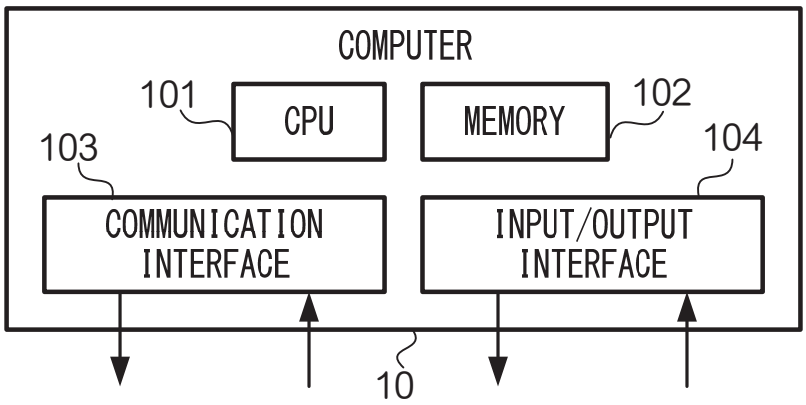
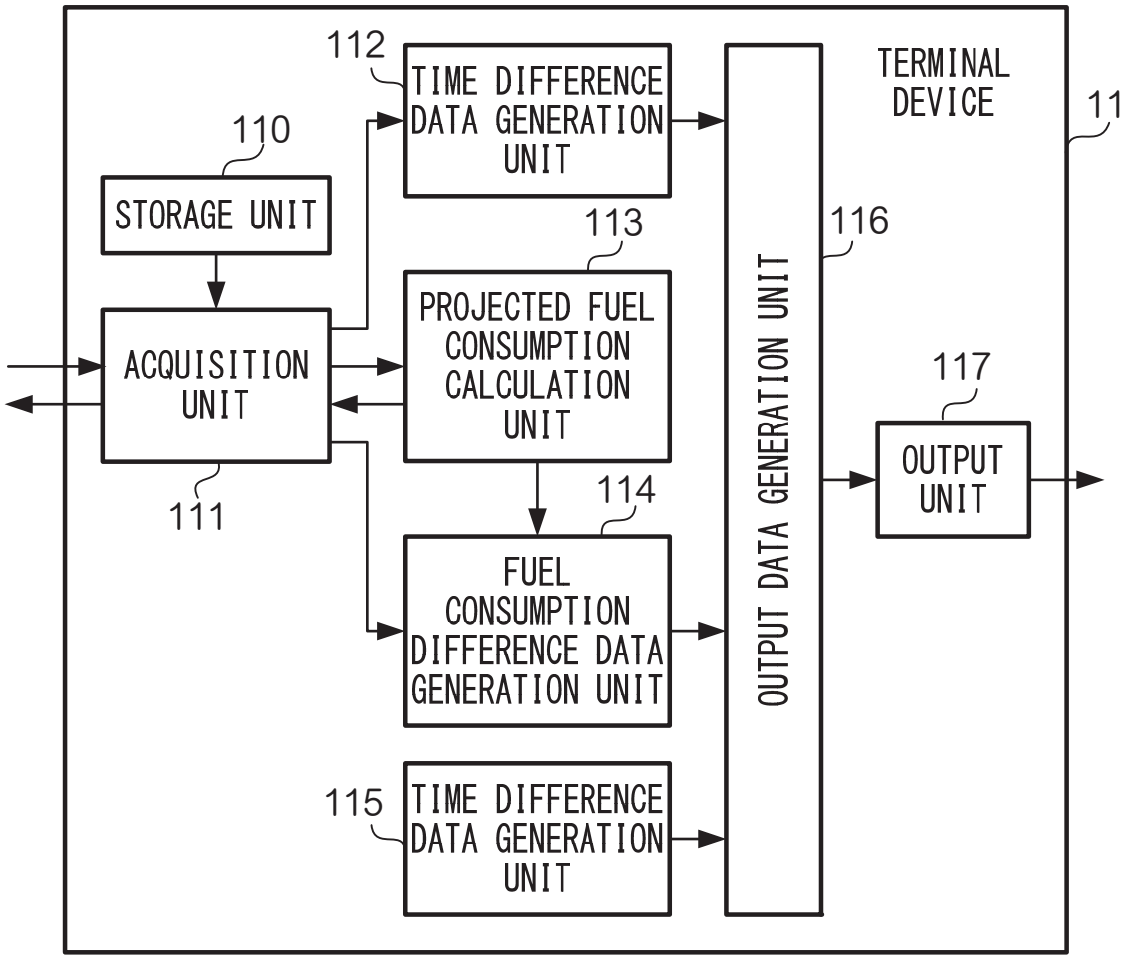
[FIG.1]


8
1
13
12
11
9
B
A
E
C
D

[FIG.2]


COMPUTER
101
CPU
MEMORY
102
103
104
COMMUNICATION INTERFACE
INPUT/OUTPUT INTERFACE
10

[FIG.3]


TERMINAL DEVICE
11
112
TIME DIFFERENCE DATA GENERATION UNIT
110
STORAGE UNIT
113
PROJECTED FUEL CONSUMPTION CALCULATION UNIT
116
OUTPUT DATA GENERATION UNIT
117
OUTPUT UNIT
ACQUISITION UNIT
111
114
FUEL CONSUMPTION DIFFERENCE DATA GENERATION UNIT
115
TIME DIFFERENCE DATA GENERATION UNIT

[FIG.4]

SHIP ID "ABC" / ROUTE ID "1234"

TABLE OF REFERENCE VALUES FOR TRAVEL

| TRAVEL SEGMENT | SAILING DISTANCE (miles) | SAILING TIME (hours) | SAILING SPEED (knots) |
|---|---|---|---|
| A－B | 190 | 13.5 | 13.5 |
| B－C | 3700 | 200.0 | 200.0 |
| C－D | 1400 | 85.0 | 85.0 |
| D－E | 700 | 46.0 | 46.0 |
| E－A | 150 | 12.5 | 12.5 |

TABLE OF REFERENCE VALUES WHILE IN PORT OF CALL

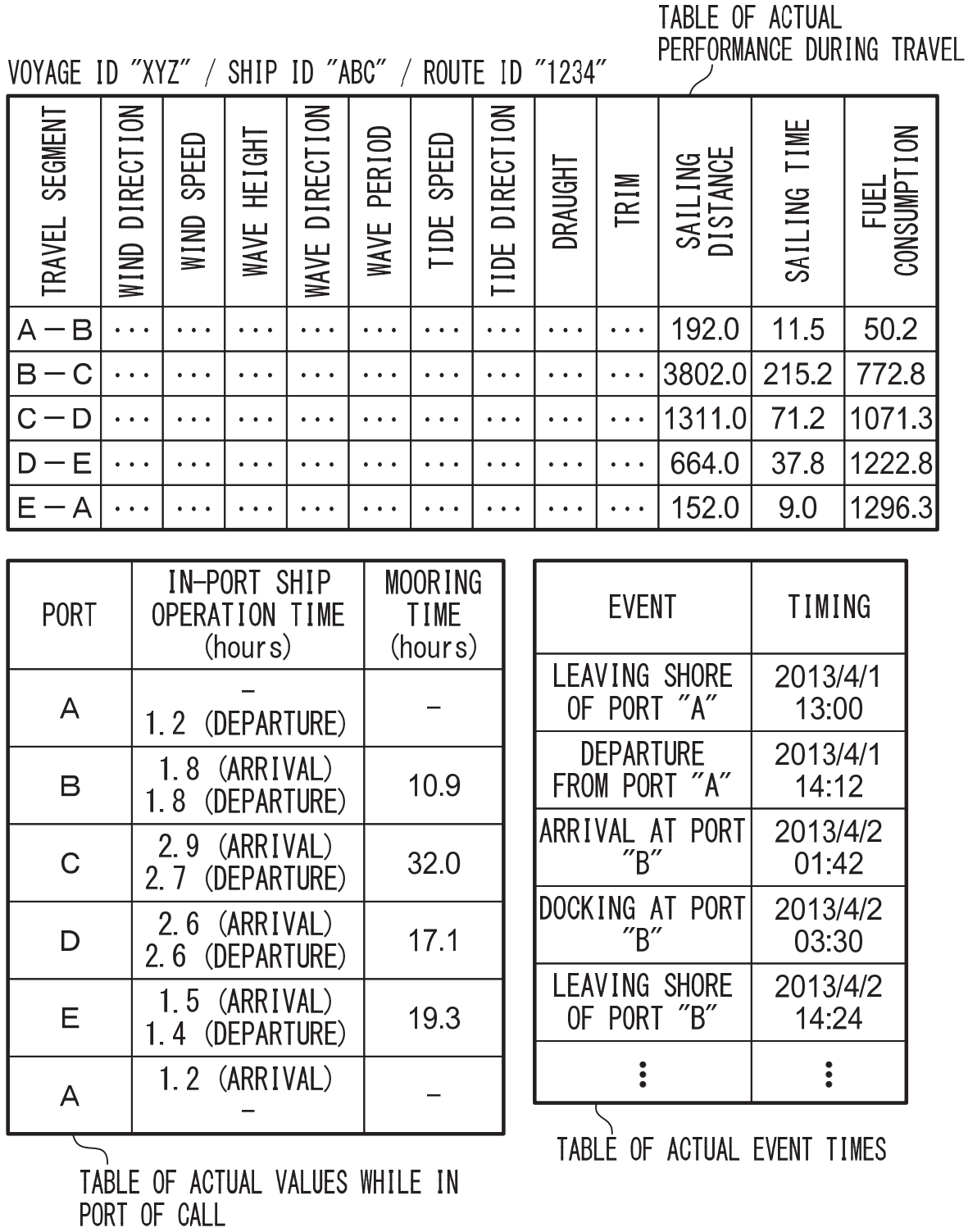
| PORT | IN-PORT SHIP OPERATION TIME (hours) | MOORING TIME (hours) |
|---|---|---|
| A | －<br>2.0 (DEPARTURE) | － |
| B | 2.0 (ARRIVAL)<br>2.0 (DEPARTURE) | 8.0 |
| C | 1.0 (ARRIVAL)<br>1.0 (DEPARTURE) | 25.0 |
| D | 2.0 (ARRIVAL)<br>2.0 (DEPARTURE) | 17.5 |
| E | 2.0 (ARRIVAL)<br>2.0 (DEPARTURE) | 20.0 |
| A | 2.0 (ARRIVAL)<br>－ | － |

[FIG.5]

SHIP ID "ABC"

| WIND DIRECTION | WIND SPEED | WAVE HEIGHT | WAVE DIRECTION | WAVE PERIOD | TIDE SPEED | TIDE DIRECTION | DRAUGHT | TRIM | SPEED OVER GROUND | FUEL CONSUMPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |

[FIG.6]


TABLE OF ACTUAL PERFORMANCE DURING TRAVEL
VOYAGE ID "XYZ" / SHIP ID "ABC" / ROUTE ID "1234"
TRAVEL SEGMENT
WIND DIRECTION
WIND SPEED
WAVE HEIGHT
WAVE DIRECTION
WAVE PERIOD
TIDE SPEED
TIDE DIRECTION
DRAUGHT
TRIM
SAILING DISTANCE
SAILING TIME
FUEL CONSUMPTION
A－B ··· ··· ··· ··· ··· ··· ··· ··· ··· 192.0 11.5 50.2
B－C ··· ··· ··· ··· ··· ··· ··· ··· ··· 3802.0 215.2 772.8
C－D ··· ··· ··· ··· ··· ··· ··· ··· ··· 1311.0 71.2 1071.3
D－E ··· ··· ··· ··· ··· ··· ··· ··· ··· 664.0 37.8 1222.8
E－A ··· ··· ··· ··· ··· ··· ··· ··· ··· 152.0 9.0 1296.3
PORT
IN-PORT SHIP OPERATION TIME (hours)
MOORING TIME (hours)
A – 1.2 (DEPARTURE) –
B 1.8 (ARRIVAL) 1.8 (DEPARTURE) 10.9
C 2.9 (ARRIVAL) 2.7 (DEPARTURE) 32.0
D 2.6 (ARRIVAL) 2.6 (DEPARTURE) 17.1
E 1.5 (ARRIVAL) 1.4 (DEPARTURE) 19.3
A 1.2 (ARRIVAL) –
TABLE OF ACTUAL VALUES WHILE IN PORT OF CALL
EVENT
TIMING
LEAVING SHORE OF PORT "A" 2013/4/1 13:00
DEPARTURE FROM PORT "A" 2013/4/1 14:12
ARRIVAL AT PORT "B" 2013/4/2 01:42
DOCKING AT PORT "B" 2013/4/2 03:30
LEAVING SHORE OF PORT "B" 2013/4/2 14:24
TABLE OF ACTUAL EVENT TIMES

[FIG.7]

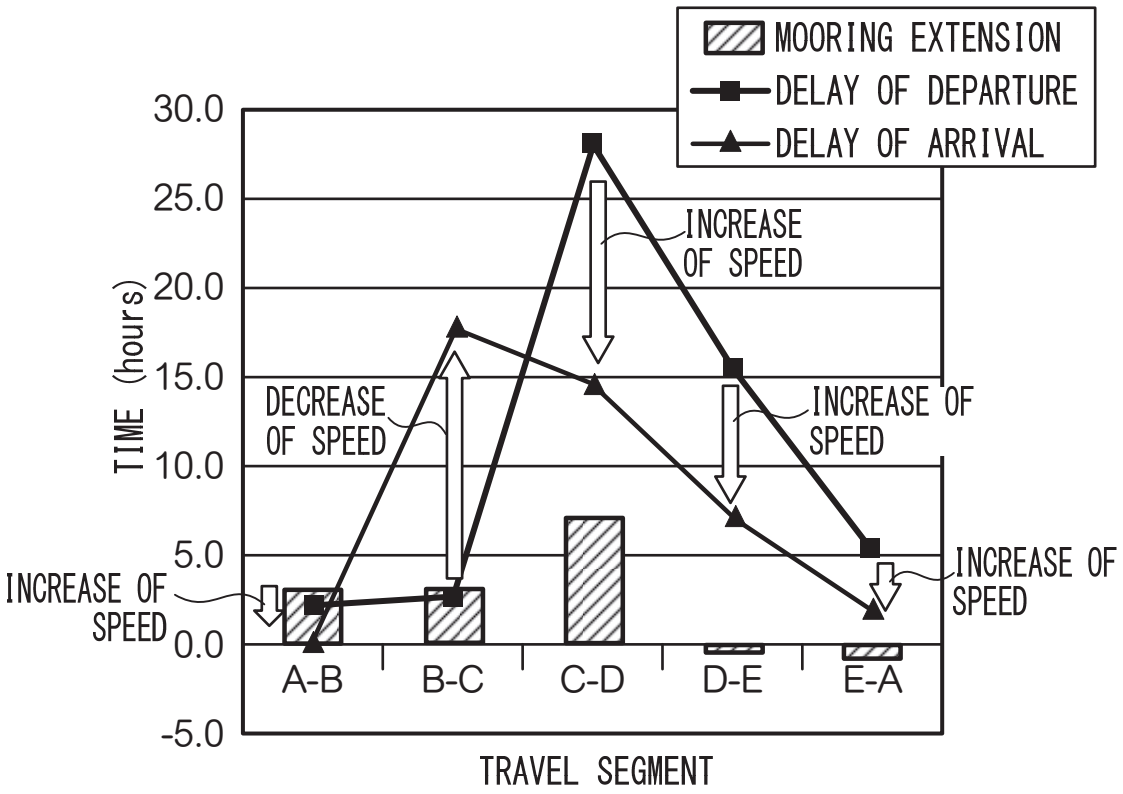
TIME RANGE "2013/4/1 12:00 - 2013/4/2 01:30"
"SEA AREA A-B"

| WIND DIRECTION | WIND SPEED | WAVE HEIGHT | WAVE DIRECTION | WAVE PERIOD | TIDE SPEED | TIDE DIRECTION |
|---|---|---|---|---|---|---|
| ... | ... | ... | ... | ... | ... | ... |

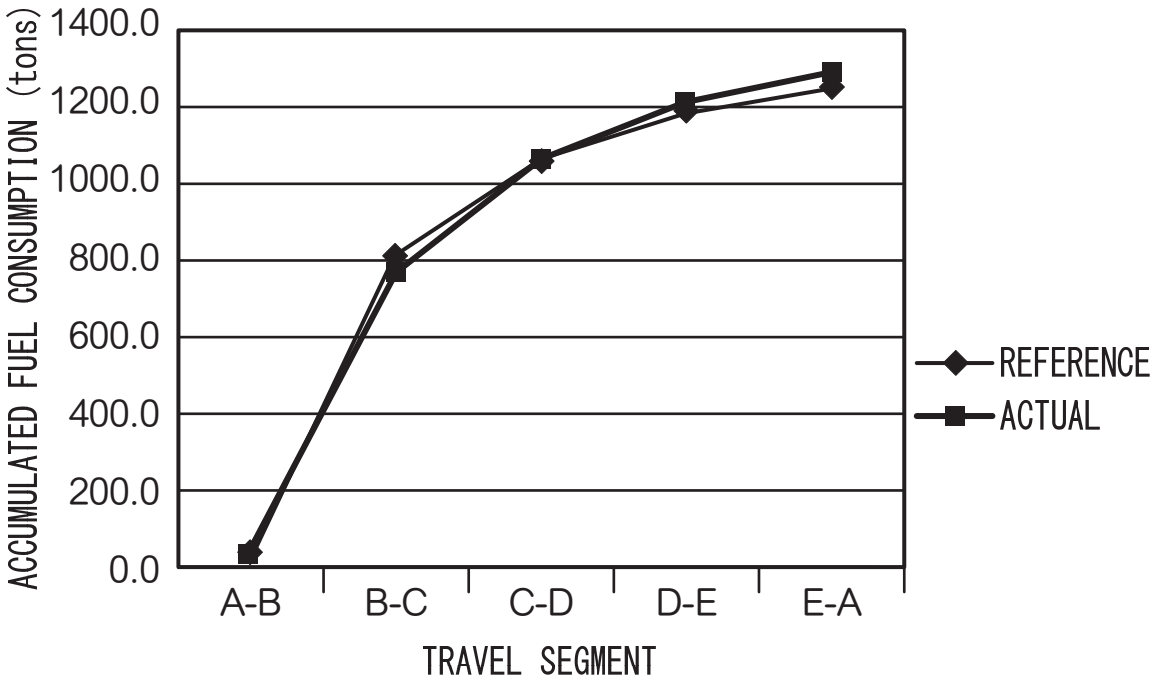
[FIG.8]

| | TIME | | | FUEL CONSUMPTION | | | | TIME DIFFERENCE | |
|---|---|---|---|---|---|---|---|---|---|
| | REFERENCE | ACTUAL | DIFFERENCE | REFERENCE | ACTUAL | DIFFERENCE | ACCUMULATION | | |
| DELAY OF DEPARTURE FROM PORT "A" | 0.0 | 3.0 | 3.0 | | | | | 3.00 | LEAVING SHORE OF PORT "A" |
| TIME SPENT LEAVING SHORE OF PORT "A" | 2.0 | 1.2 | -0.8 | | | | | 2.20 | DEPARTURE FROM PORT "A" |
| TIME SPENT SAILING FROM PORT "A" TO PORT "B" | 13.5 | 11.5 | -2.0 | 42.2 | 50.2 | 8.0 | 8.0 | 0.20 | ARRIVAL AT PORT "B" |
| TIME SPENT DOCKING FOR PORT "B" | 2.0 | 1.8 | -0.2 | | | | | 0.00 | DOCKING AT PORT "B" |
| TIME SPENT MOORING AT PORT "B" | 8.0 | 10.9 | 2.9 | | | | | 2.90 | LEAVING SHORE OF PORT "B" |
| TIME SPENT LEAVING SHORE OF PORT "B" | 2.0 | 1.8 | -0.2 | | | | | 2.70 | DEPARTURE FROM PORT "B" |
| TIME SPENT SAILING FROM PORT "B" TO PORT "C" | 200.0 | 215.2 | 15.2 | 777.7 | 722.6 | -55.1 | -47.1 | 17.90 | ARRIVAL AT PORT "C" |
| TIME SPENT DOCKING FOR PORT "C" | 1.0 | 2.9 | 1.9 | | | | | 19.80 | DOCKING AT PORT "C" |
| TIME SPENT MOORING AT PORT "C" | 25.0 | 32.0 | 7.0 | | | | | 26.80 | LEAVING SHORE OF PORT "C" |
| TIME SPENT LEAVING SHORE OF PORT "C" | 1.0 | 2.7 | 1.7 | | | | | 28.50 | DEPARTURE FROM PORT "C" |
| TIME SPENT SAILING FROM PORT "C" TO PORT "D" | 85.0 | 71.2 | -13.8 | 245.5 | 298.5 | 53.0 | 5.9 | 14.70 | ARRIVAL AT PORT "D" |
| TIME SPENT DOCKING FOR PORT "D" | 2.0 | 2.6 | 0.6 | | | | | 15.30 | DOCKING AT PORT "D" |
| TIME SPENT MOORING AT PORT "D" | 17.5 | 17.1 | -0.4 | | | | | 14.90 | LEAVING SHORE OF PORT "D" |
| TIME SPENT LEAVING SHORE OF PORT "D" | 2.0 | 2.6 | 0.6 | | | | | 15.50 | DEPARTURE FROM PORT "D" |
| TIME SPENT SAILING FROM PORT "D" TO PORT "E" | 46.0 | 37.8 | -8.2 | 127.2 | 151.5 | 24.3 | 30.2 | 7.30 | ARRIVAL AT PORT "E" |
| TIME SPENT DOCKING FOR PORT "E" | 2.0 | 1.5 | -0.5 | | | | | 6.80 | DOCKING AT PORT "E" |
| TIME SPENT MOORING AT PORT "E" | 20.0 | 19.3 | -0.7 | | | | | 6.10 | LEAVING SHORE OF PORT "E" |
| TIME SPENT LEAVING SHORE OF PORT "E" | 2.0 | 1.4 | -0.6 | | | | | 5.50 | DEPARTURE FROM PORT "E" |
| TIME SPENT SAILING FROM PORT "E" TO PORT "A" | 12.5 | 9.0 | -3.5 | 60.3 | 73.5 | 13.2 | 43.4 | 2.00 | ARRIVAL AT PORT "A" |
| TIME SPENT DOCKING FOR PORT "A" | 2.0 | 1.2 | -0.8 | | | | | 1.20 | DOCKING AT PORT "A" |

[FIG.9]


MOORING EXTENSION
DELAY OF DEPARTURE
DELAY OF ARRIVAL
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
TIME (hours)
INCREASE OF SPEED
DECREASE OF SPEED
INCREASE OF SPEED
INCREASE OF SPEED
INCREASE OF SPEED
A-B
B-C
C-D
D-E
E-A
TRAVEL SEGMENT

[FIG.10]


1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
ACCUMULATED FUEL CONSUMPTION (tons)
REFERENCE
ACTUAL
A-B
B-C
C-D
D-E
E-A
TRAVEL SEGMENT