

SIDERURGIA NACIONAL EP

Terminal do Seixal Hydro - Morphological Study

ship manoeuvring trials

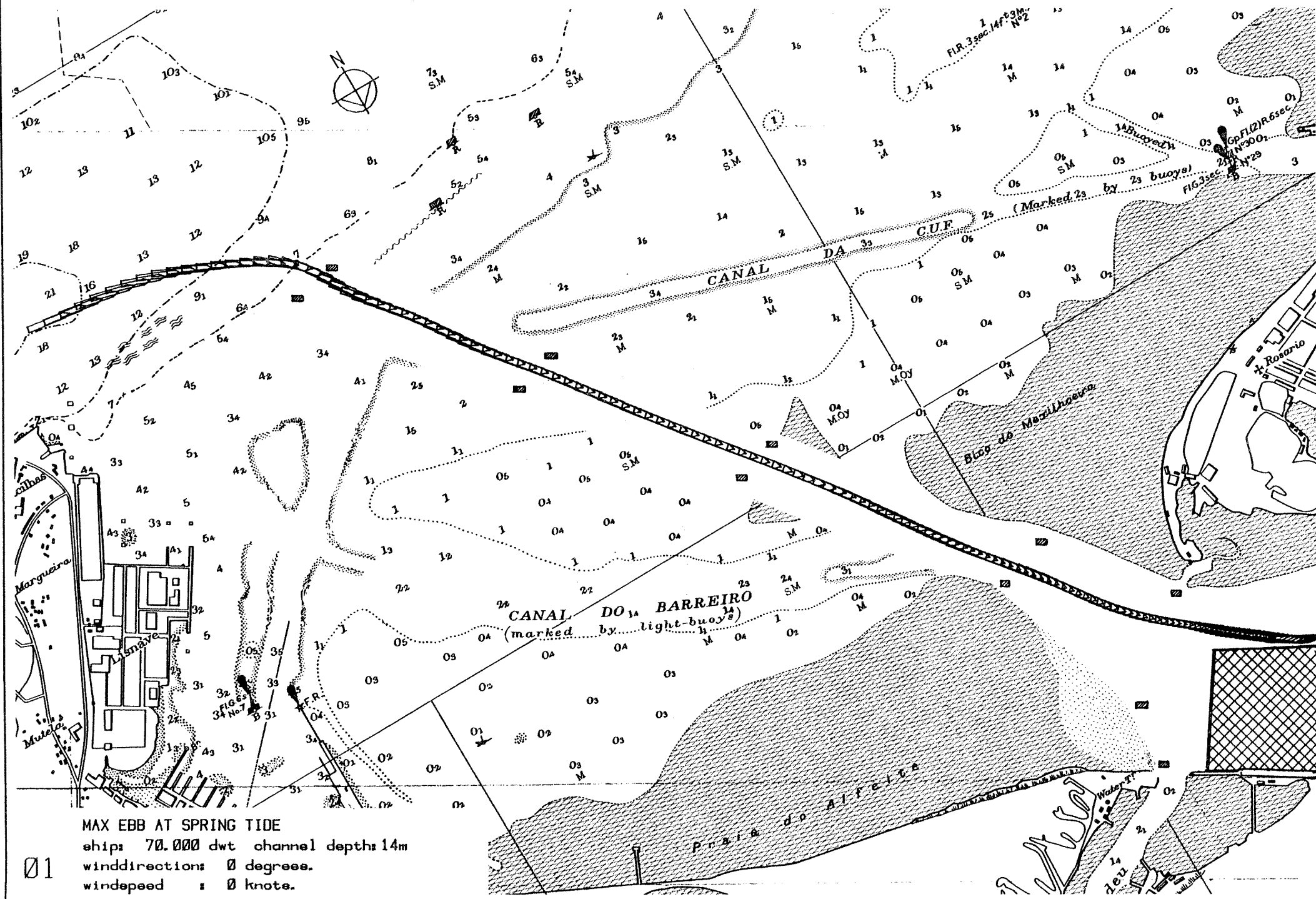


February 1982 / P457

PORT AND WATERWAY ENGINEERS

70,000 DWT	45,000 DWT			
TRIAL NO	TIDE CONDITION	WIND SPEED (KNOTS)	WIND DIRECTION (DEGREES)	TRIAL NO
1	Max. Ebb at Mean Spring Tide	0	0	35
2		30	225	36
3		20	270	37
4		10	0	38
5		20	0	39
6		10	45	40
7		30	315	41
8	Max. Flood at Mean Spring Tide	0	0	42
9		30	225	43
10		20	270	44
11		10	0	45
12		20	0	46
13		10	45	47
14		30	315	48
15	High* Water Slack	0	0	49
16		10	225	50
17		10	0	51
18		20	0	52
19		10	45	53
20		20	315	54
21	Max. Ebb at Mean Neap Tide	0	0	55
22		20	225	56
23		10	270	57
24		10	0	58
25		20	0	59
26		10	45	60
27		10	315	61
28	Max. Flood at Mean Neap Tide	0	0	62
29		20	225	63
30		10	270	64
31		10	0	65
32		20	0	66
33		10	45	67
34		10	315	68

*By error the text of the trials 15-20 and 49-54 is indicated as "Turn of the Ebb Tide" this must be "Turn to the Ebb Tide"



MAX EBB AT SPRING TIDE

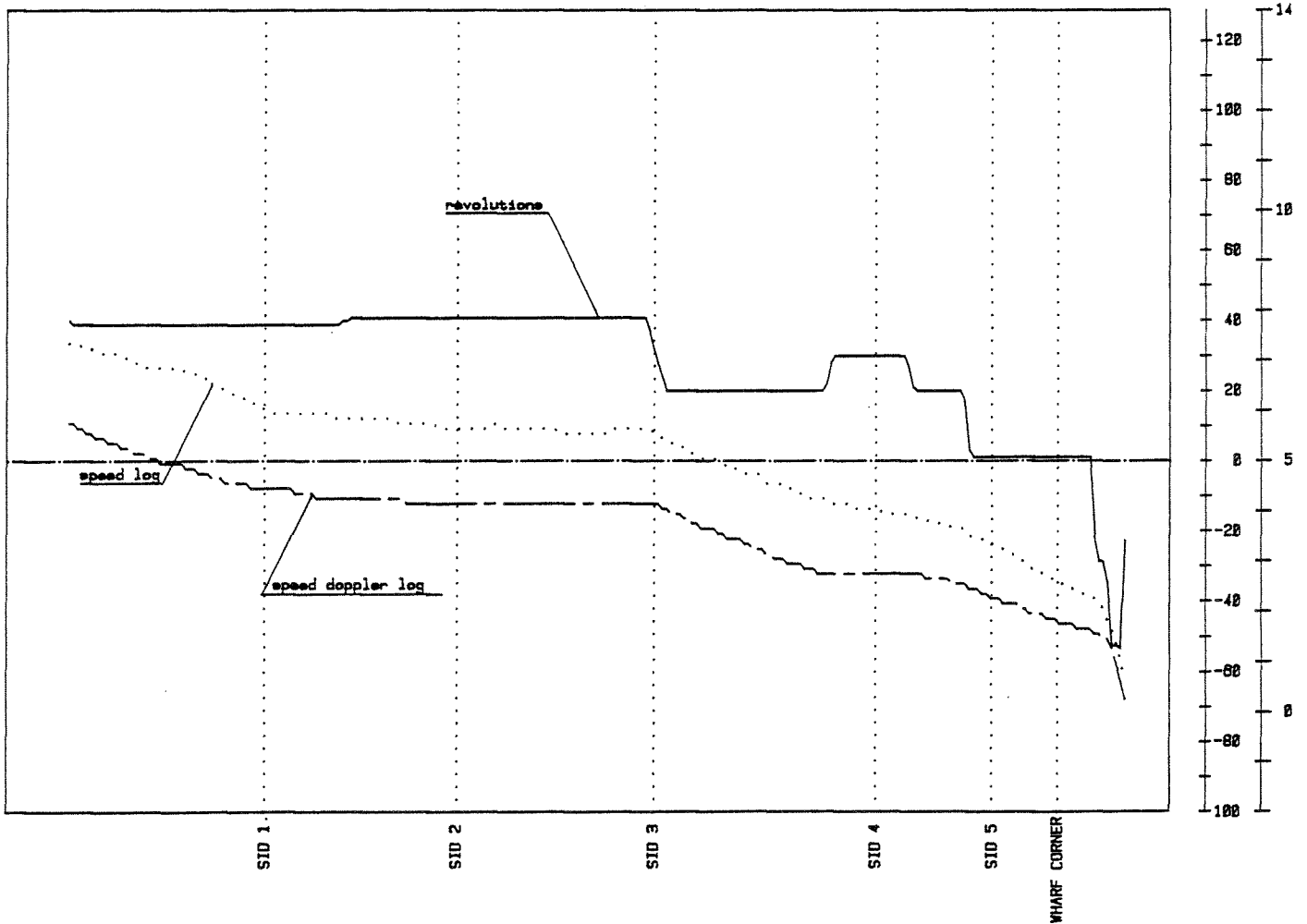
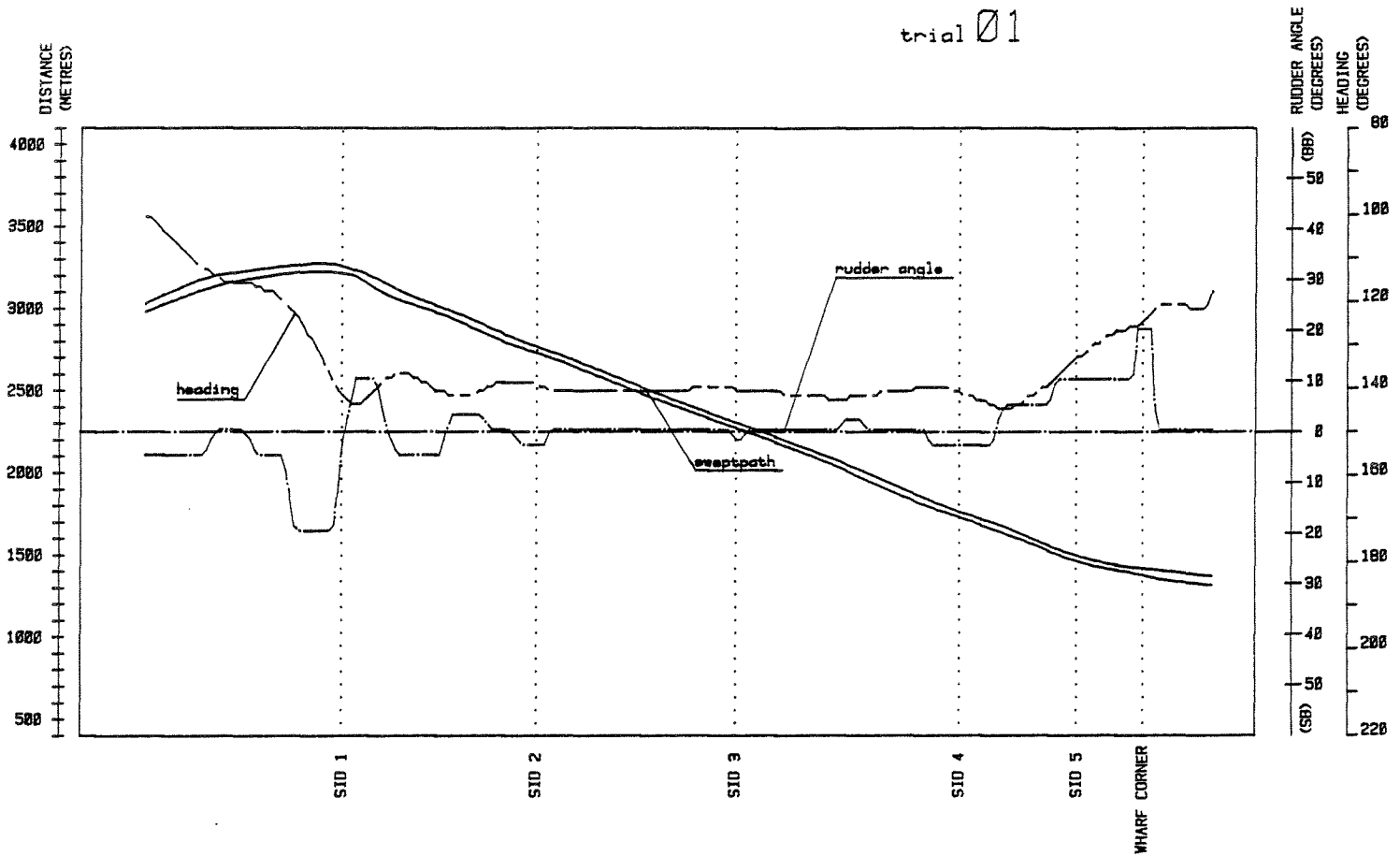
ships: 70.000 dwt channel depths: 14m

winddirection: 0 degrees.

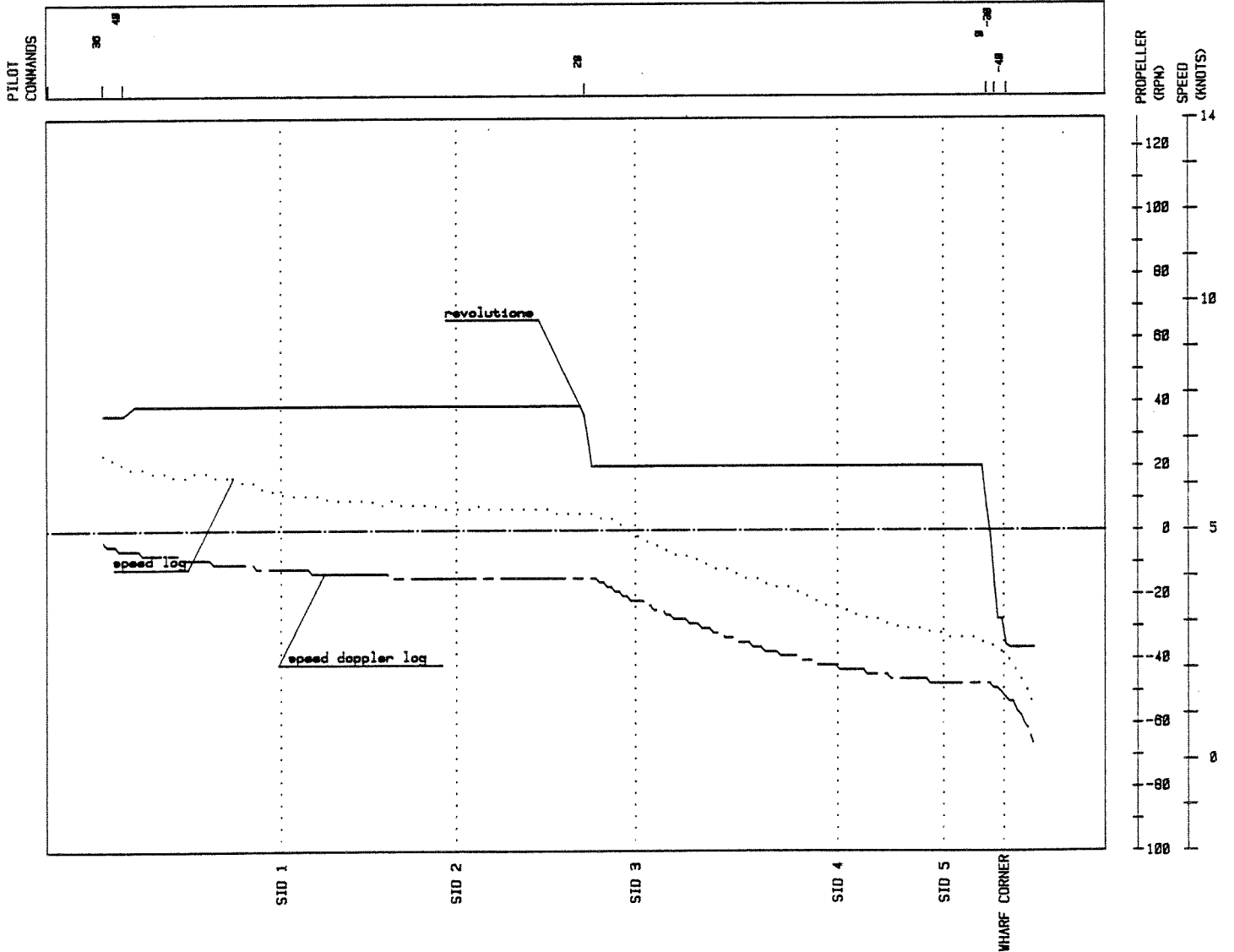
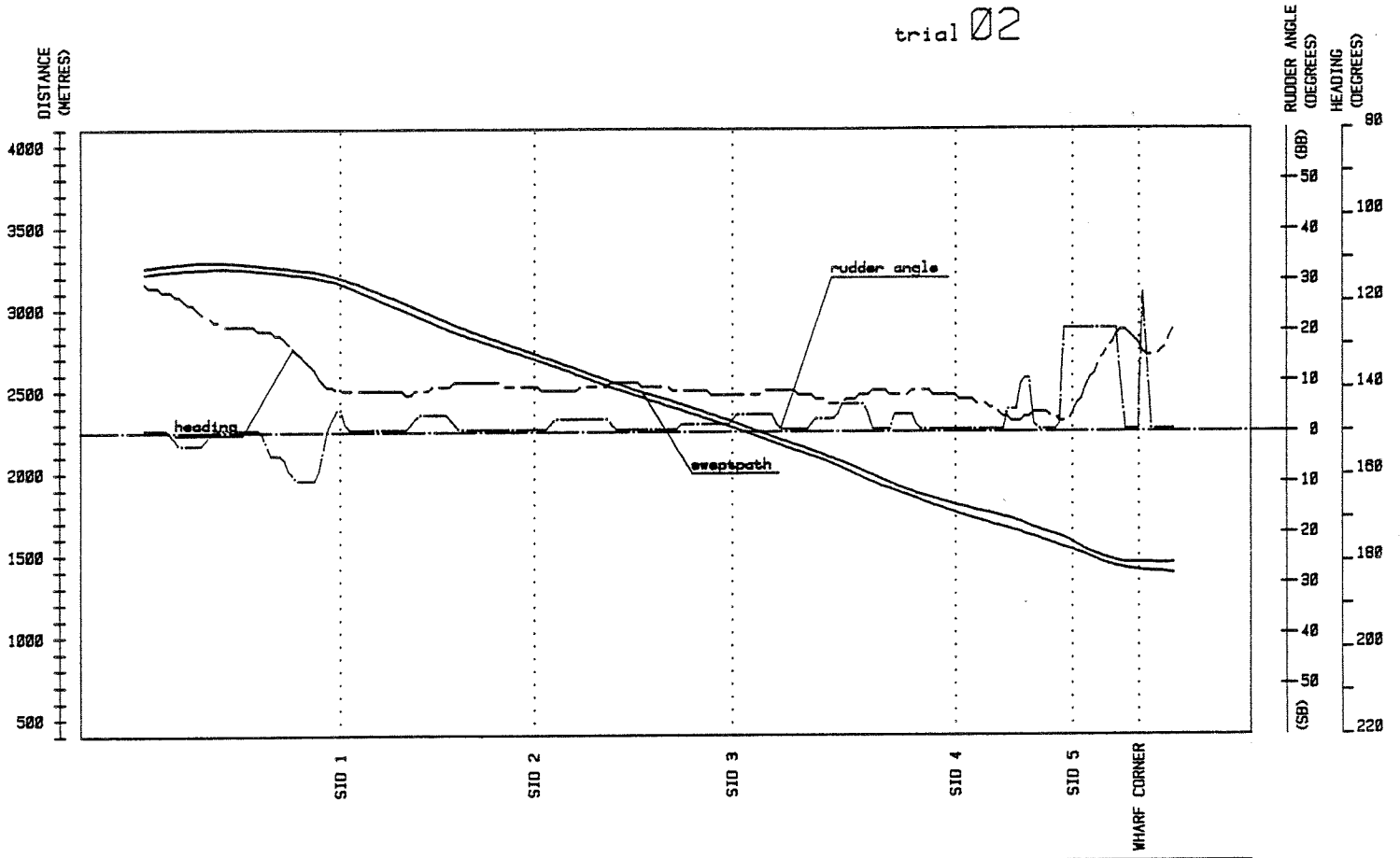
windepeed: 0 knots.

01

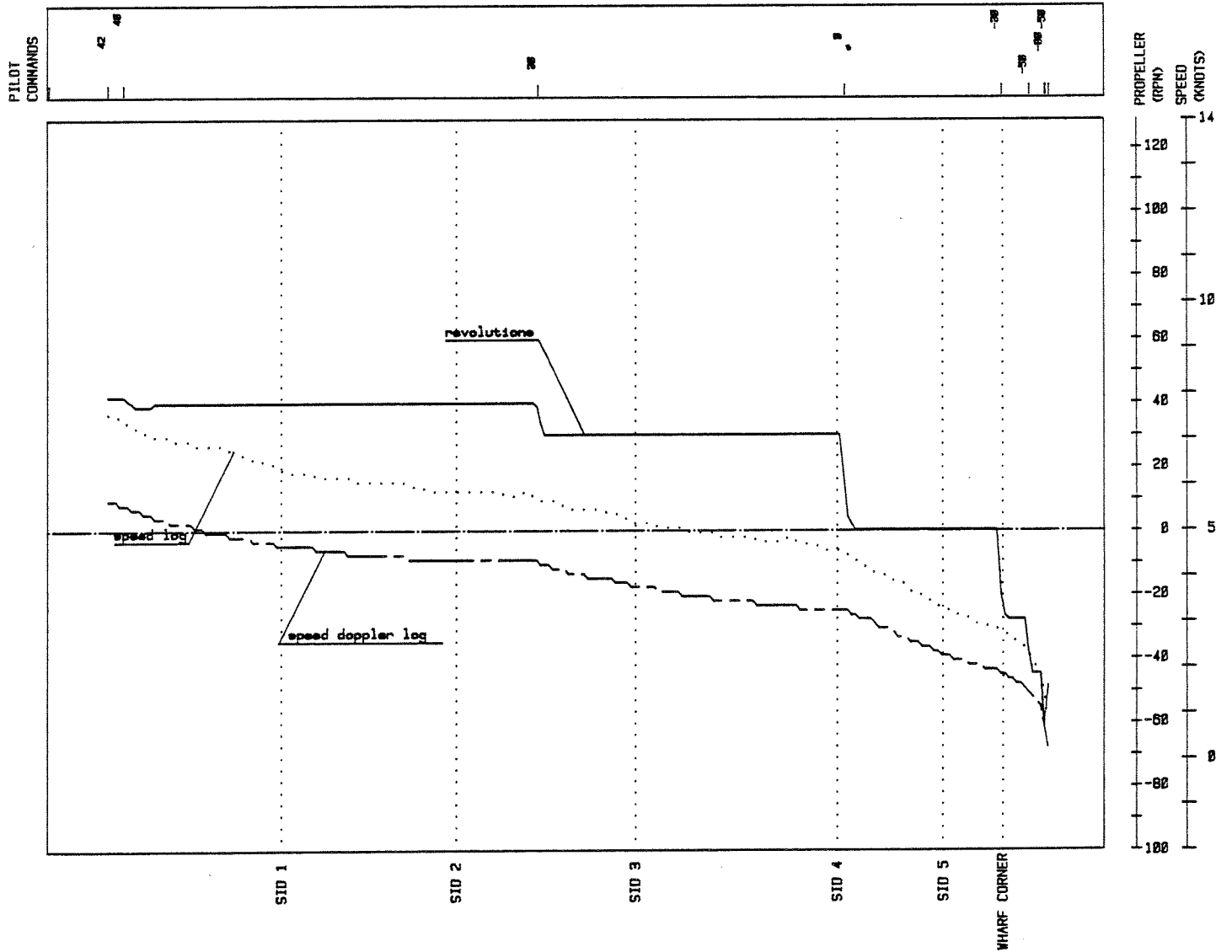
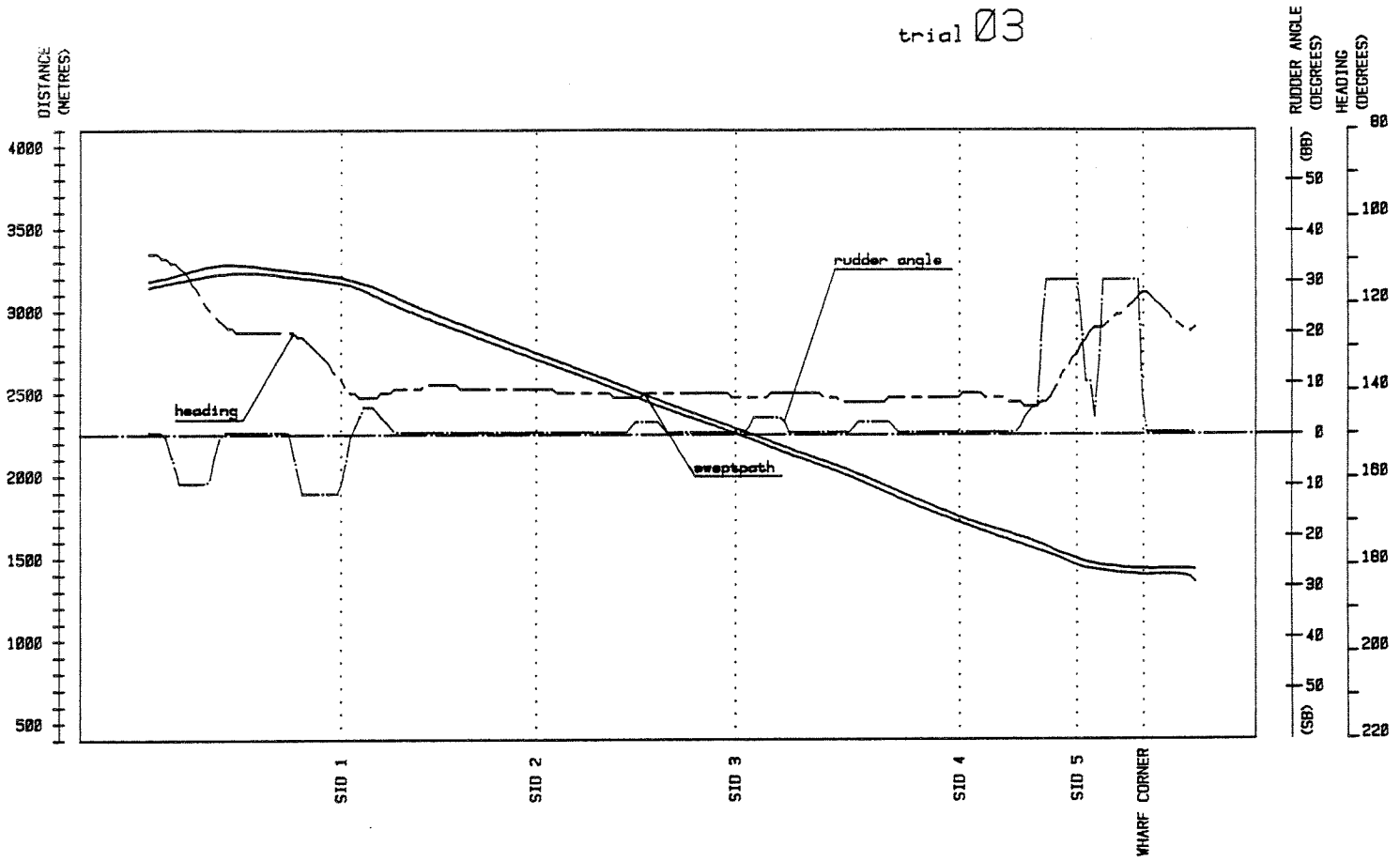
trial 01

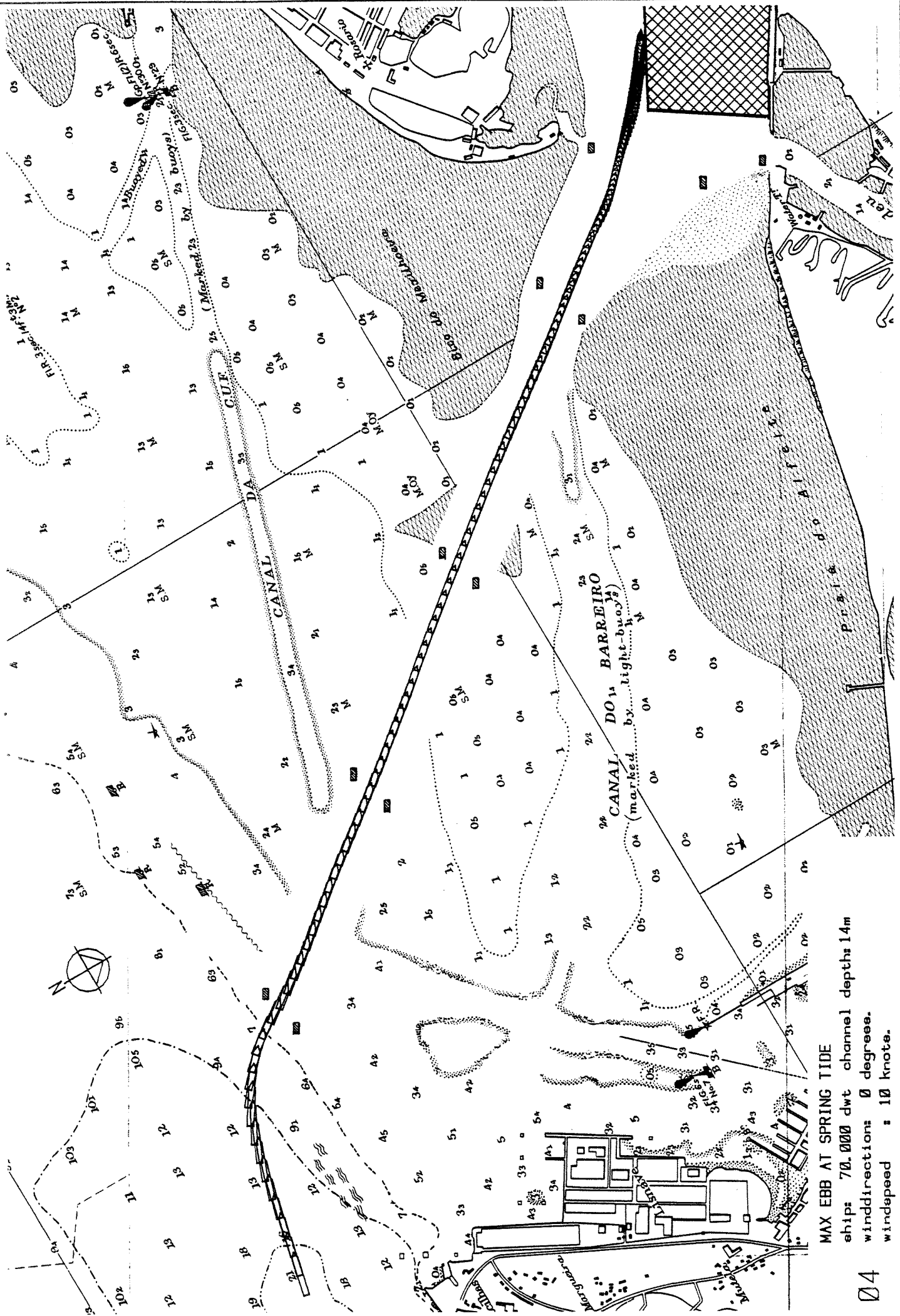


trial 02



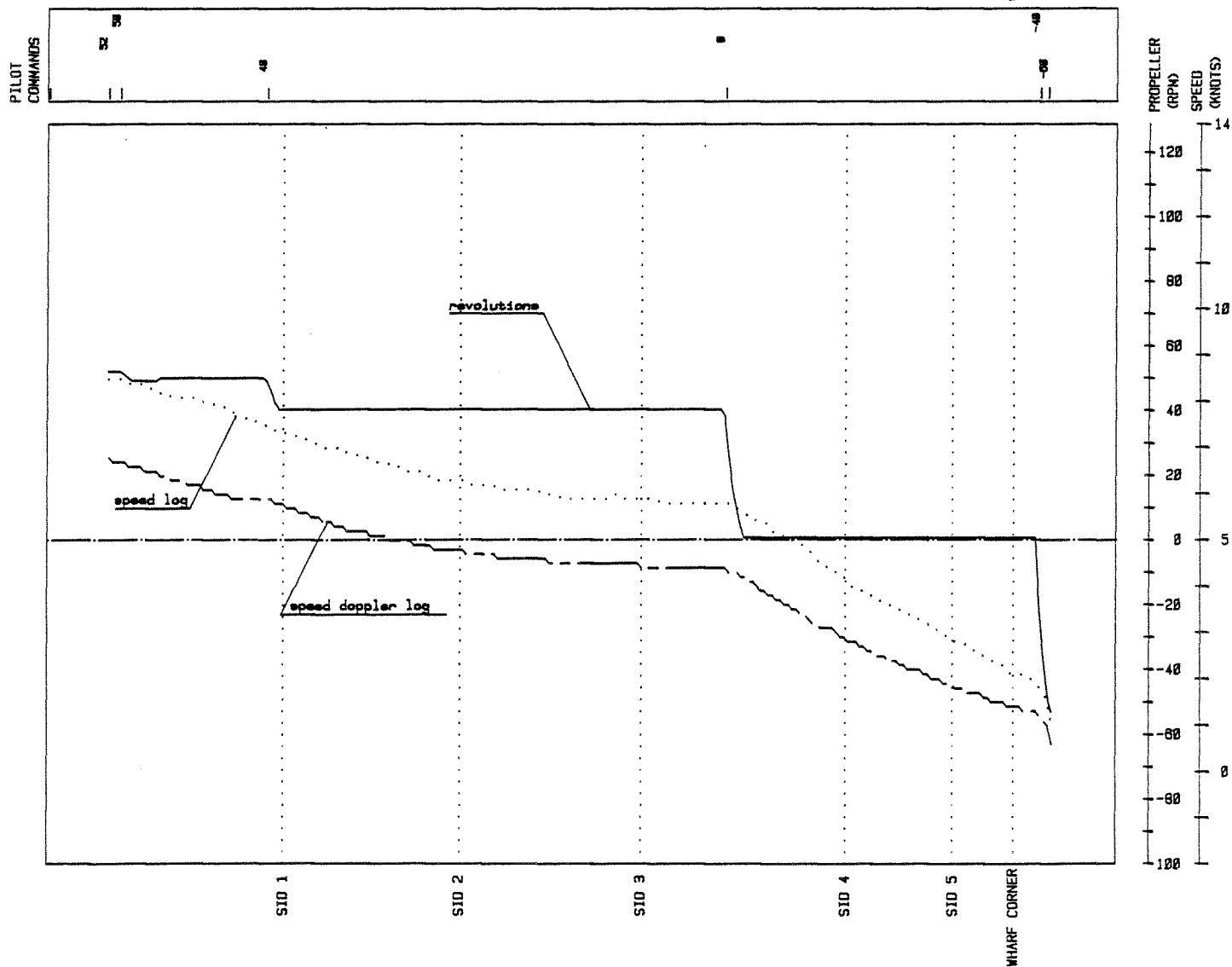
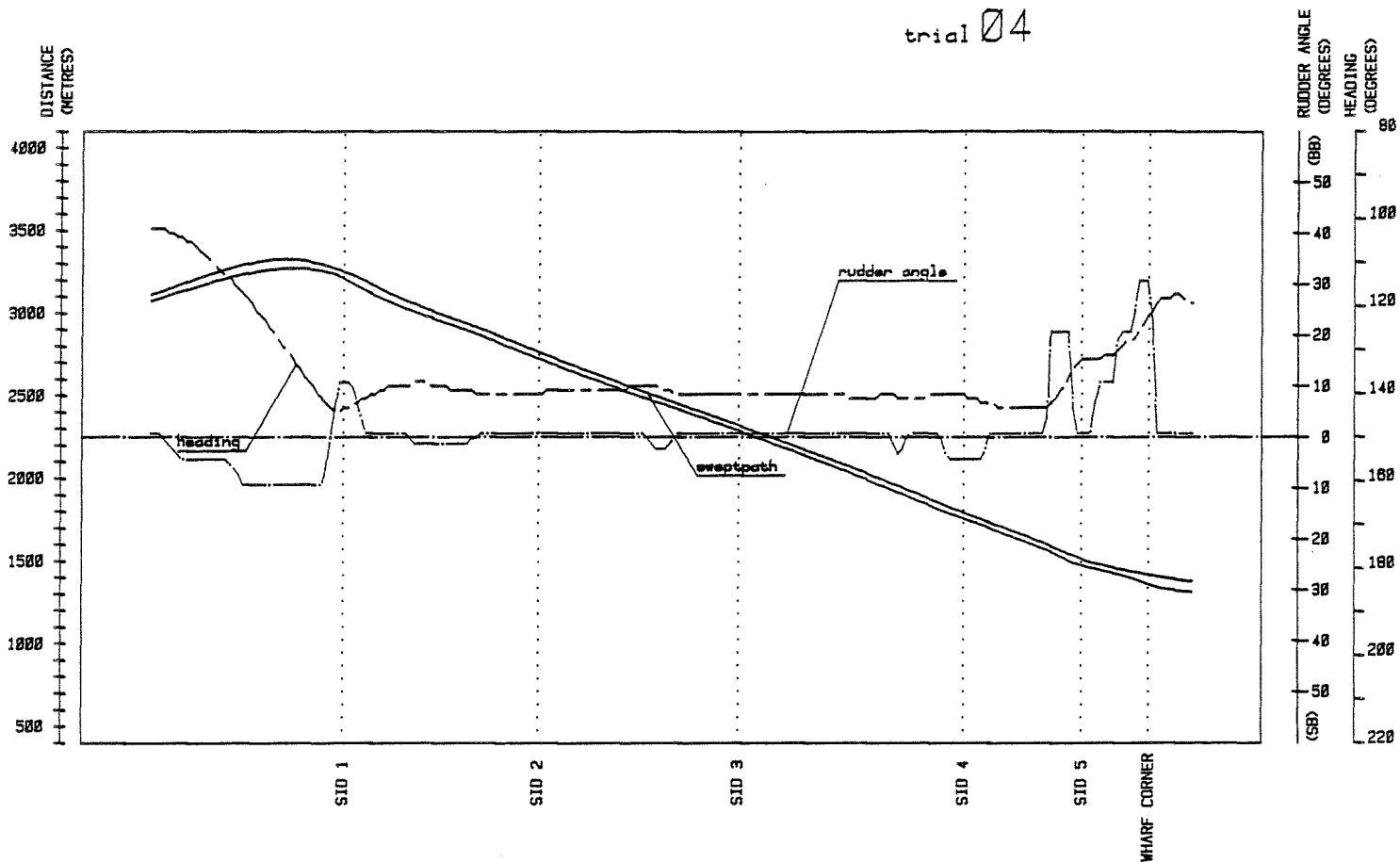
trial 03



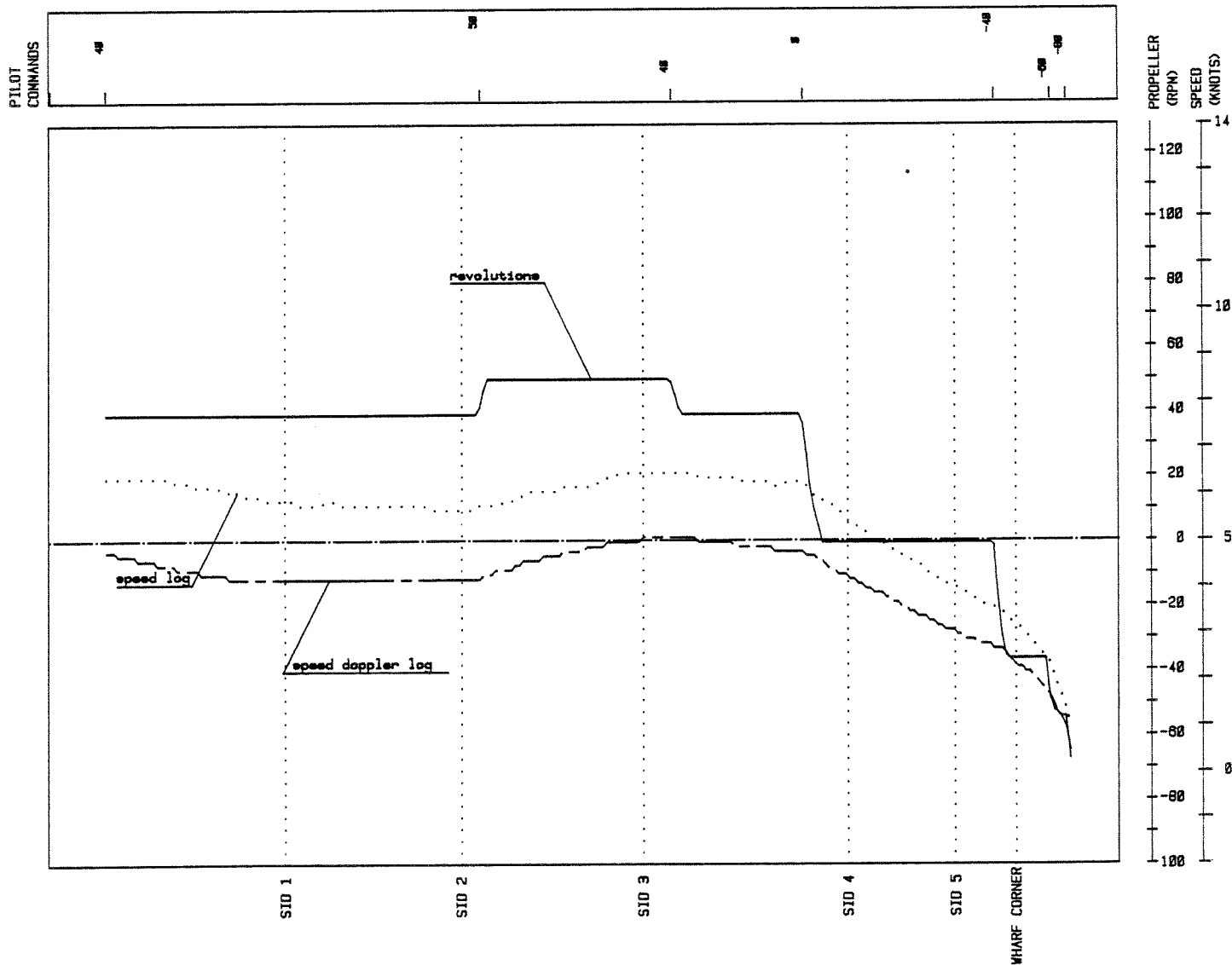
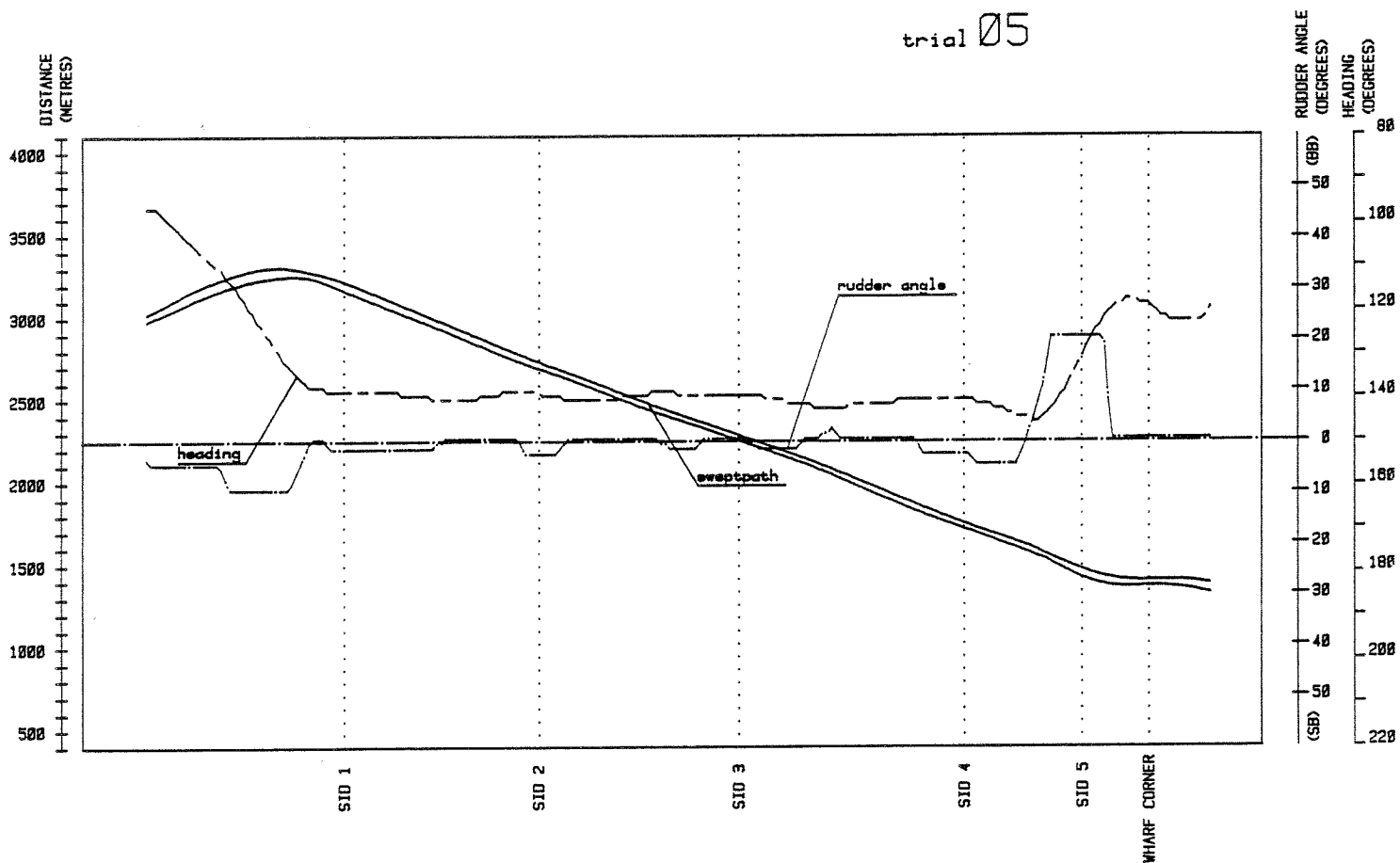


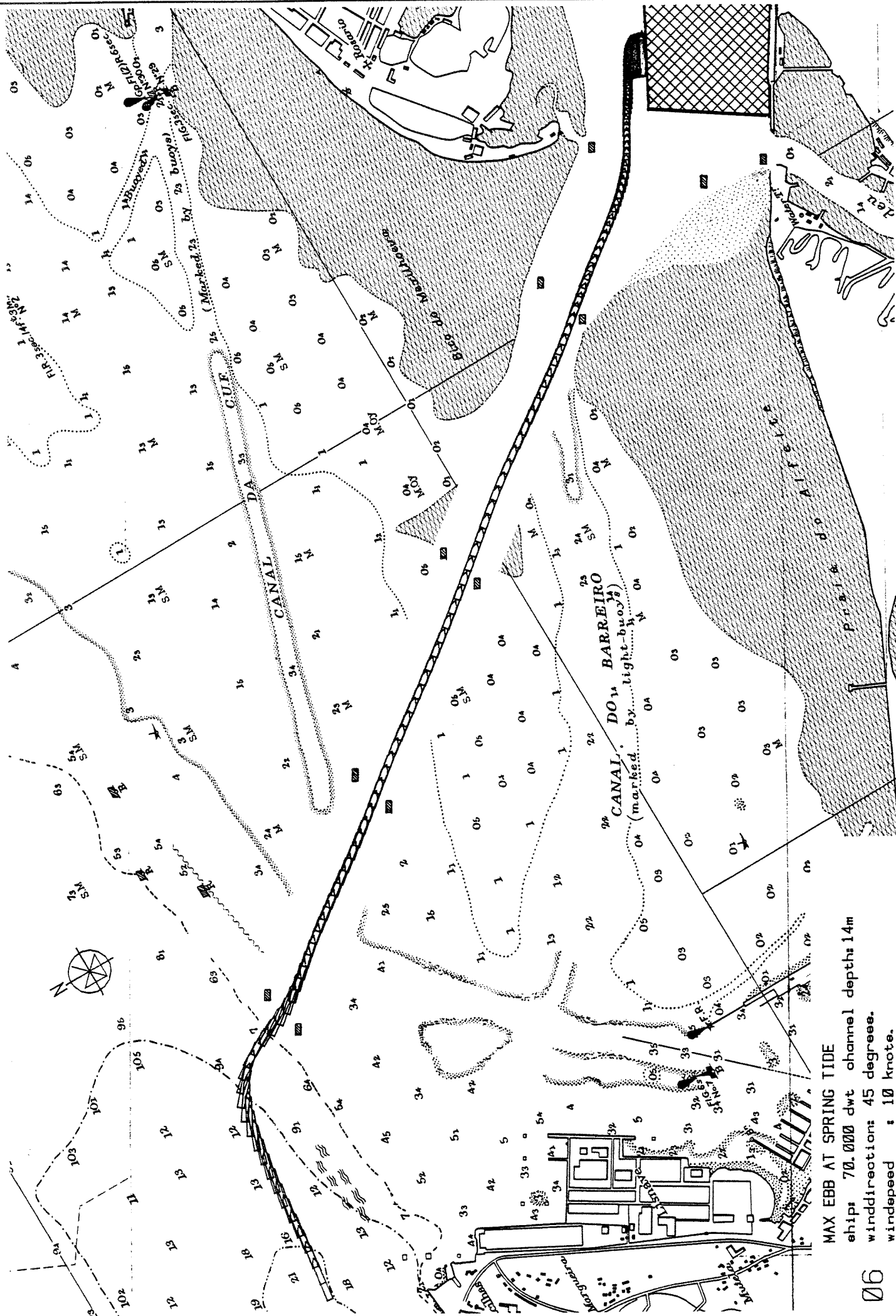
MAX EBB AT SPRING TIDE
 ships: 70,000 dwt channel depths 14m
 winddirection: 0 degrees.
 windspeed : 10 knots.

trial 04



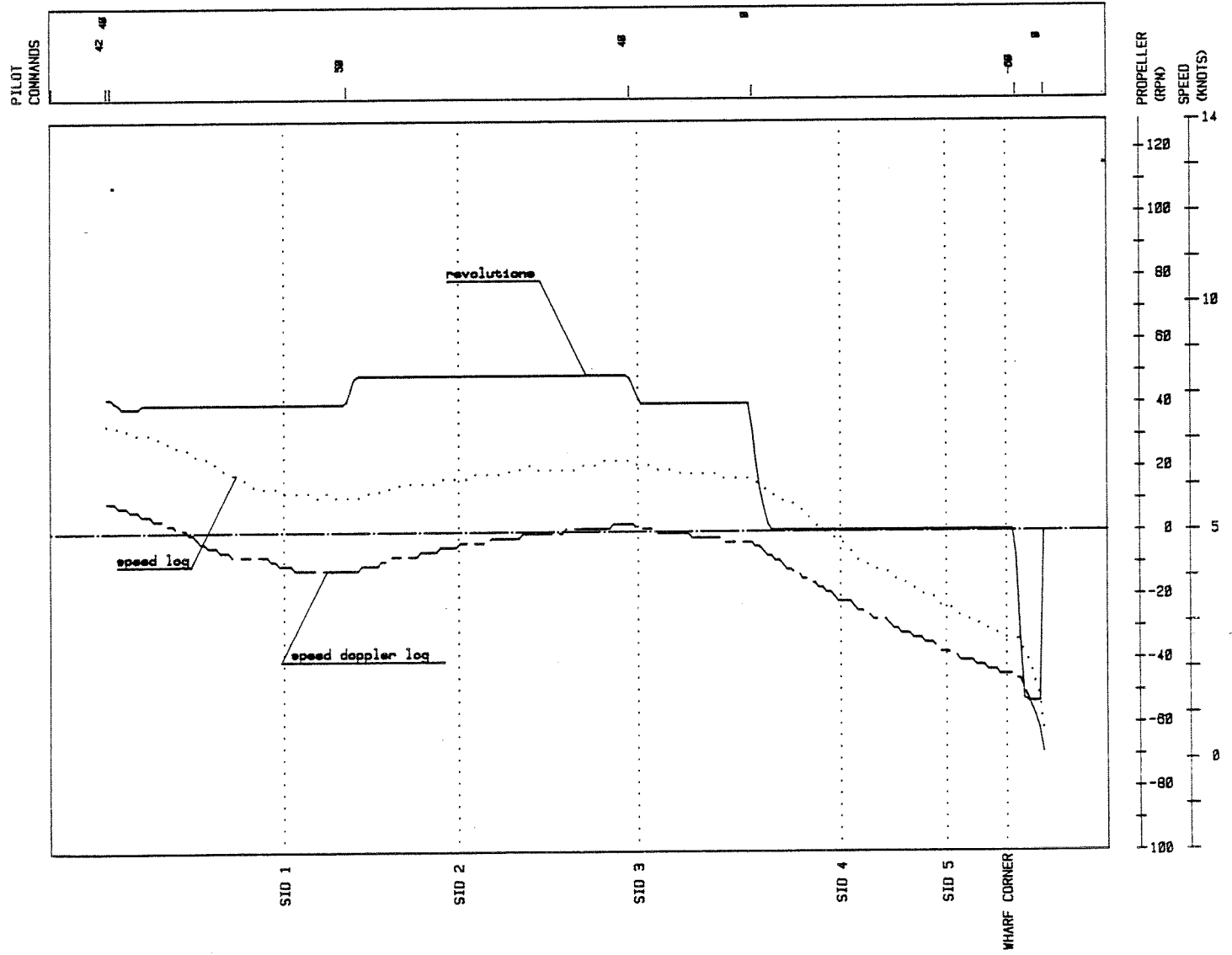
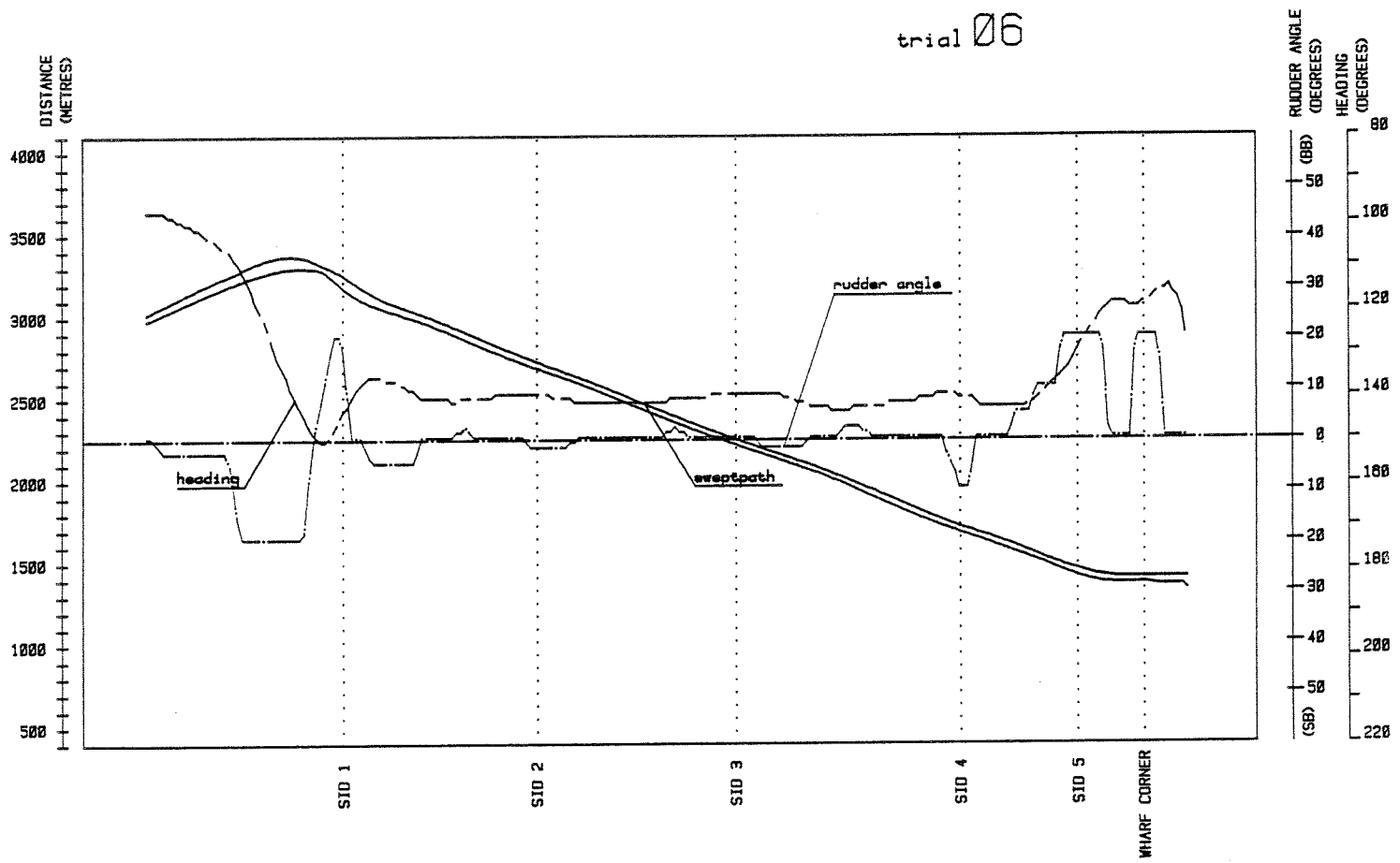
trial 05

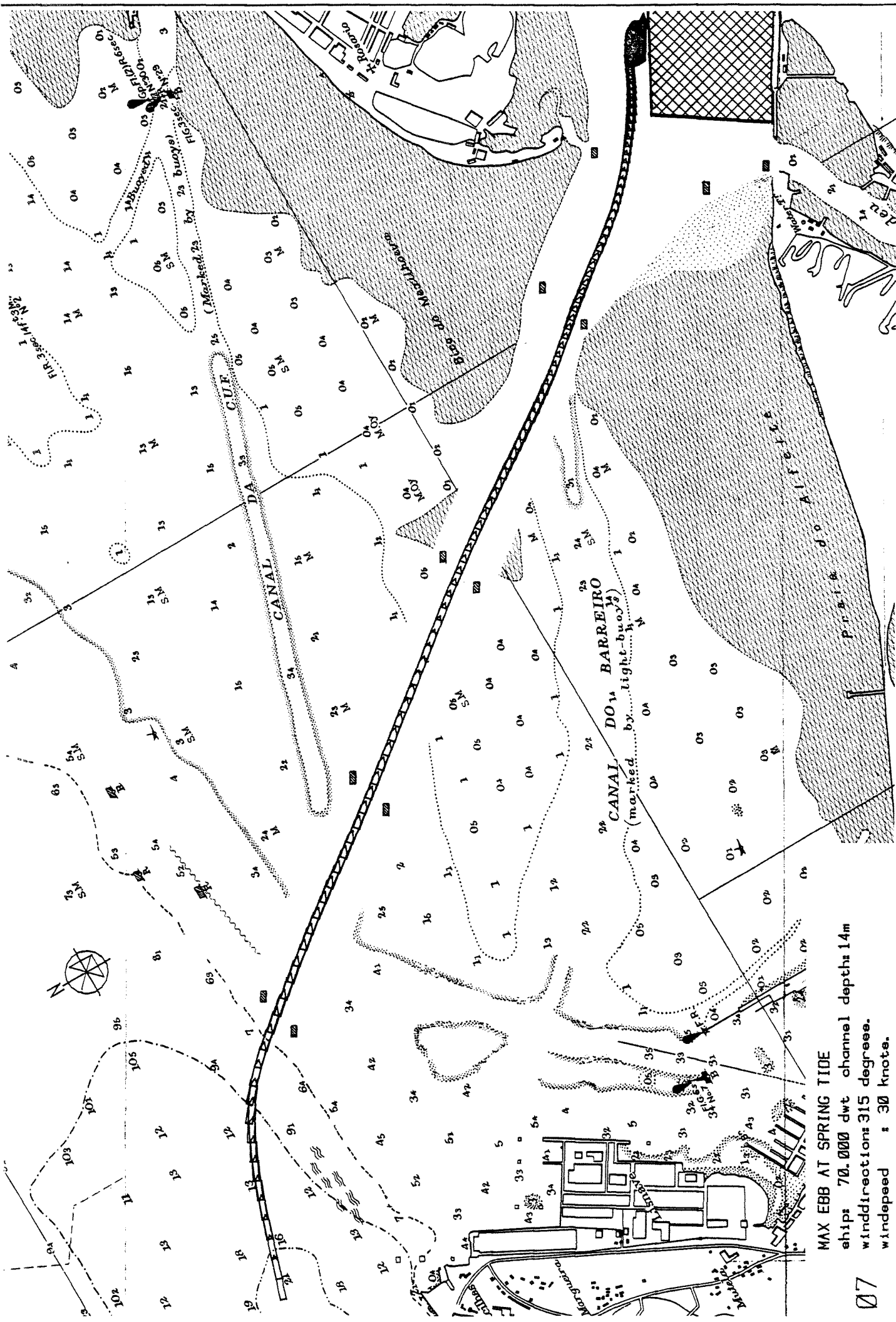




MAX EBB AT SPRING TIDE
ships 70,000 dwt channel depths 14m
winddirection: 45 degrees.
windspeed : 10 knots.

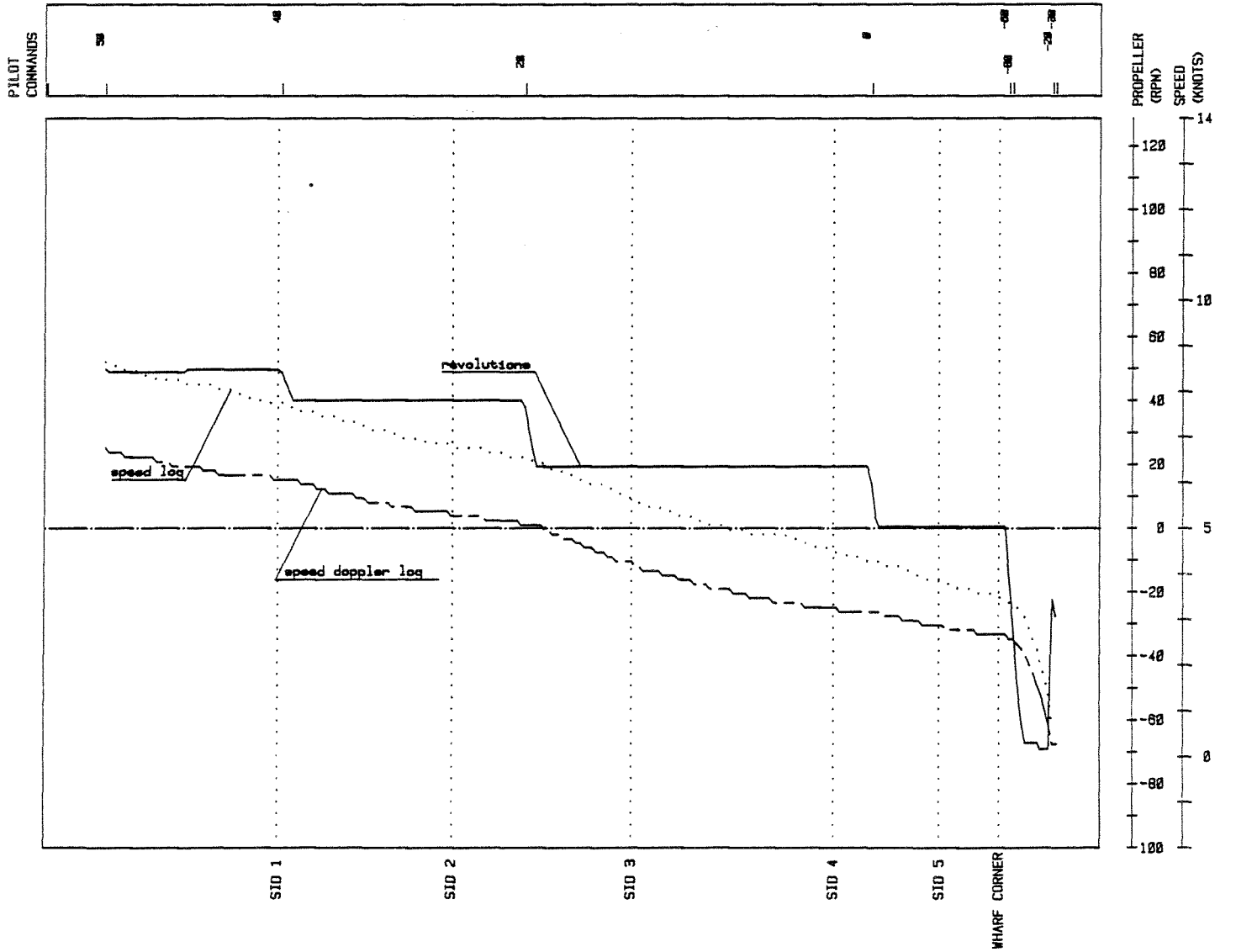
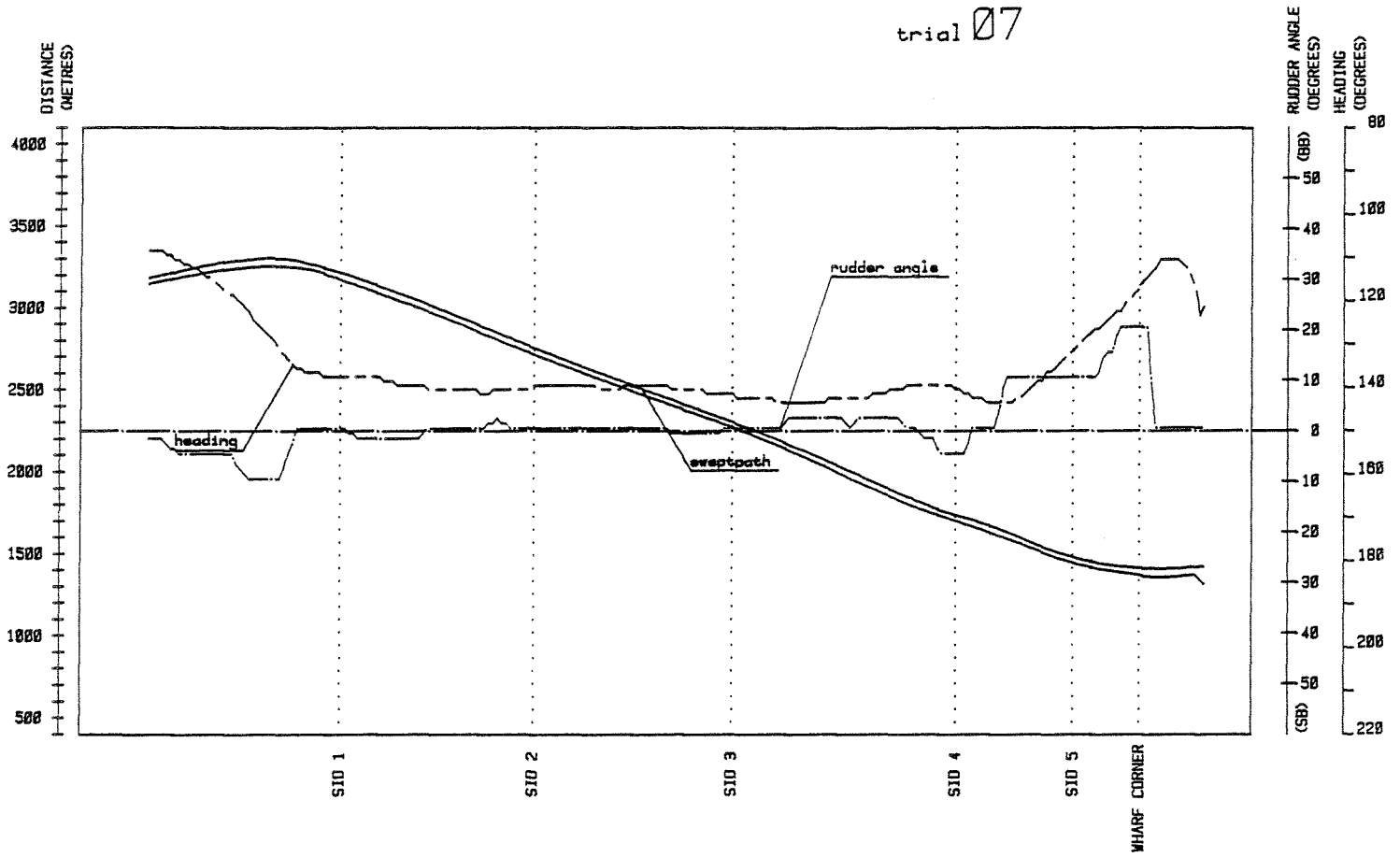
trial 06

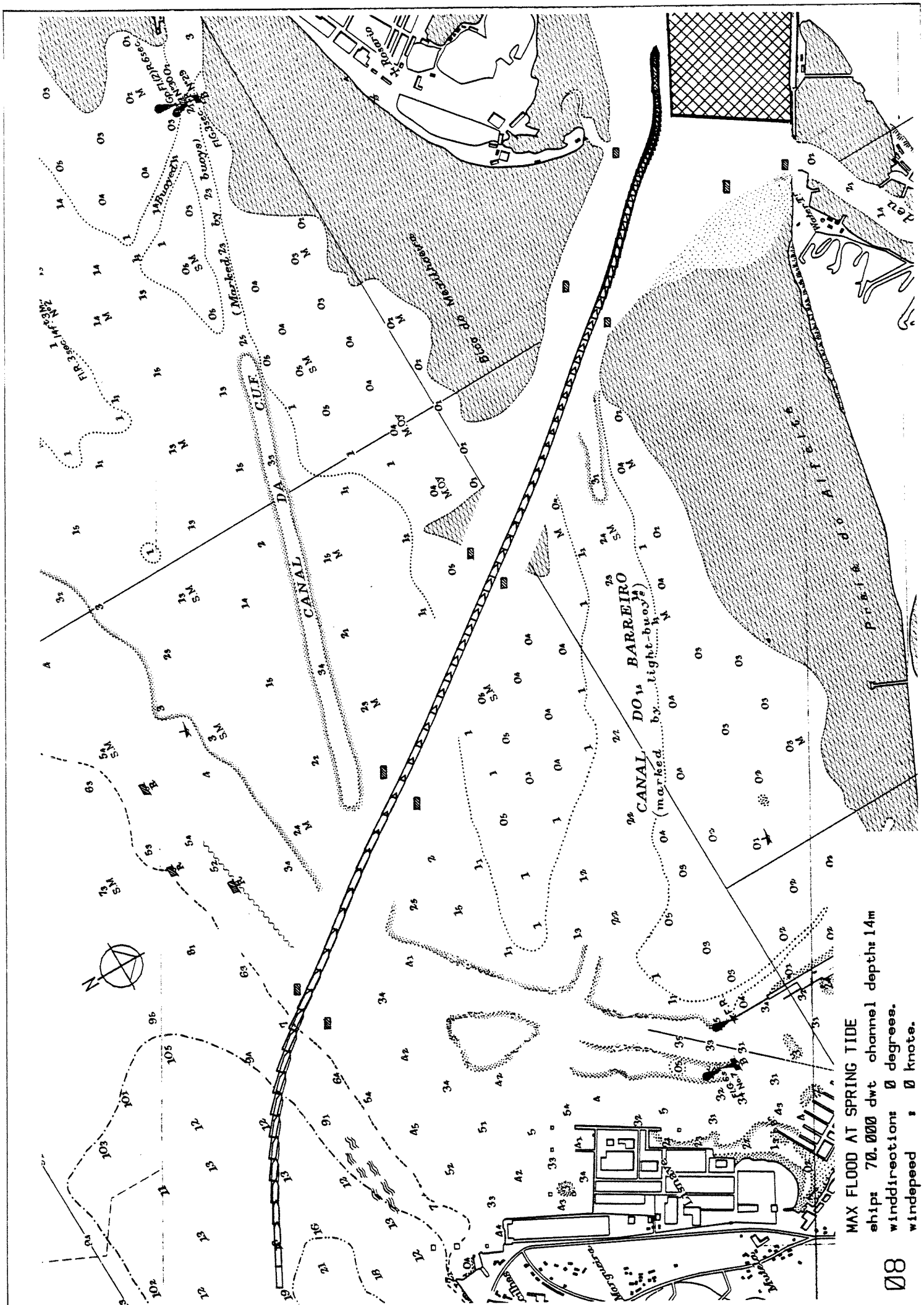




MAX EBB AT SPRING TIDE
 ships 70,000 dwt channel depths 14m
 wind directions 315 degrees.
 wind speed : 30 knots.

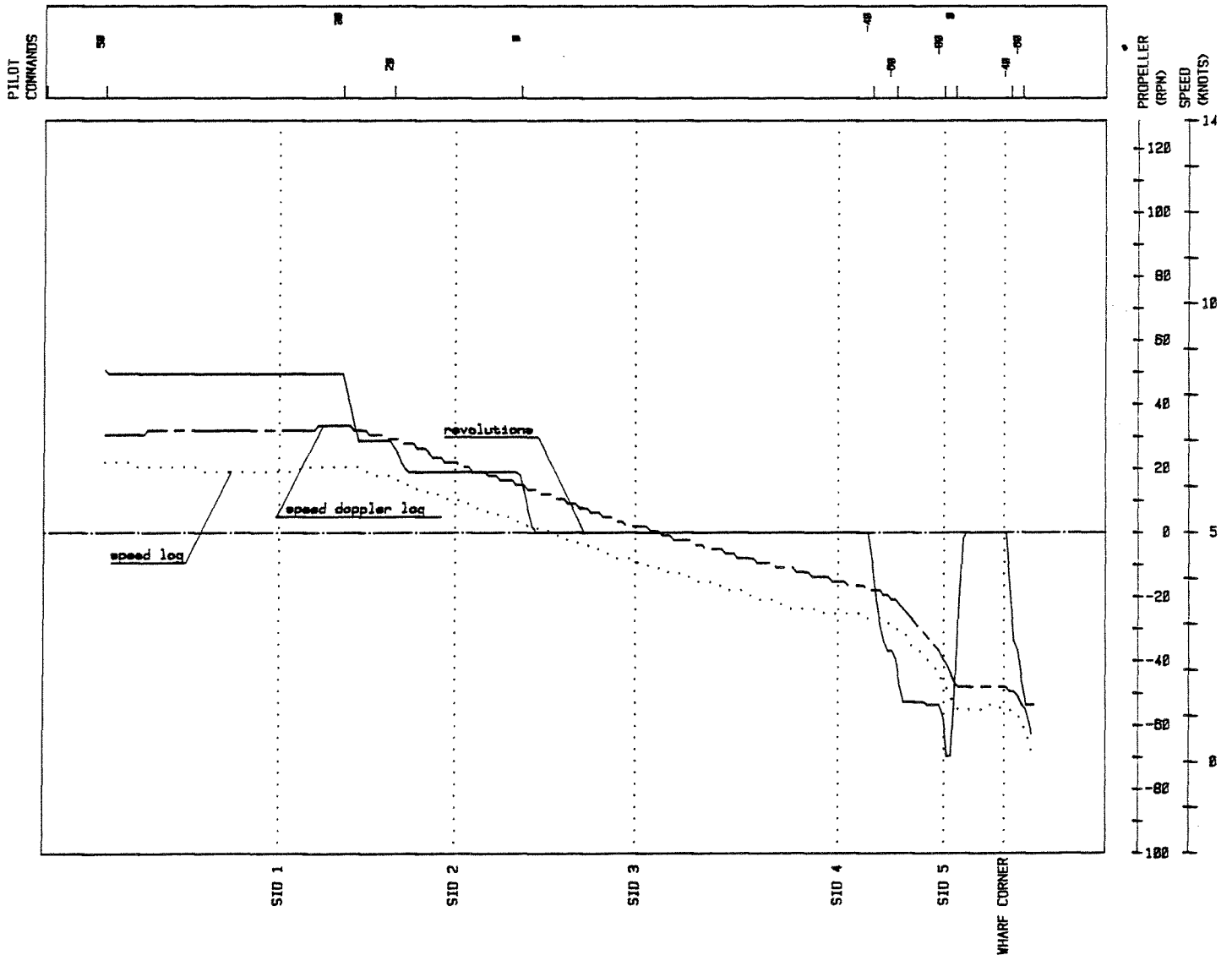
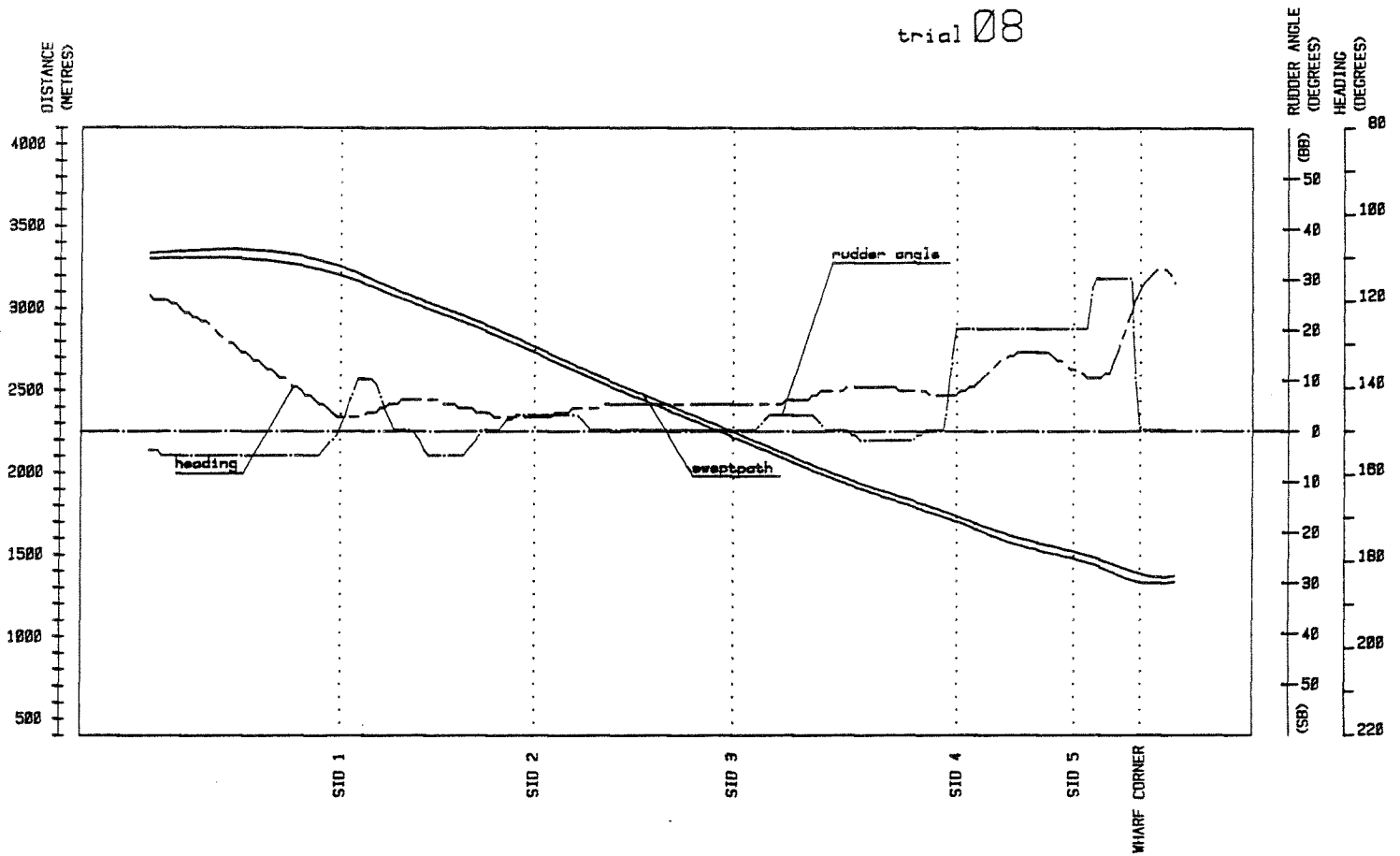
trial 07

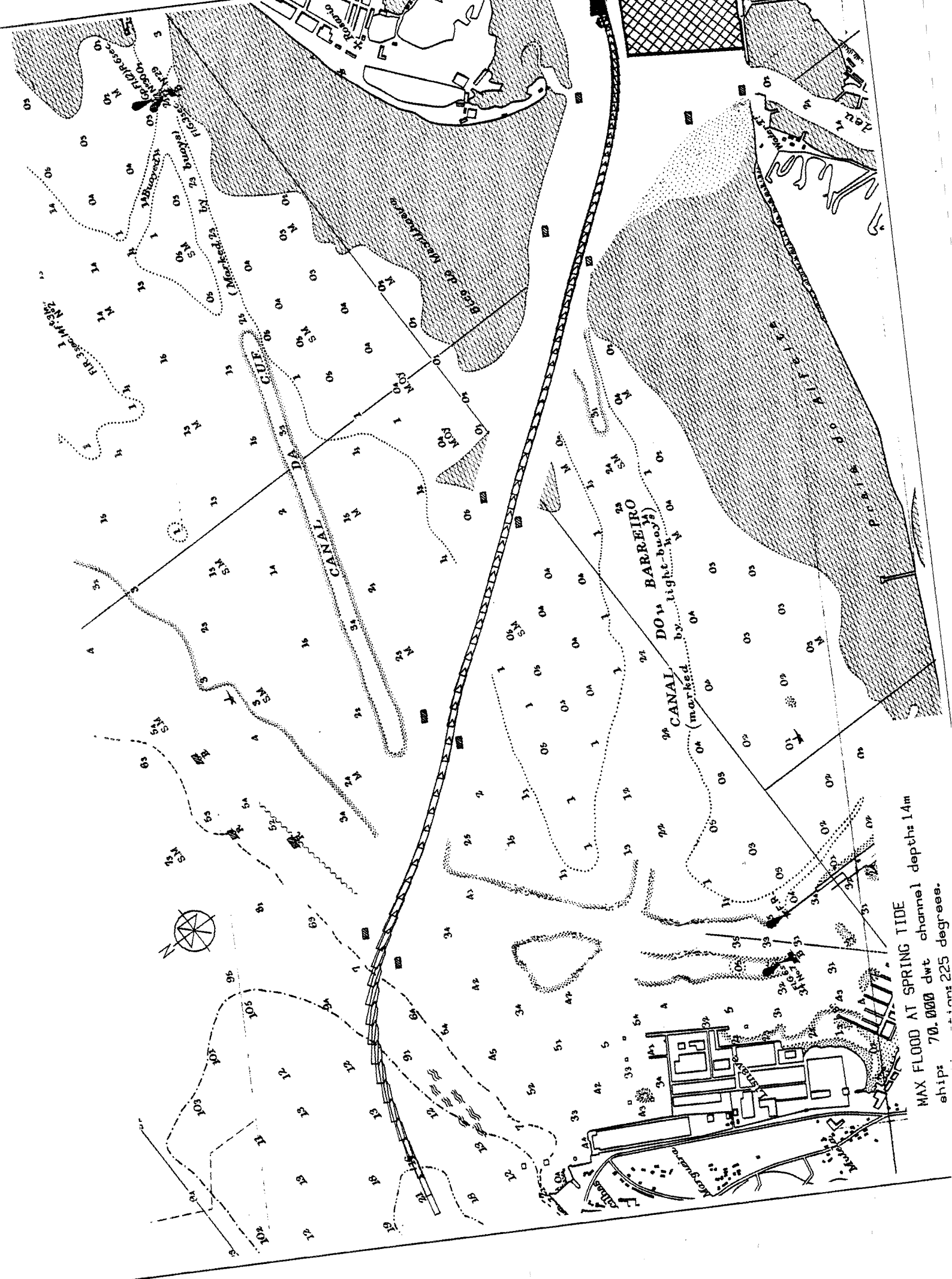




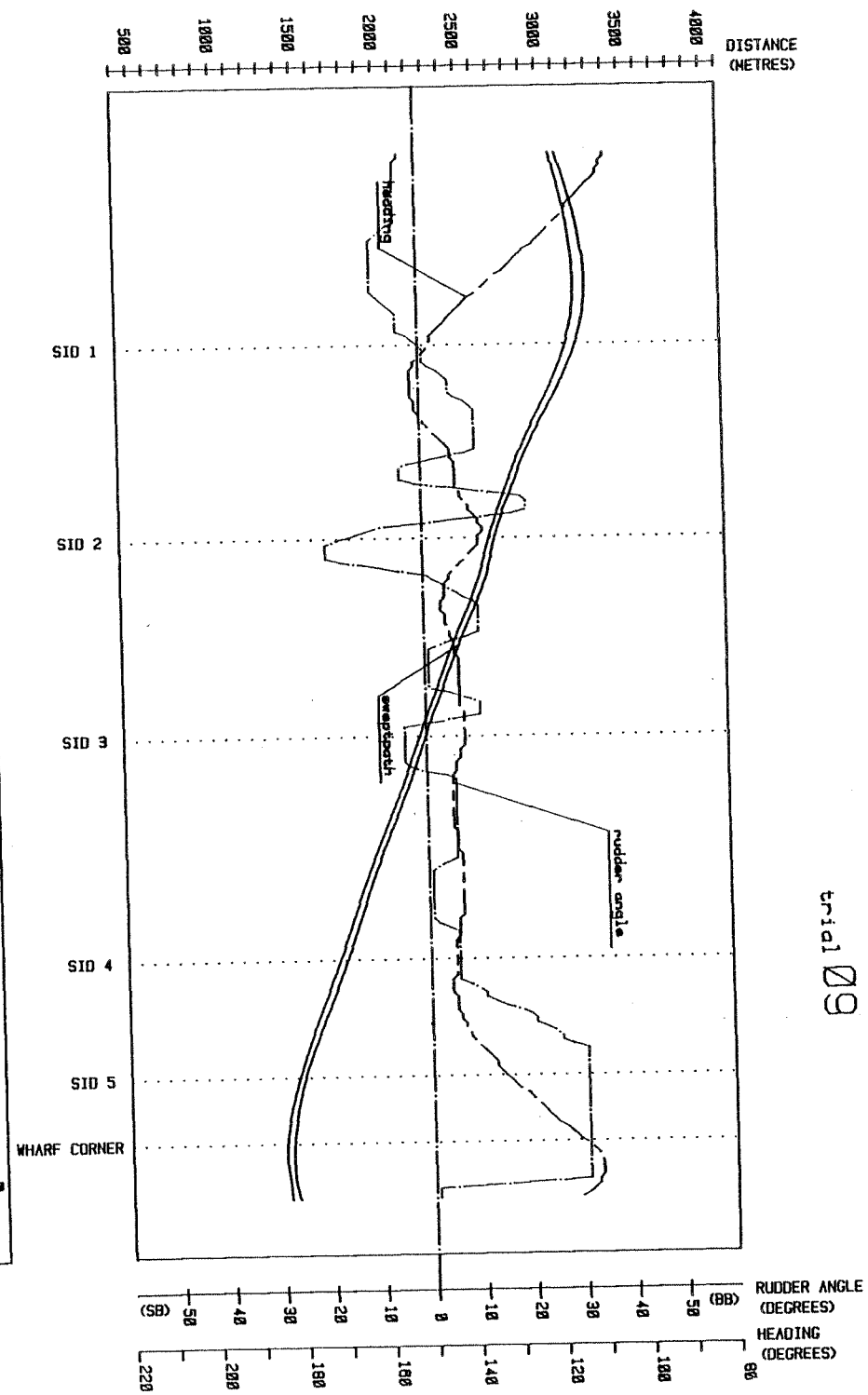
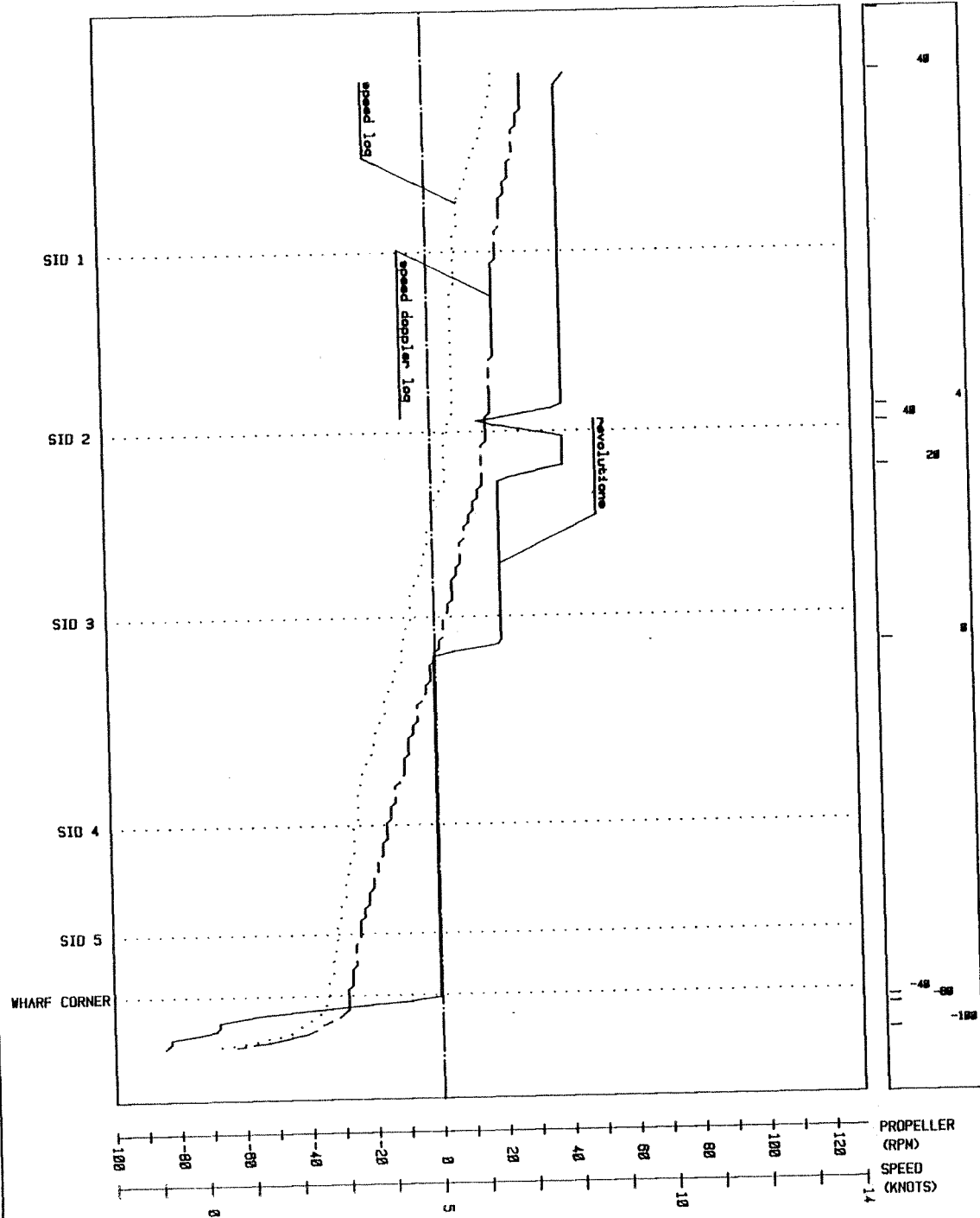
MAX FLOOD AT SPRING TIDE
 ships 70,000 dwt channel depths 14m
 wind directions 0 degrees.
 wind speed 10 knots.

trial 08

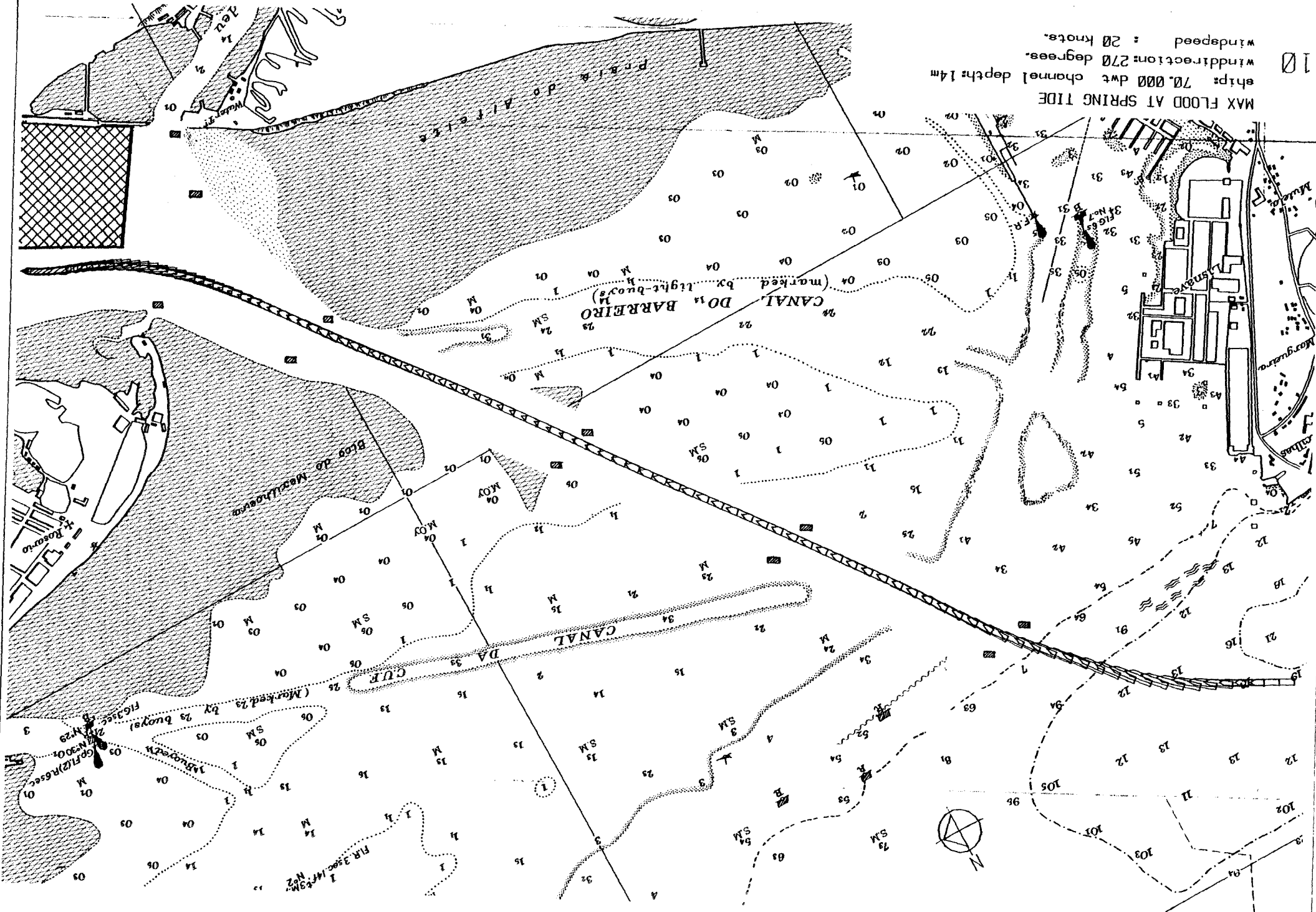




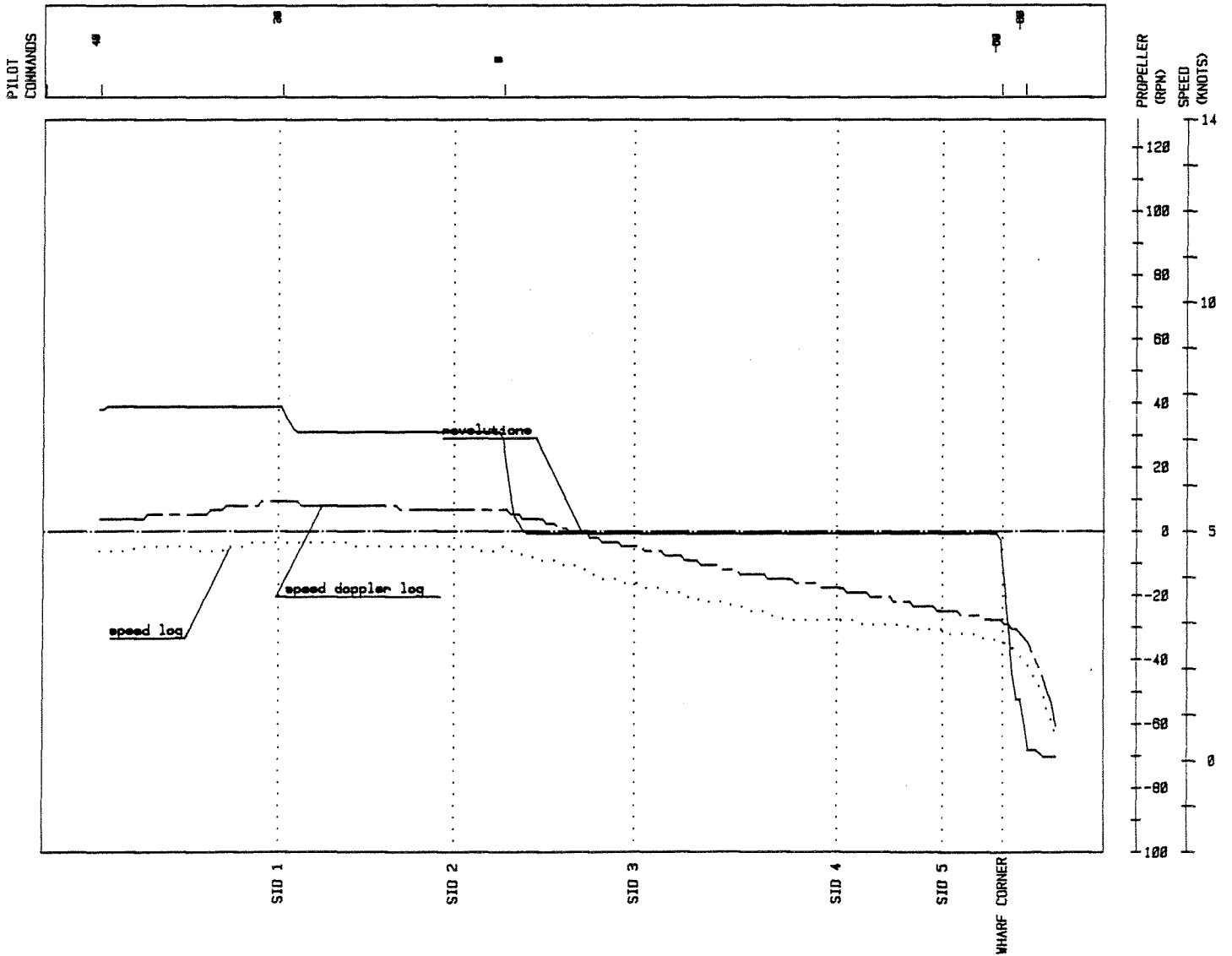
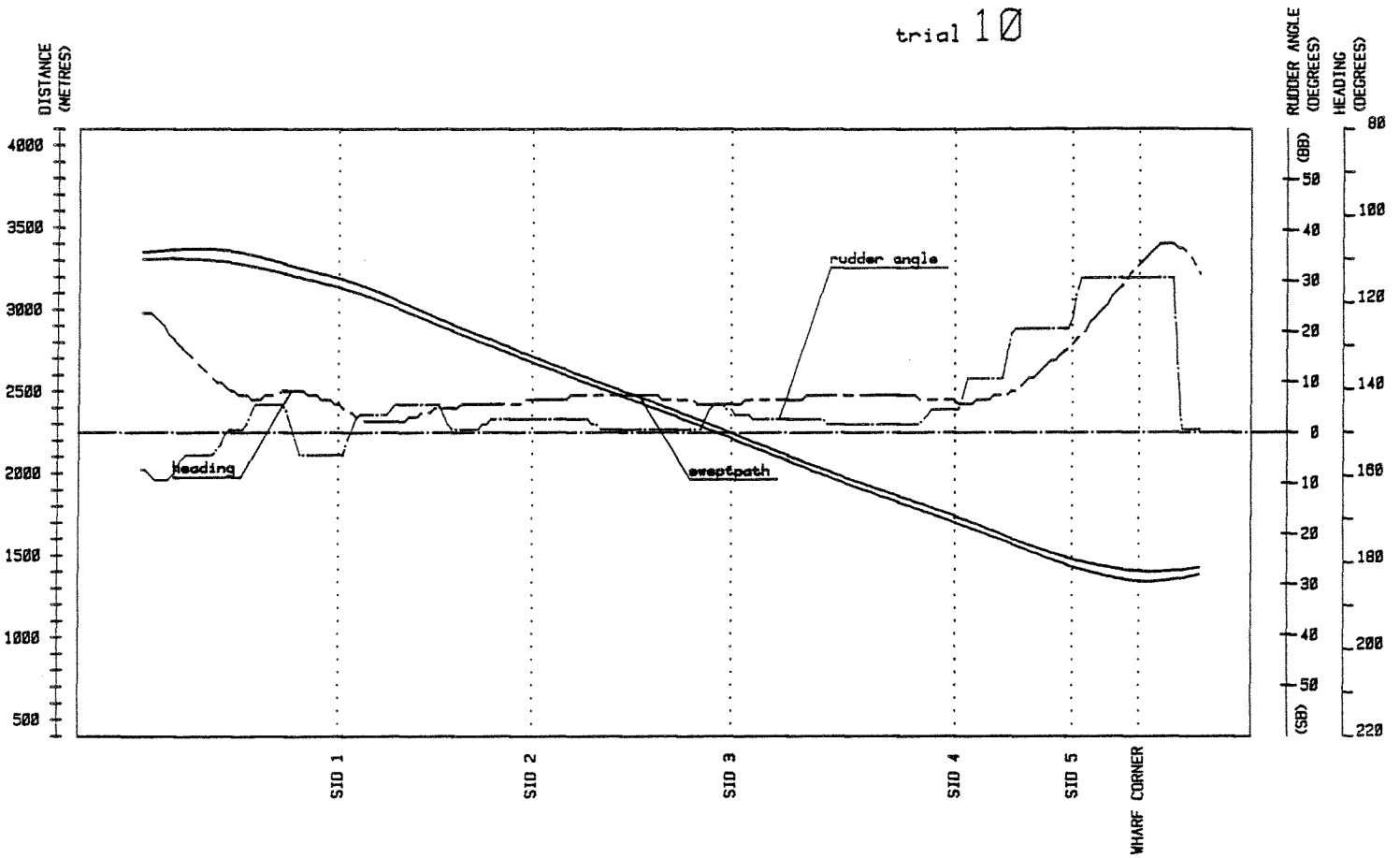
MAX FLOOD AT SPRING TIDE
70.000 dwt ships
225 degrees

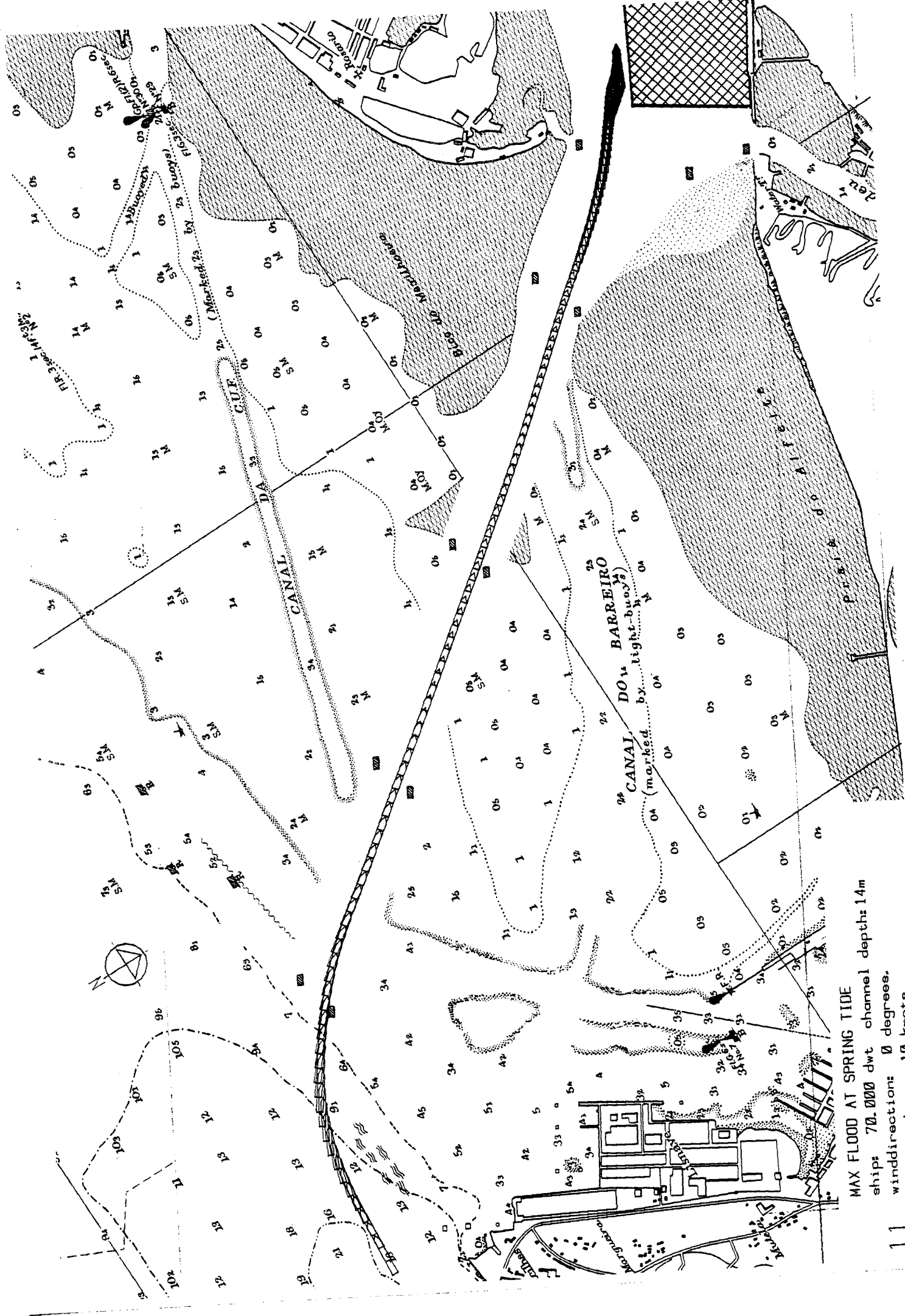


MAX FLOOD AT SPRING TIDE
 ship: 70,000 dwt channel depth: 14m
 winddirection: 270 degrees.
 windspeed : 20 knots.

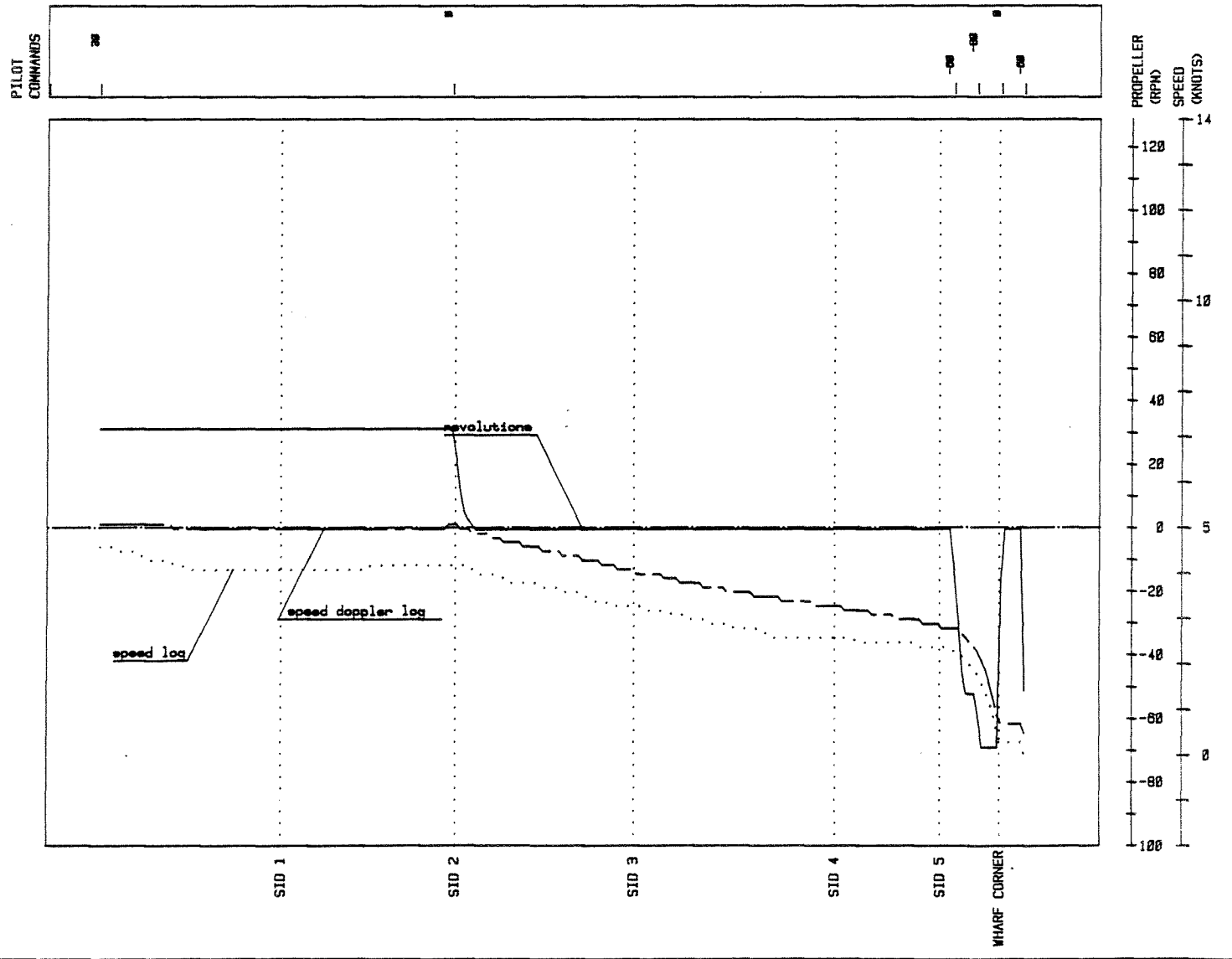
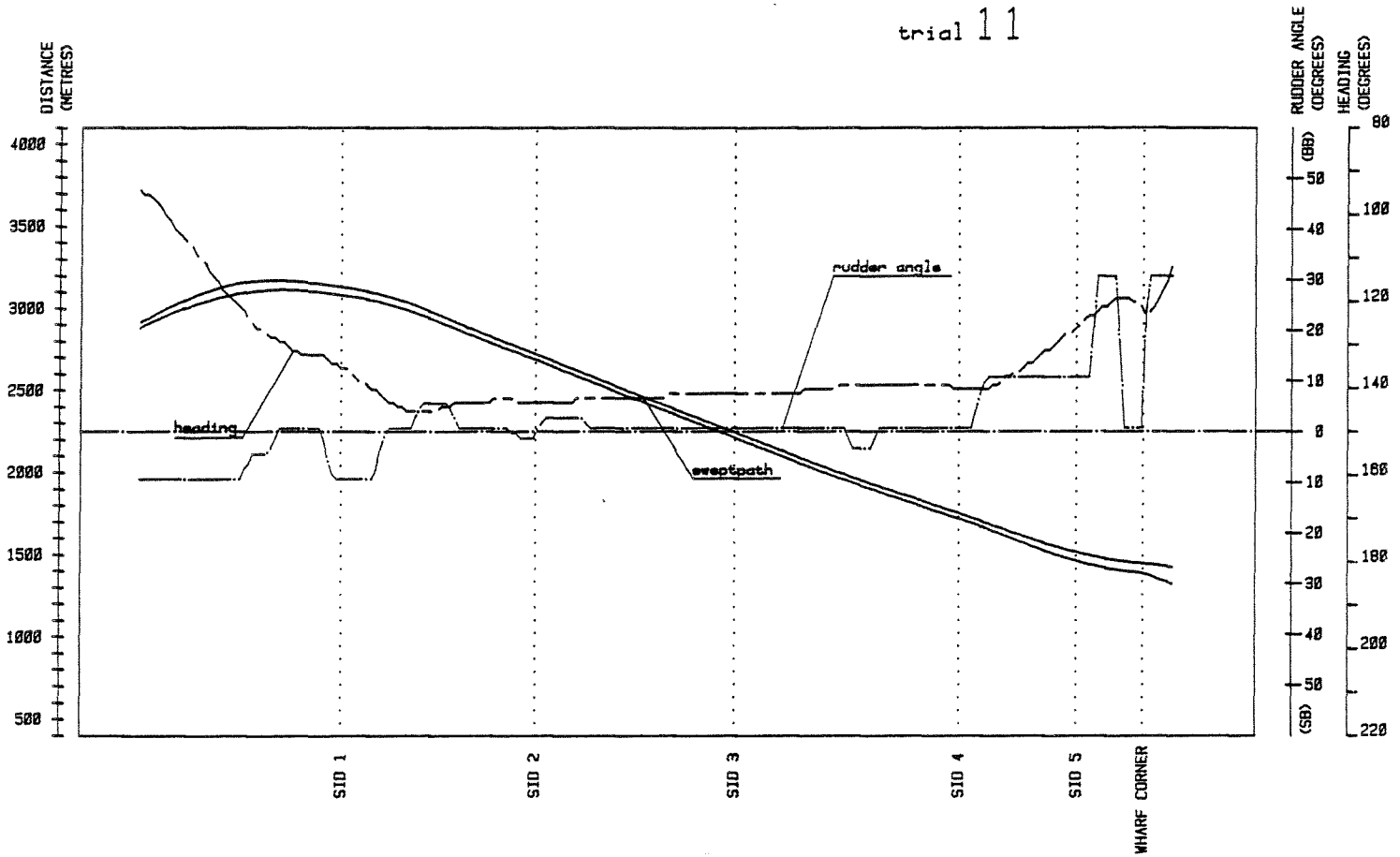


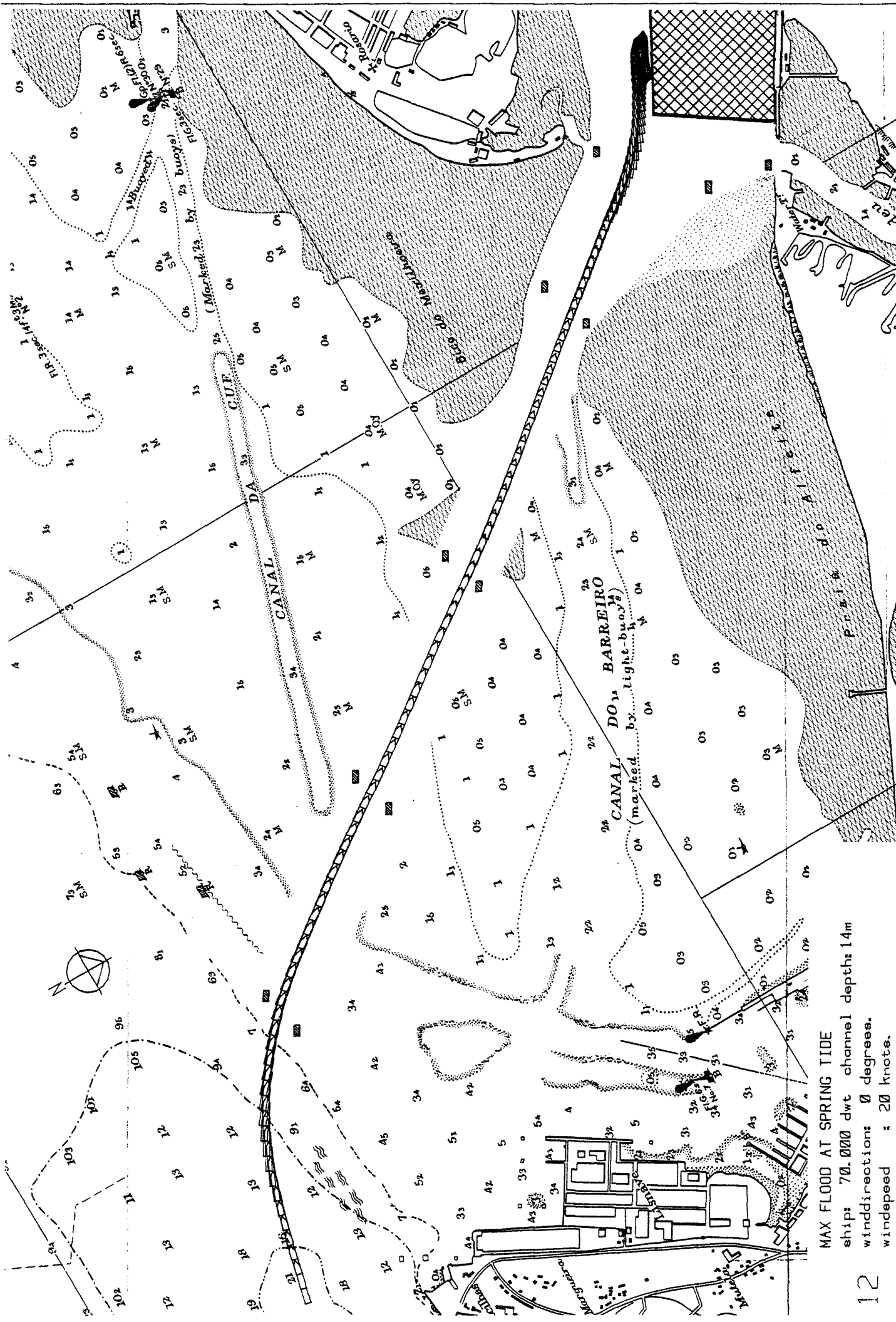
trial 10





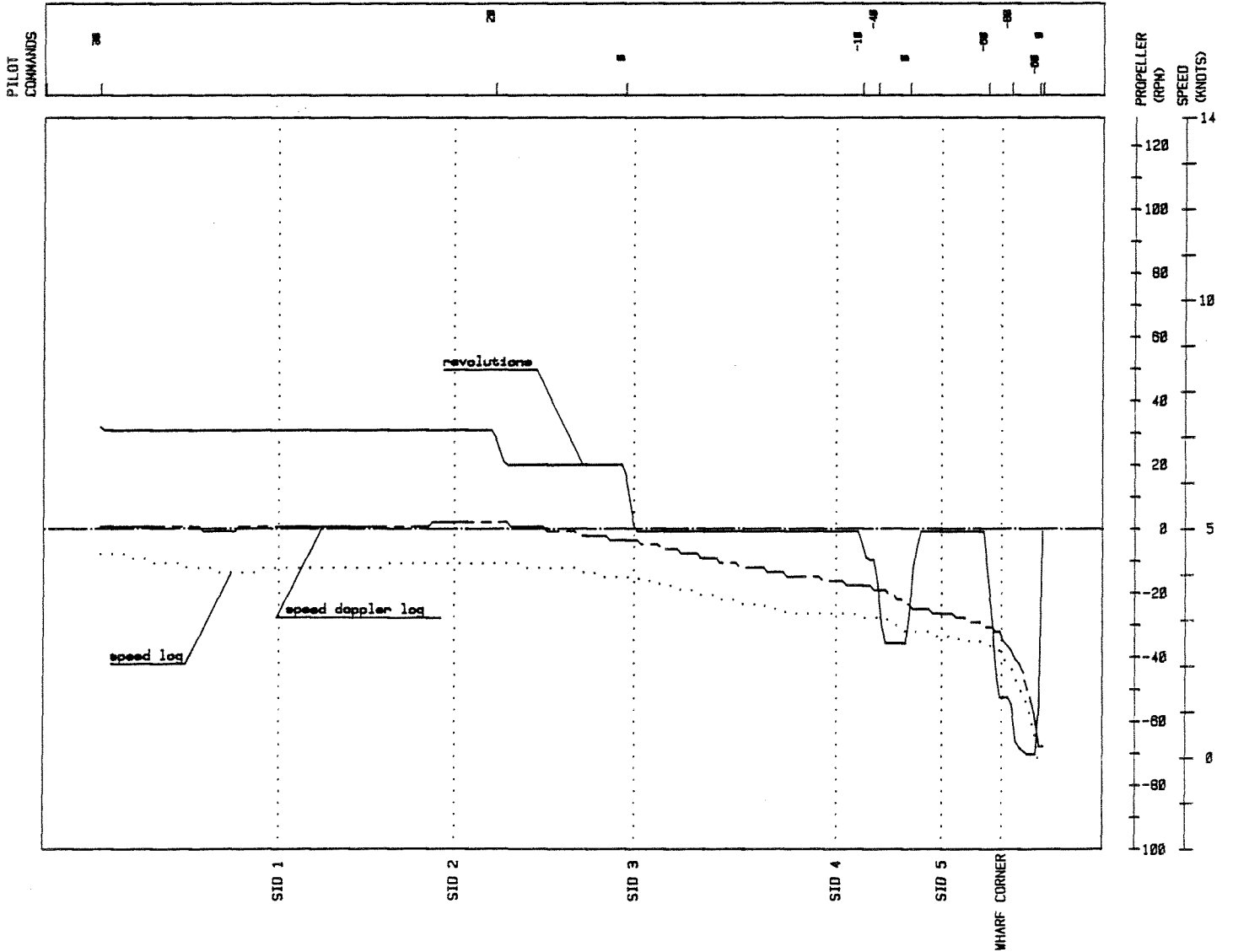
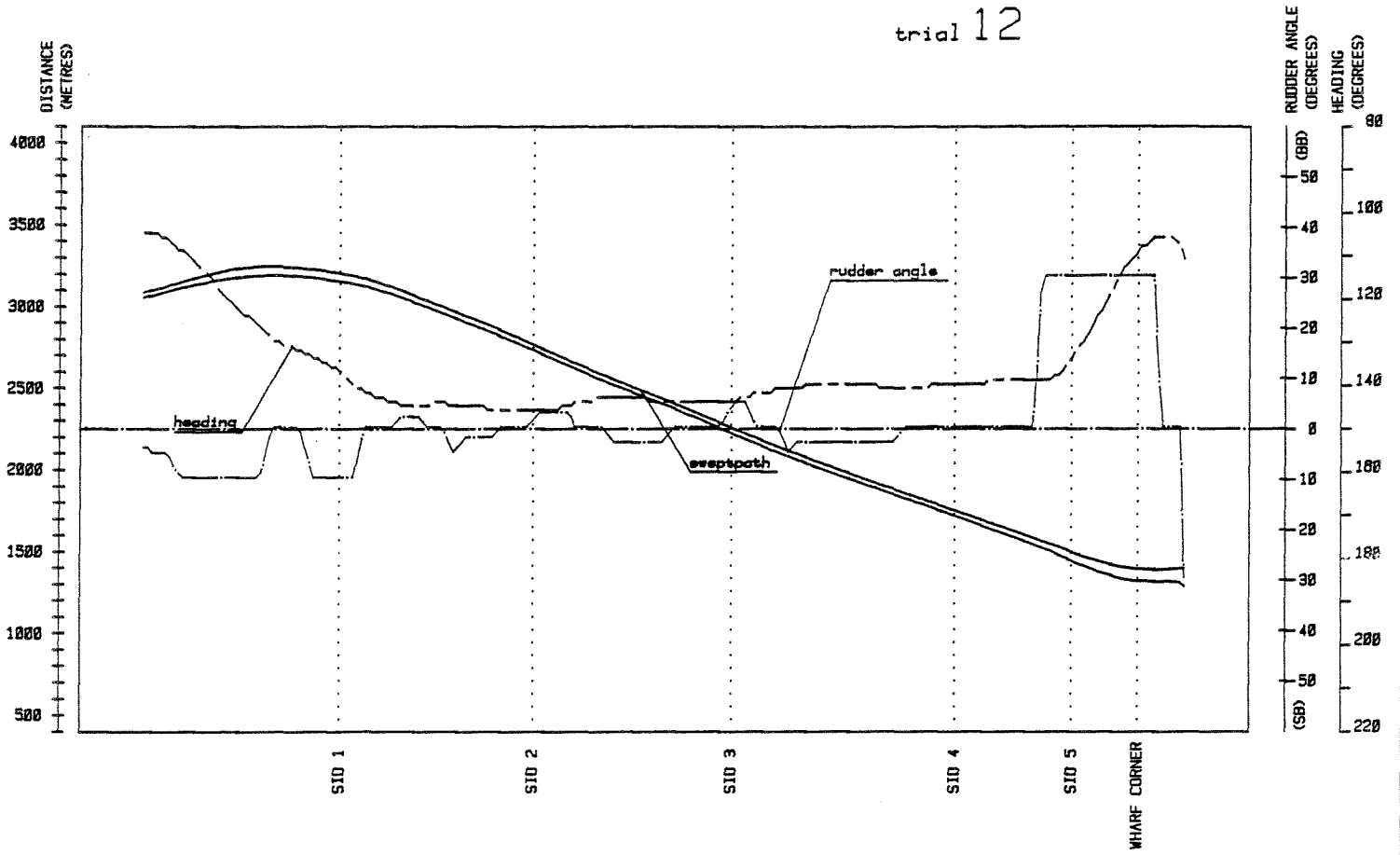
MAX FLOOD AT SPRING TIDE
 ships: 70,000 dwt channel depth: 14m
 winddirection: 0 degrees.
 windspeed : 10 knots.

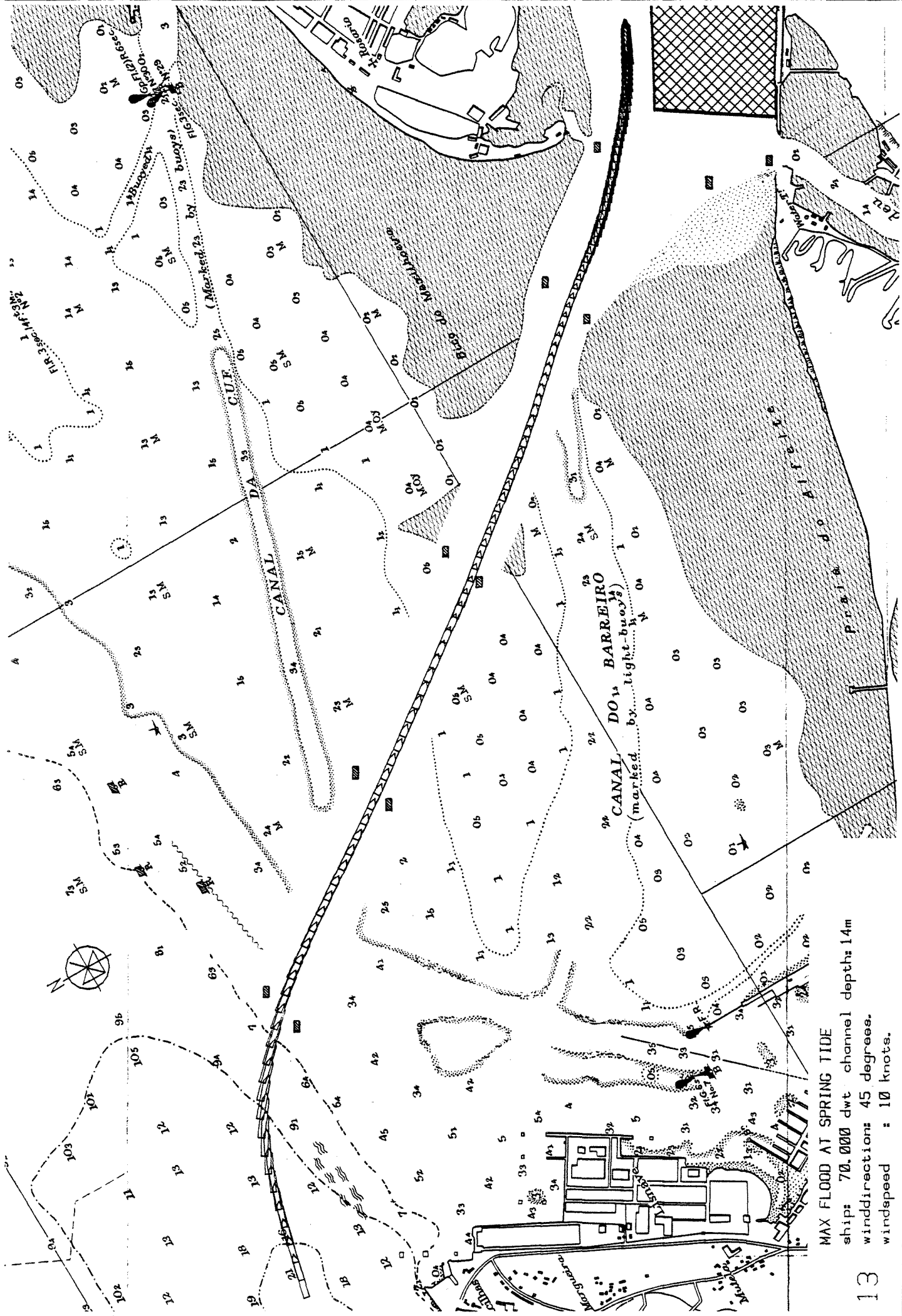




MAX FLOOD AT SPRING TIDE
 ships 70.000 dwt channel depth: 14m
 winddirection: 0 degrees.
 wind speed : 20 knots.

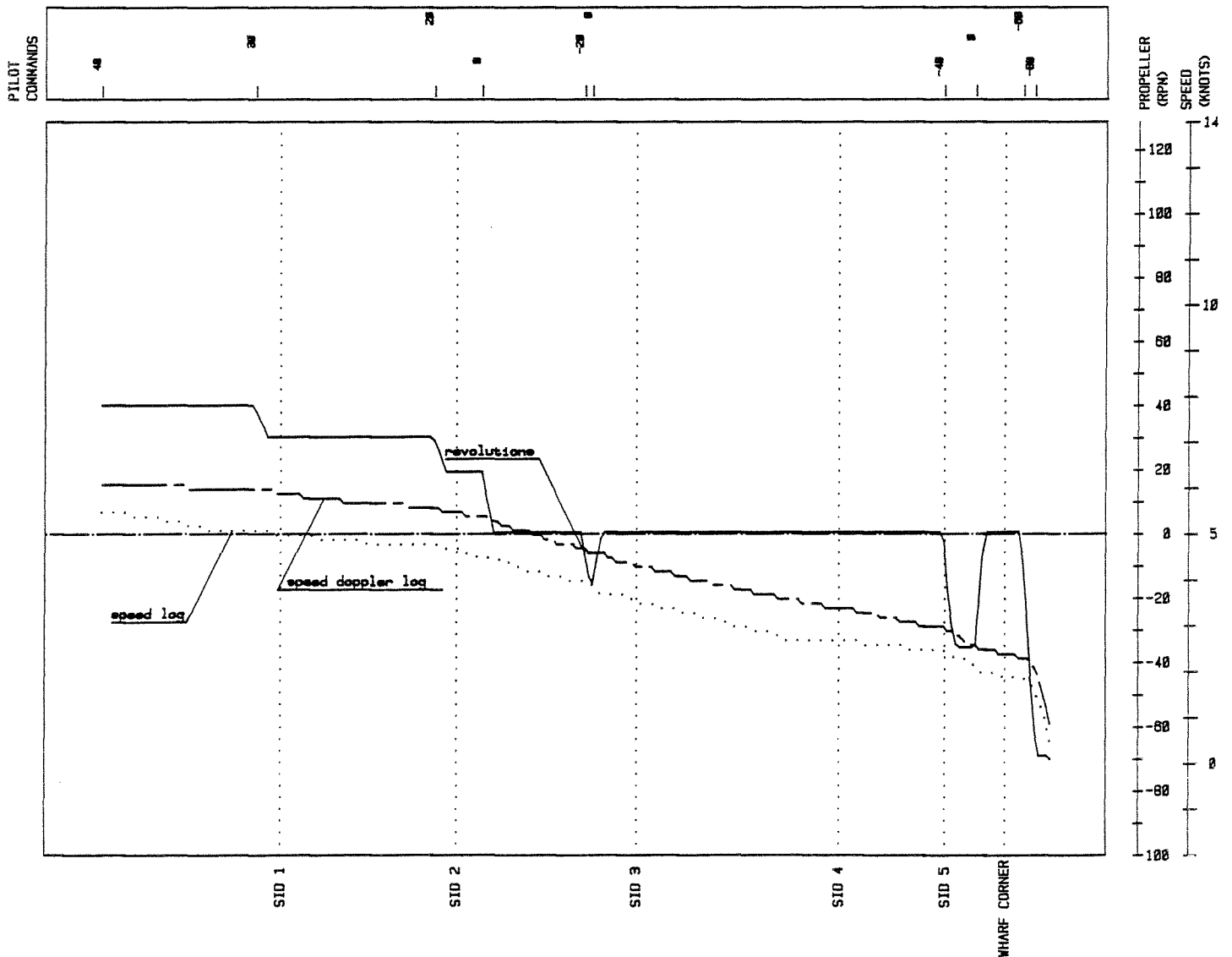
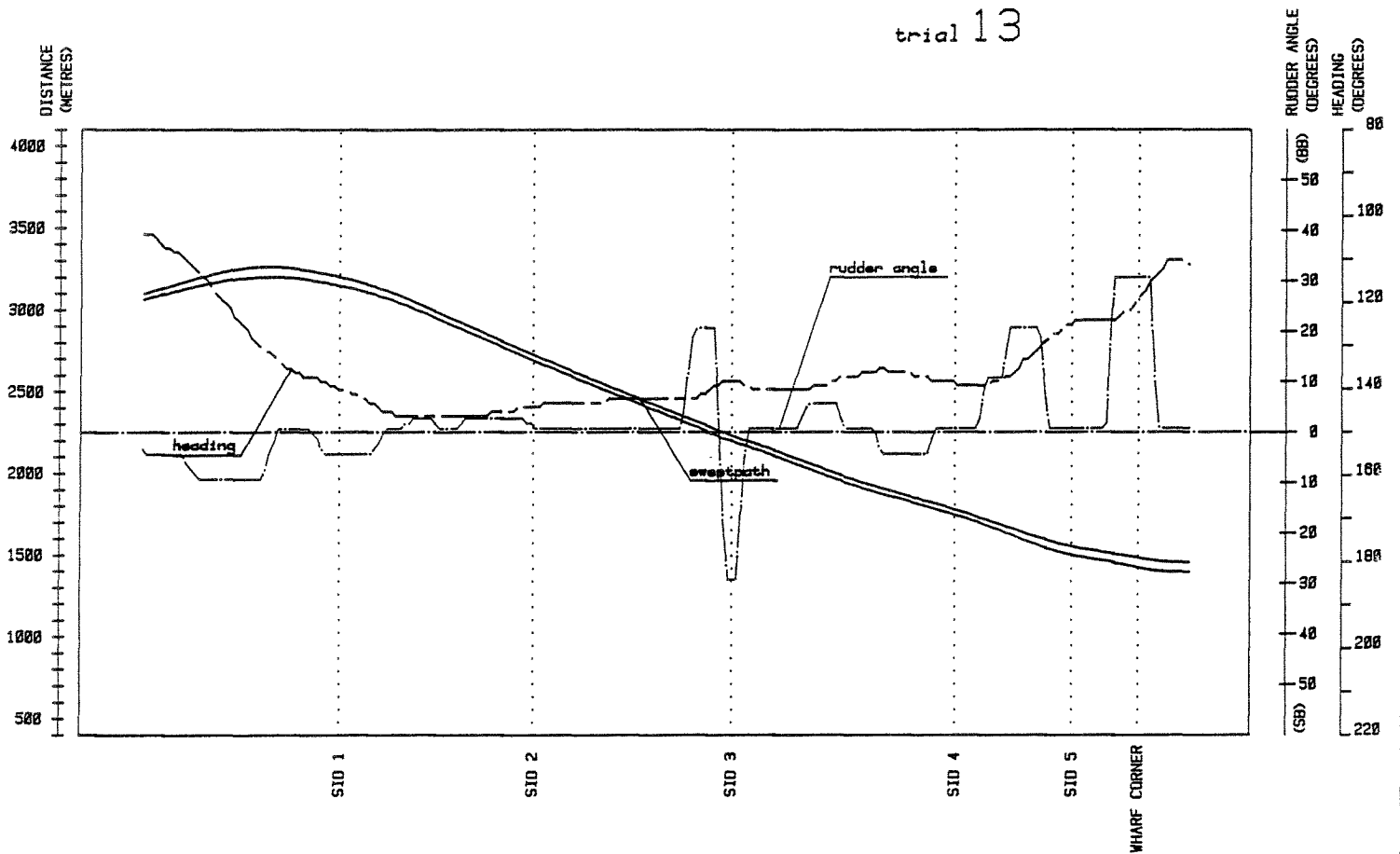
trial 12

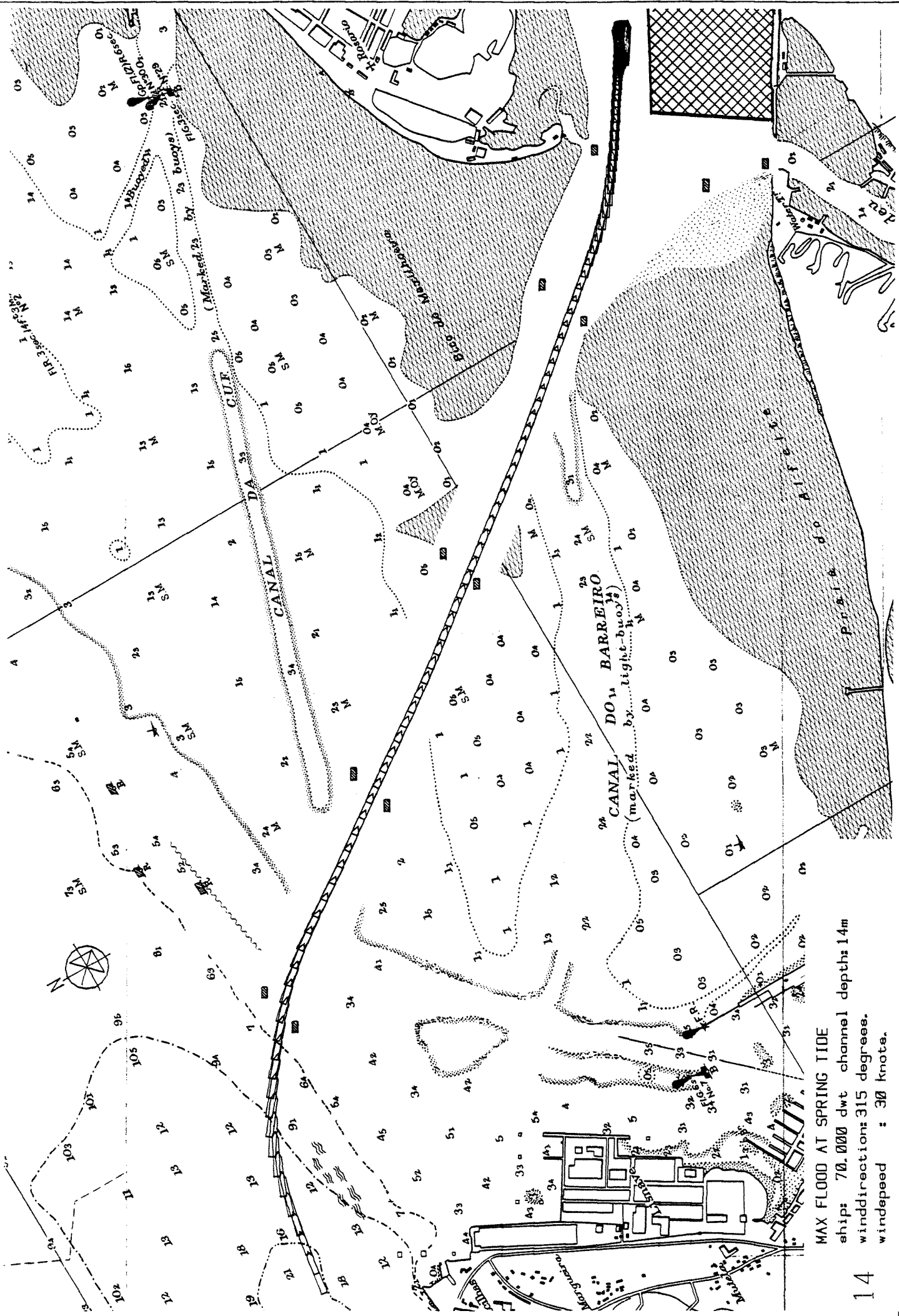




MAX FLOOD AT SPRING TIDE
 ship: 70.000 dwt channel depth: 14m
 winddirection: 45 degrees.
 windspeed : 10 knots.

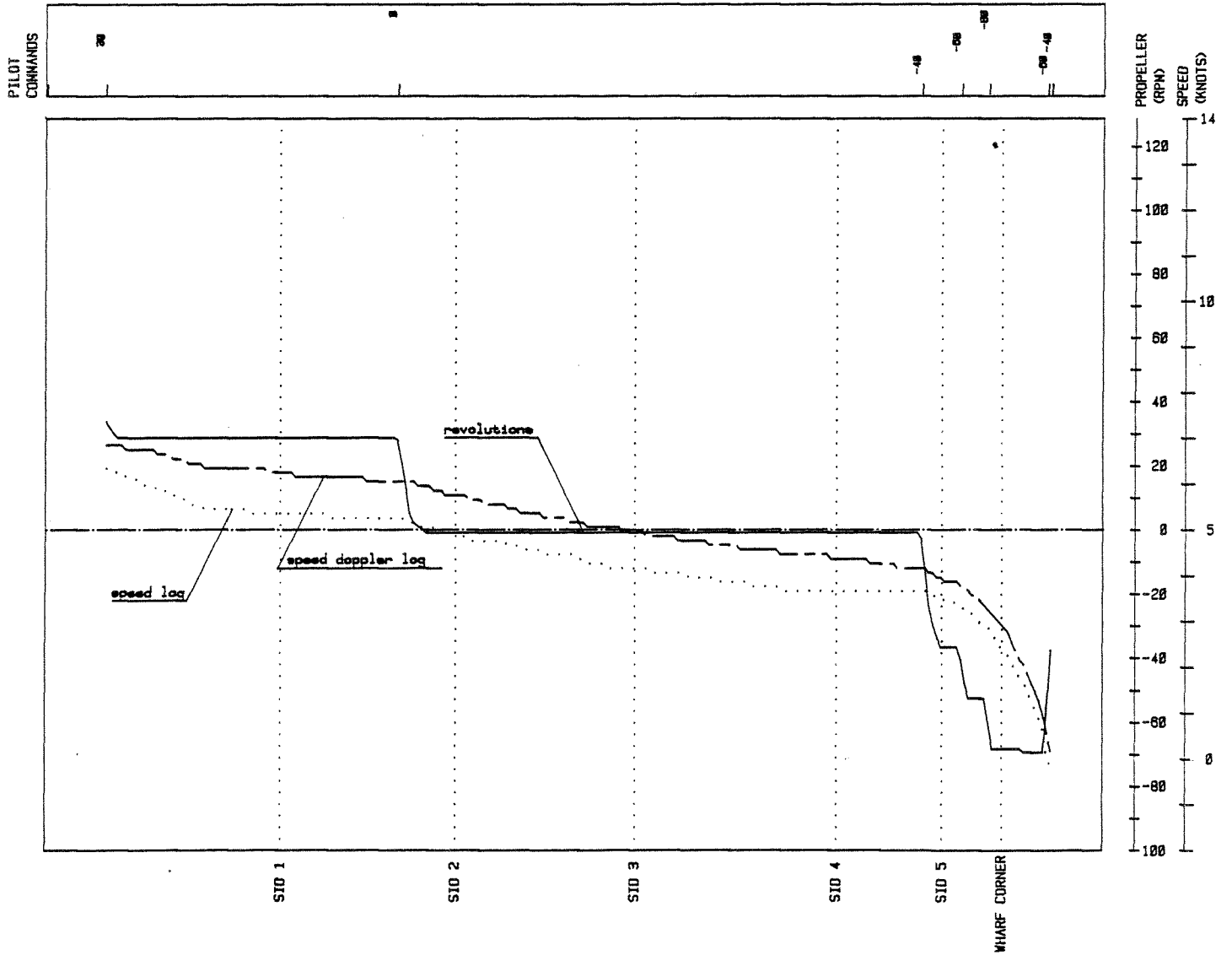
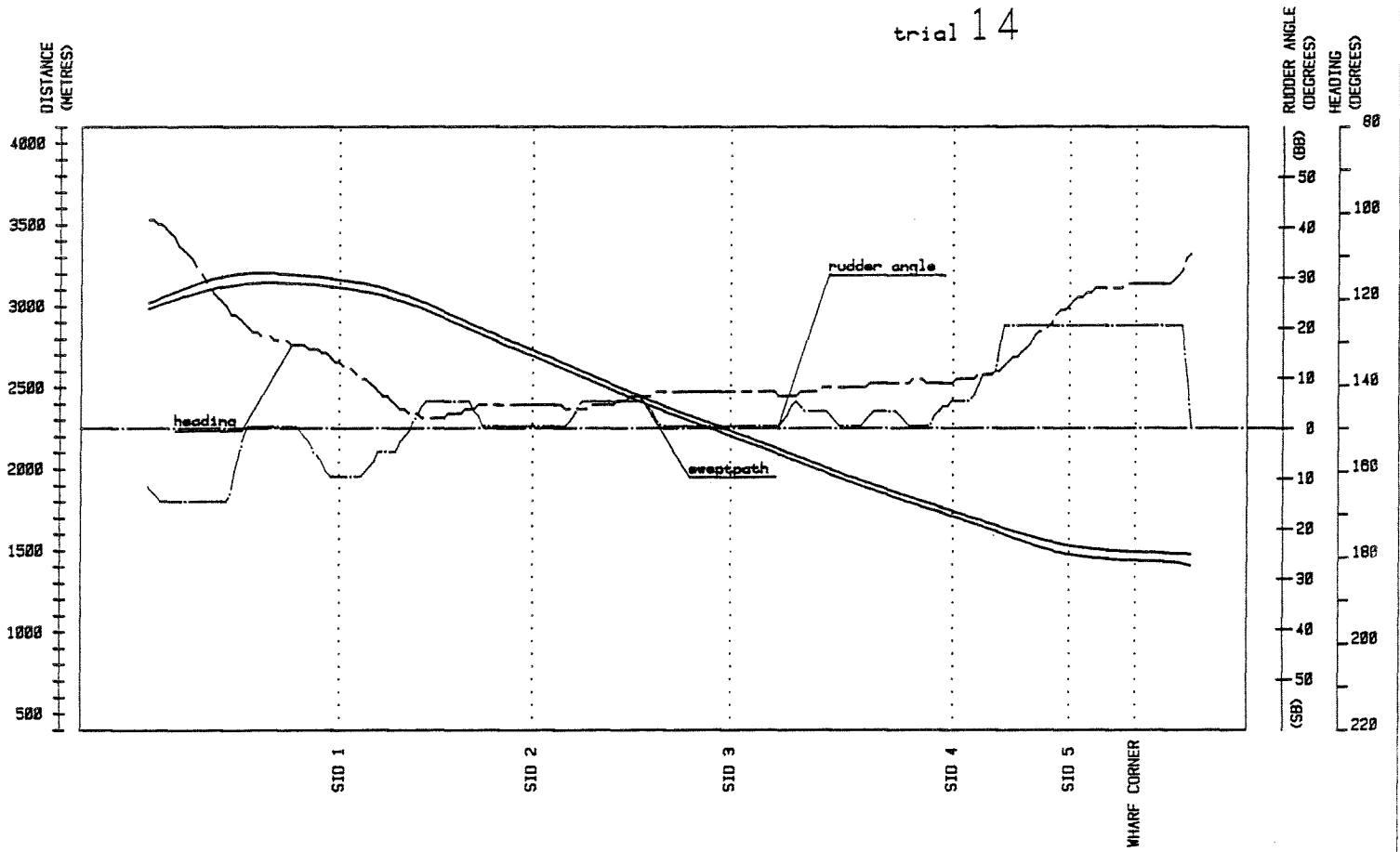
trial 13

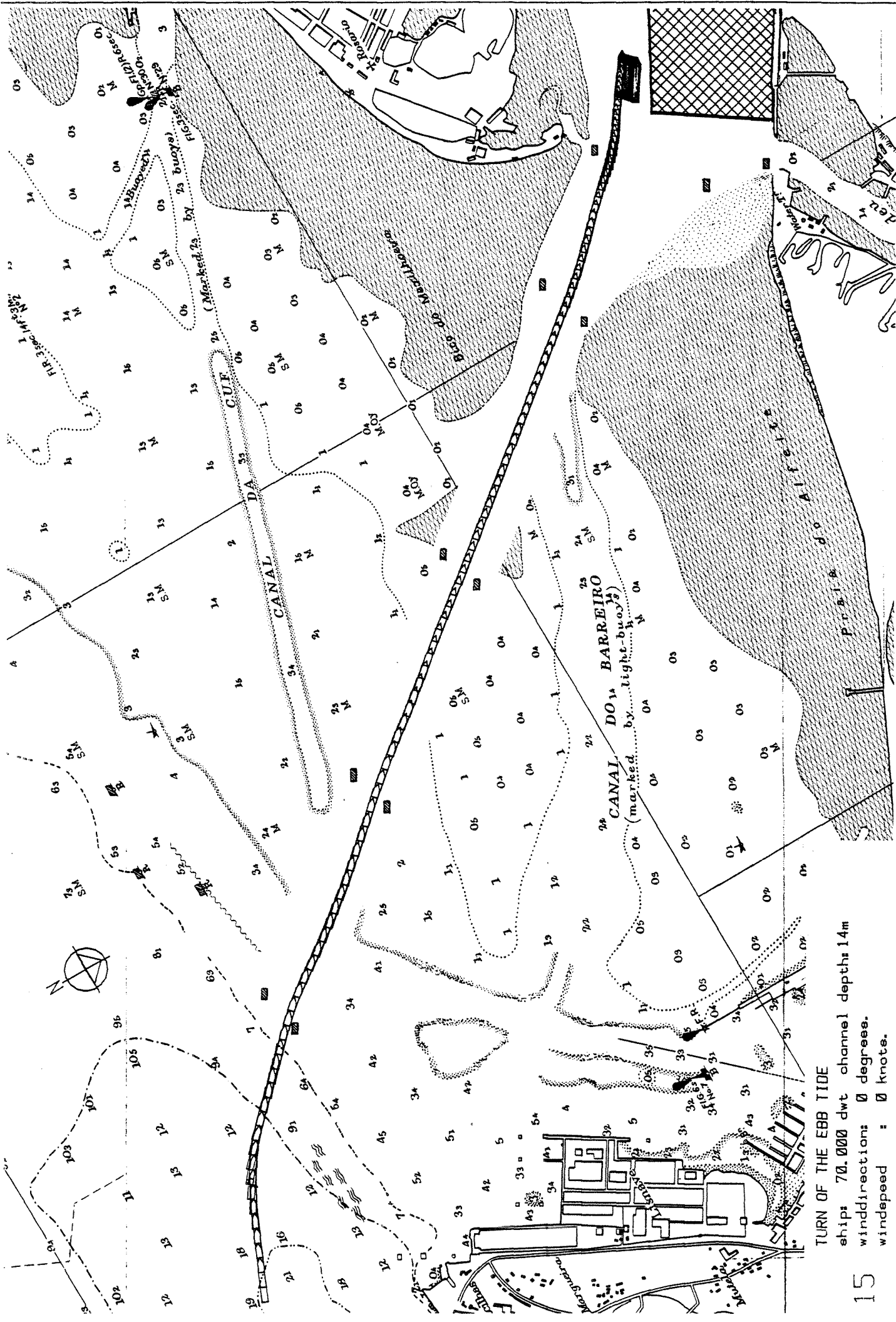




MAX FLOOD AT SPRING TIDE
 ship: 70,000 dwt channel depths 14m
 wind direction: 315 degrees.
 wind speed : 30 knots.

trial 14





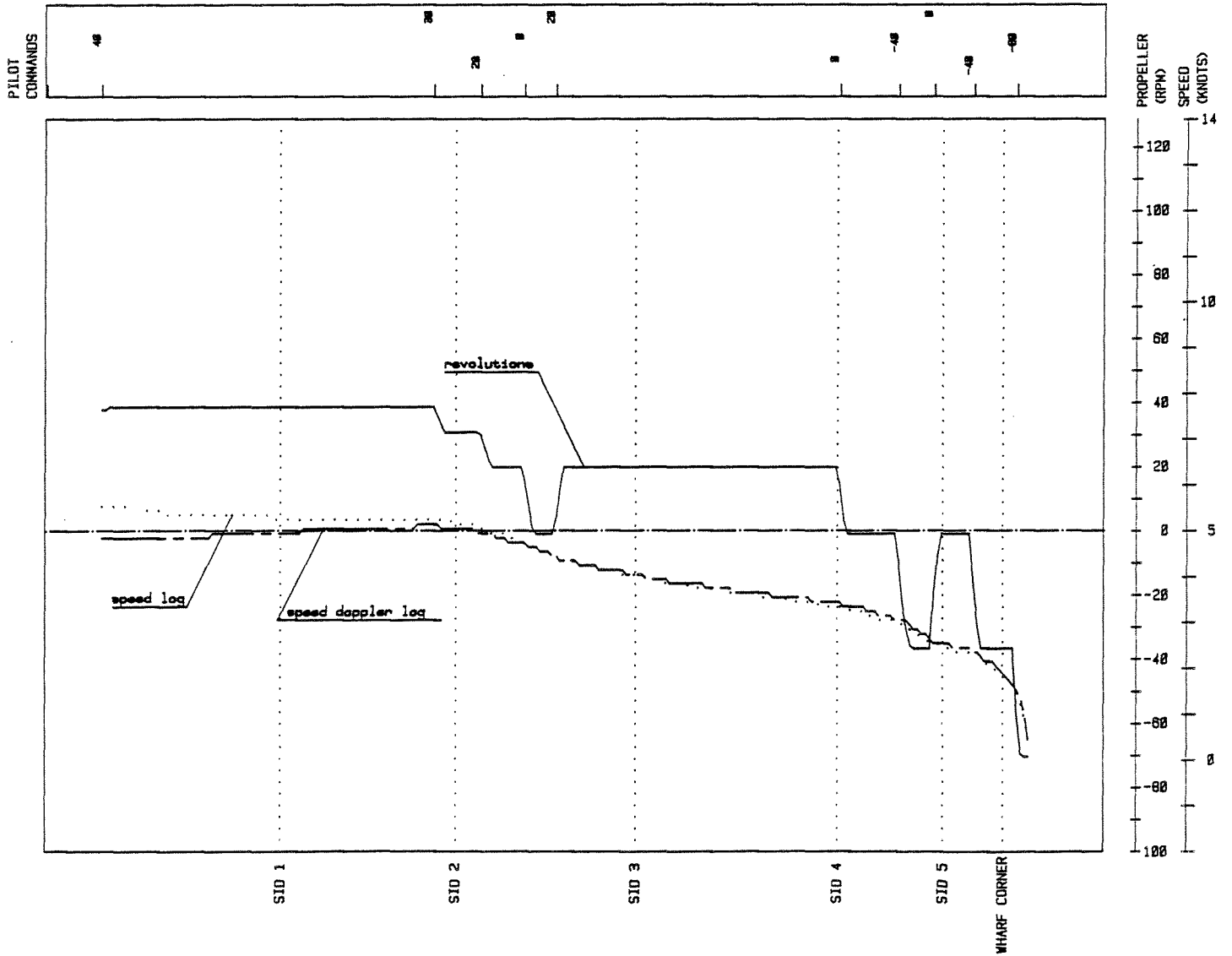
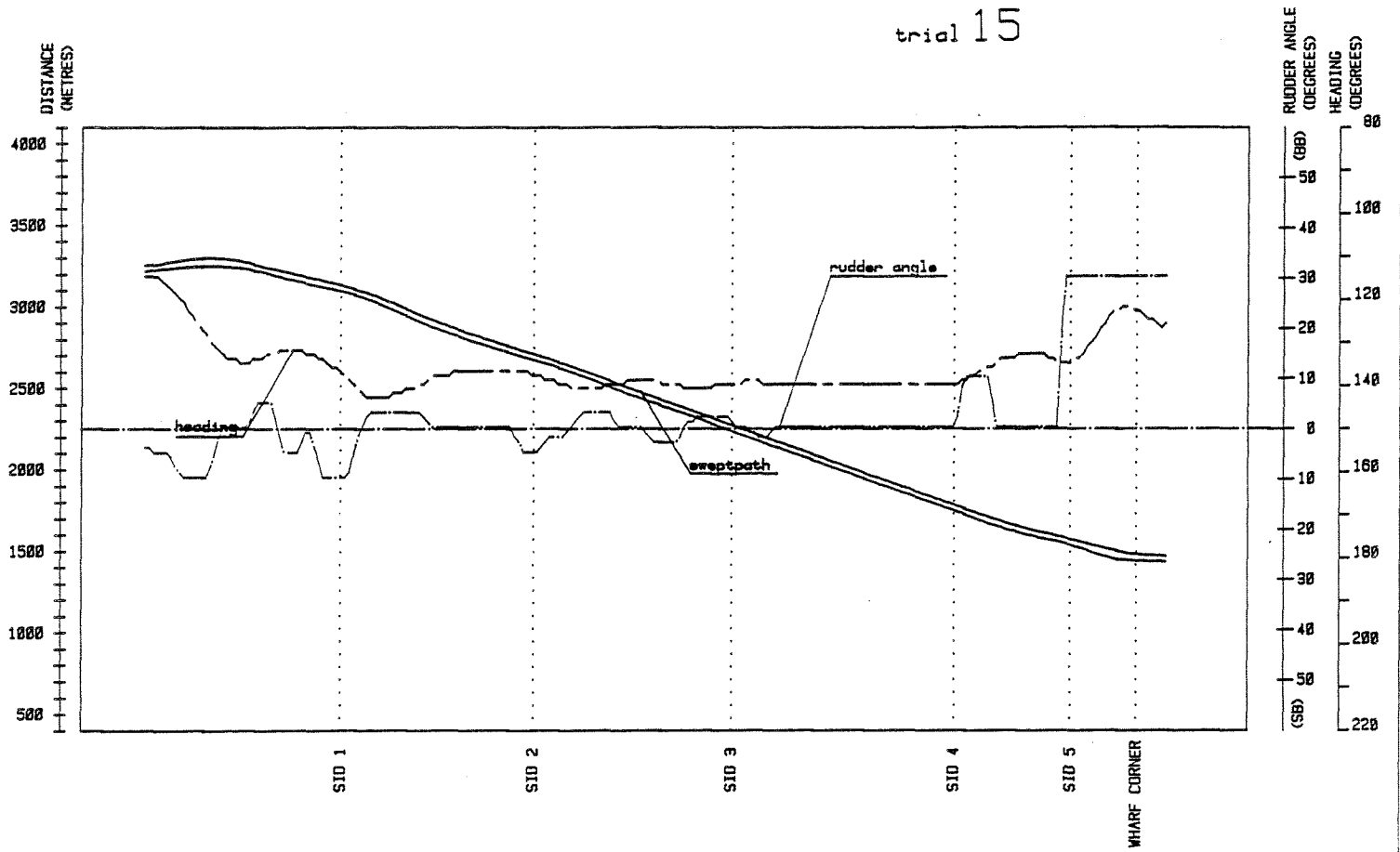
TURN OF THE EBB TIDE

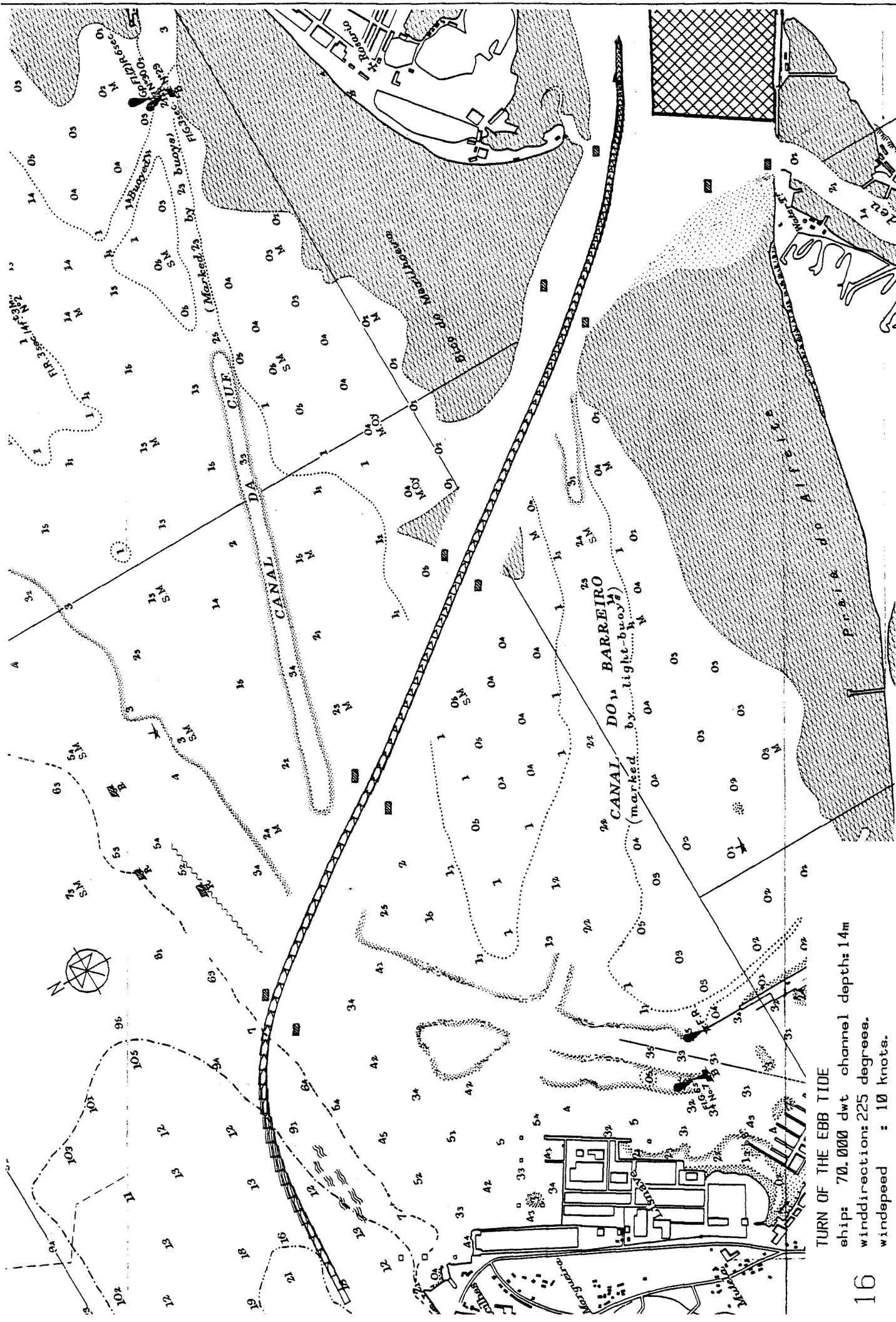
ships: 70,000 dwt channel depths: 14m

winddirection: 0 degrees.

windspeed : 0 knots.

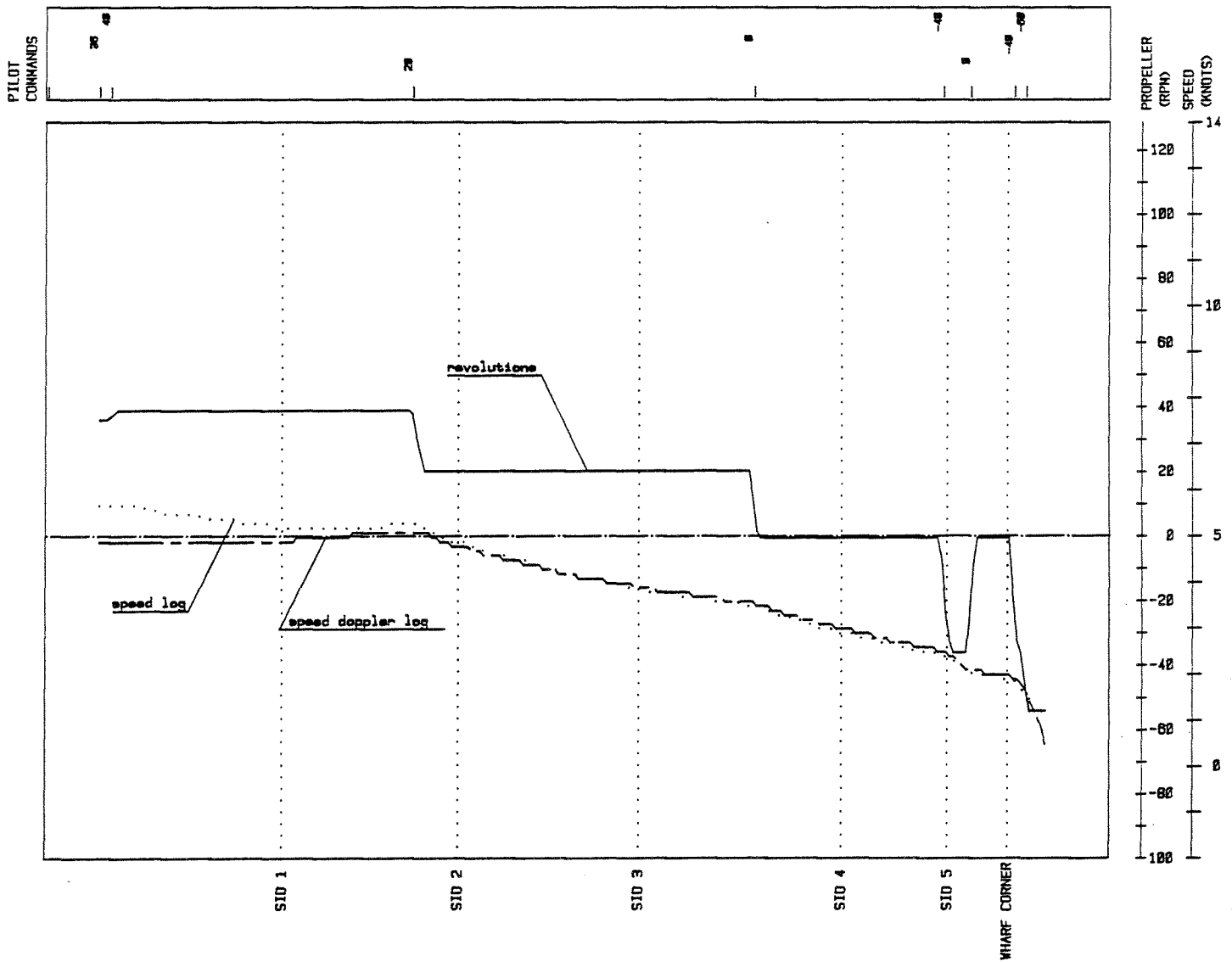
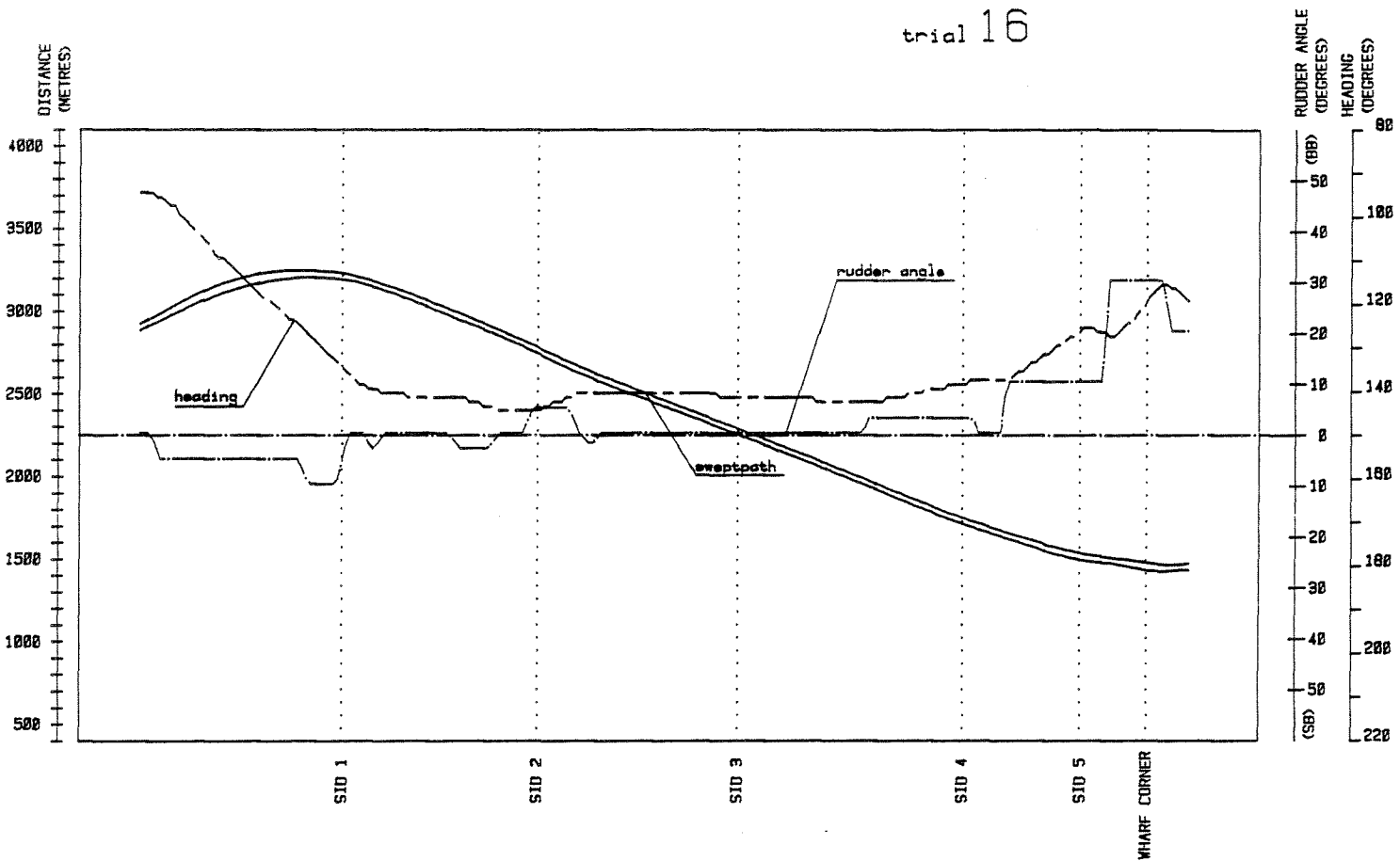
trial 15

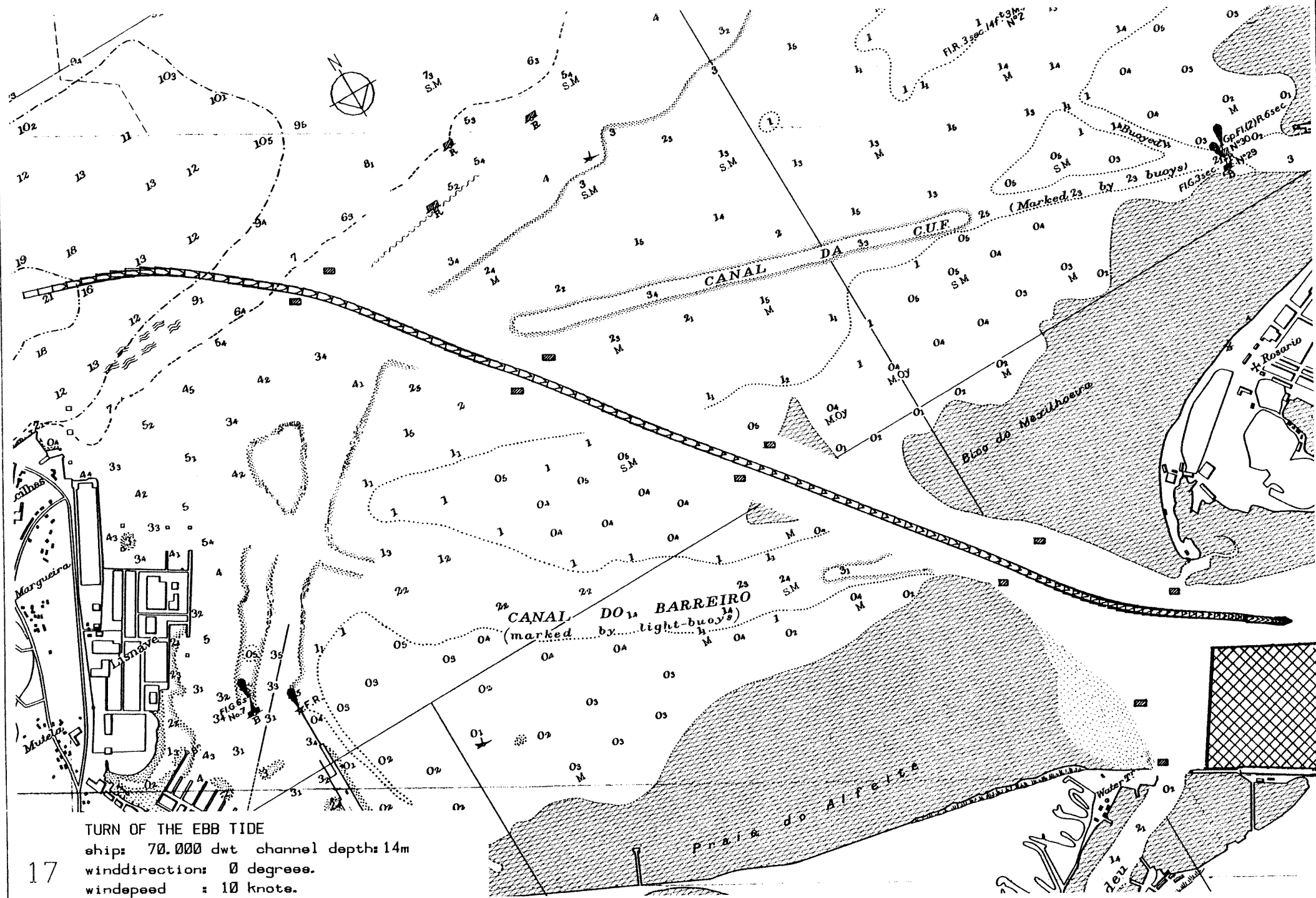




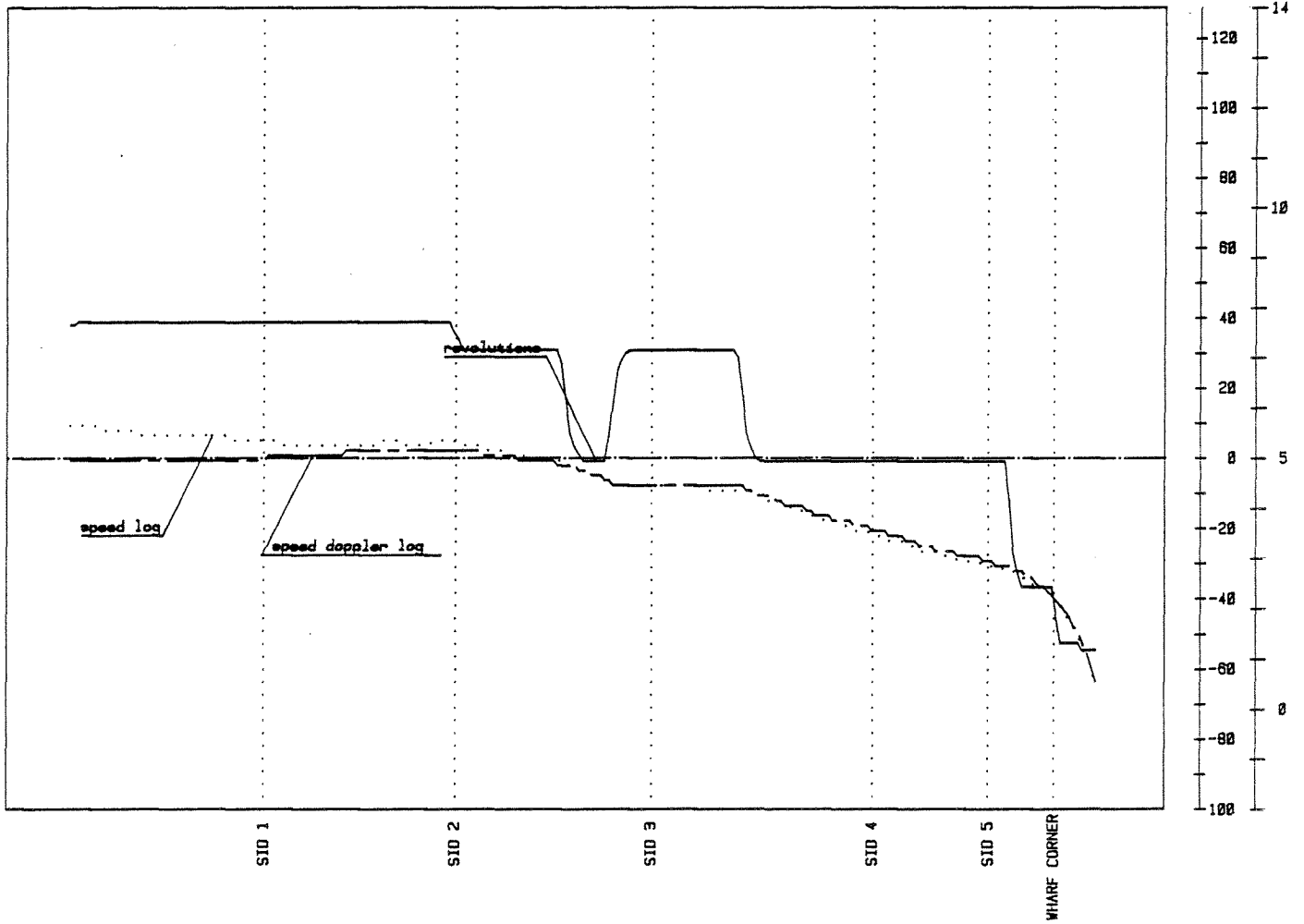
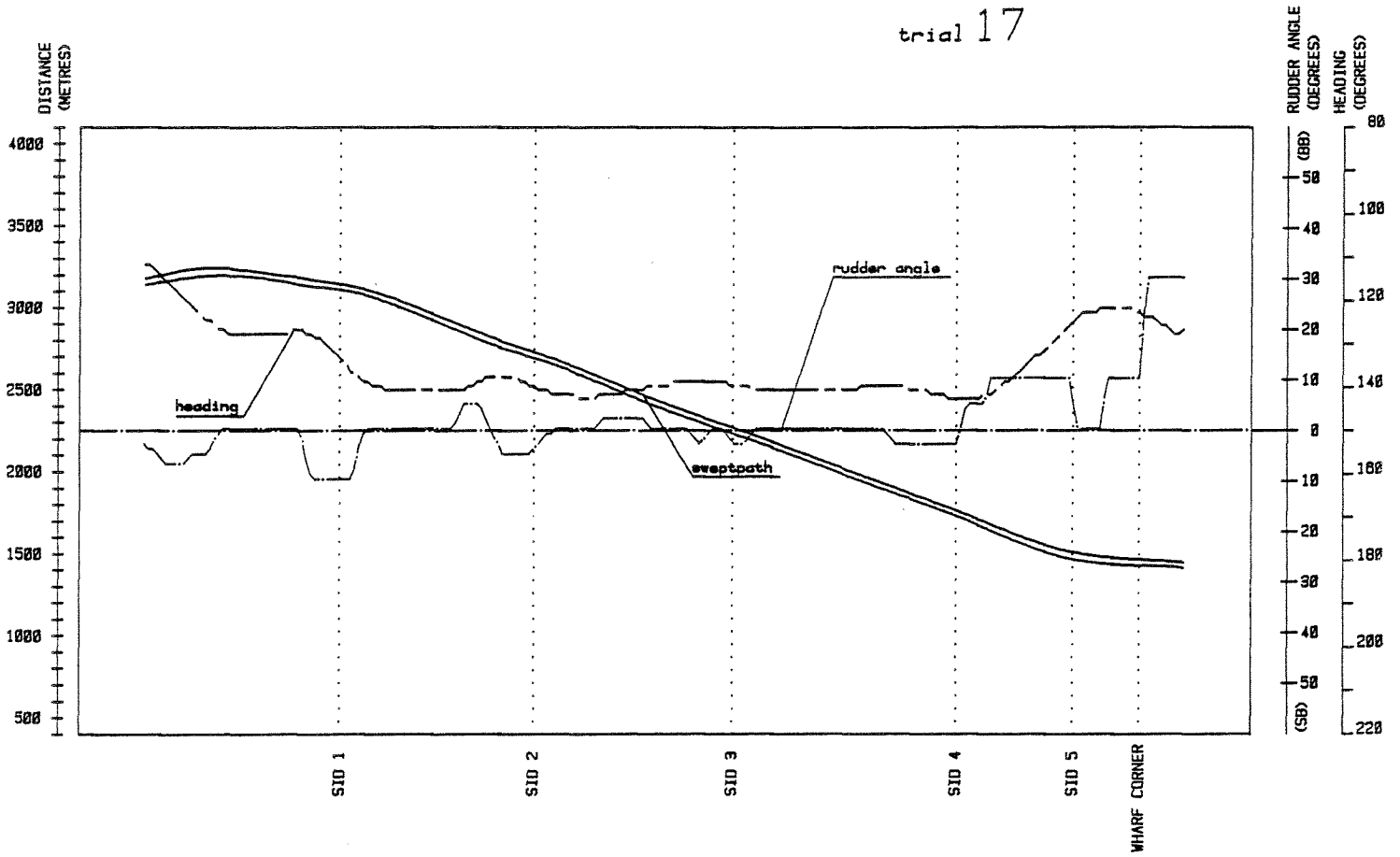
TURN OF THE EBB TIDE
 ships: 70,000 dwt channel depth: 14m
 wind direction: 225 degrees.
 wind speed : 10 knots.

trial 16

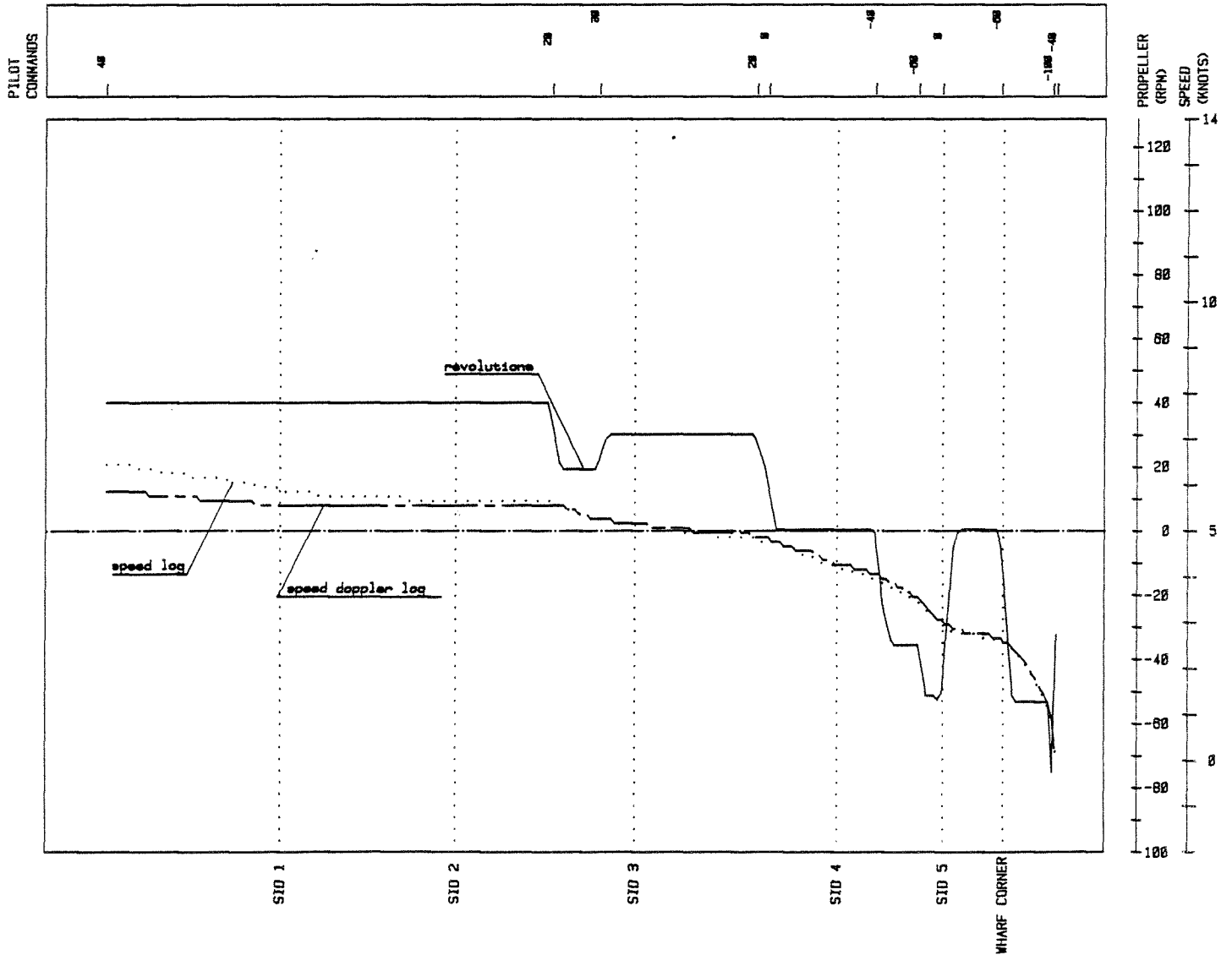
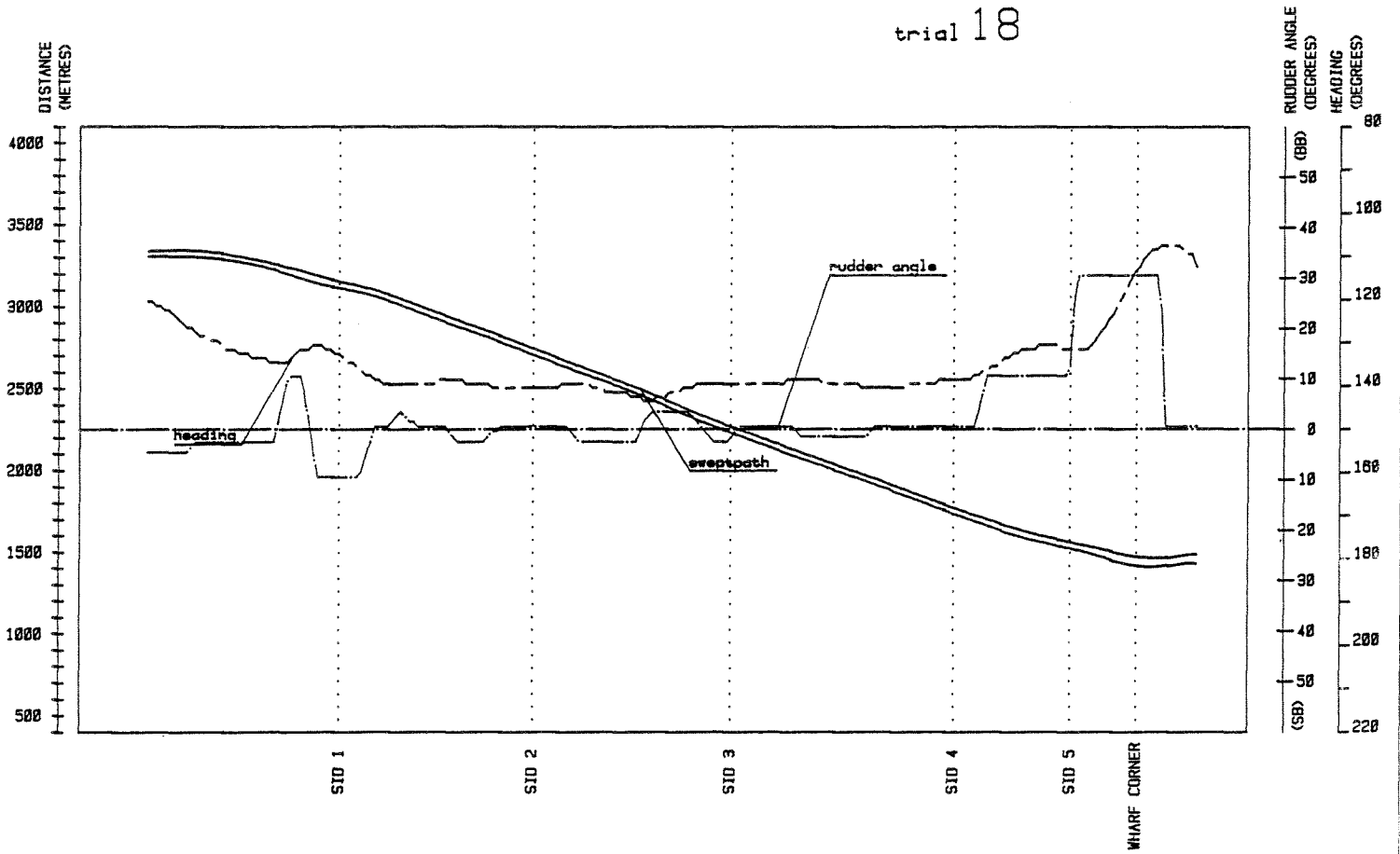


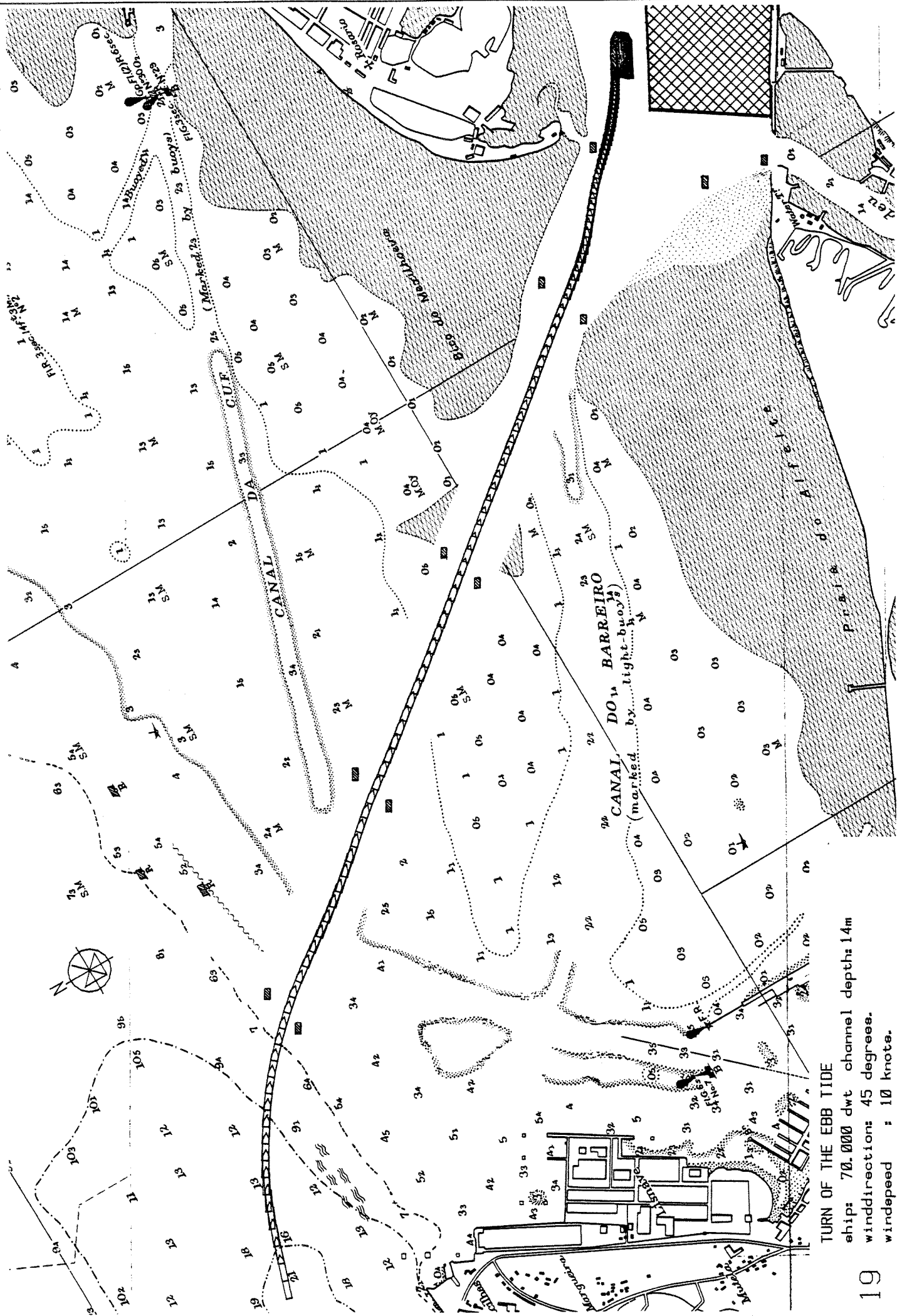


trial 17



trial 18

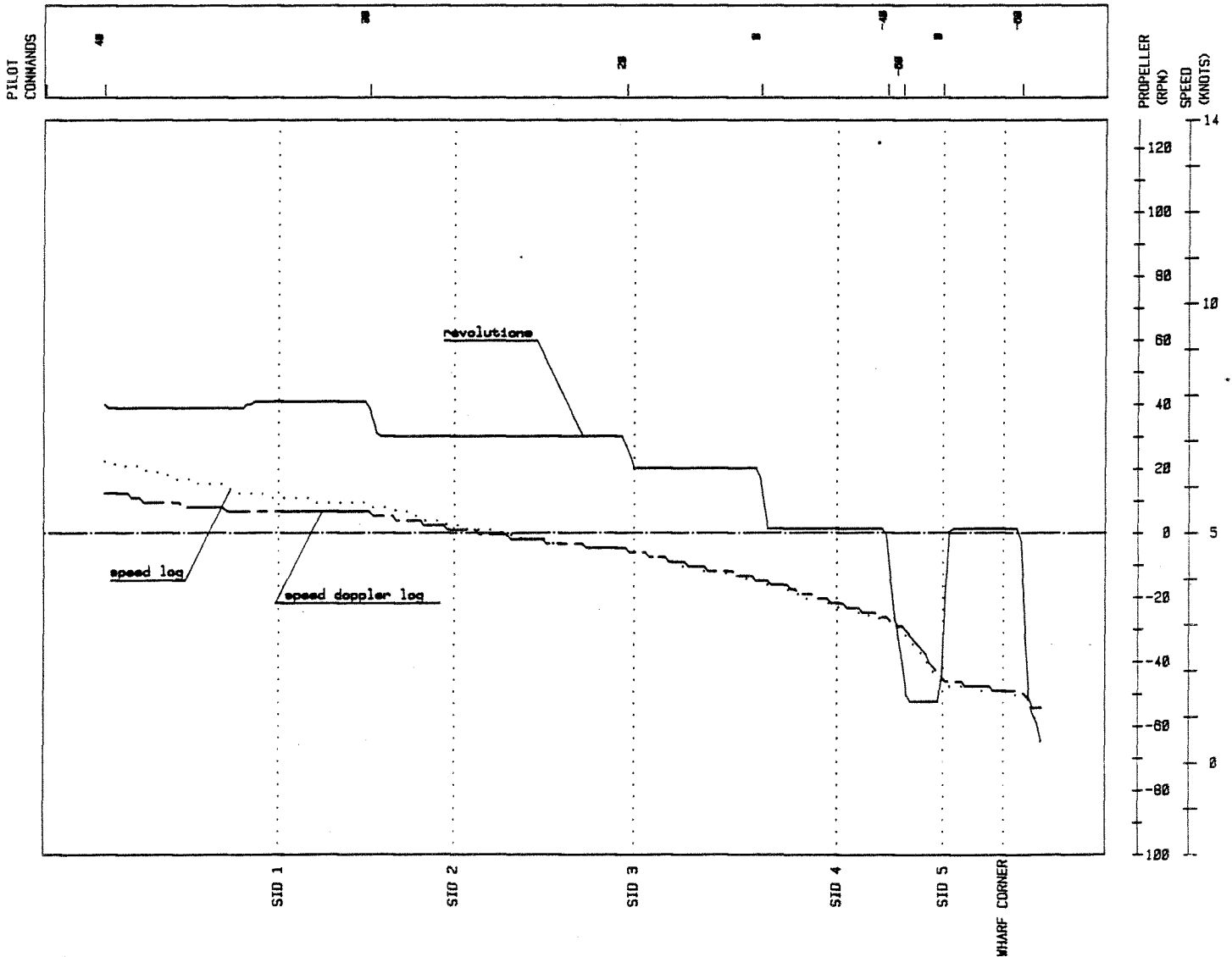
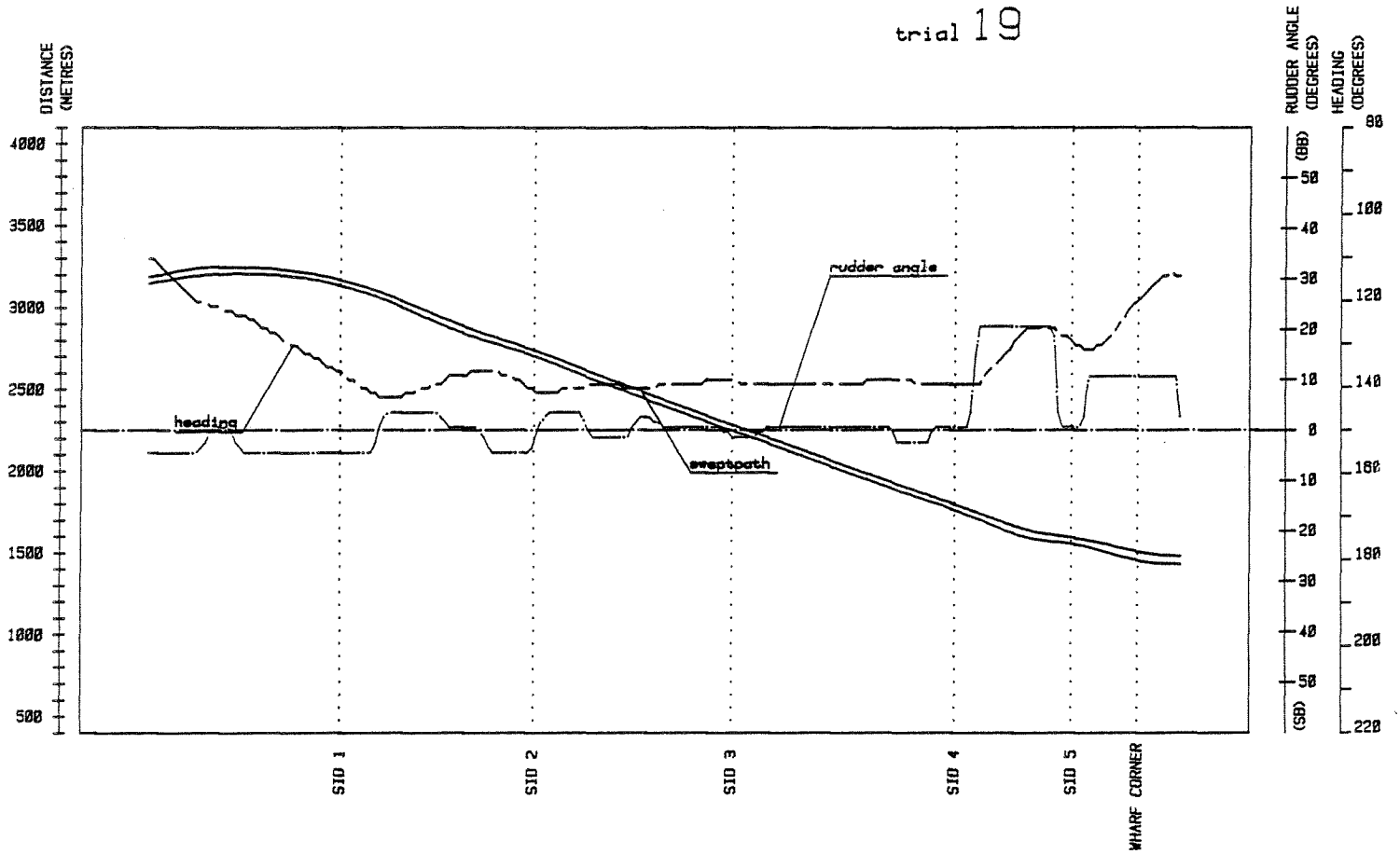


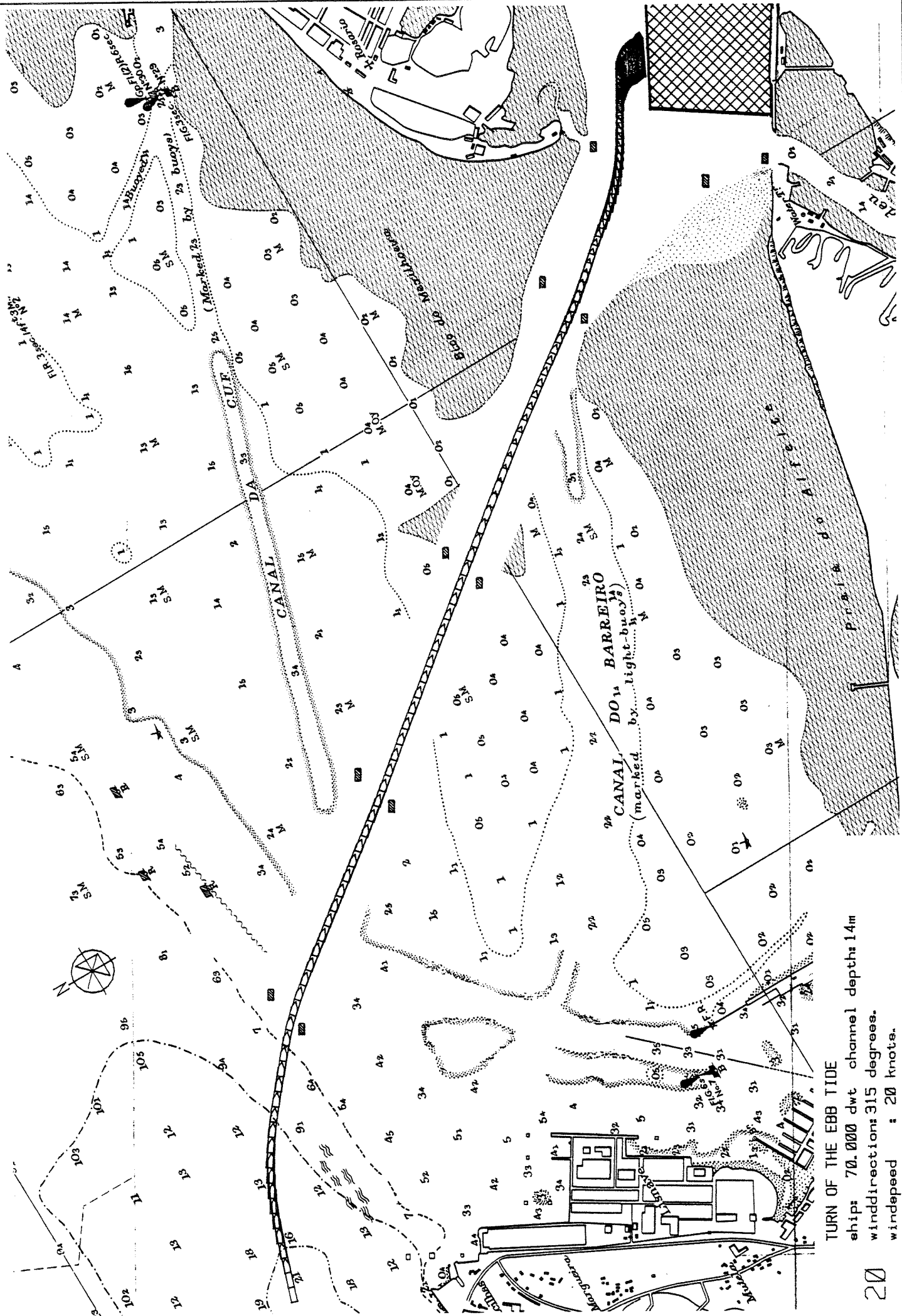


TURN OF THE EBB TIDE

ship: 70,000 dwt channel depth: 14m
 winddirection: 45 degrees.
 windepeed : 10 knots.

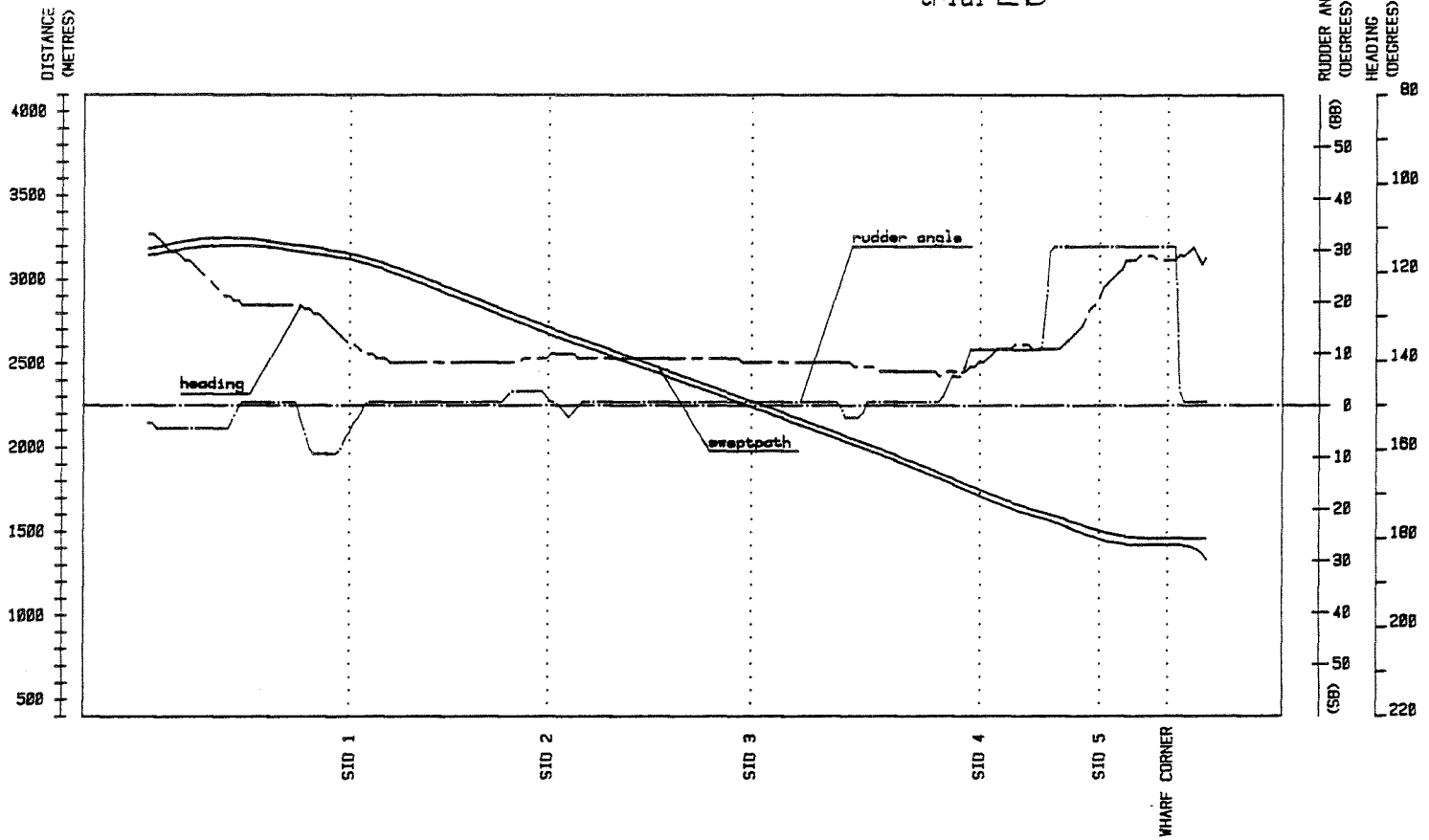
trial 19



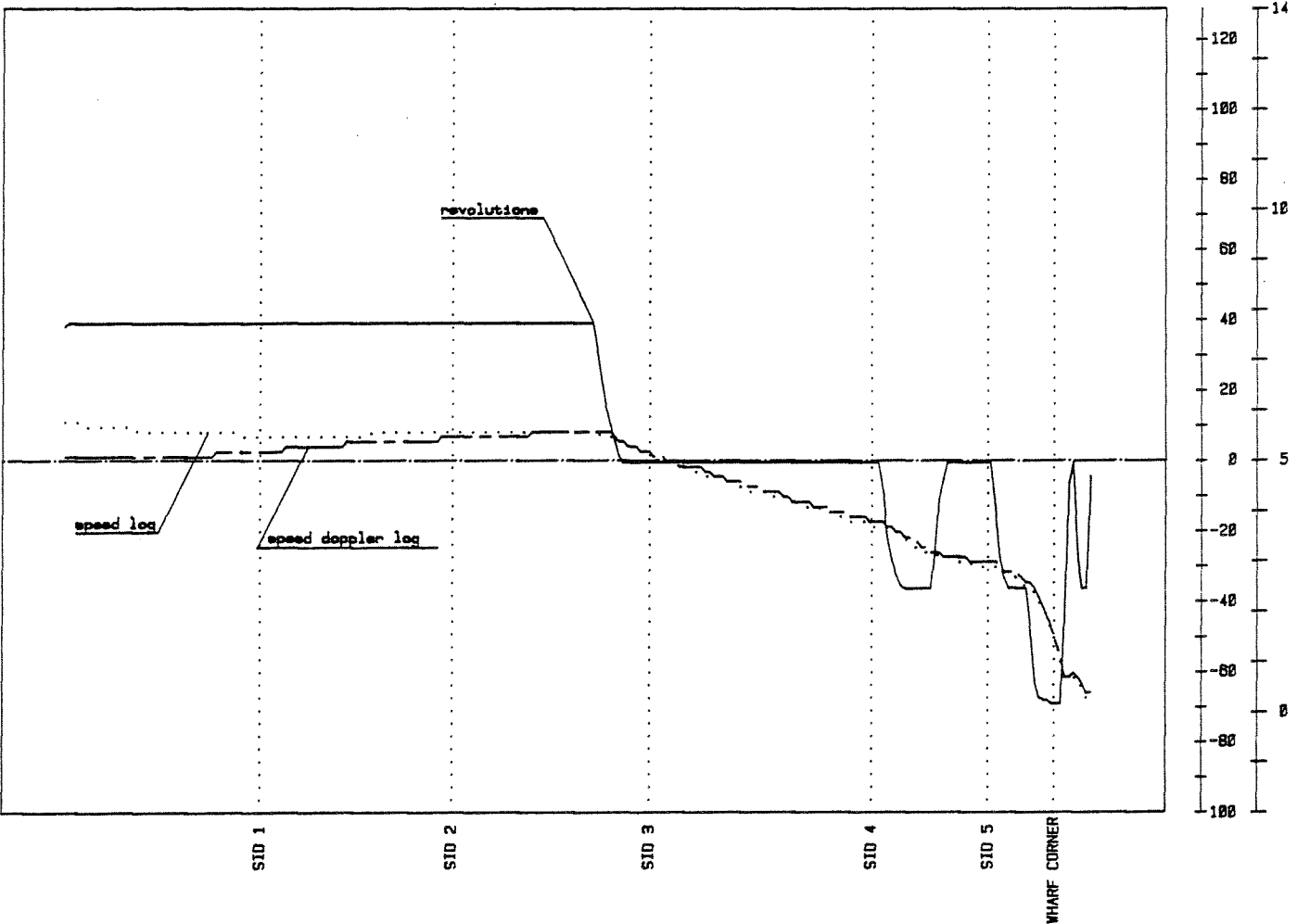
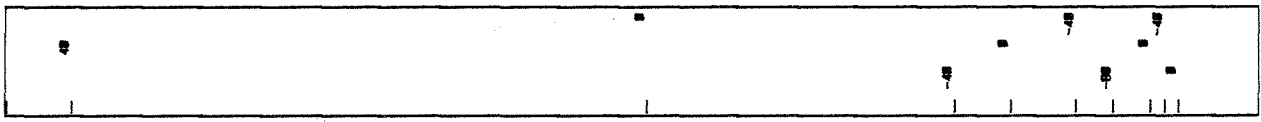


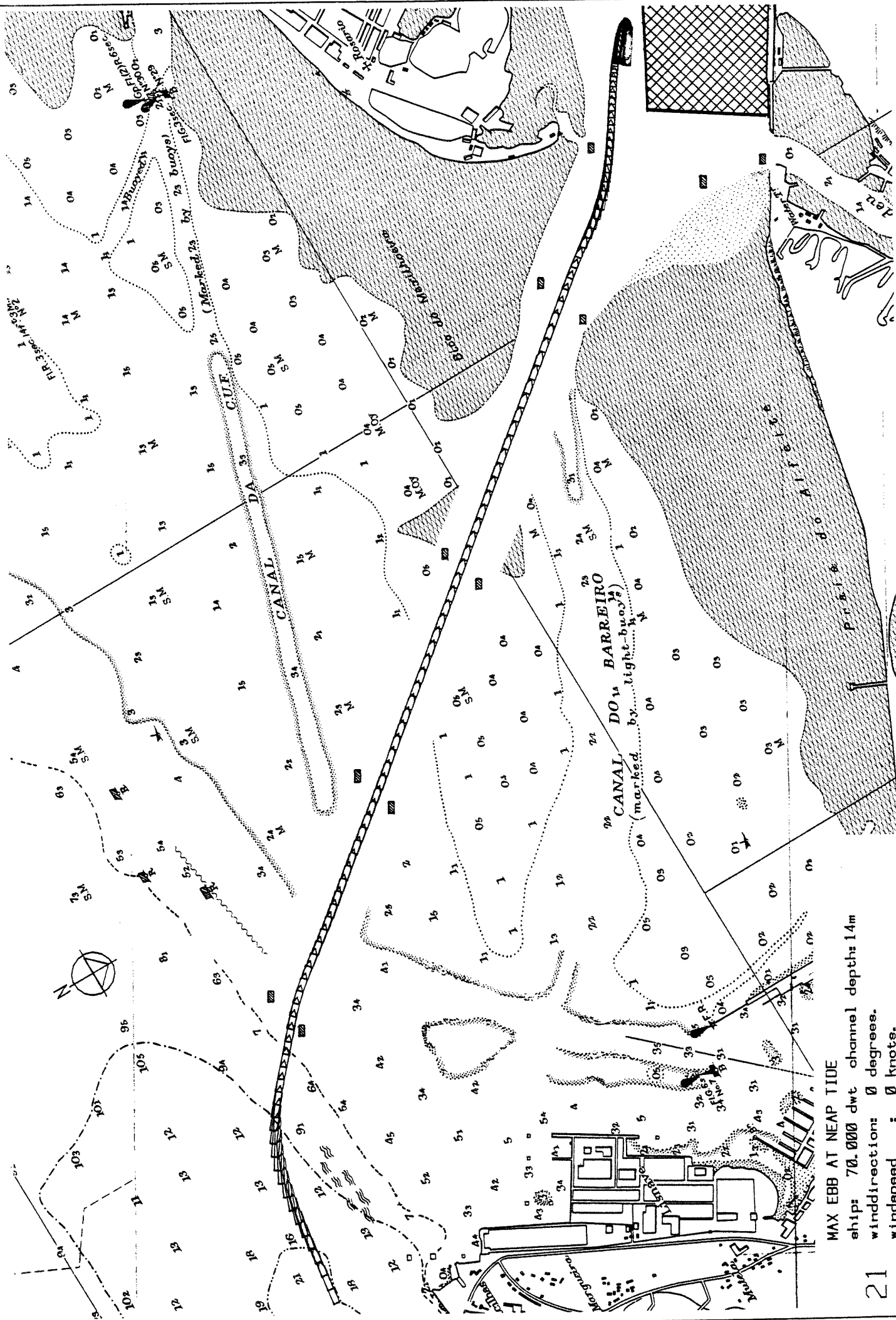
TURN OF THE EBB TIDE
 ship: 70.000 dwt channel depth: 14m
 winddirection: 315 degrees.
 wind speed : 20 knots.

trial 20



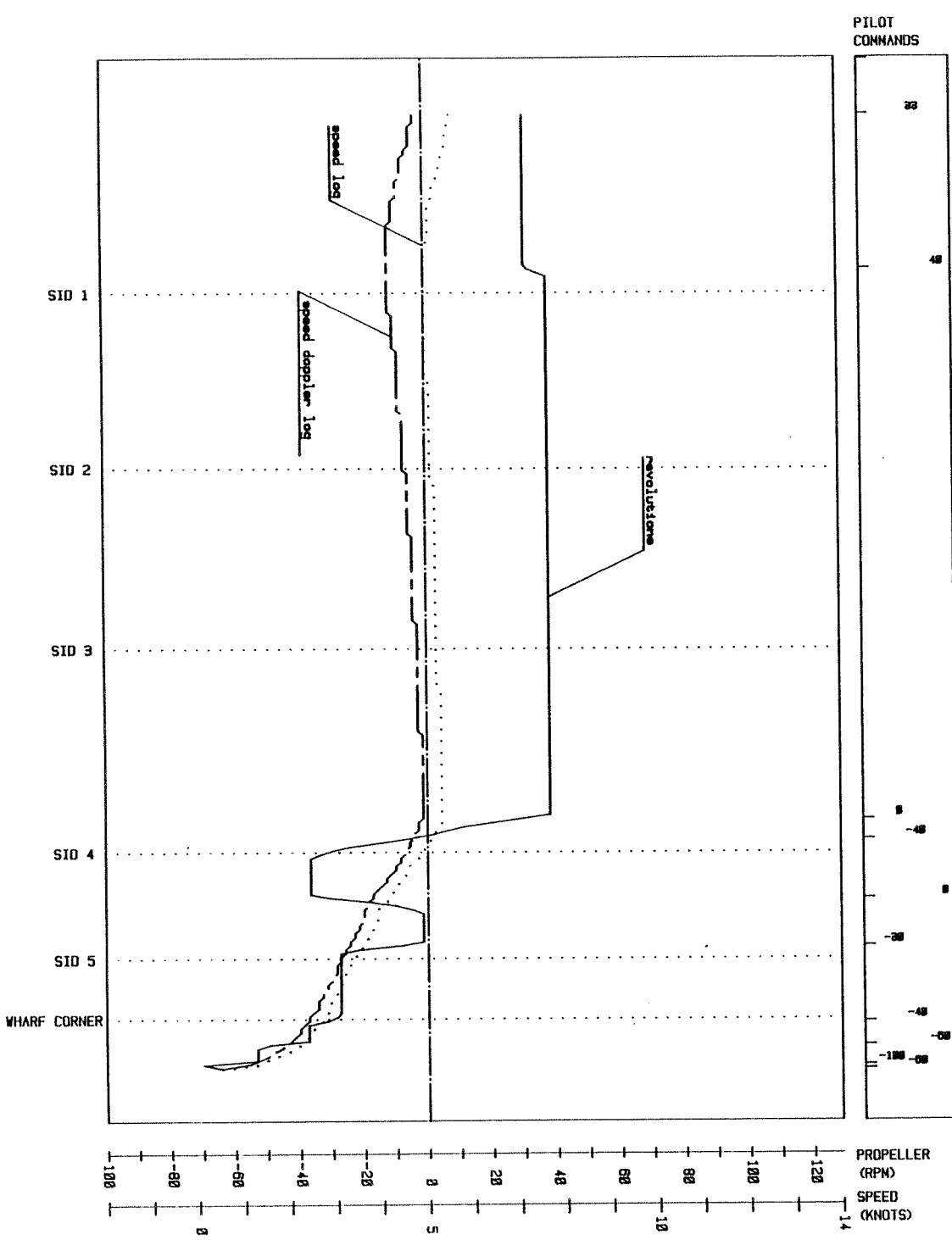
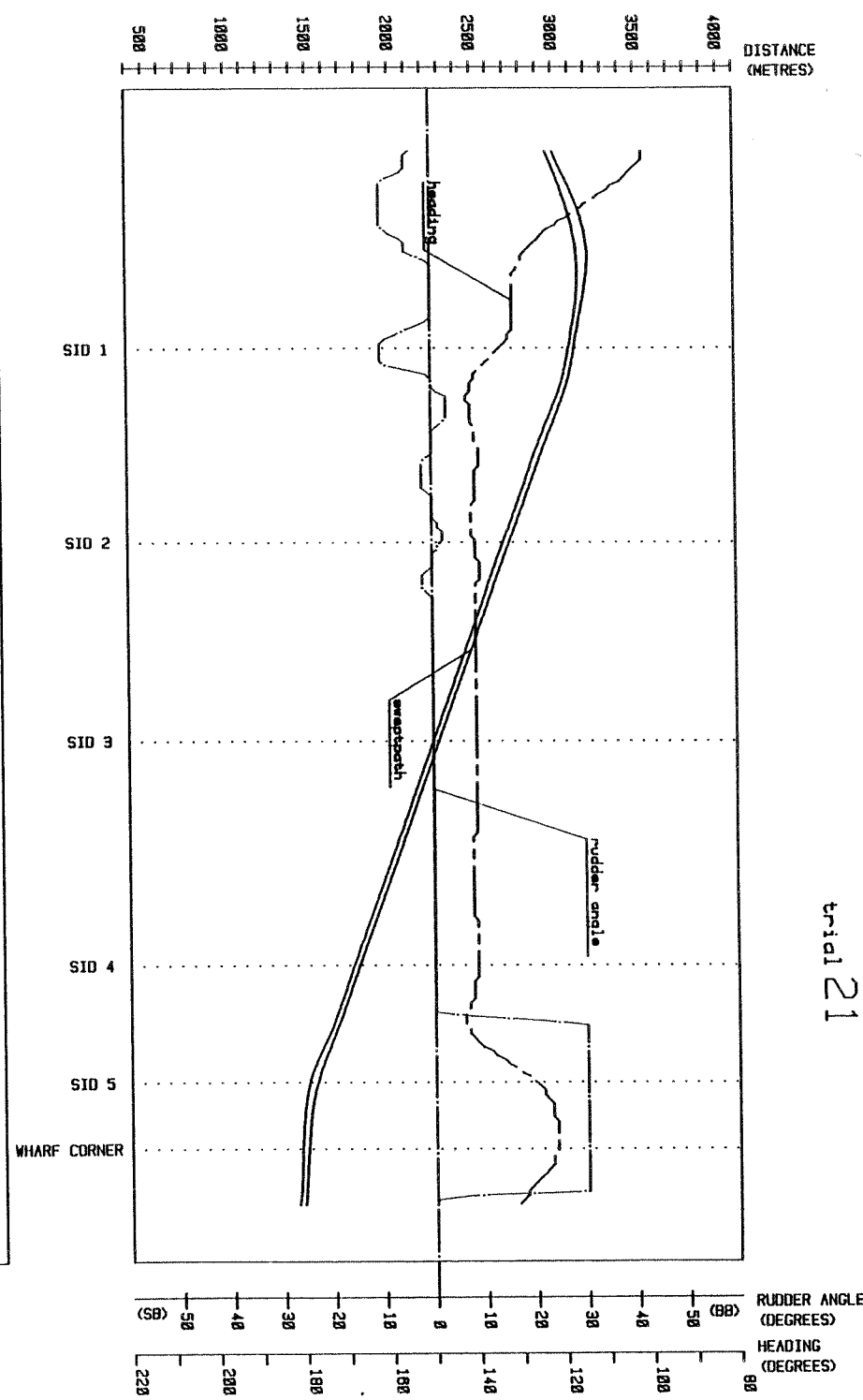
PILOT
COMMANDS

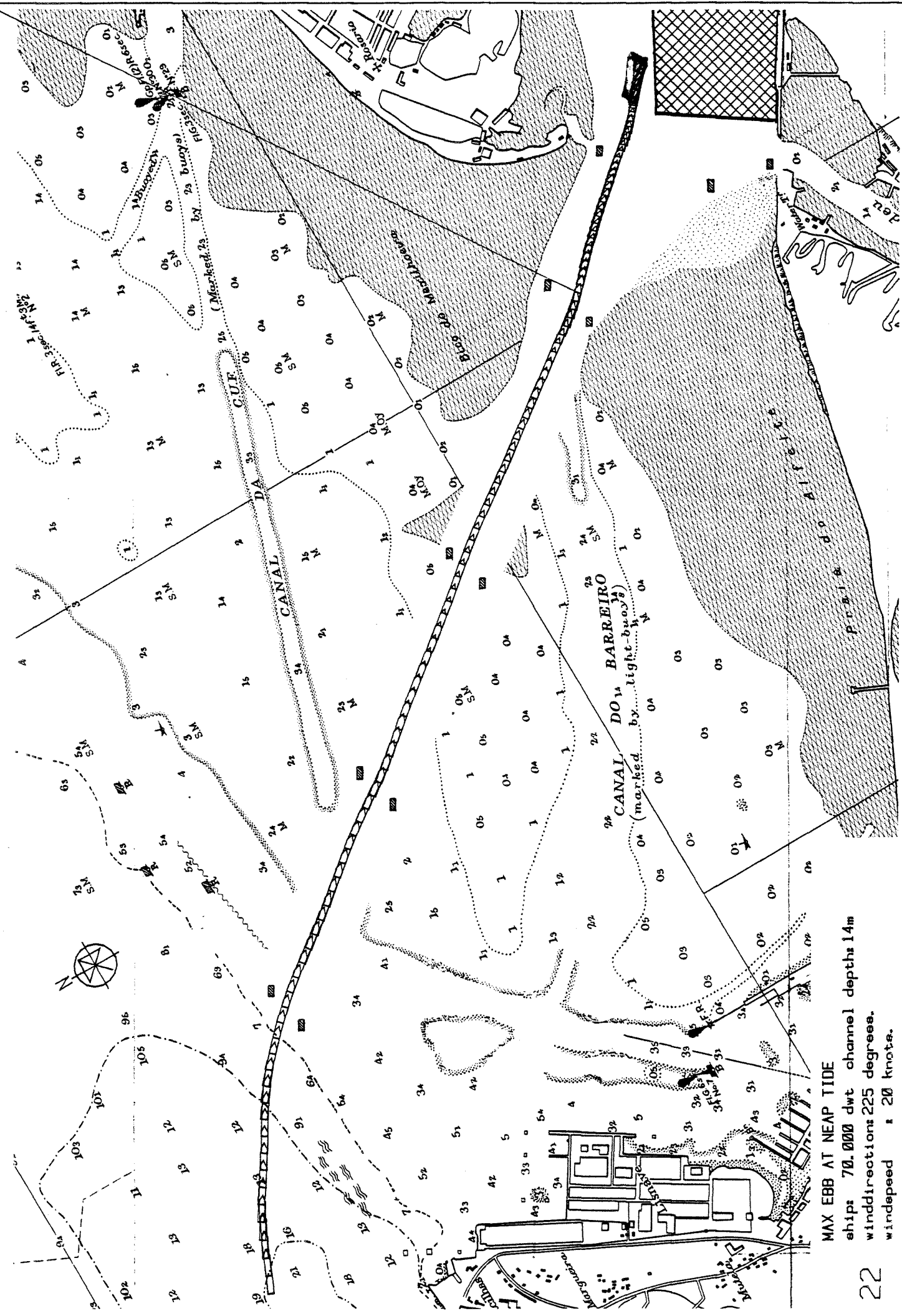




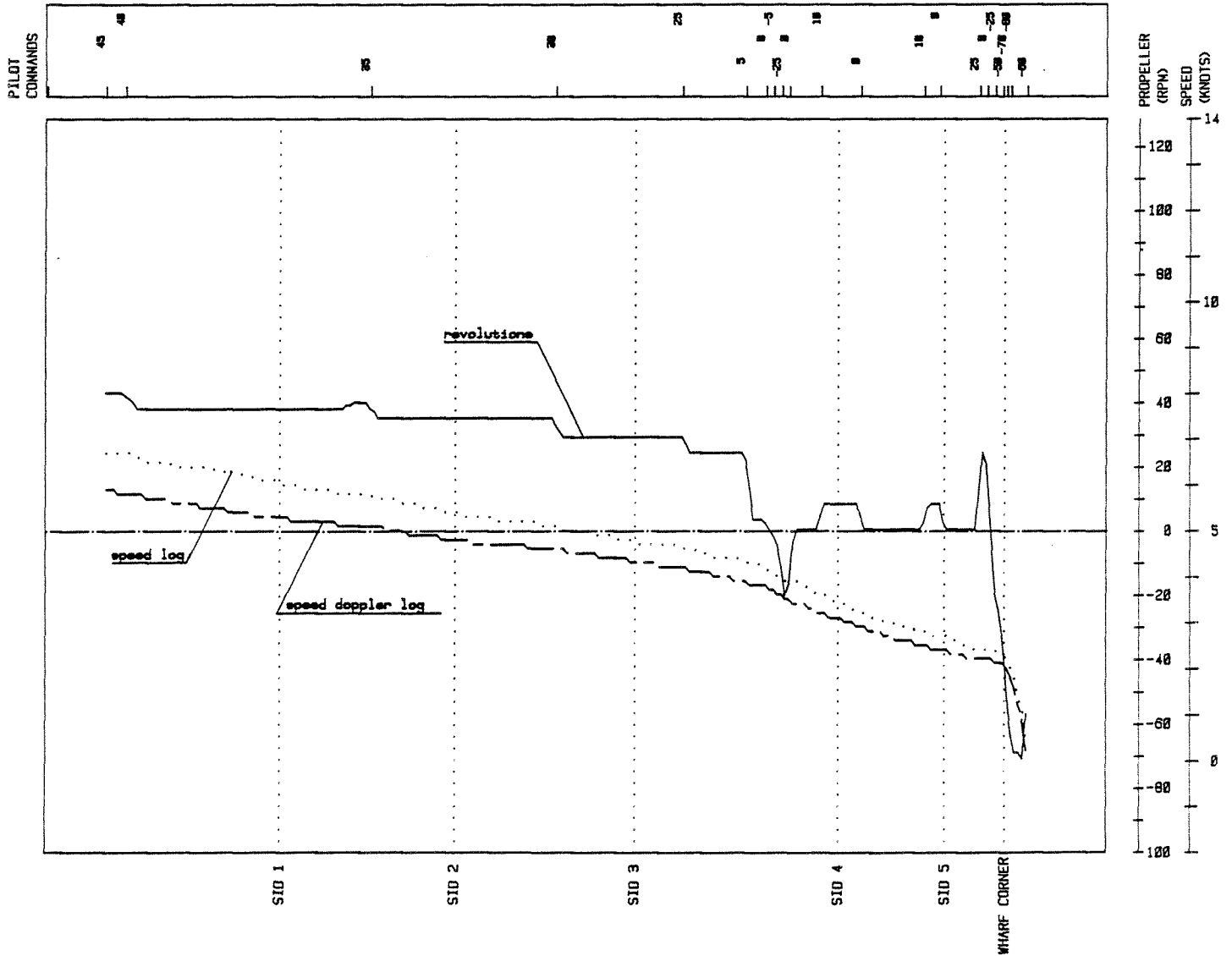
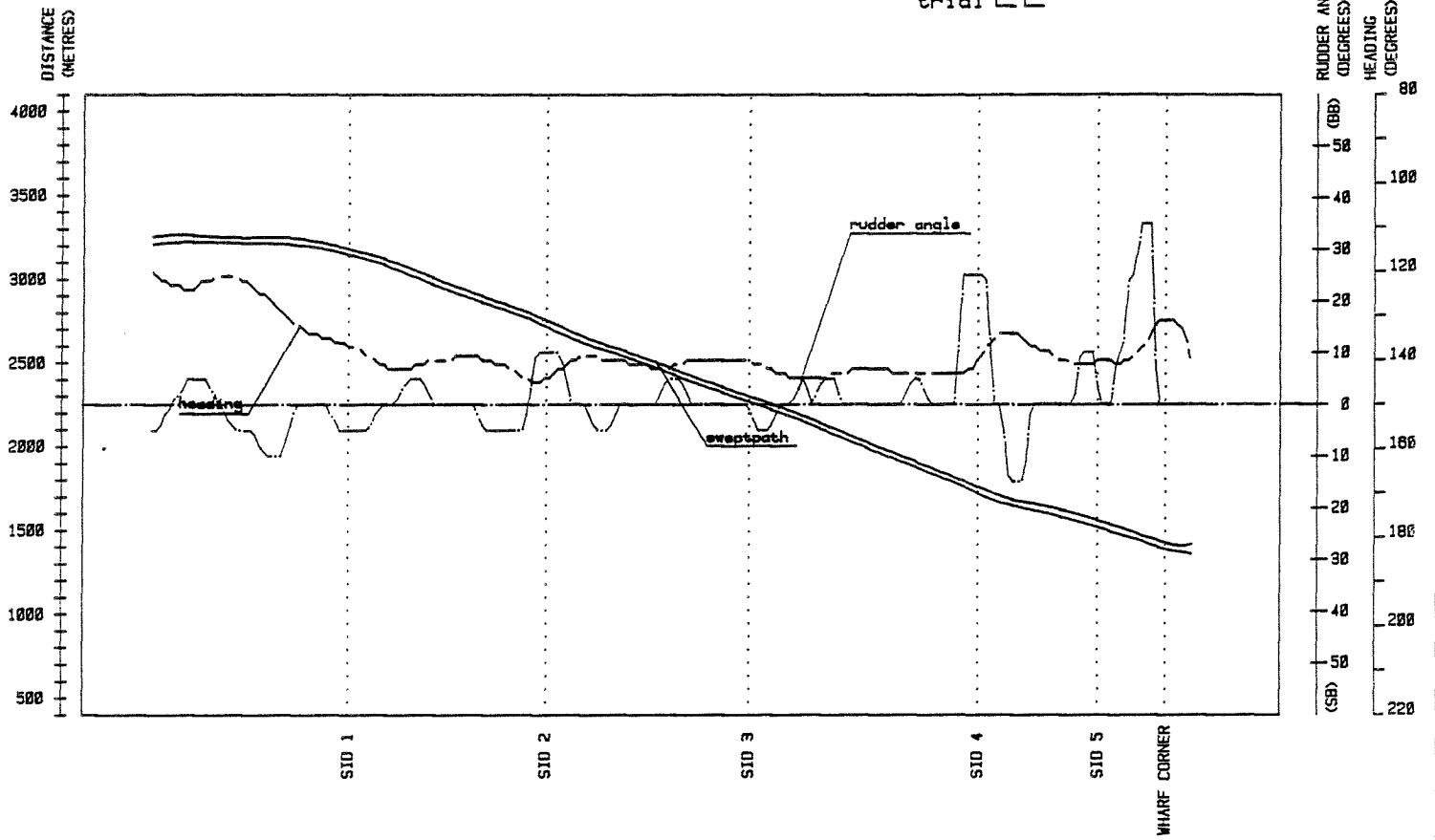
MAX EBB AT NEAP TIDE
 ships: 70.000 dwt channel depths: 14m
 winddirection: 0 degrees.
 windspeed : 0 knots.

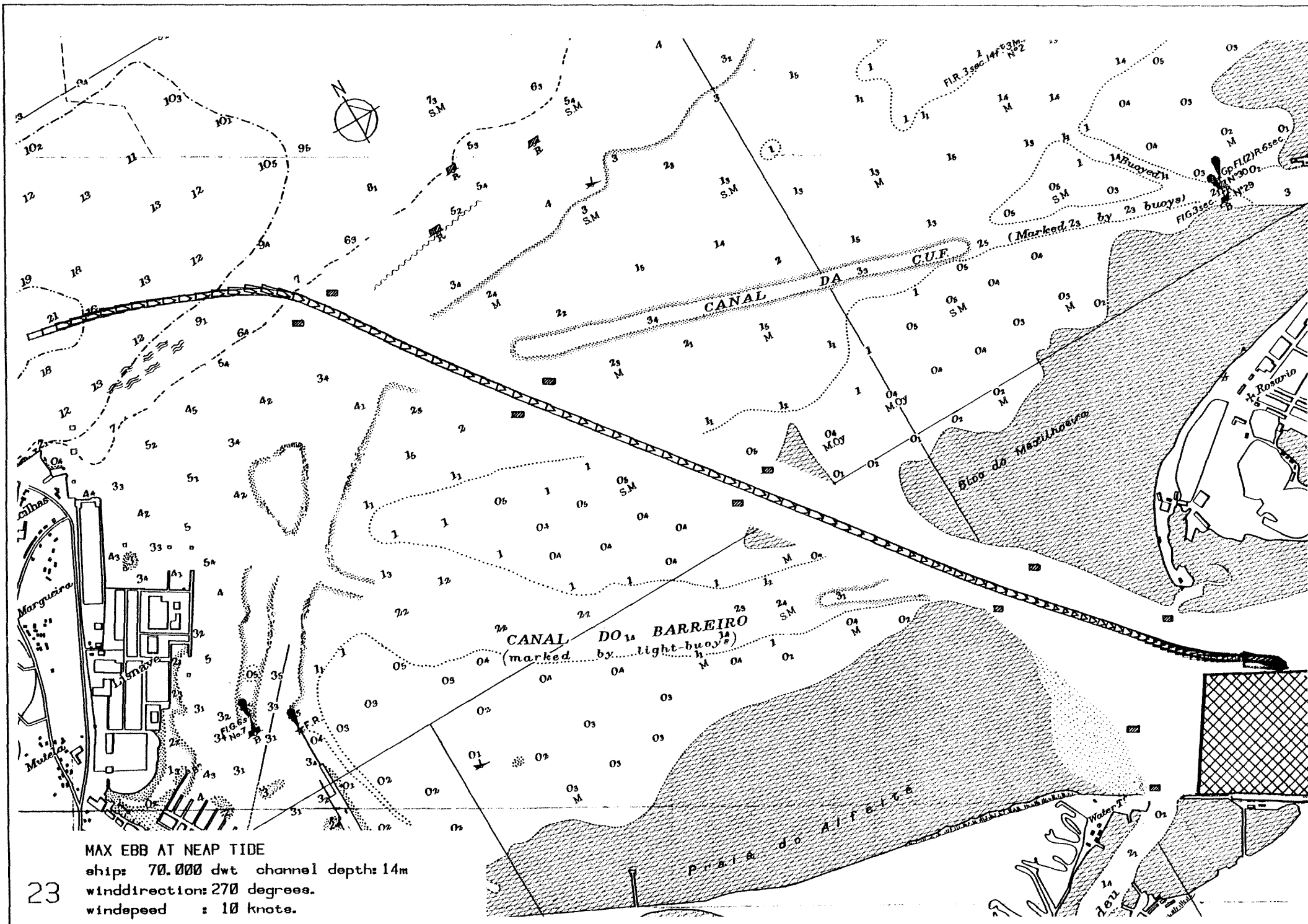
trial 21



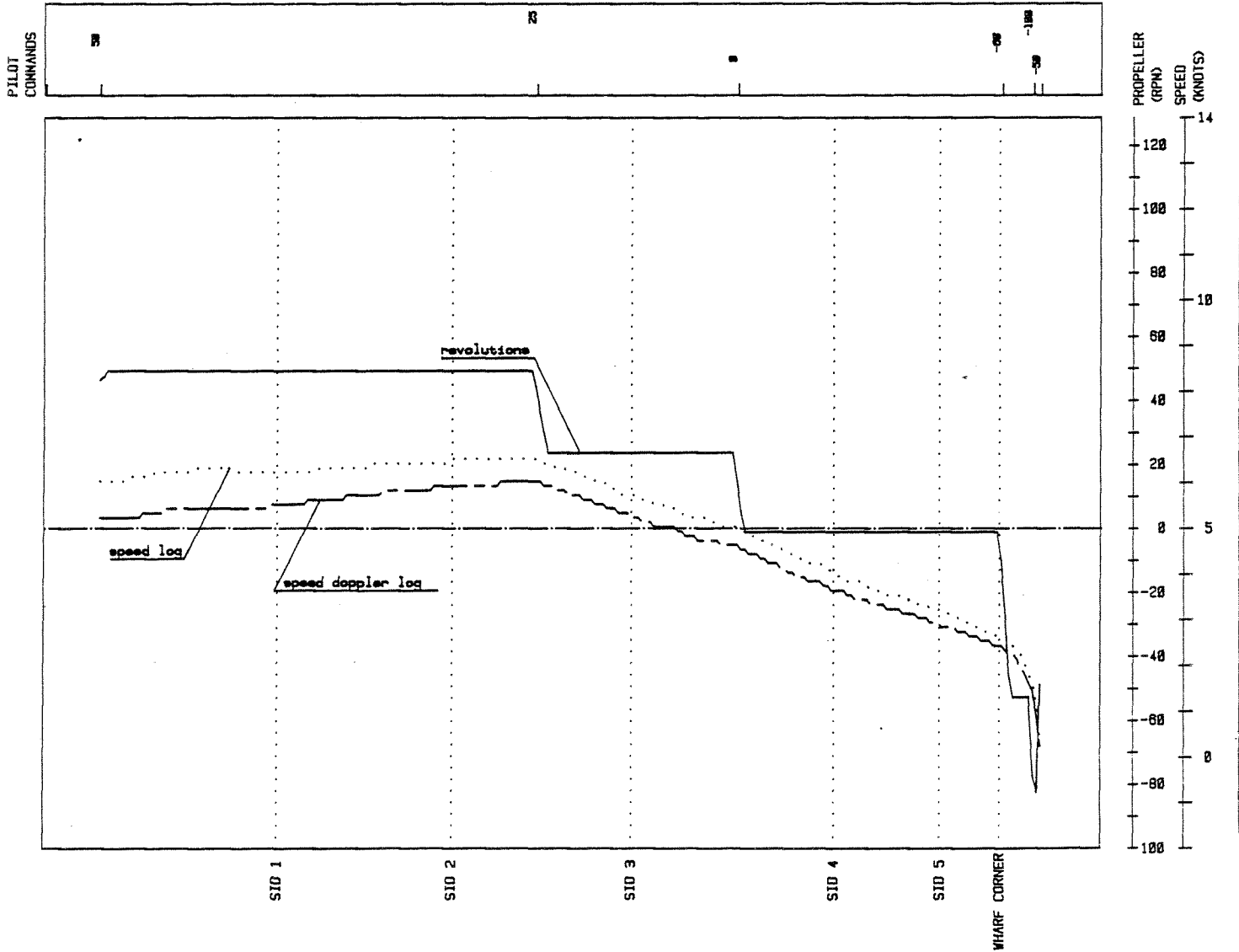
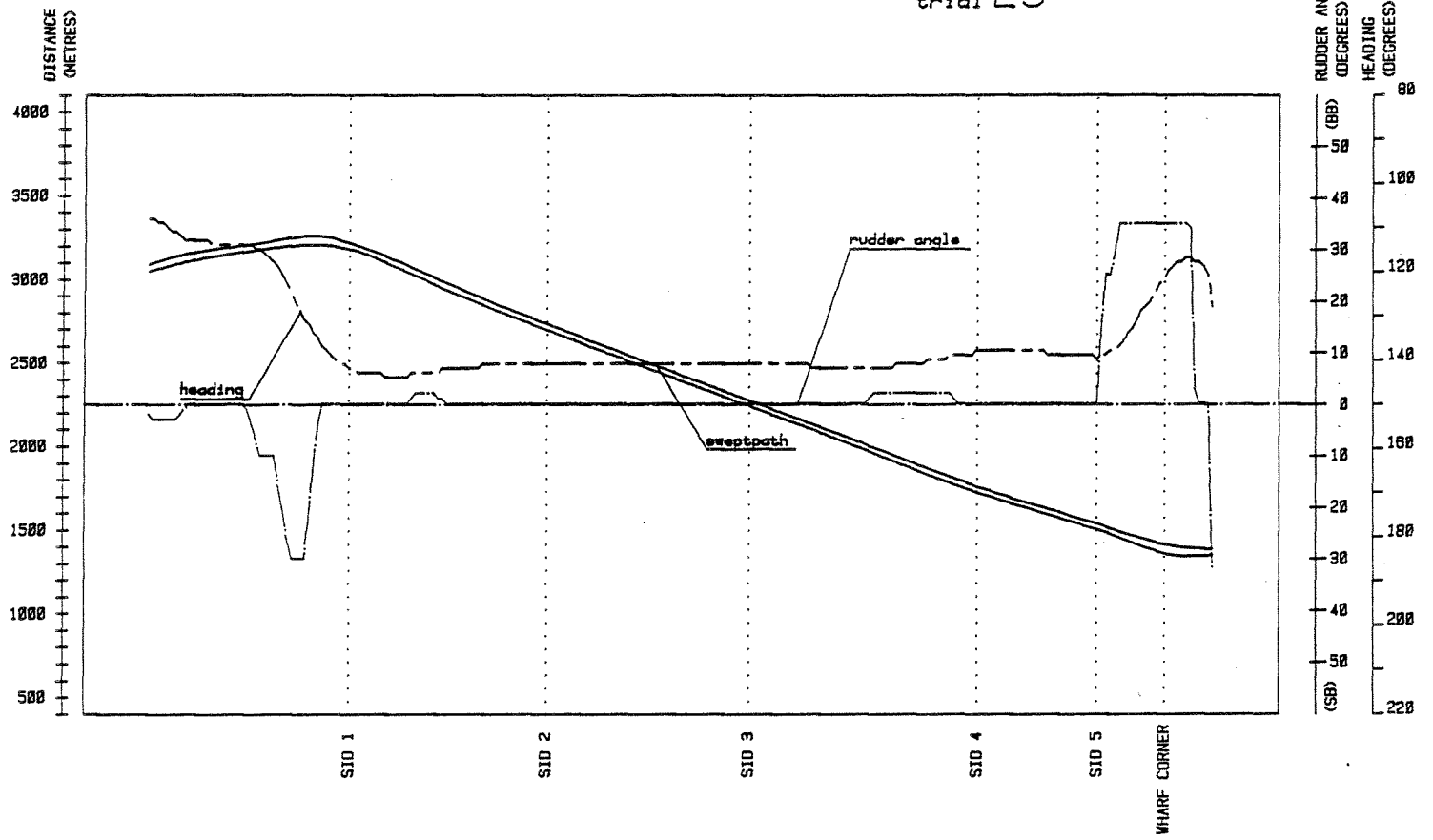


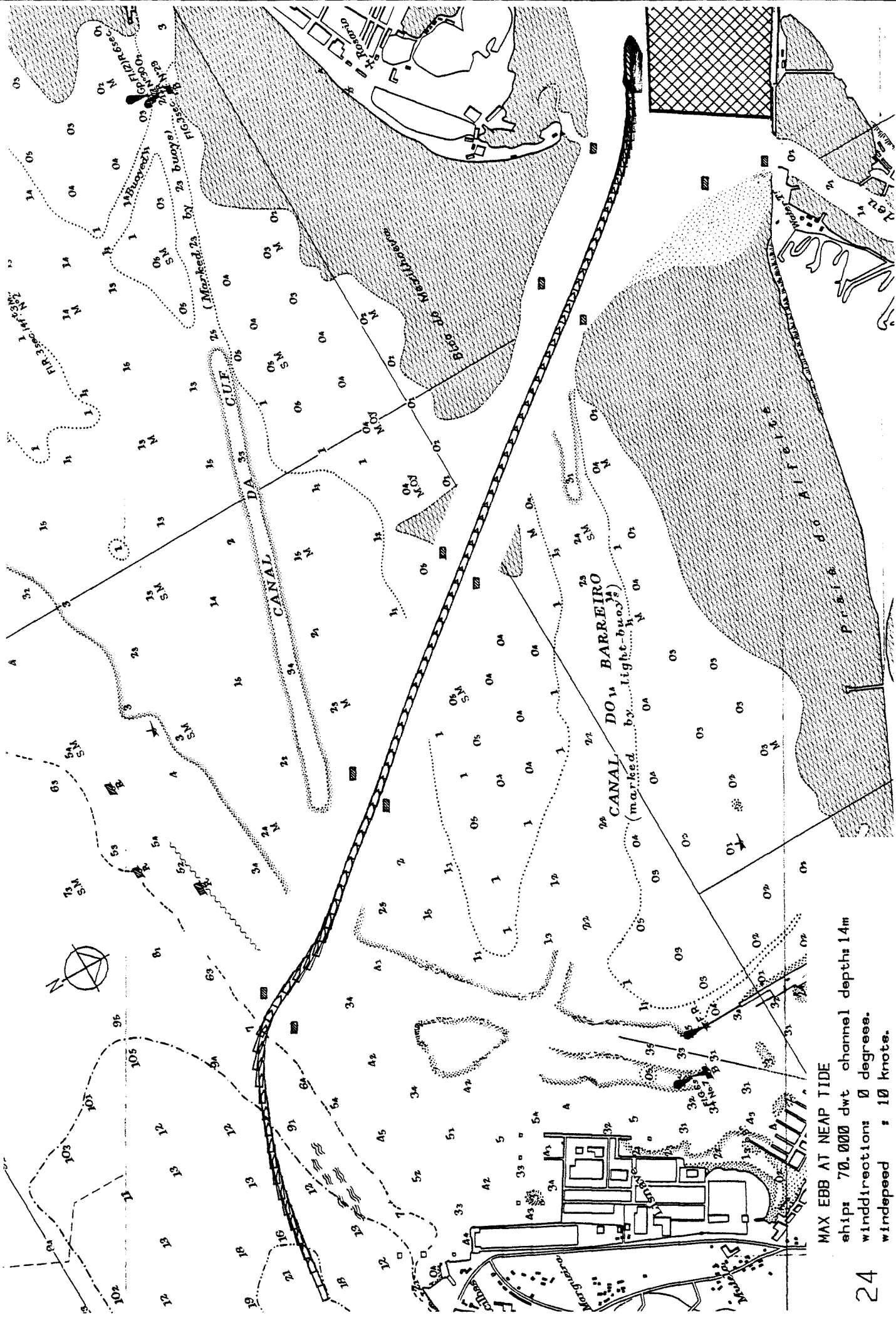
MAX EBB AT NEAP TIDE
 ships: 70.000 dwt channel depths 14m
 winddirections 225 degrees.
 windepsed : 20 knots.





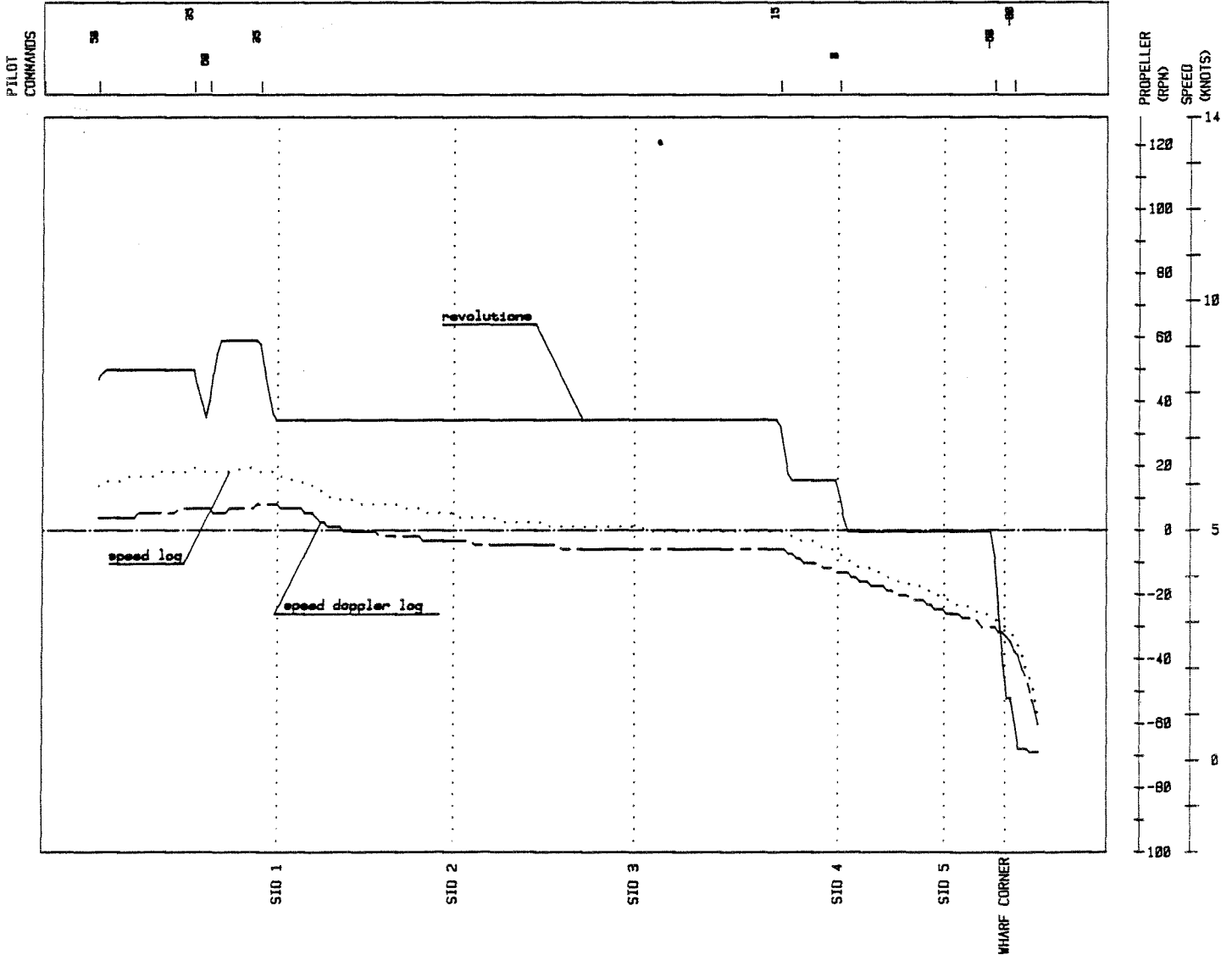
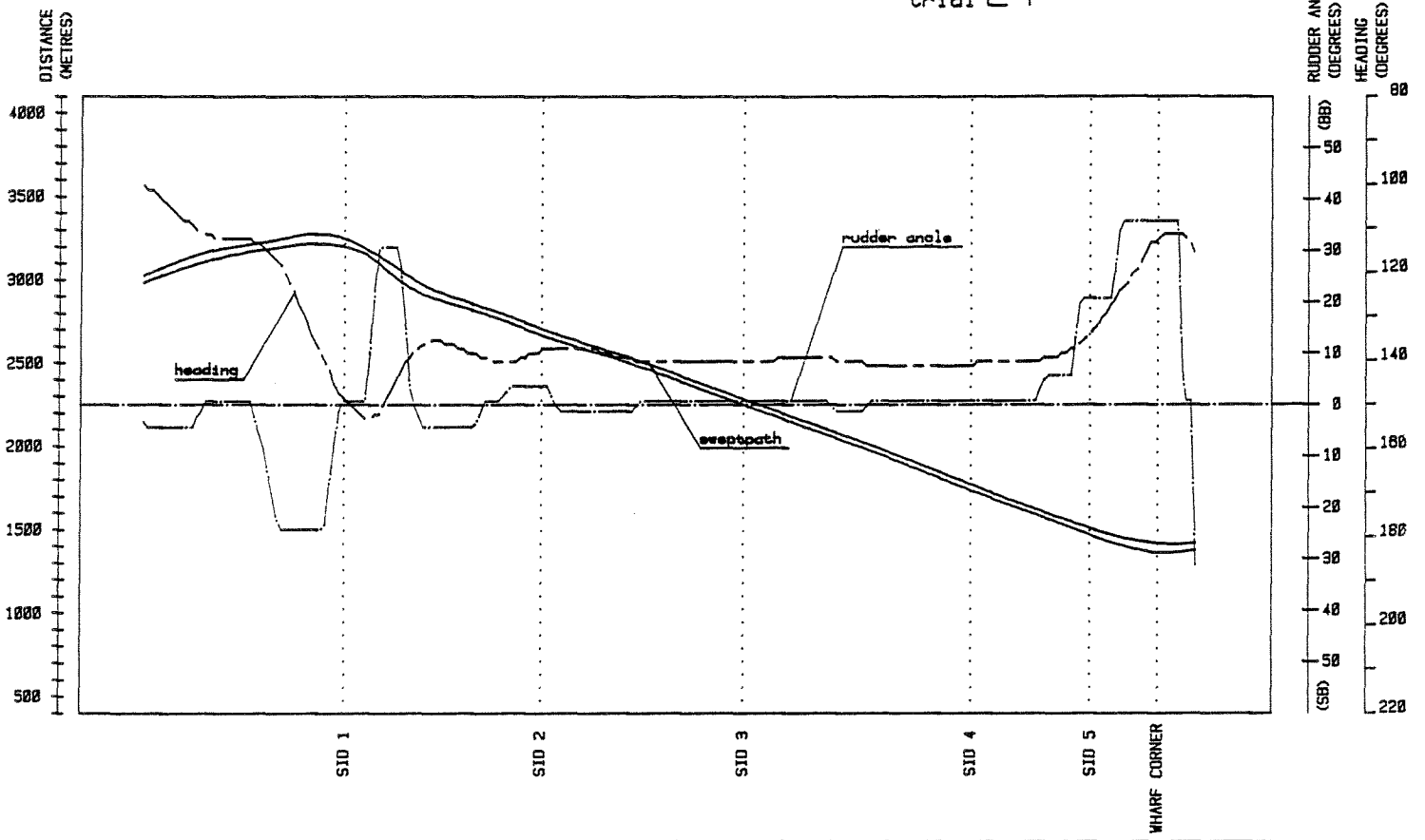
trial 23

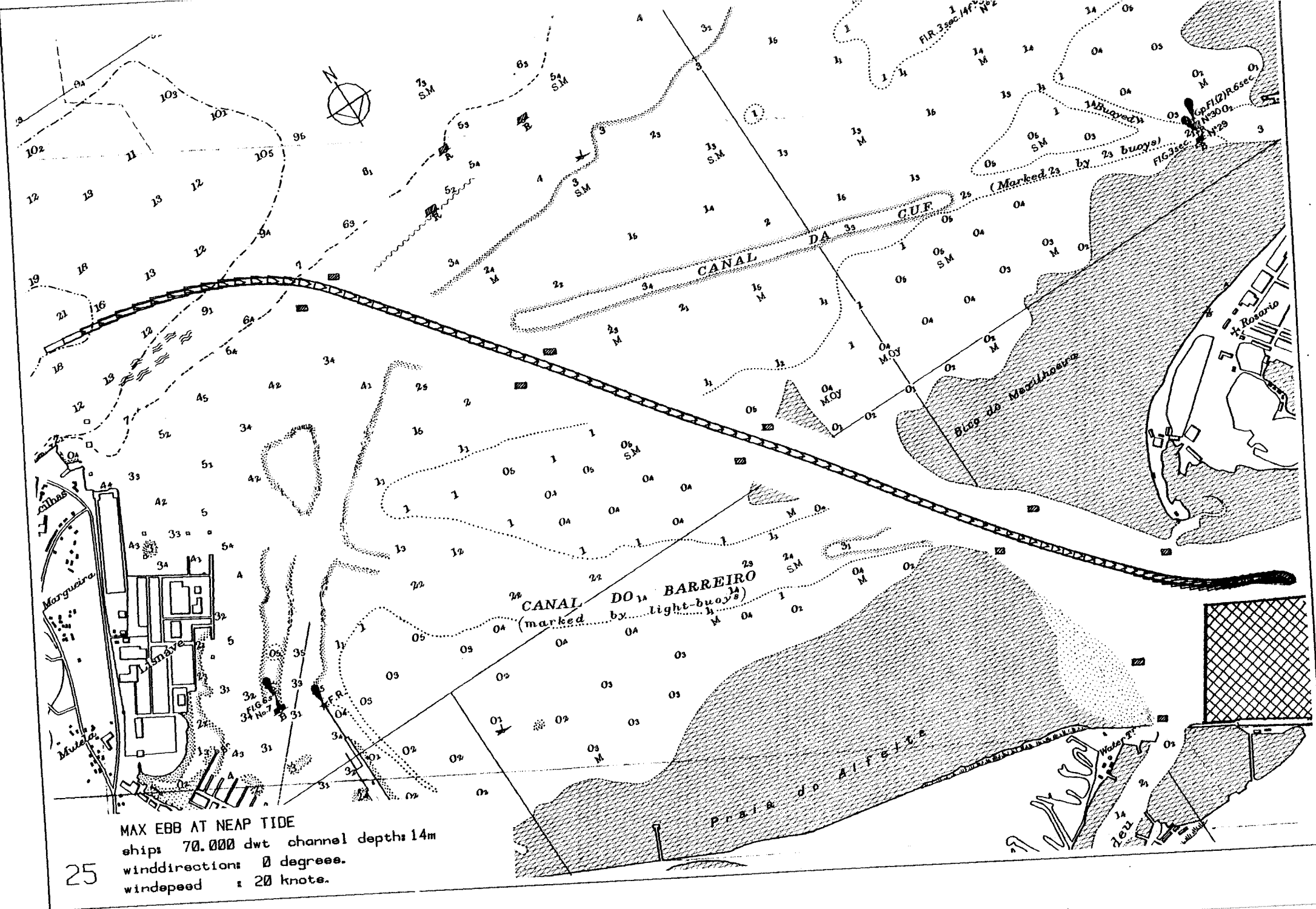


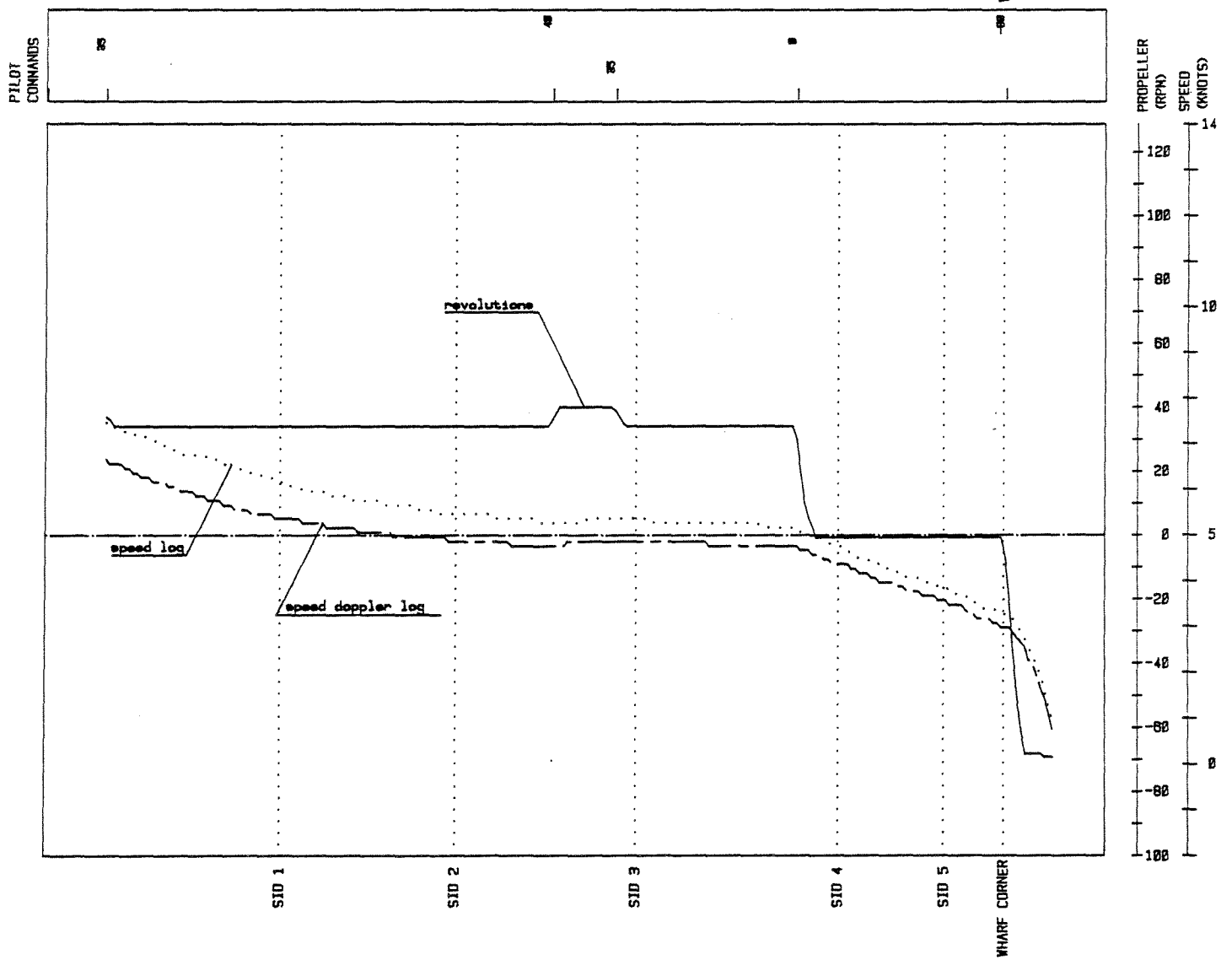
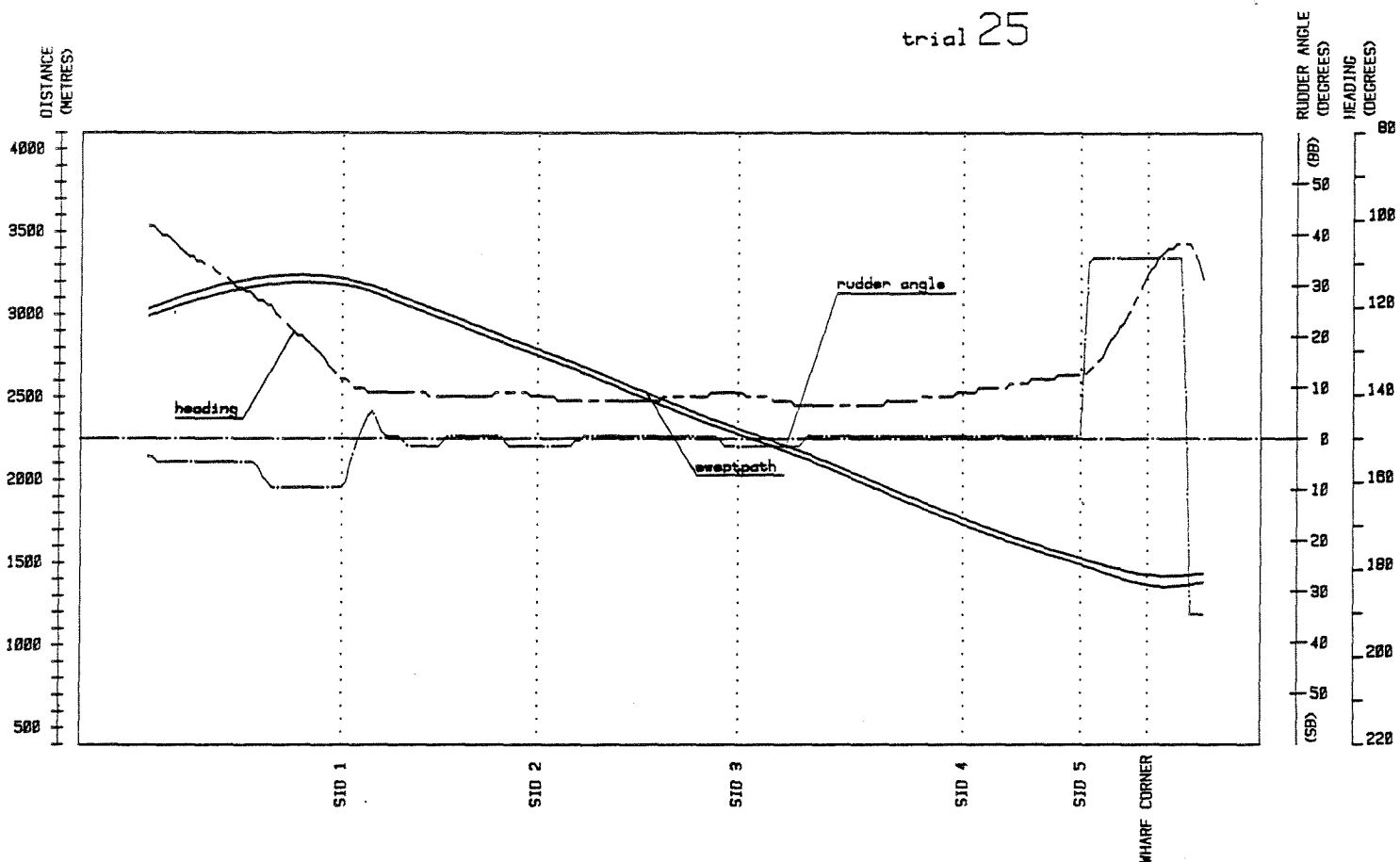


MAX EBB AT NEAP TIDE
 ships 70.000 dwt channel depths 14m
 winddirections 0 degrees.
 wind speed : 10 knots.

trial 24

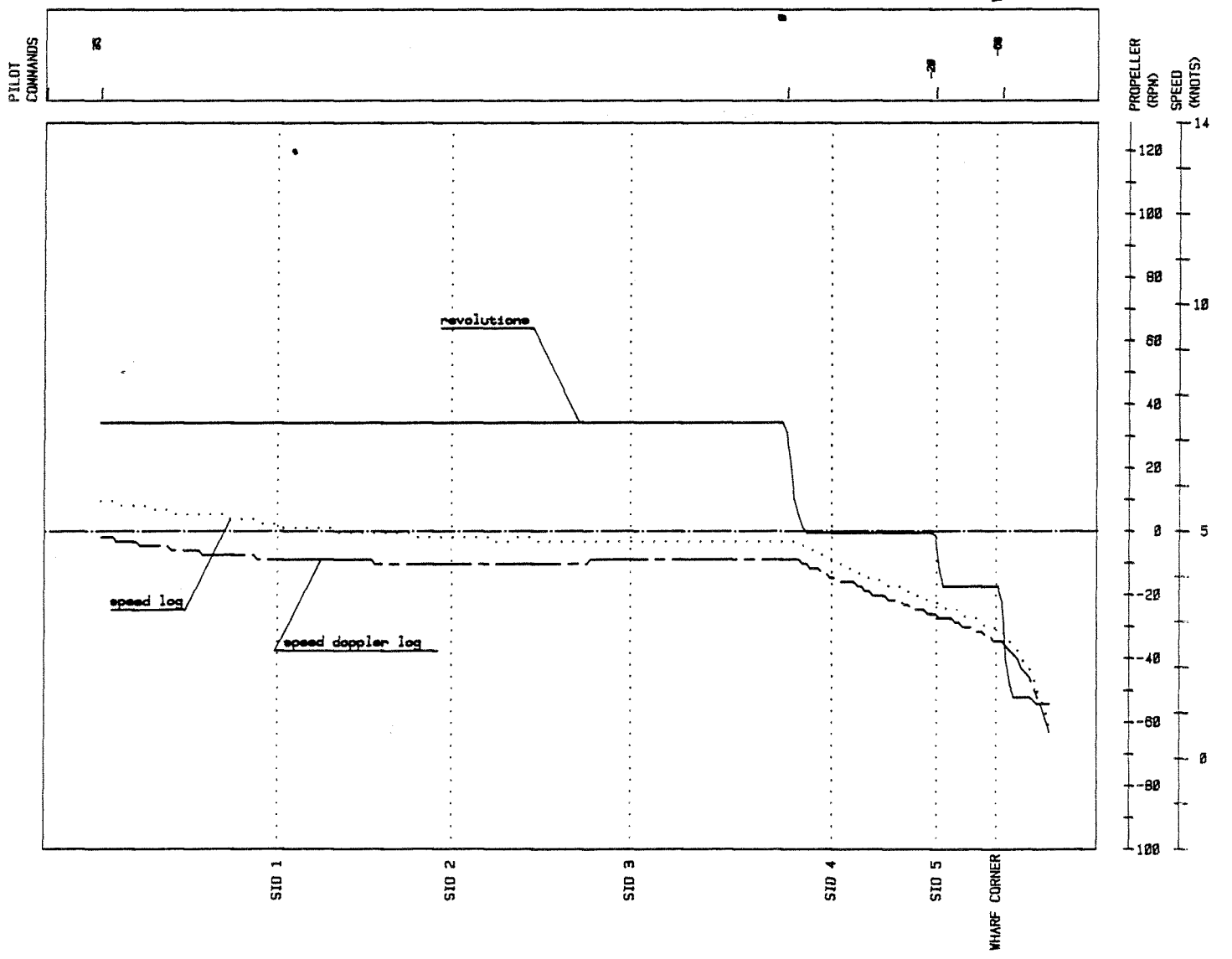
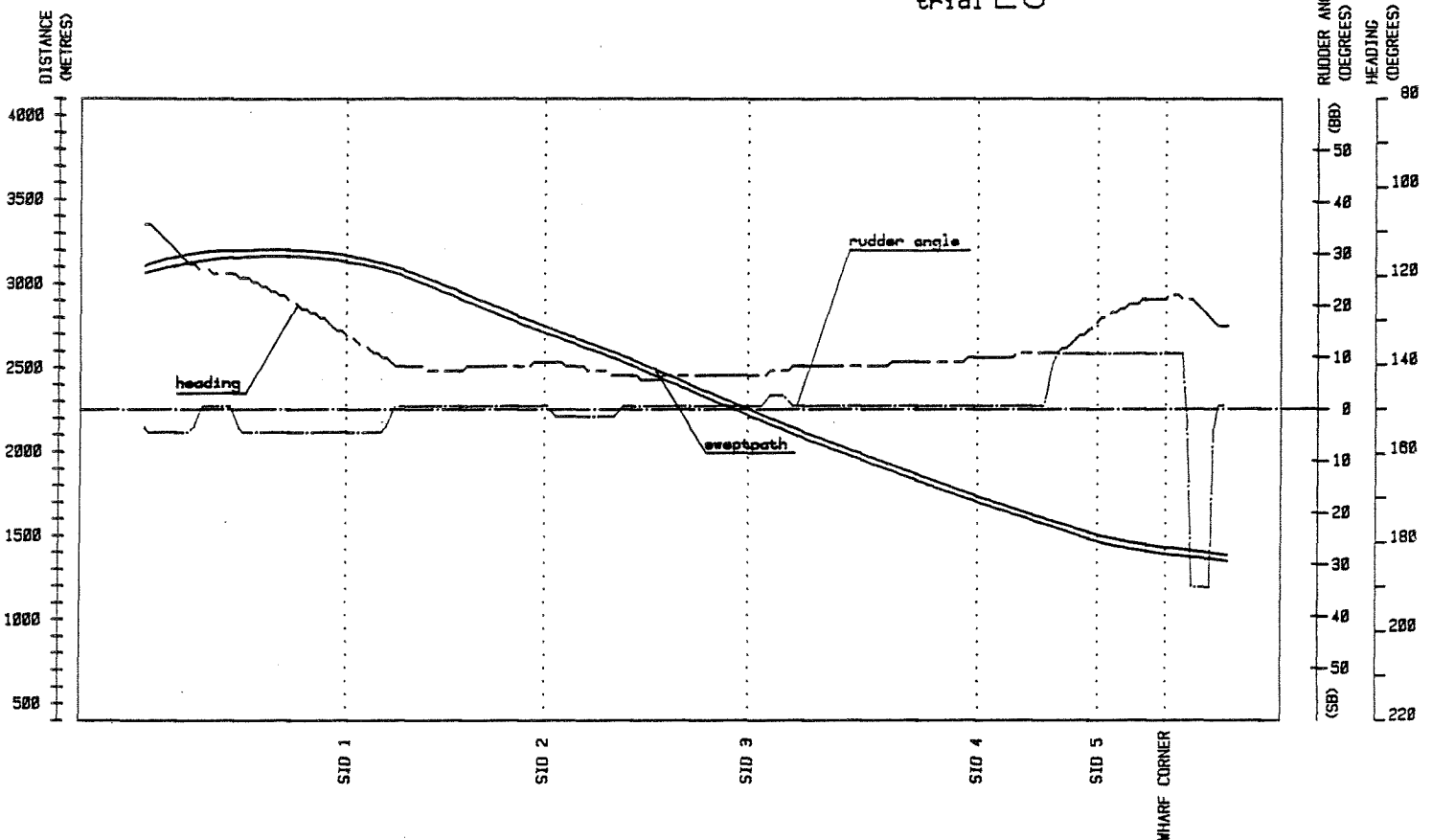


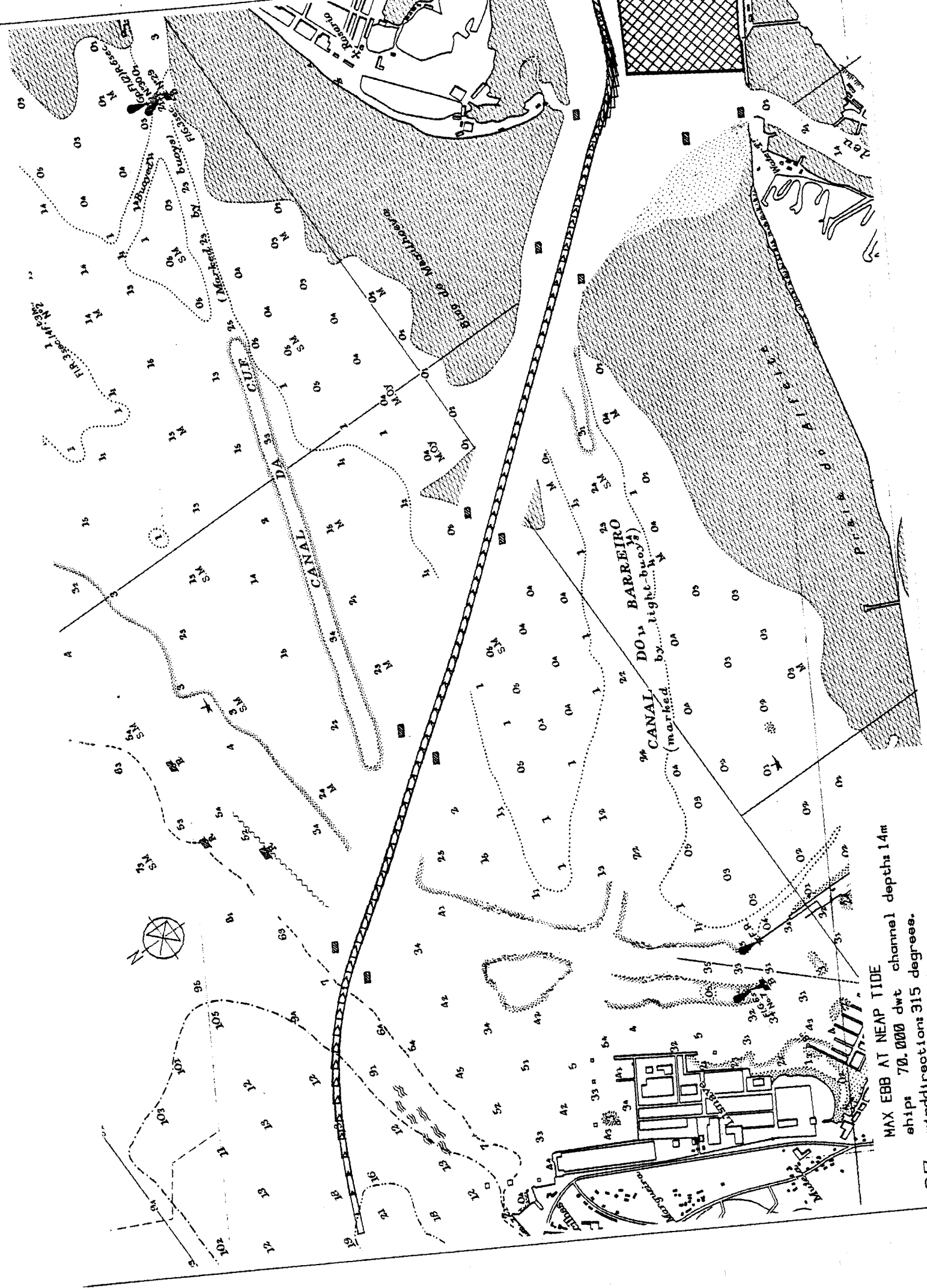




MAX EBB AT NEAP TIDE
ships: 70.000 dwt channel depth: 14m
winddirection: 45 degrees.
windspeed : 10 knots.

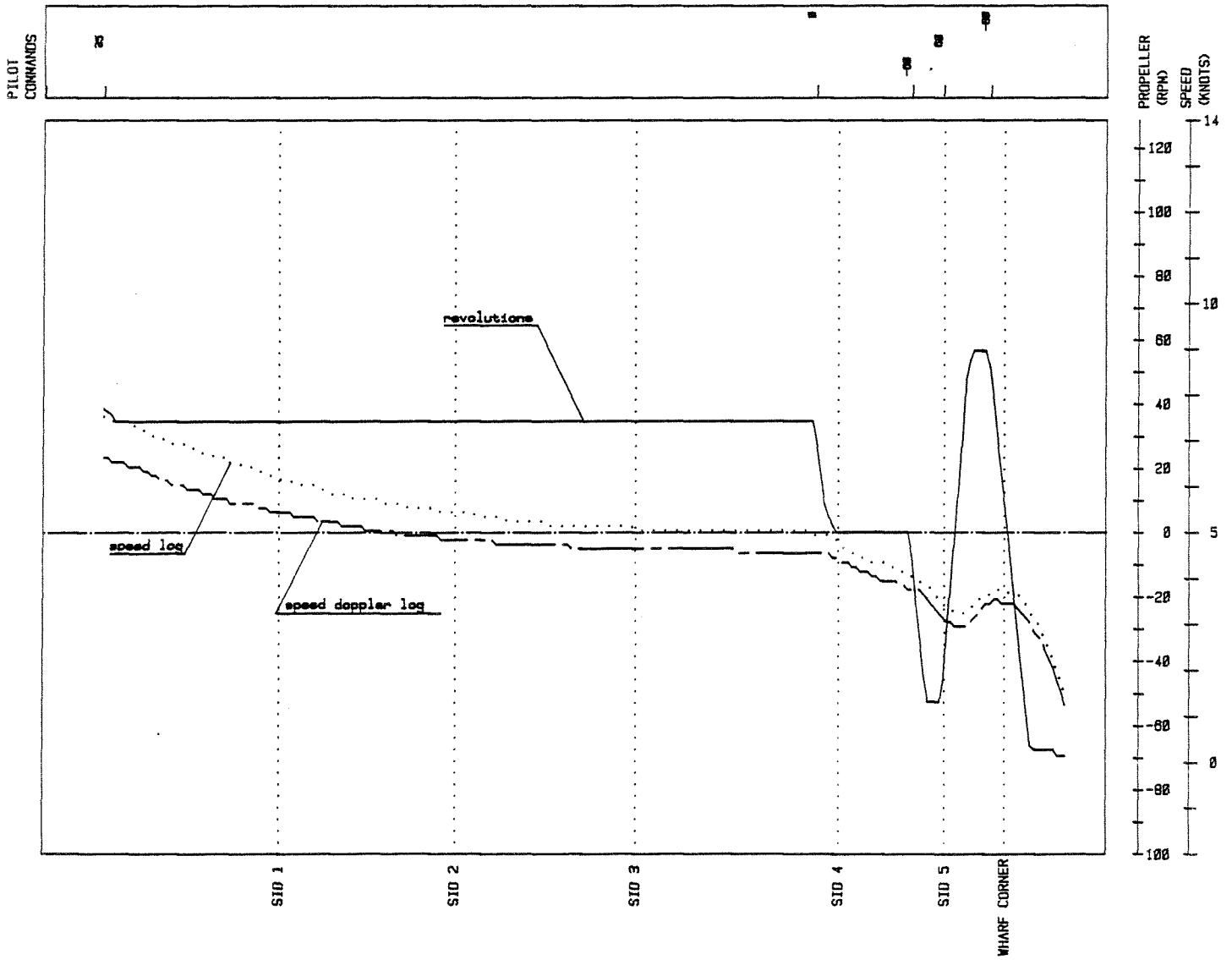
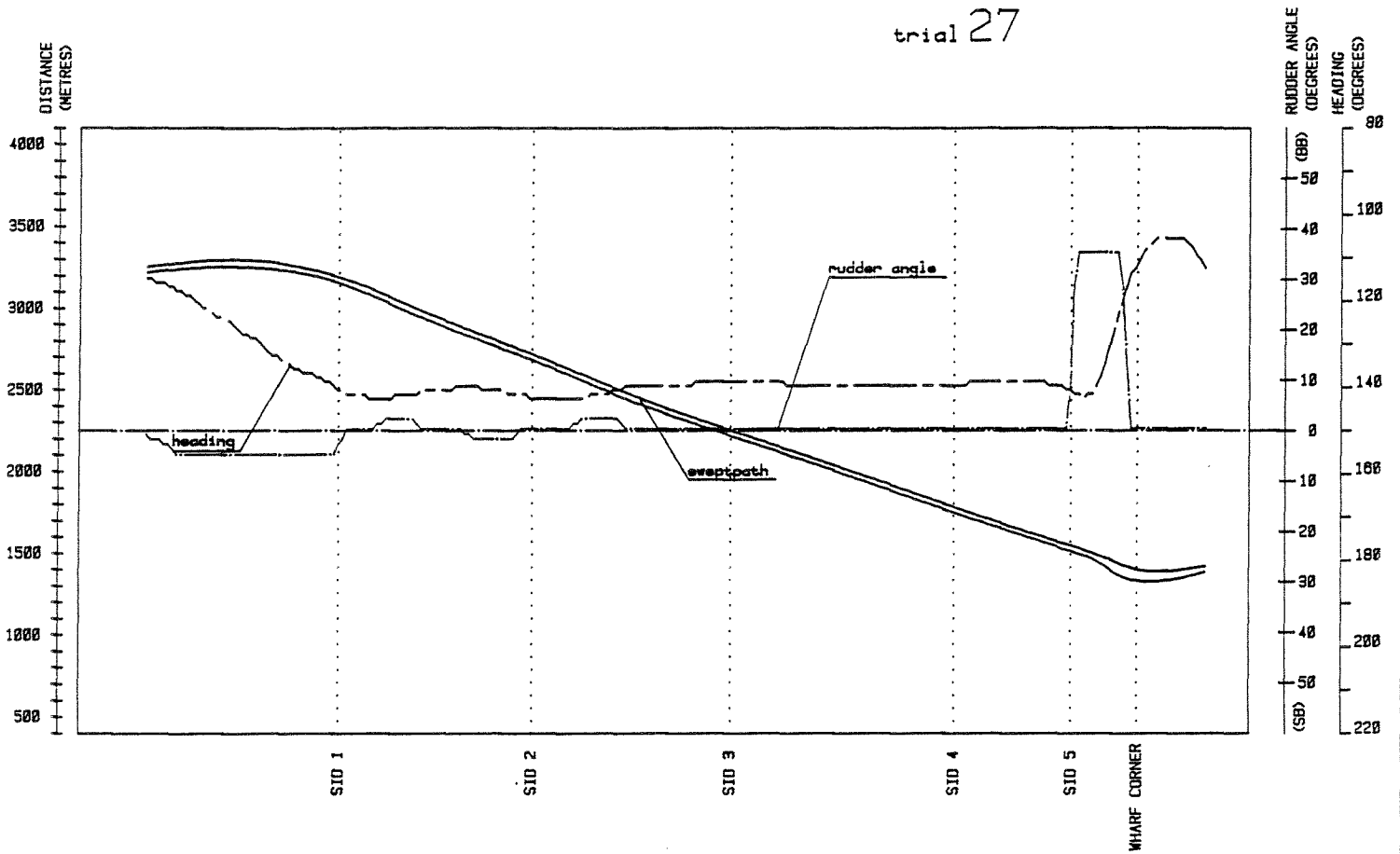
trial 26

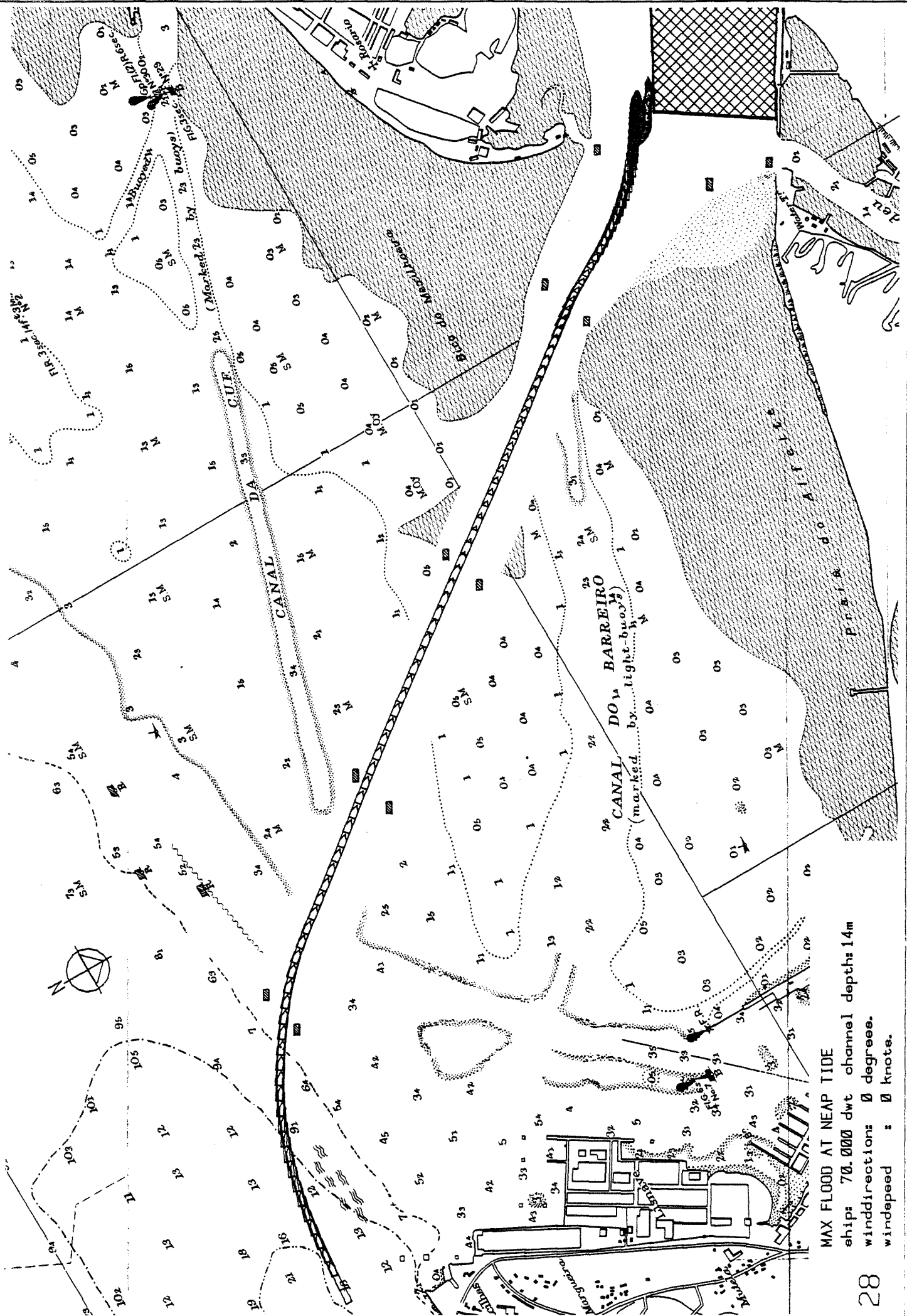




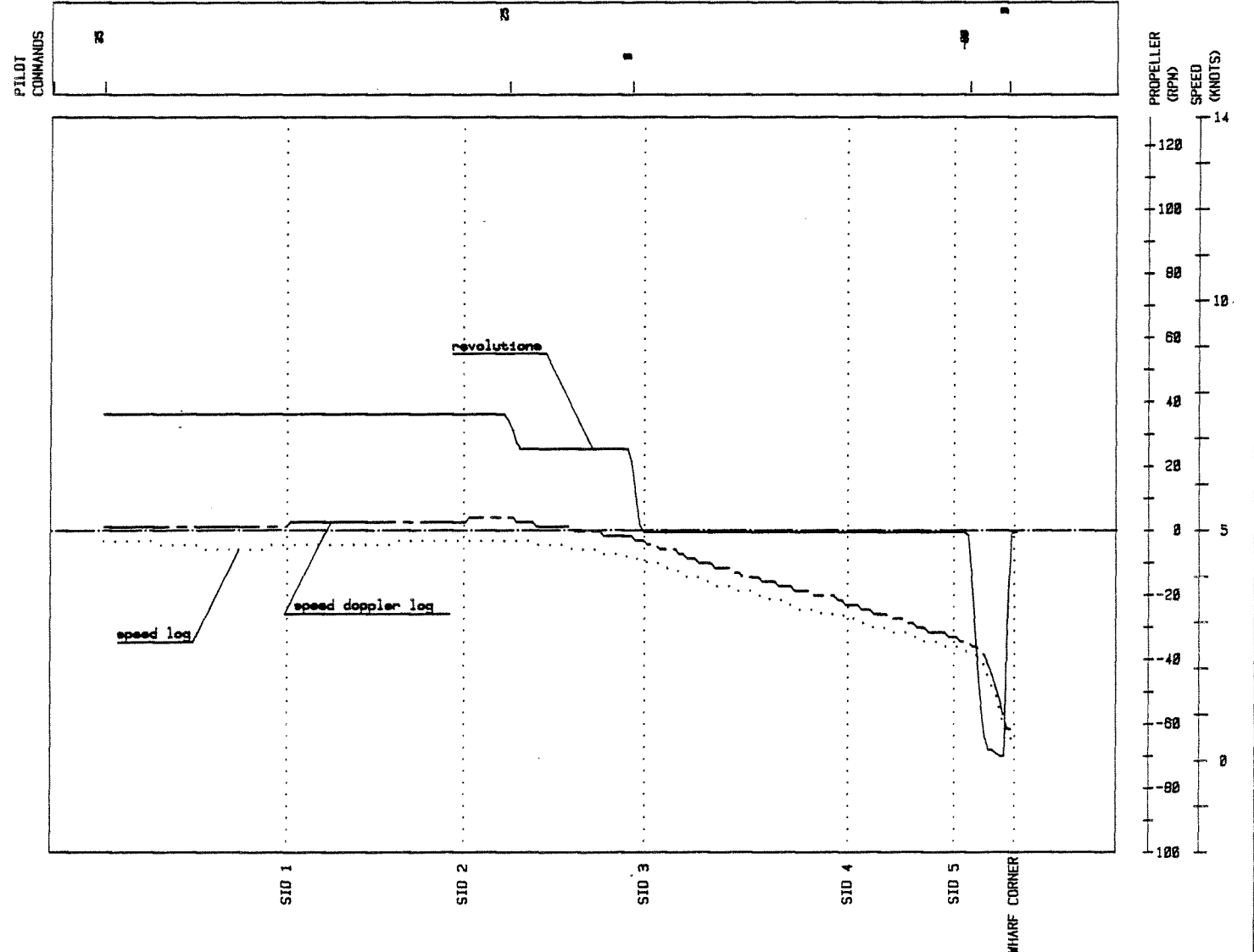
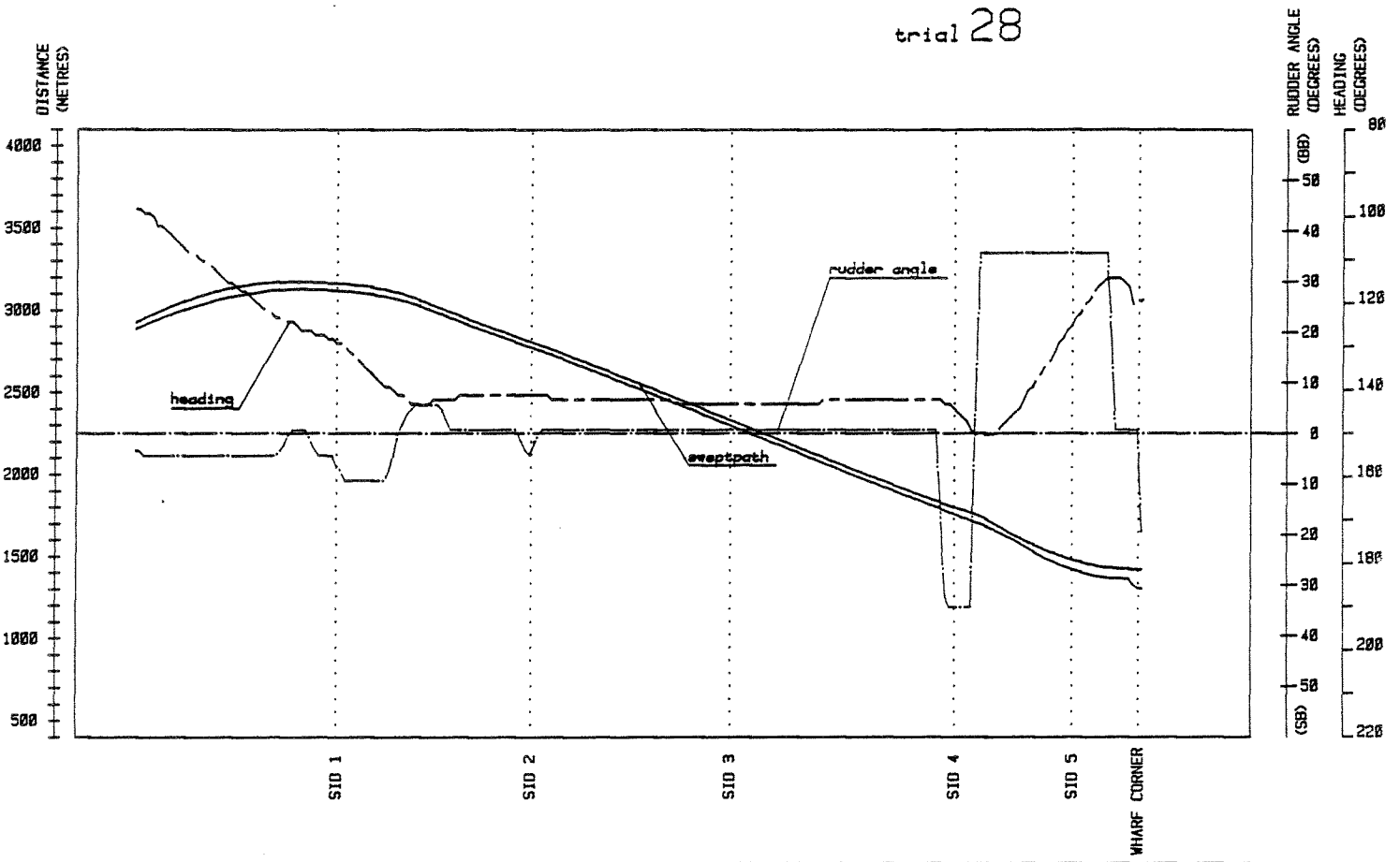
MAX EBB AT NEAP TIDE
 ships 70,000 dwt channel depths 14m
 wind direction: 315 degrees.
 wind speed: 10 knots.

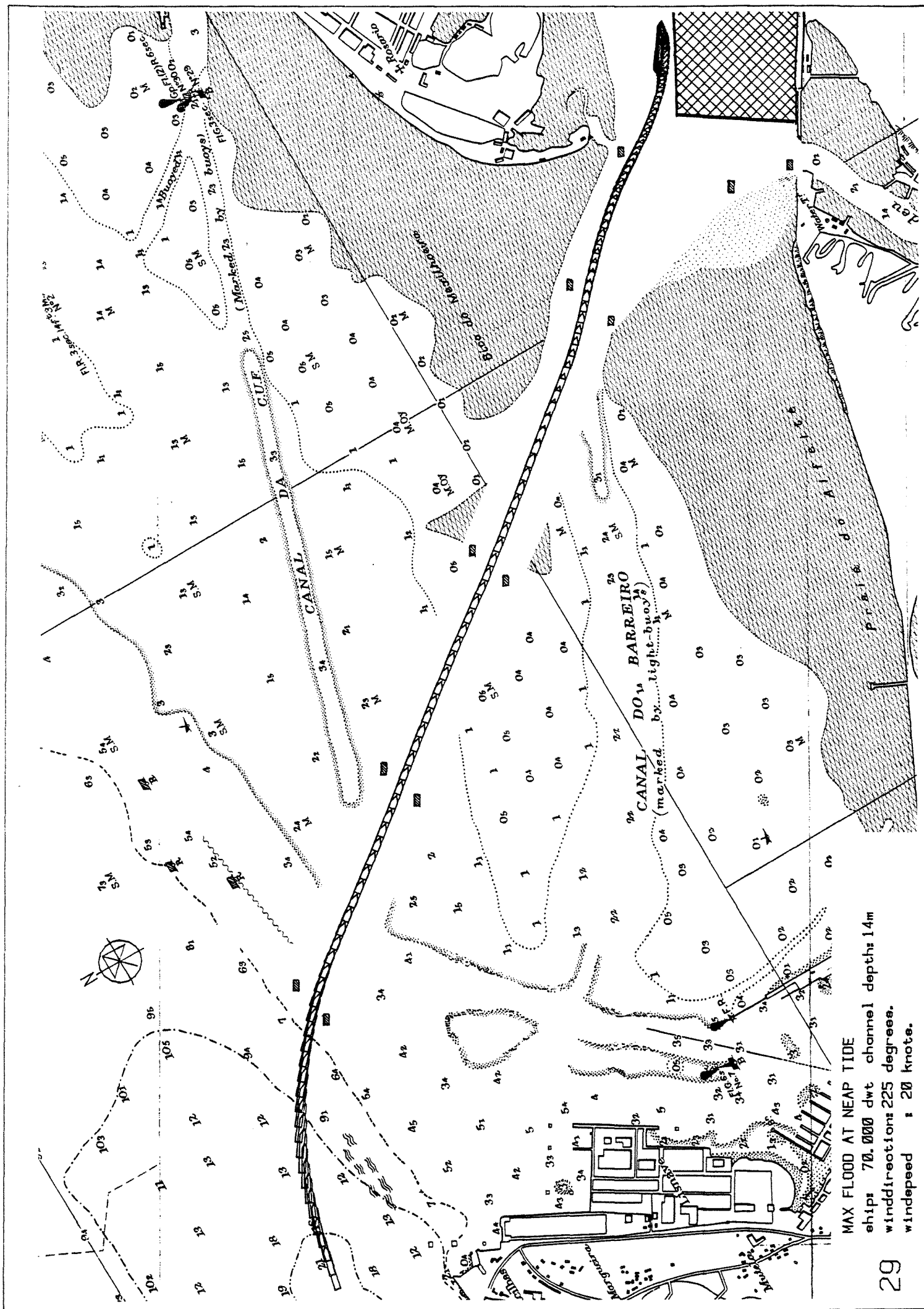
trial 27





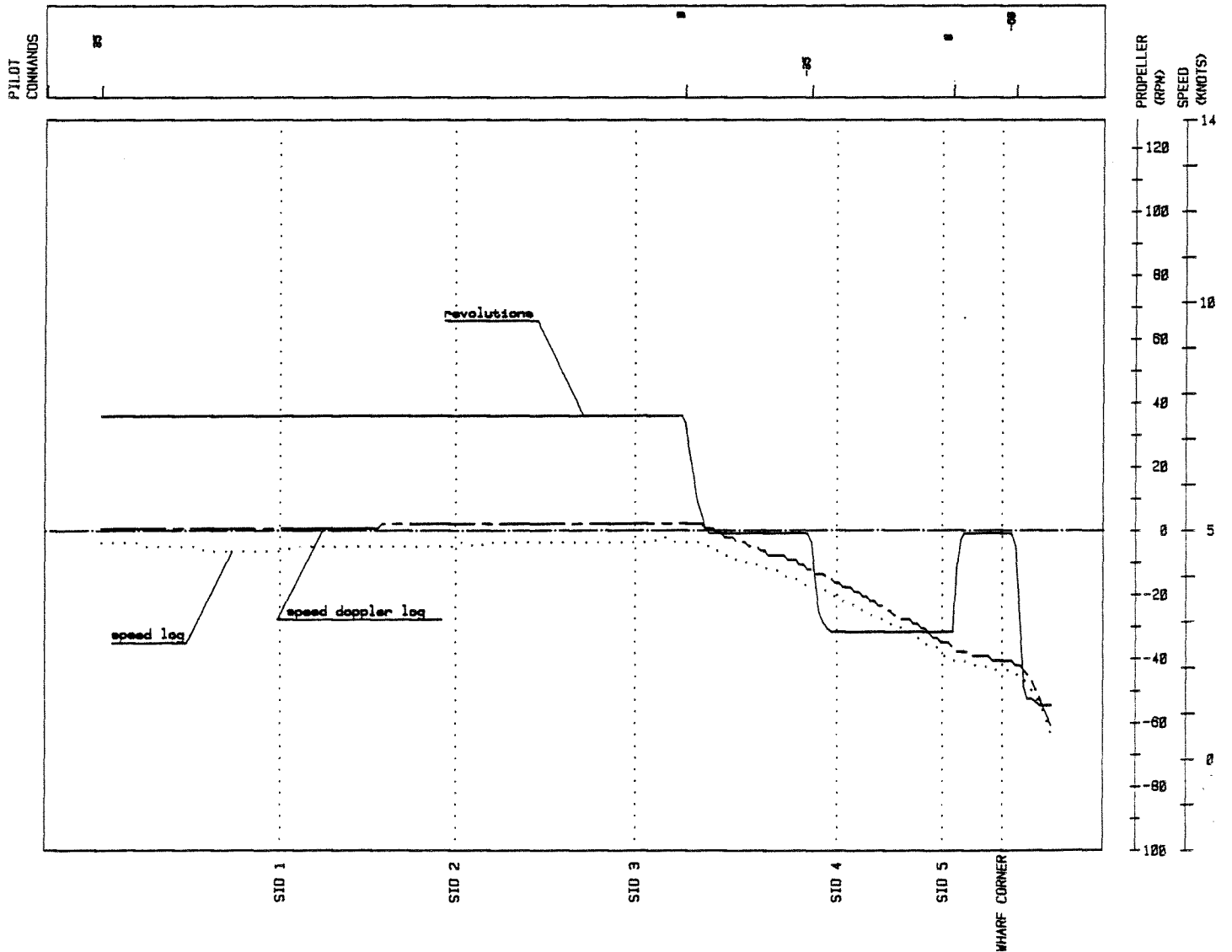
trial 28

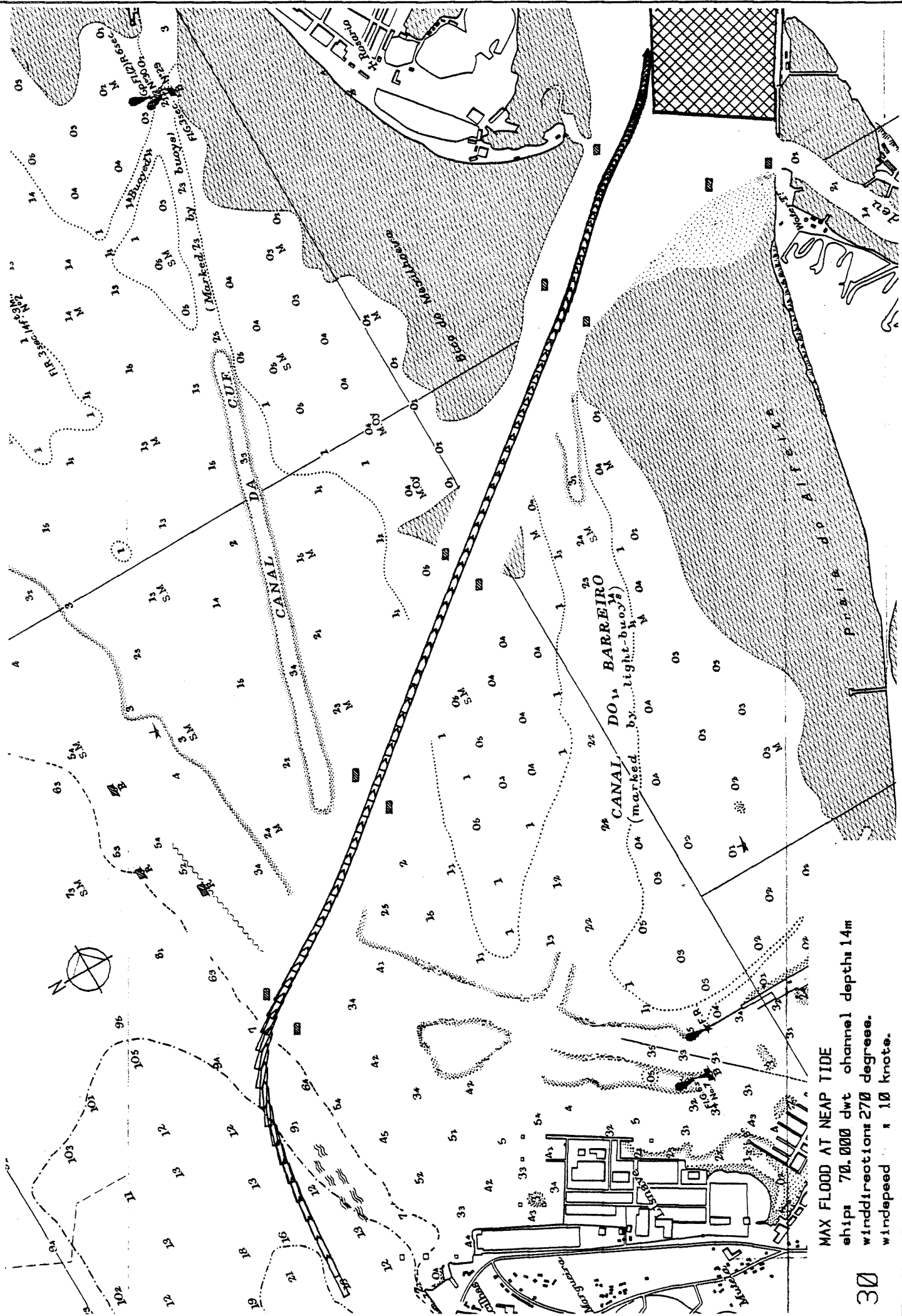




MAX FLOOD AT NEAP TIDE
 ships 70,000 dwt channel depths 14m
 wind direction 225 degrees.
 wind speed : 20 knots.

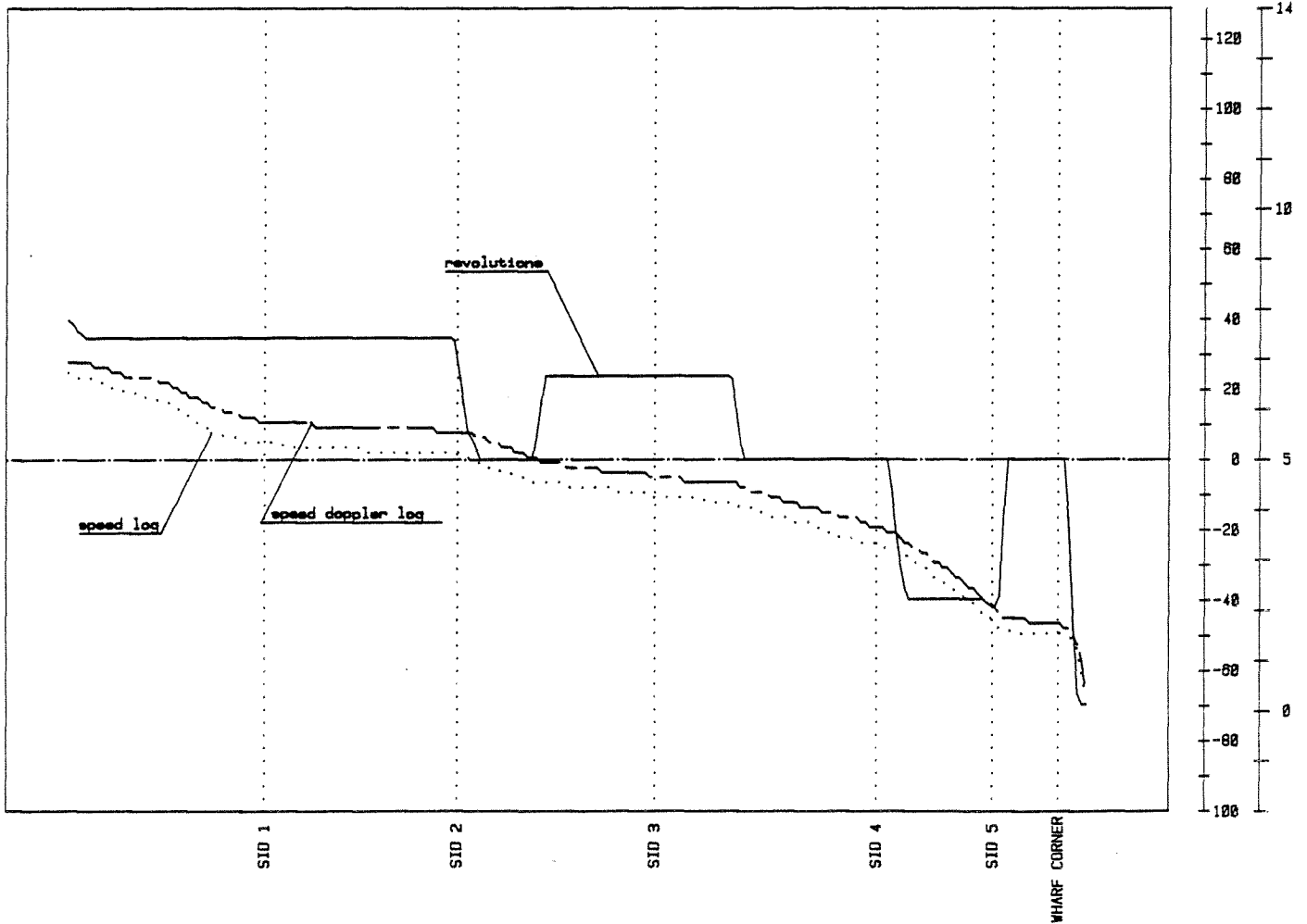
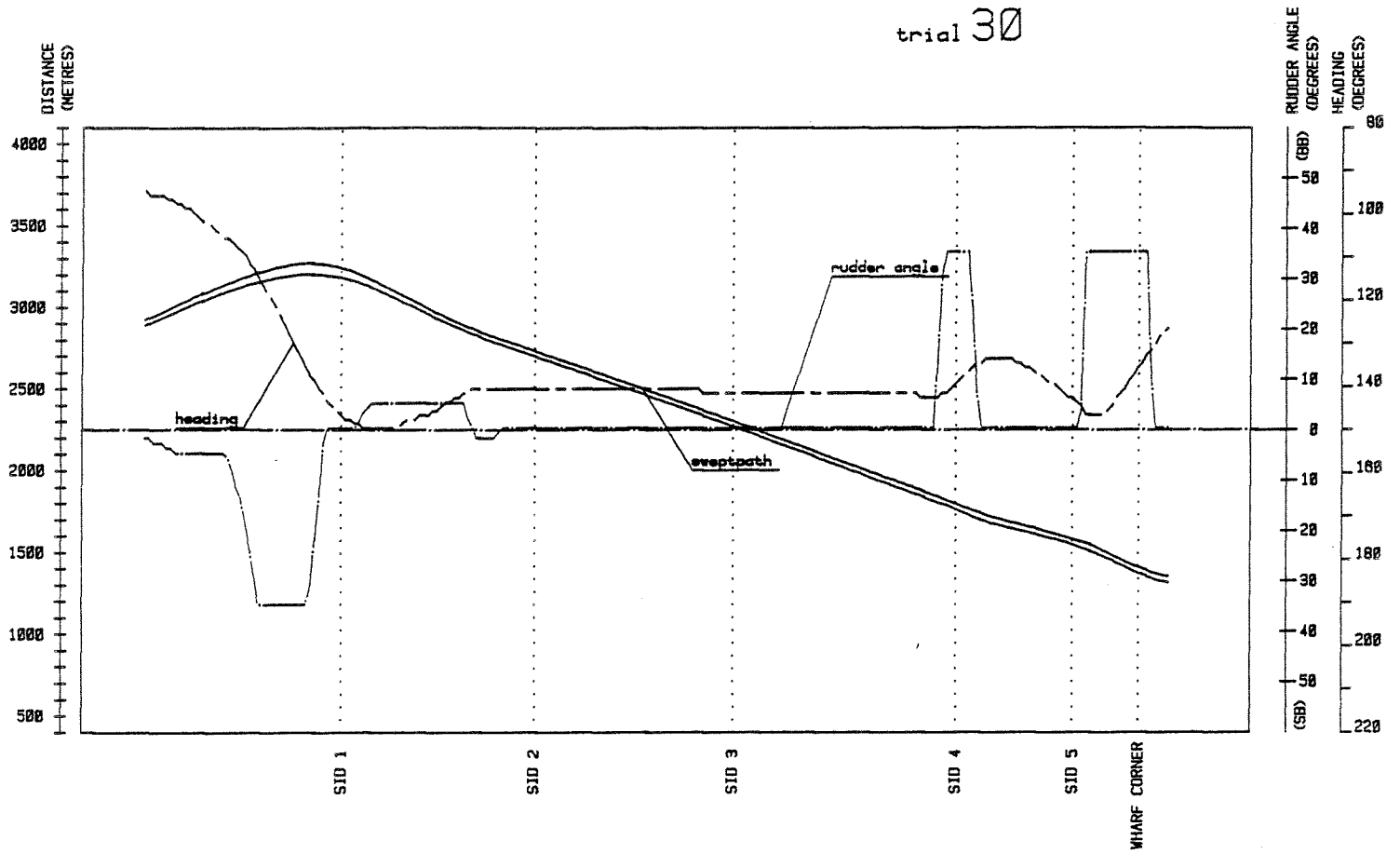
trial 29

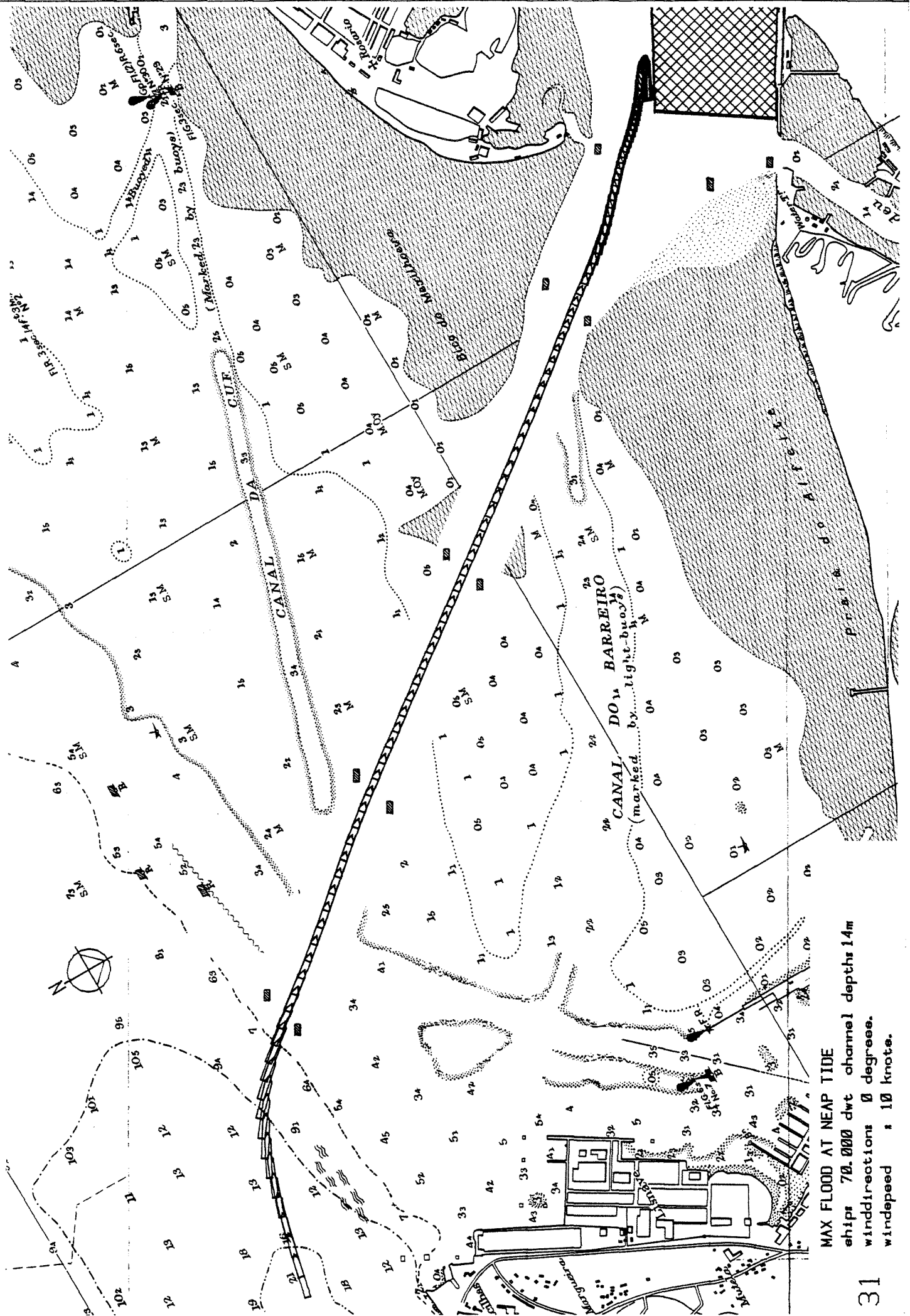




MAX FLOOD AT NEAP TIDE
 ships 70,000 dwt channel depths 14m
 winddirections 270 degrees.
 wind speed 10 knots.

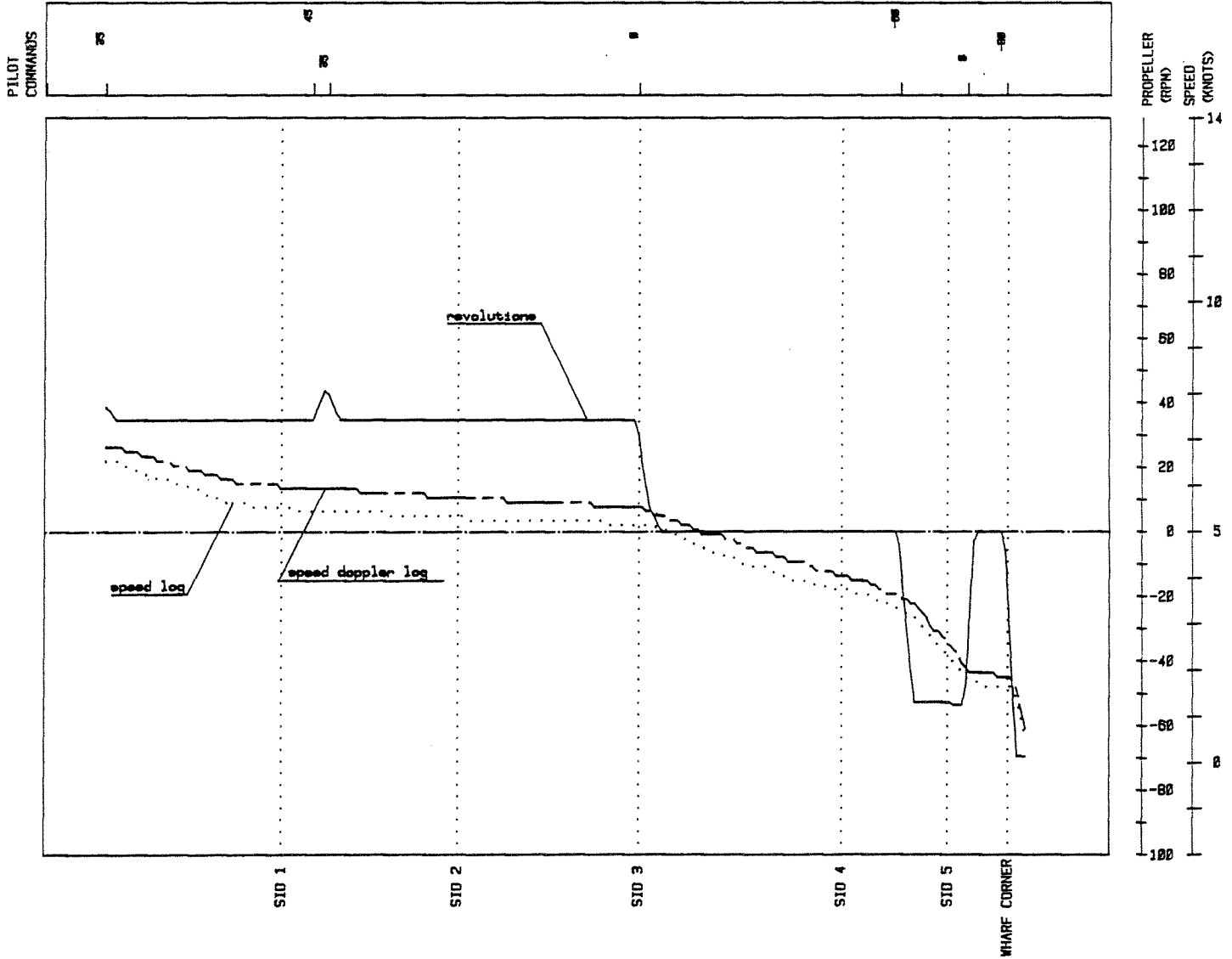
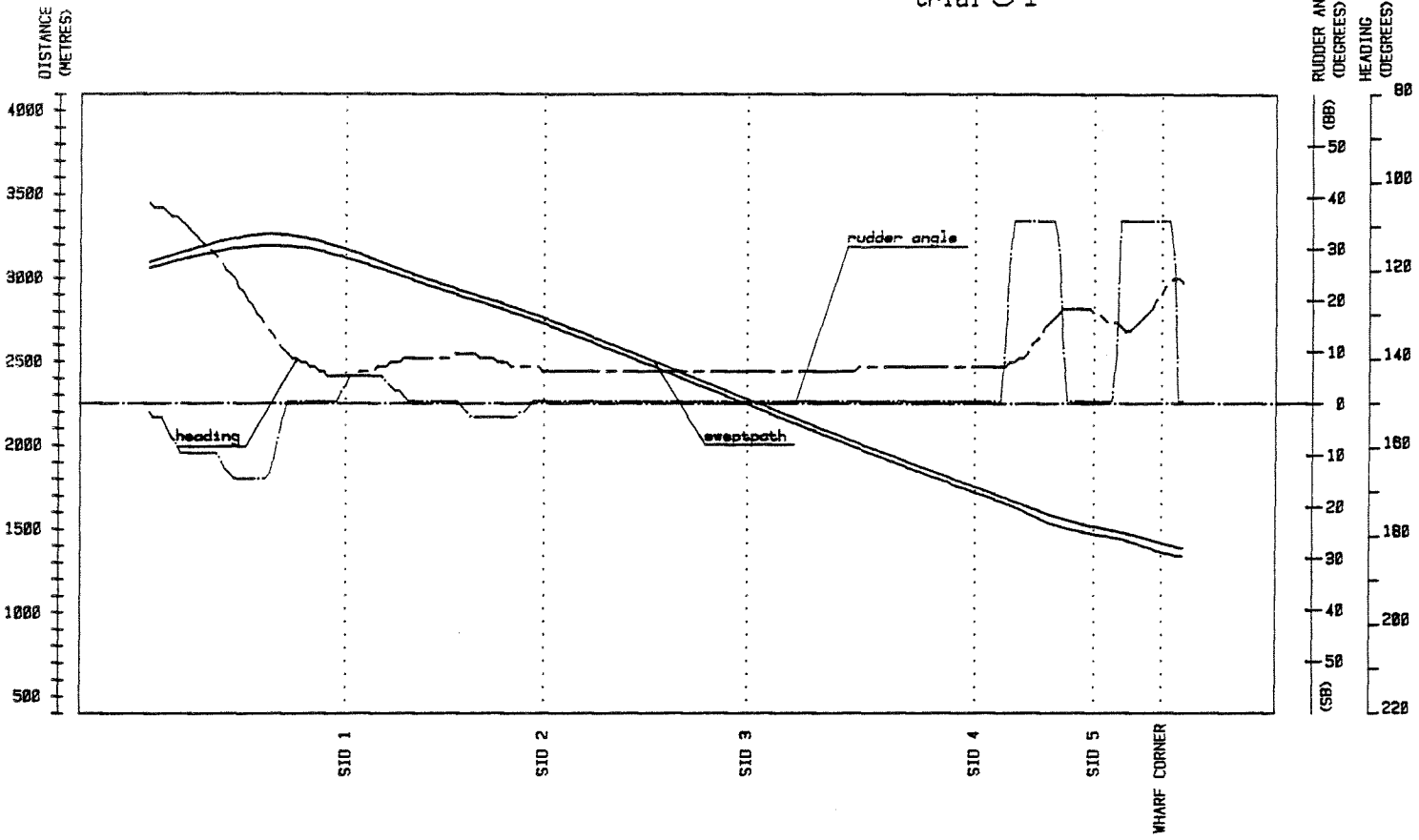
trial 30

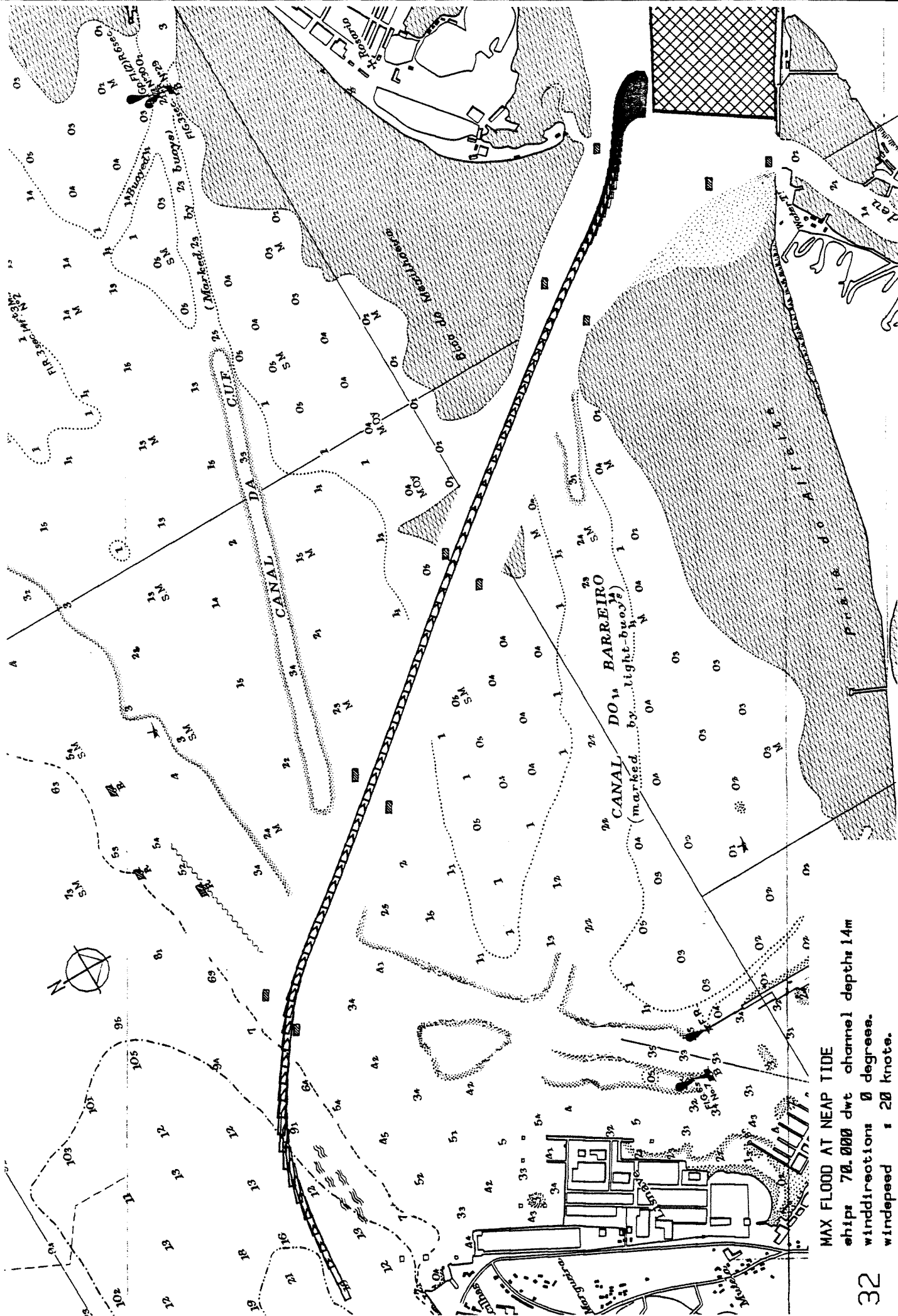




MAX FLOOD AT NEAP TIDE
 ships 70.000 dwt channel depths 14m
 wind directions 0 degrees.
 wind speed : 10 knots.

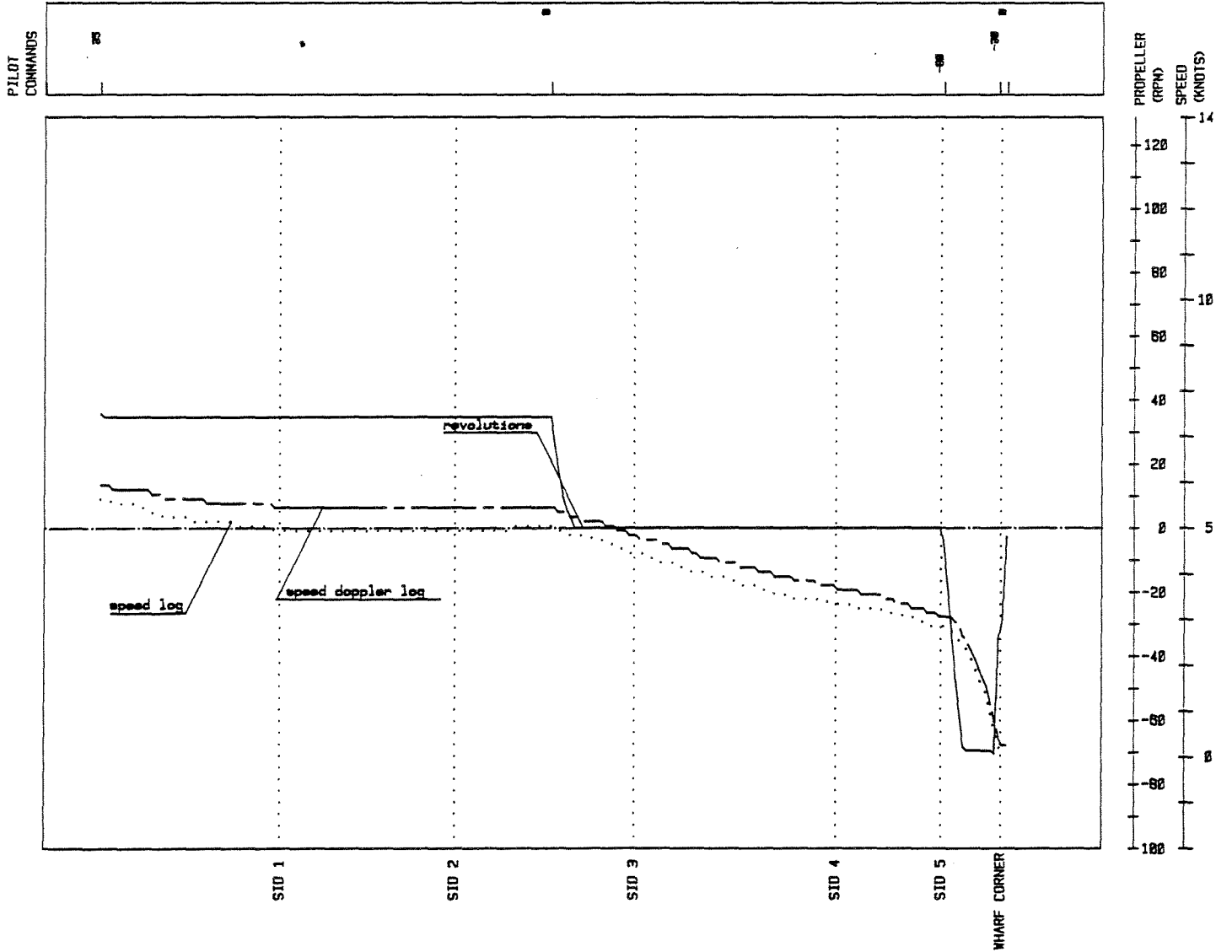
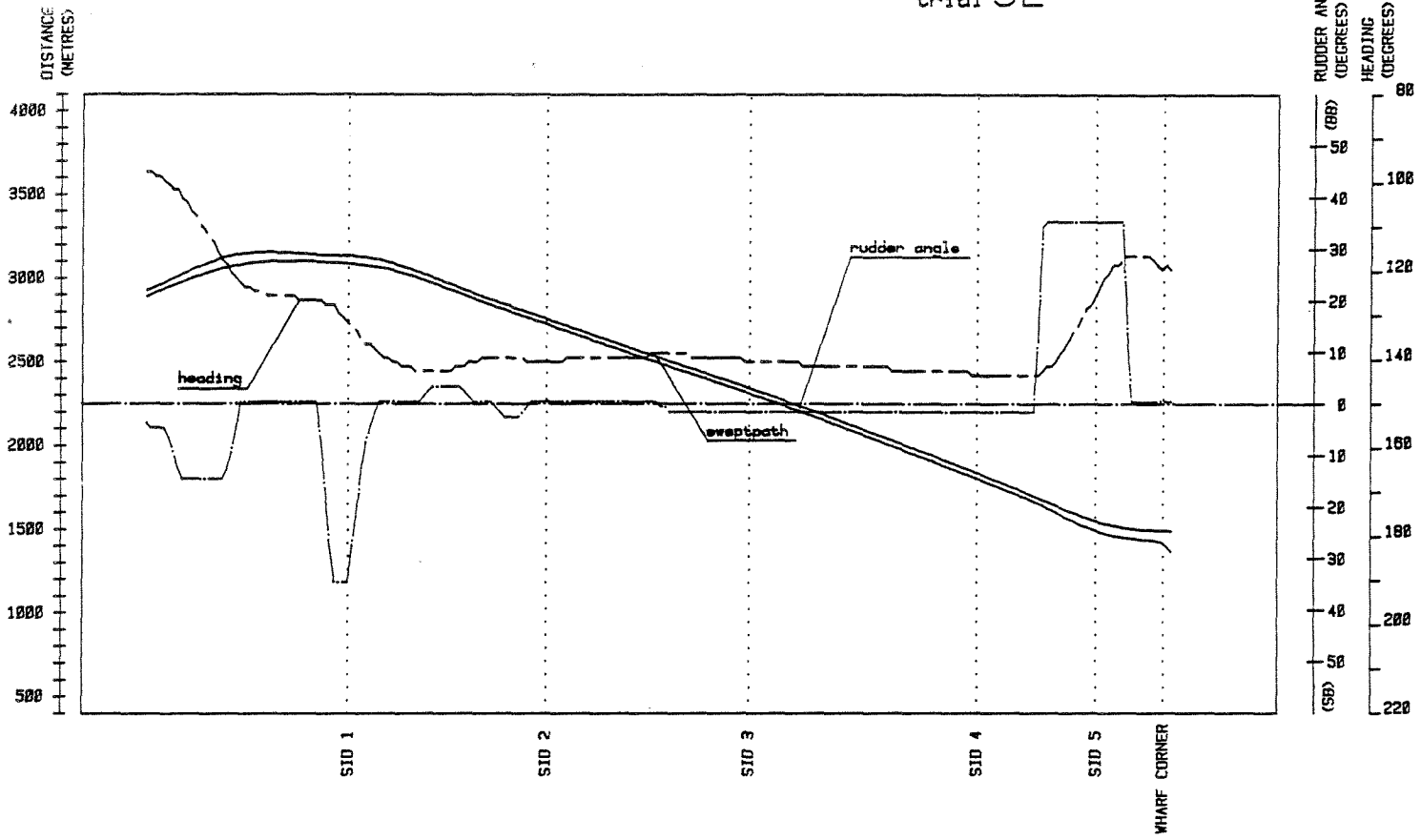
trial 31

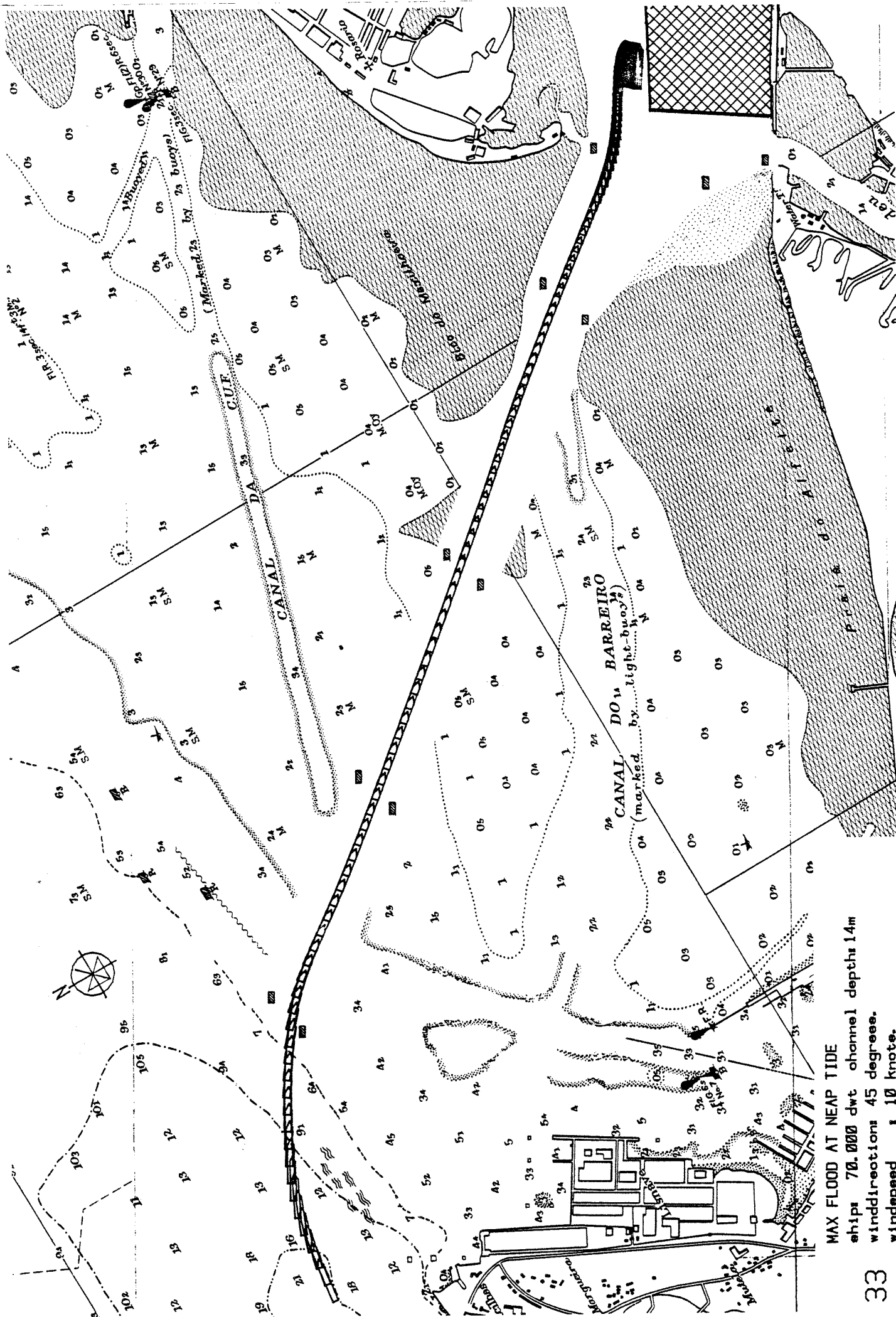




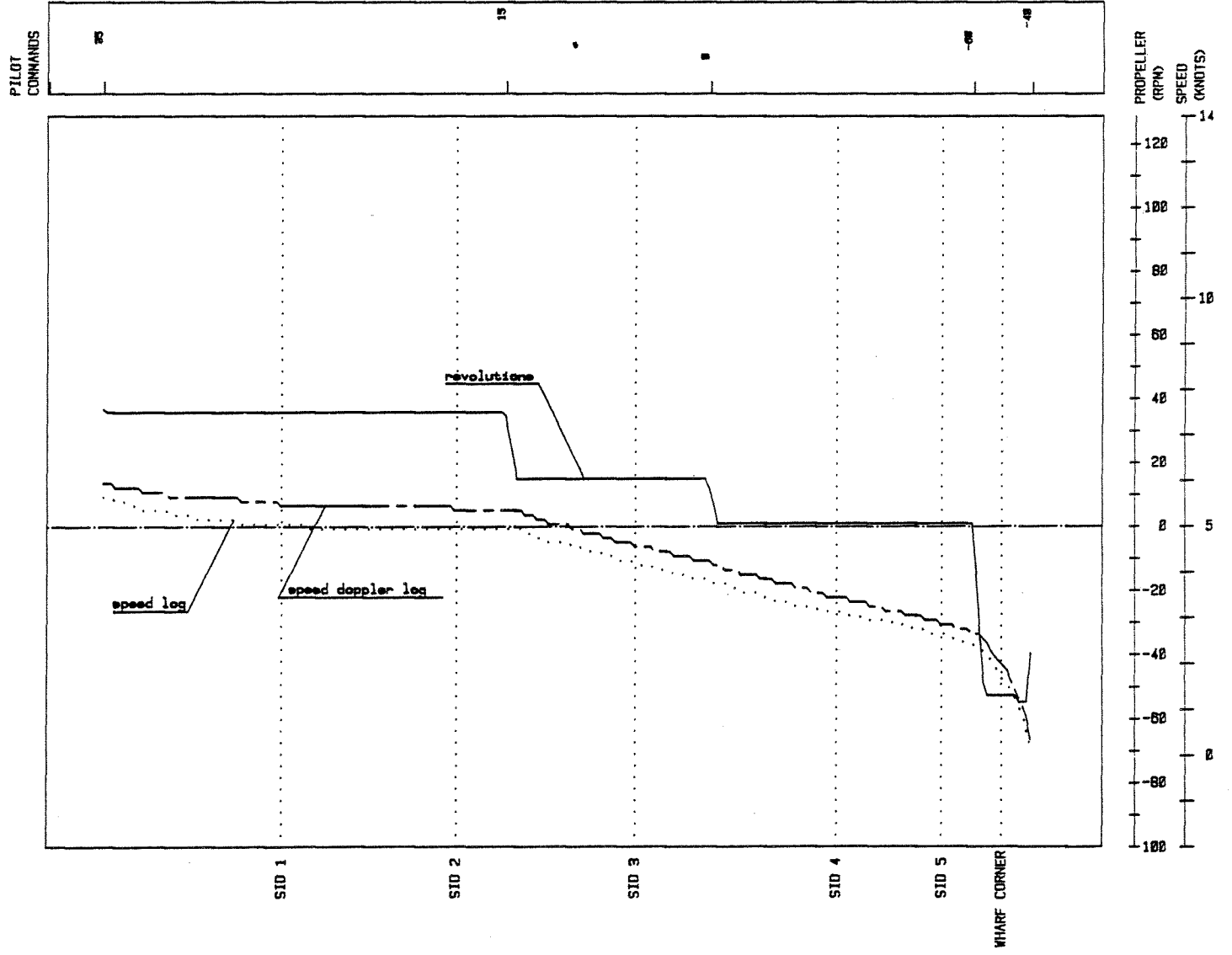
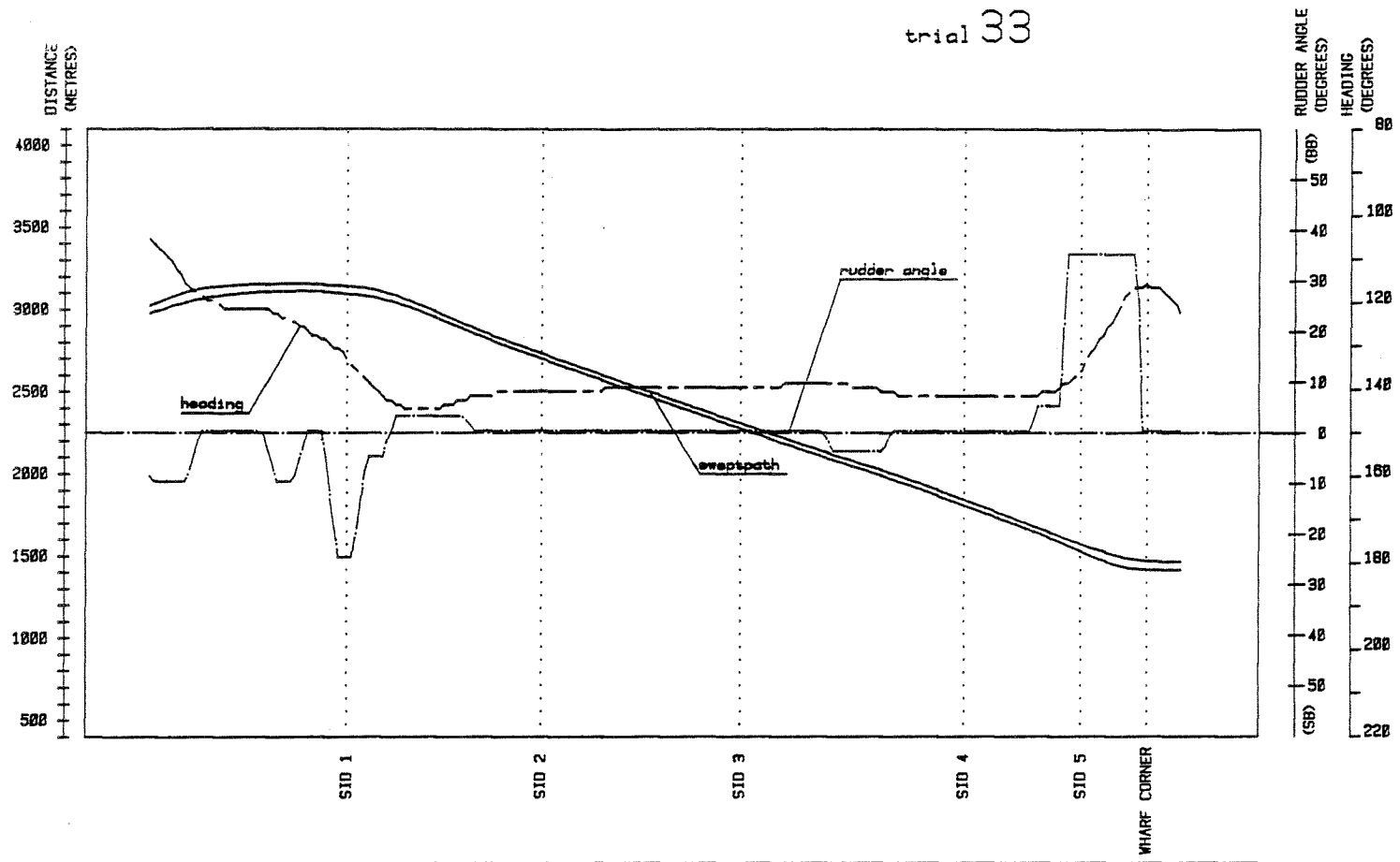
MAX FLOOD AT NEAP TIDE
 ship: 70,000 dwt channel depth: 14m
 wind direction: 0 degrees.
 wind speed: 20 knots.

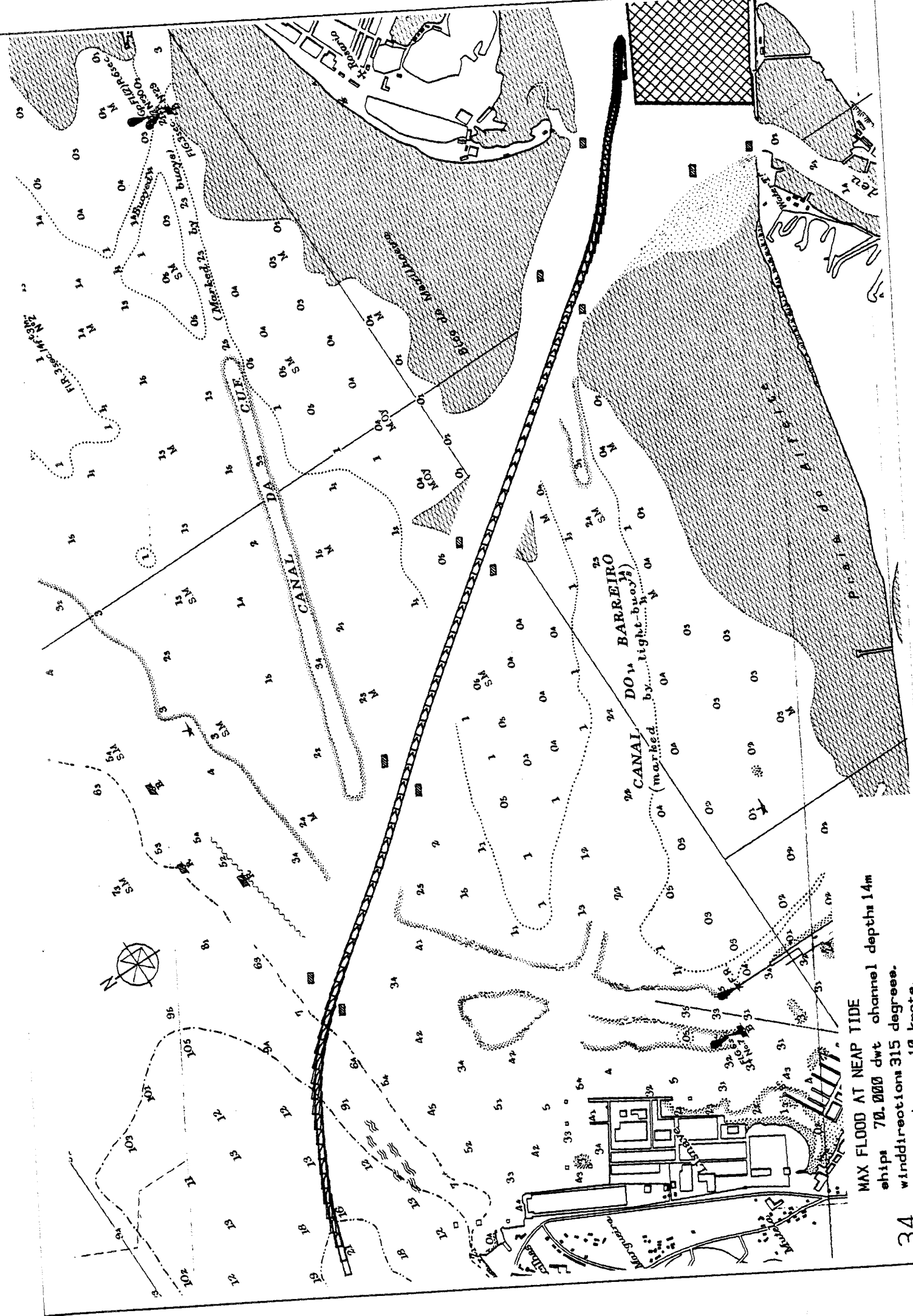
trial 32





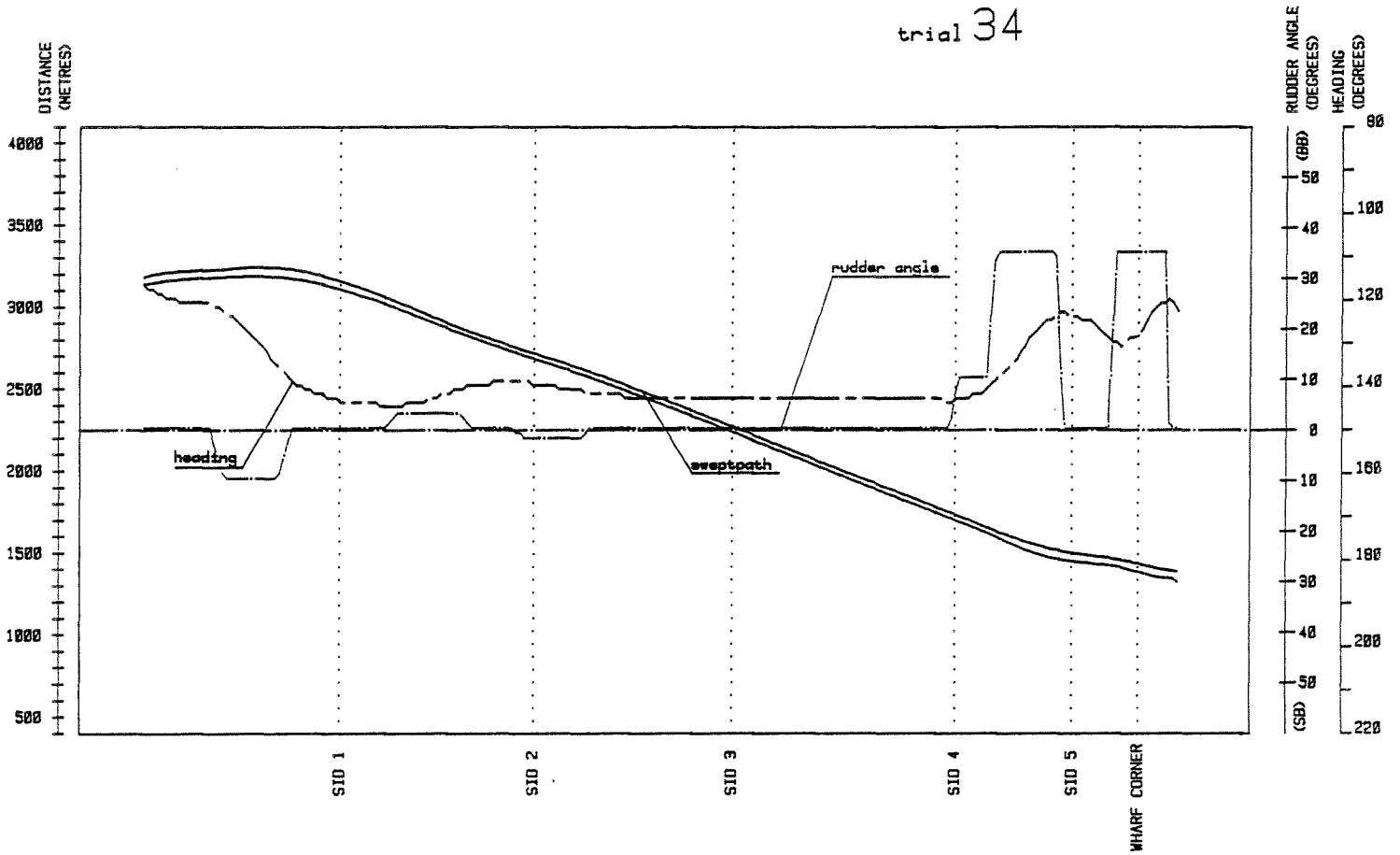
trial 33



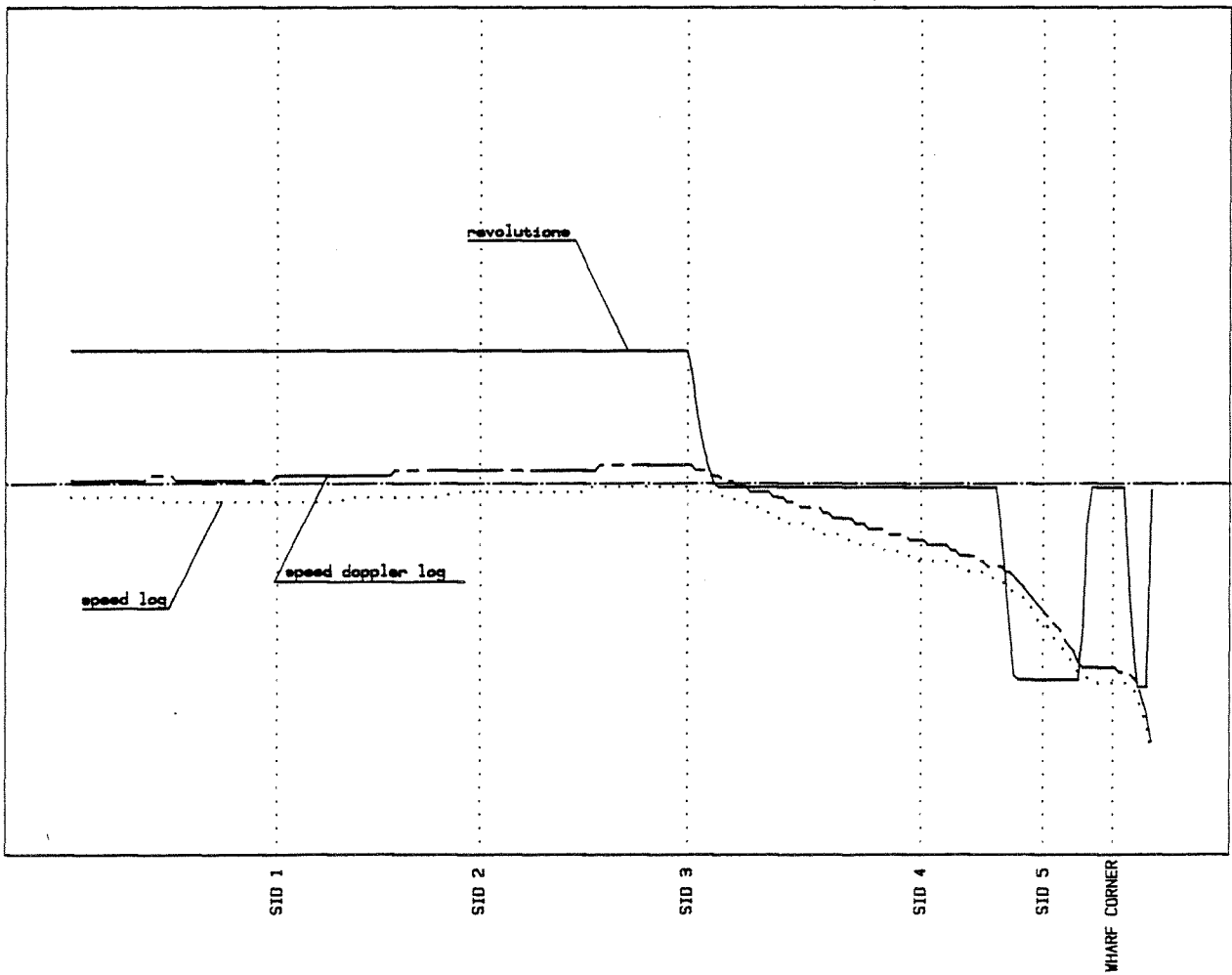


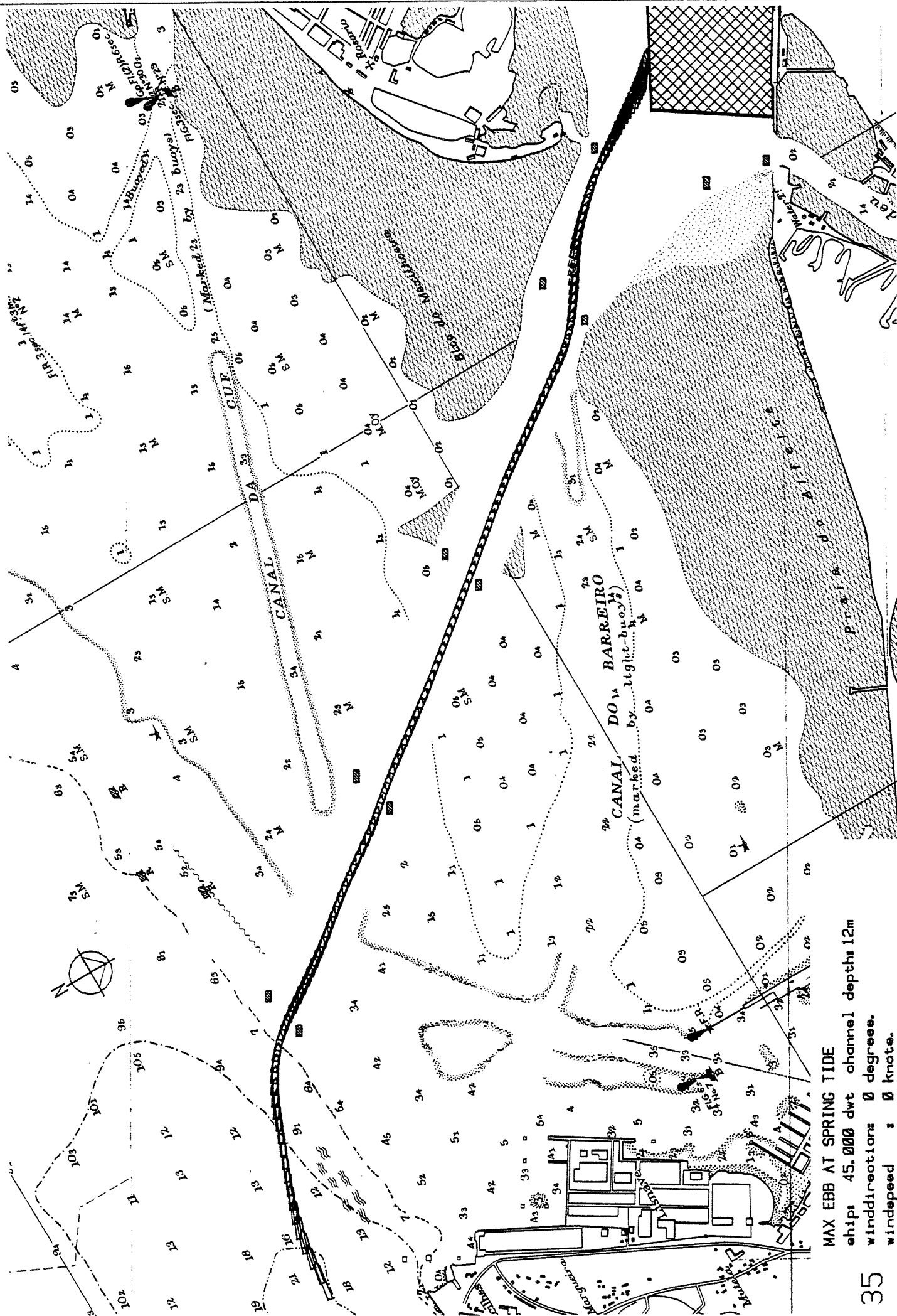
MAX FLOOD AT NEAP TIDE
 ships 70,000 dwt channel depths 14m
 wind direction 315 degrees.
 wind speed 10 knots.

trial 34



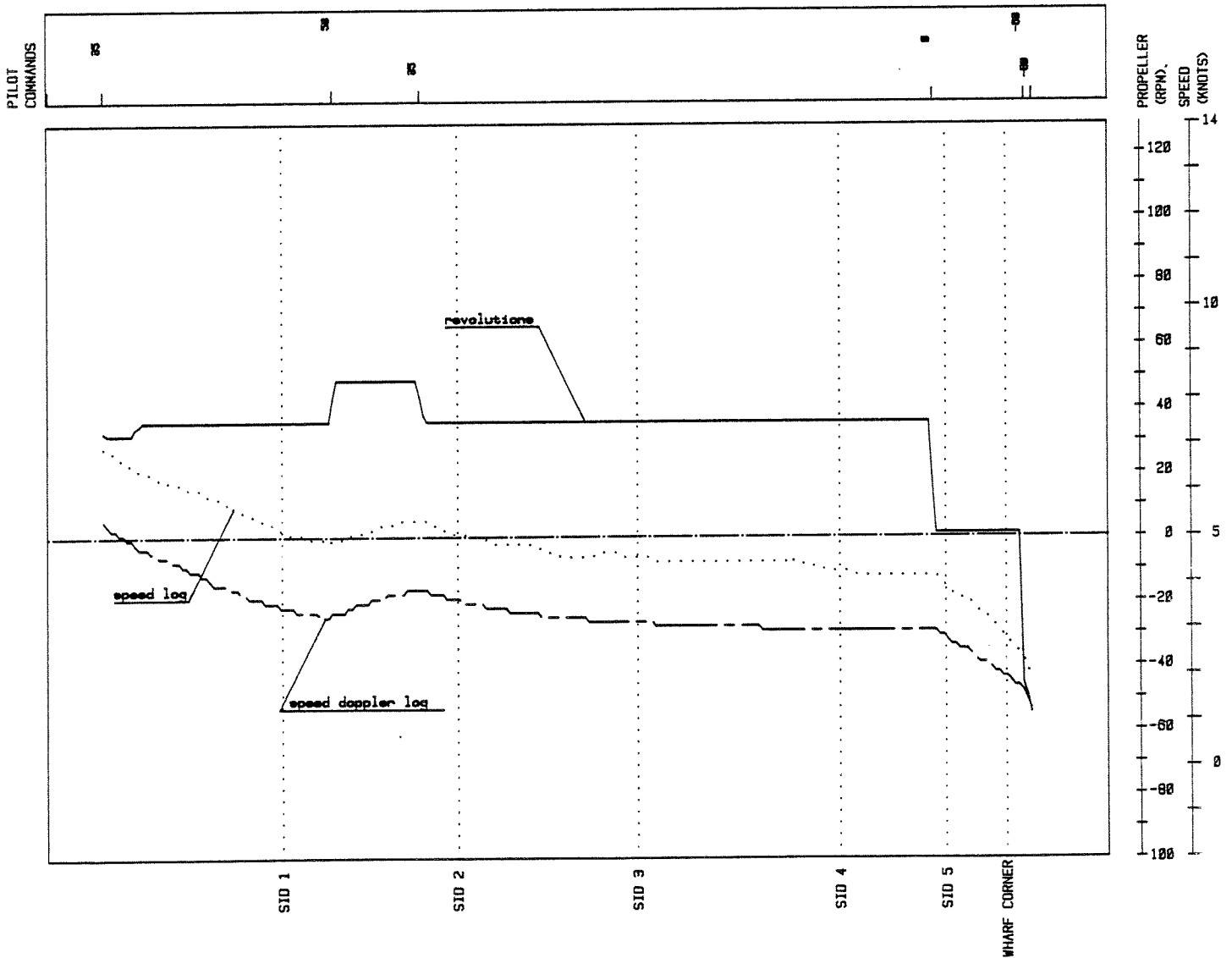
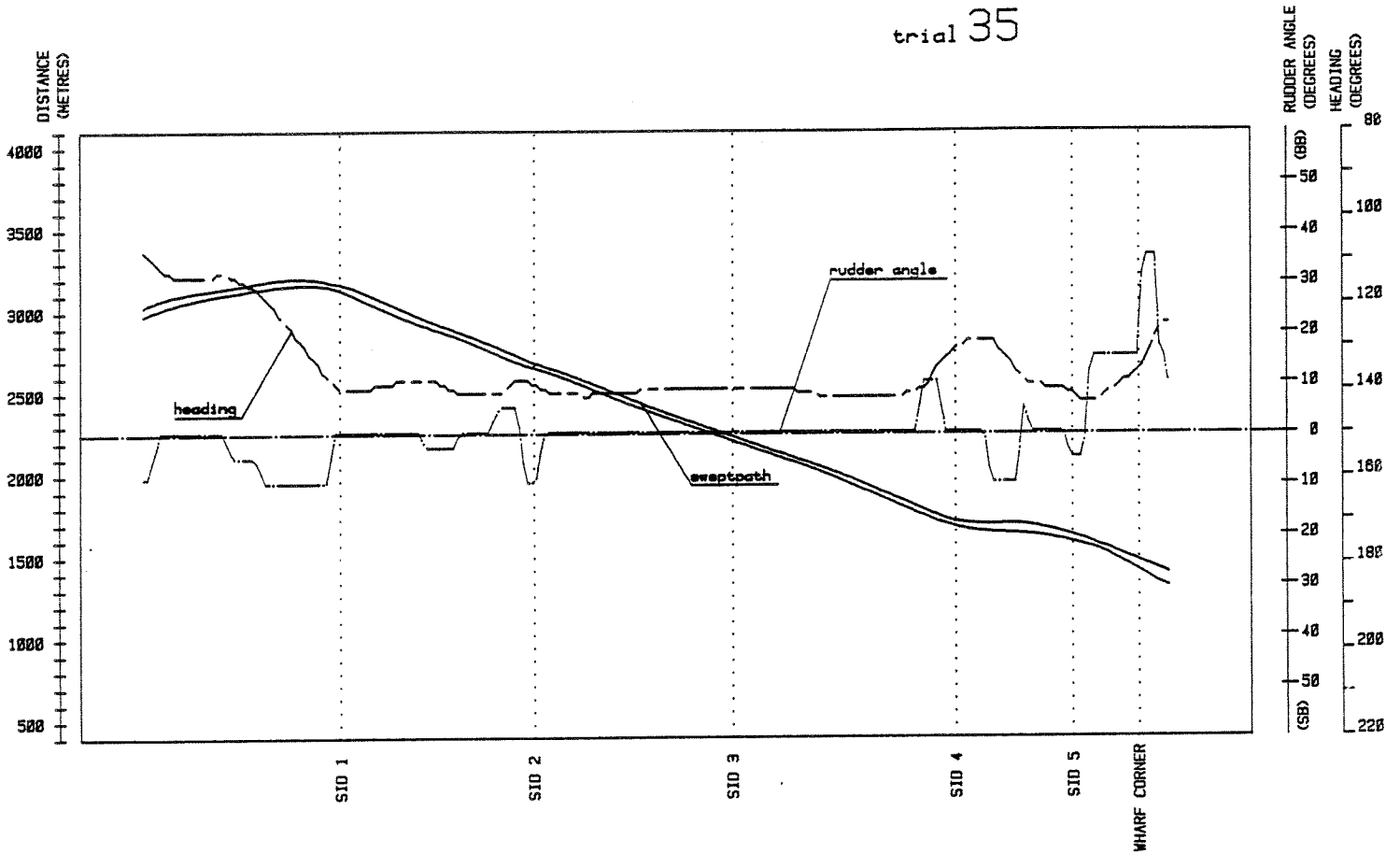
PILLOT COMMANDS

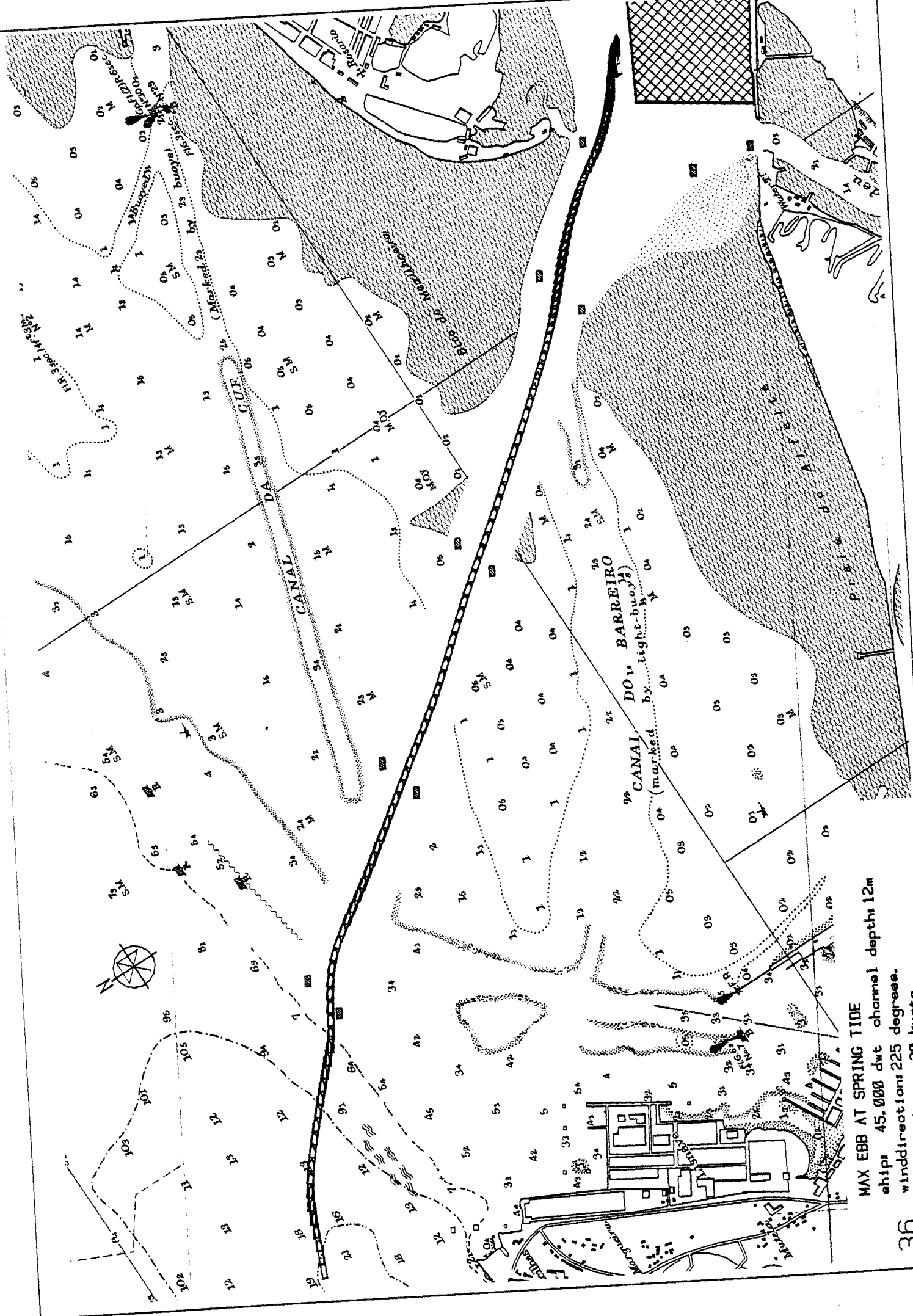




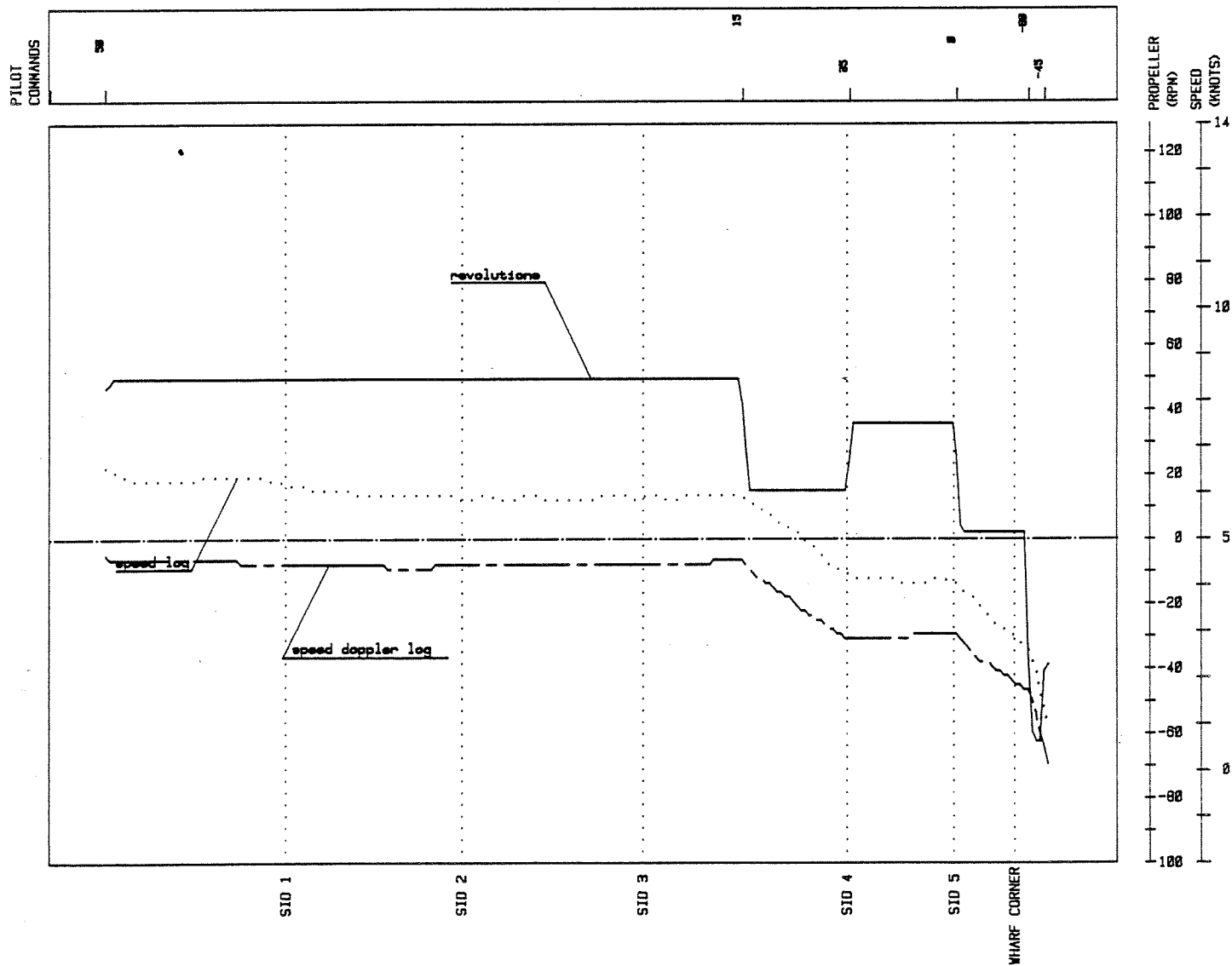
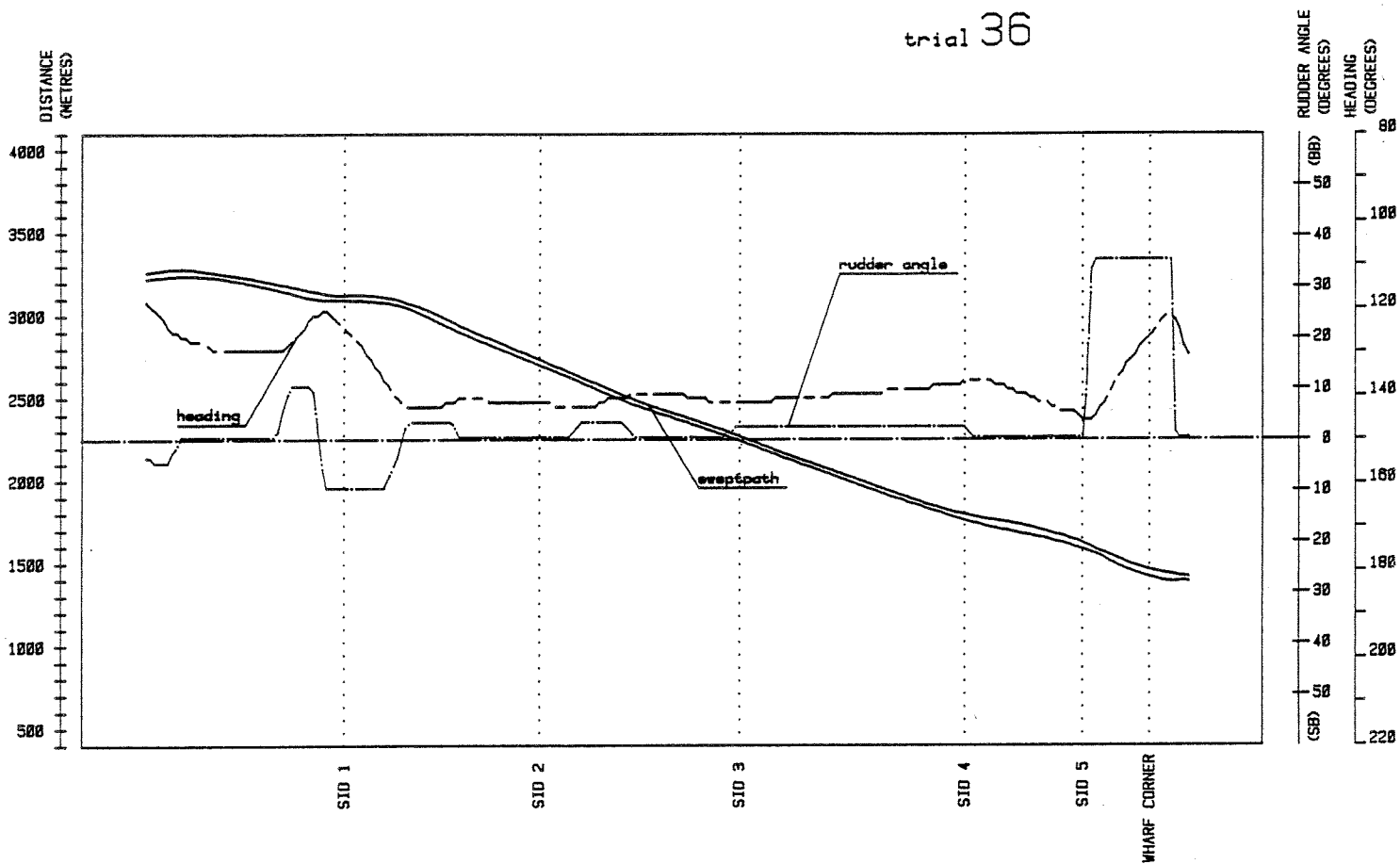
MAX EBB AT SPRING TIDE
 ships 45.000 dwt channel depths 12m
 winddirections 0 degrees.
 windepeed 1 0 knots.

trial 35

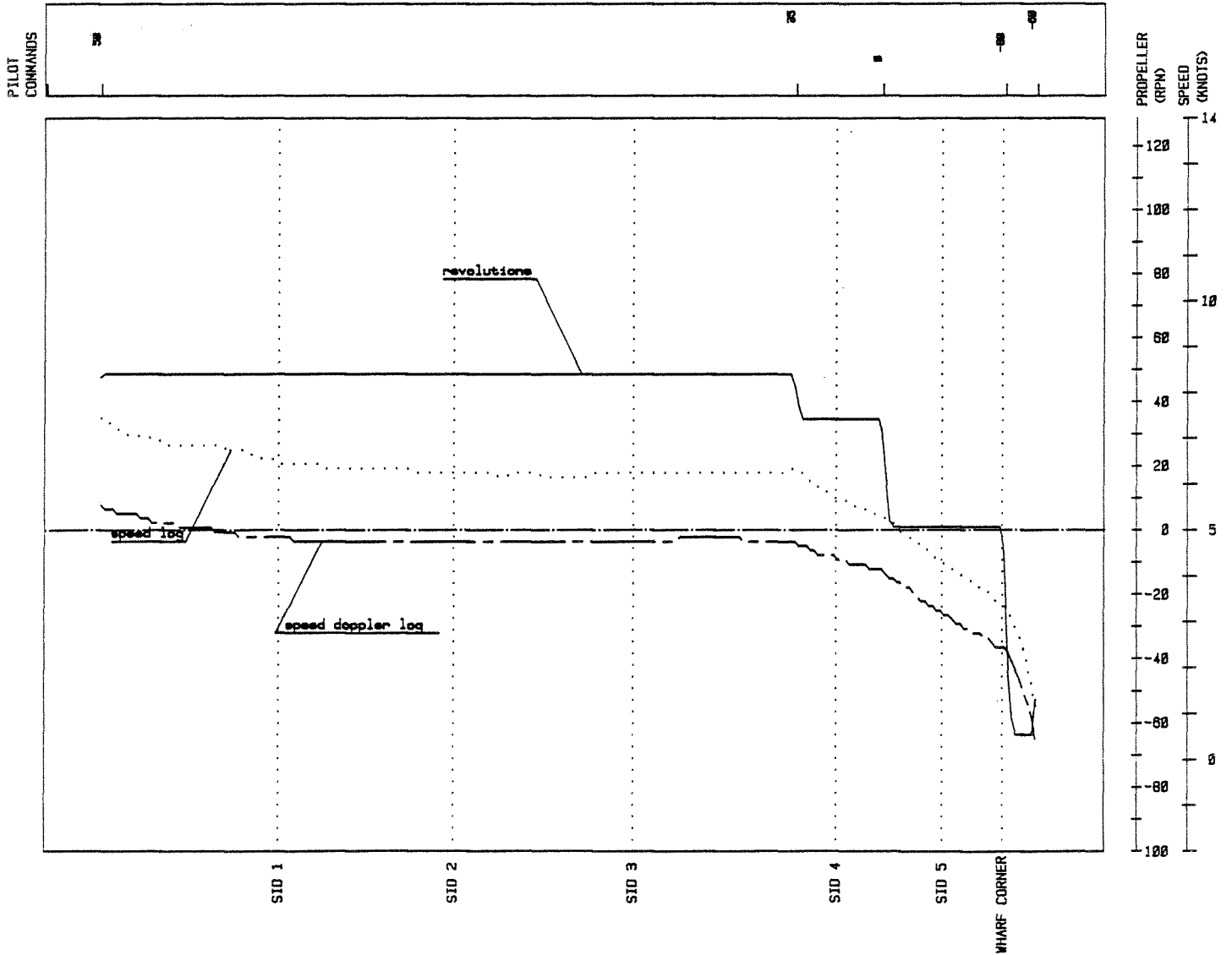
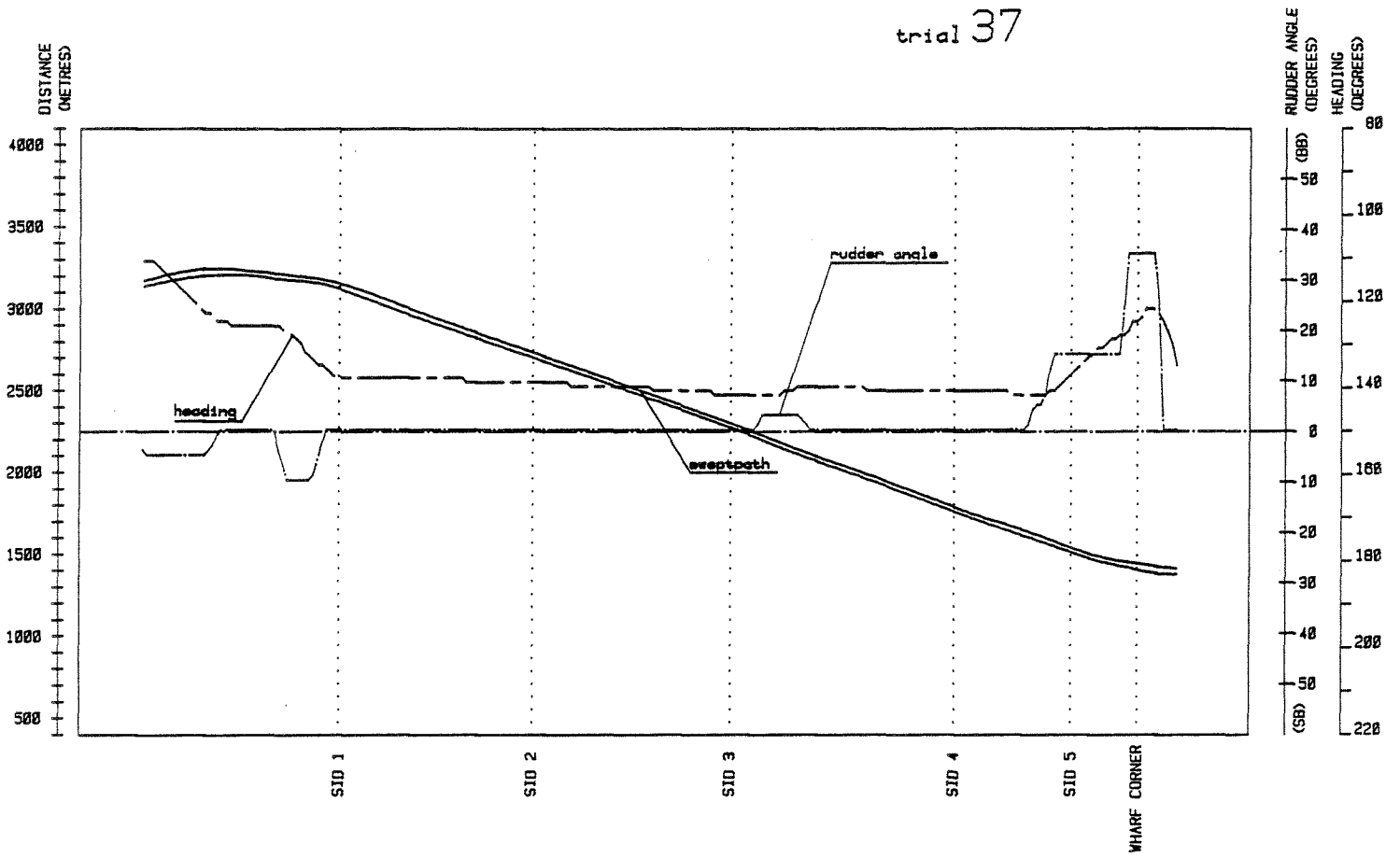


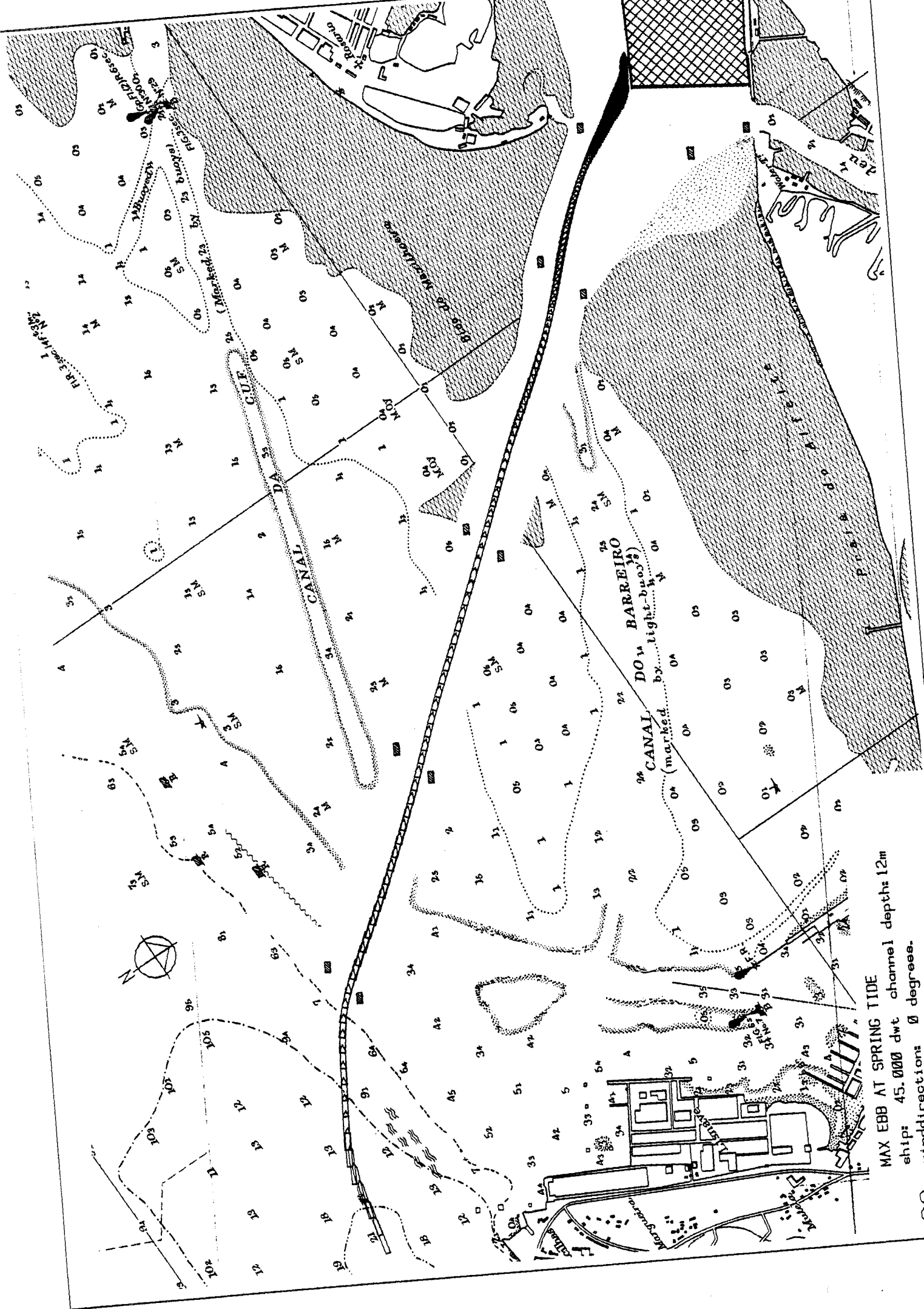


MAX EBB AT SPRING TIDE
 ships 45,000 dwt channel depths 12m
 wind directions 225 degrees.
 wind speed 30 knots.



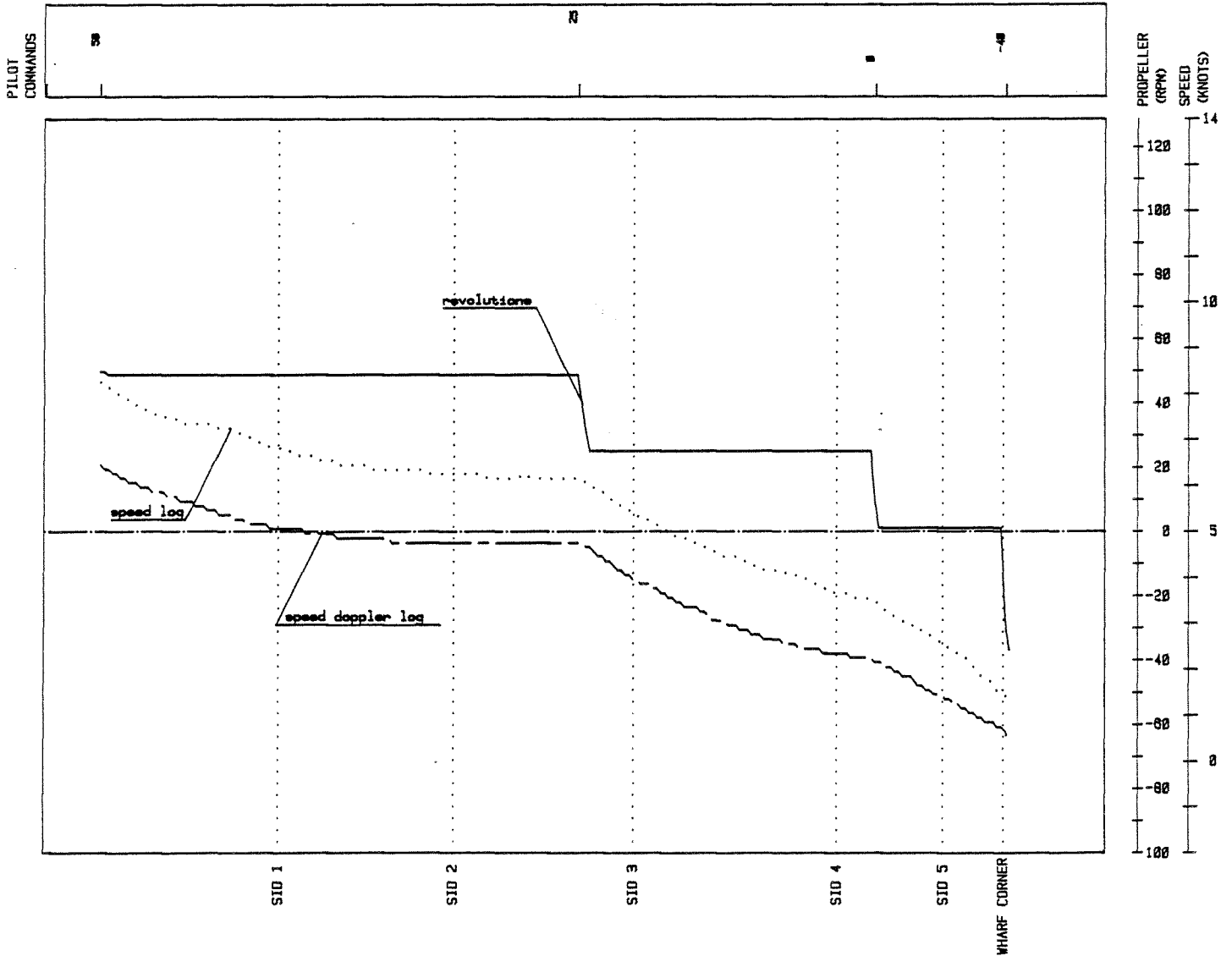
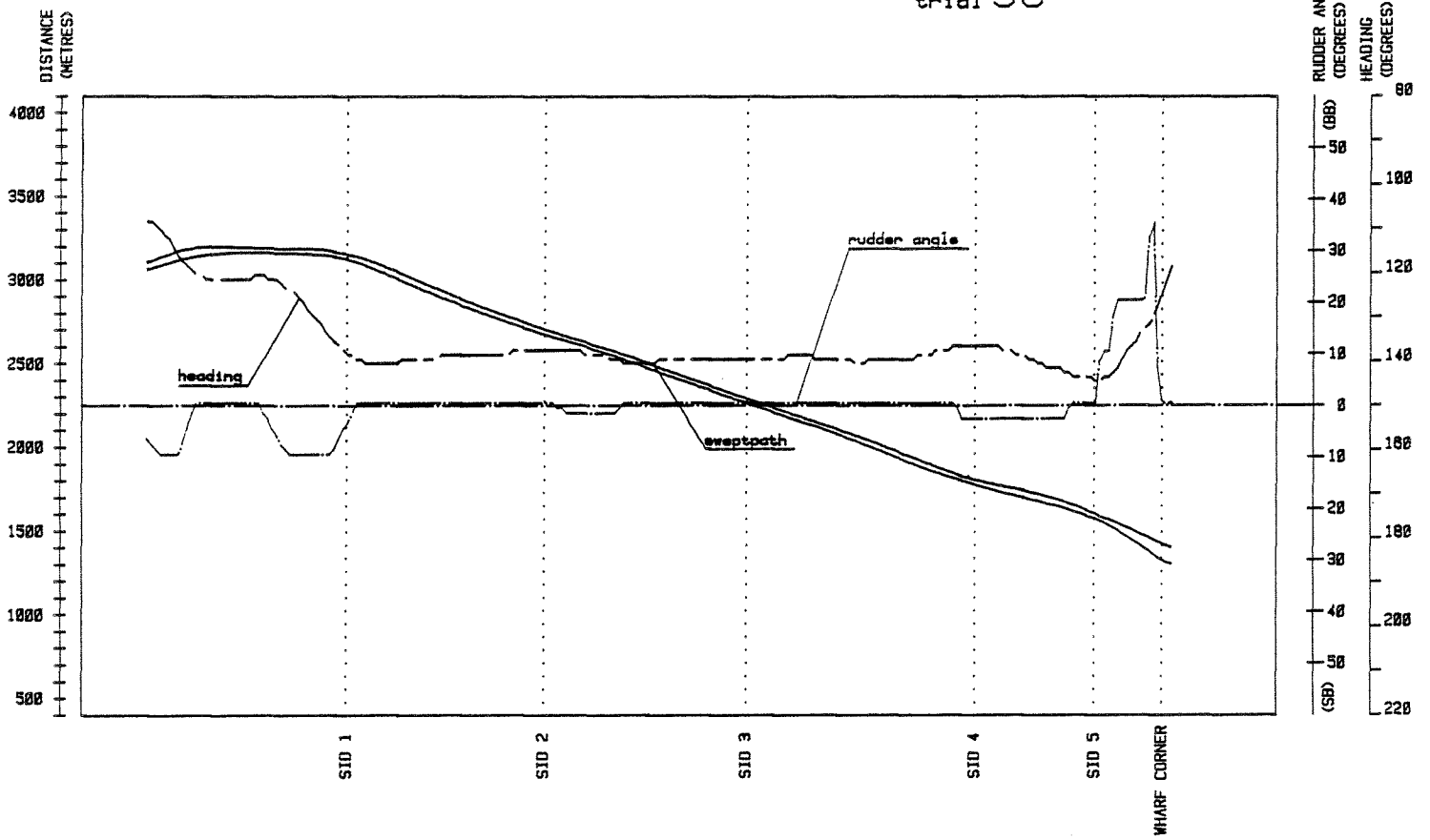
trial 37

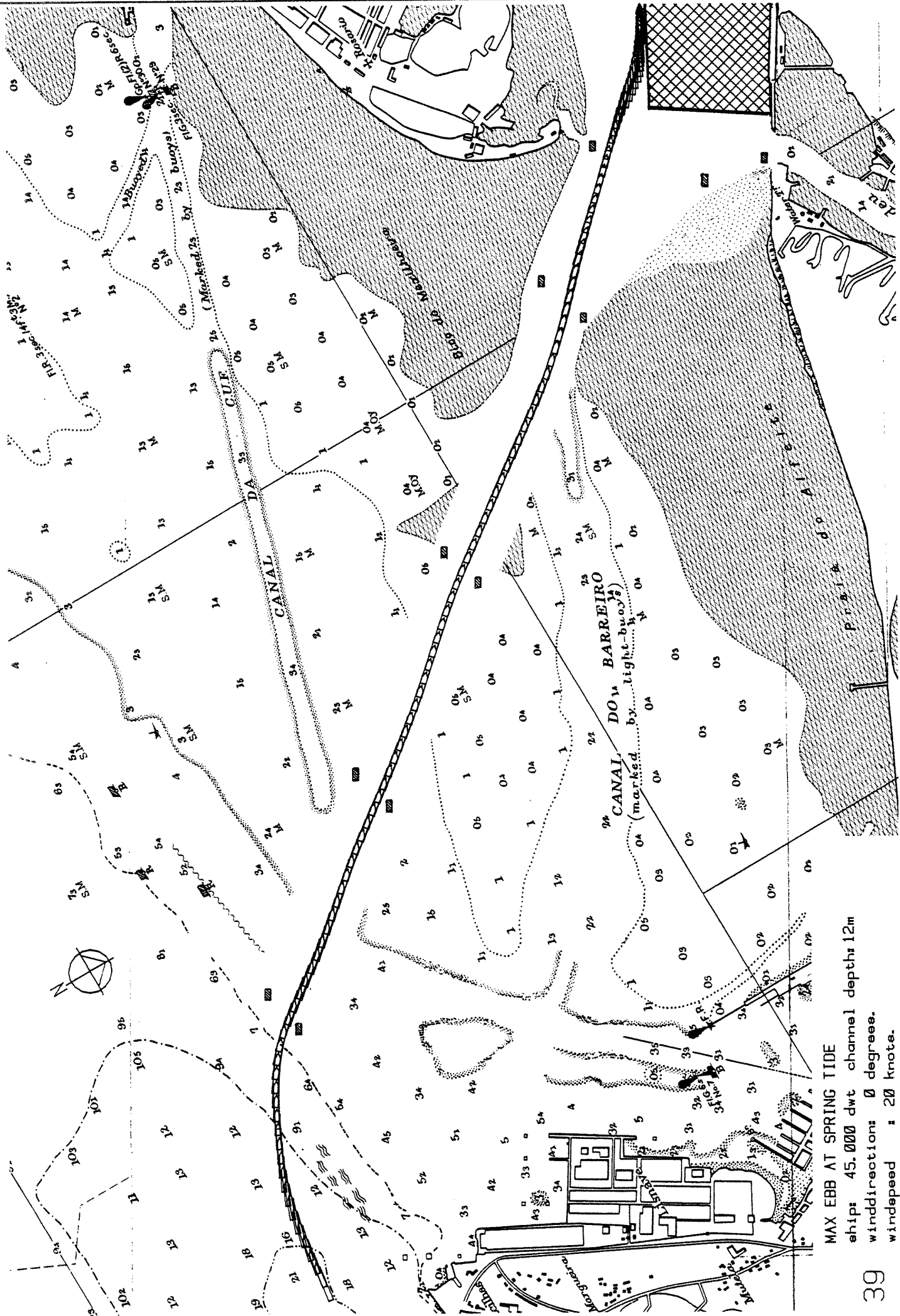




MAX EBB AT SPRING TIDE
 ship: 45.000 dwt channel depths 12m
 winddirection: 0 degrees.
 wind speed : 10 knots.

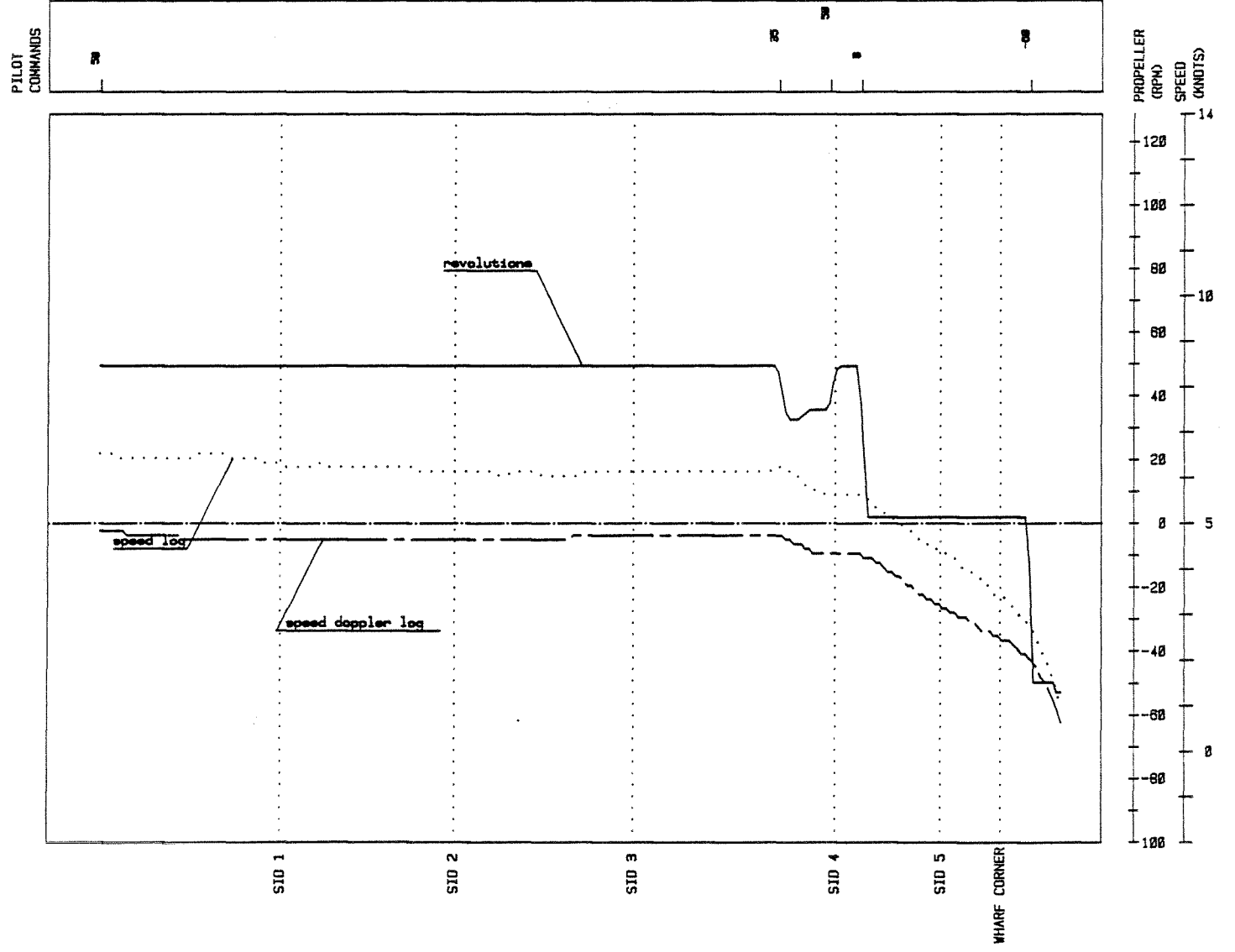
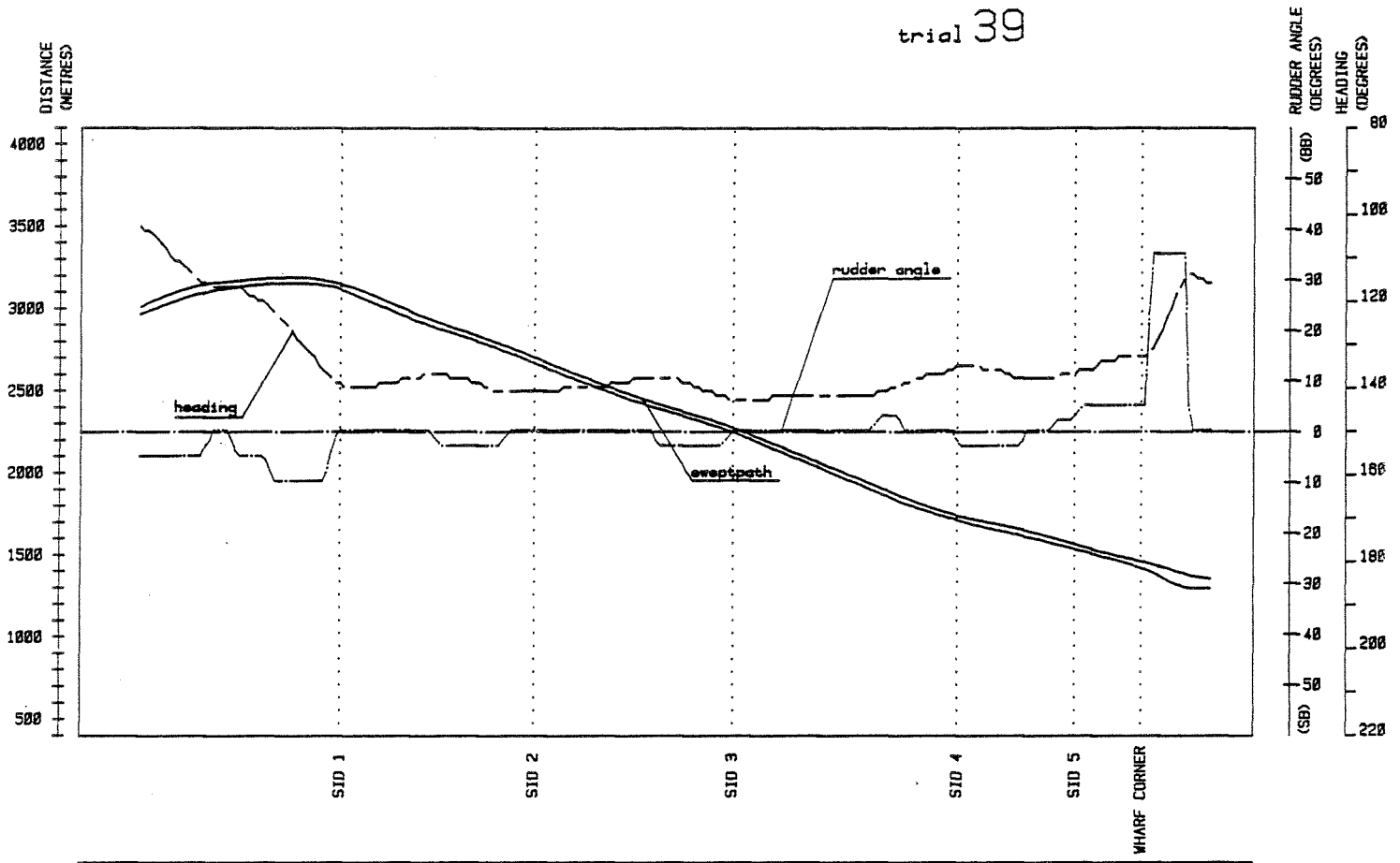
trial 38

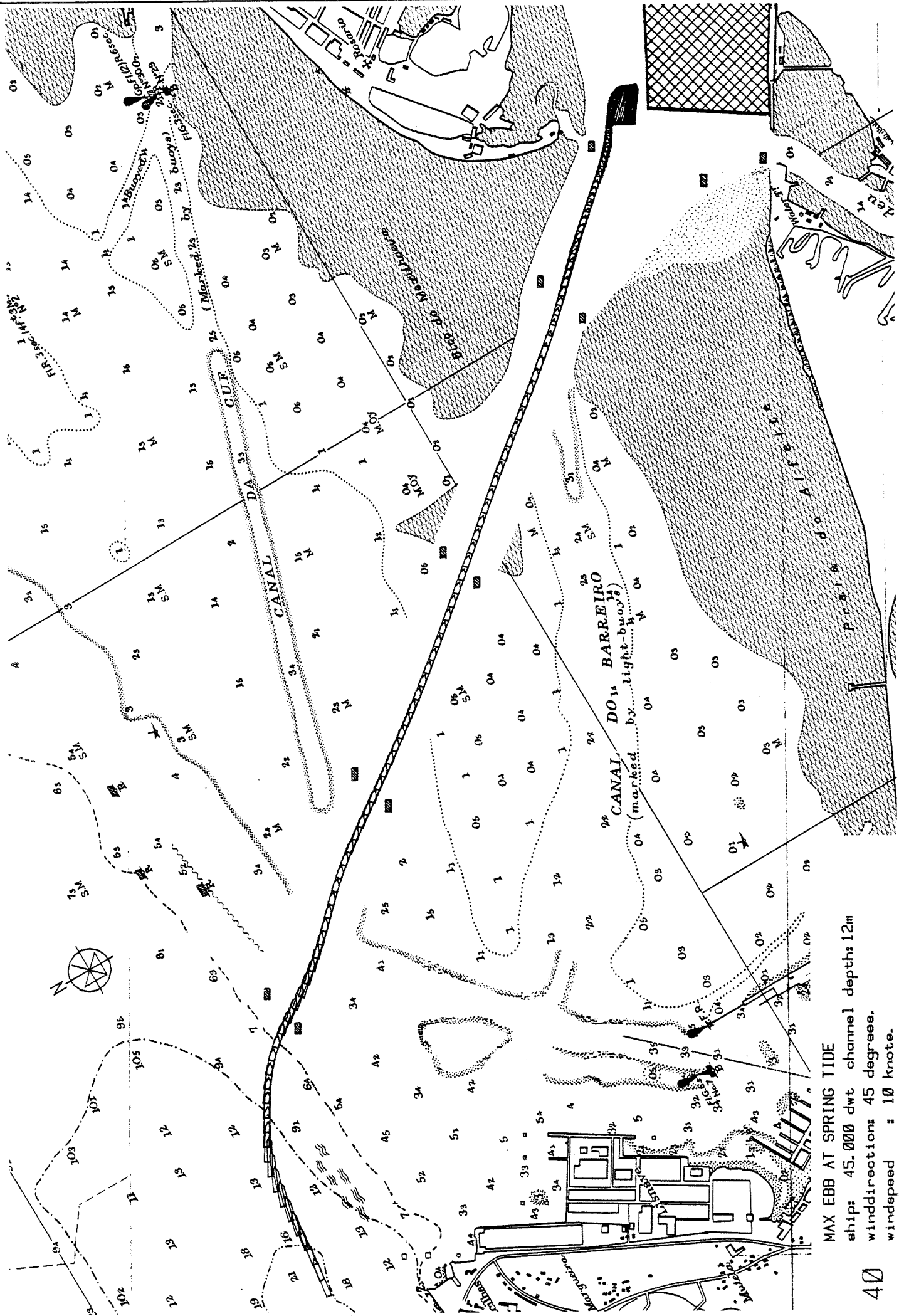




MAX EBB AT SPRING TIDE
 ships: 45.000 dwt channel depths: 12m
 winddirection: 0 degrees.
 windspeed : 20 knots.

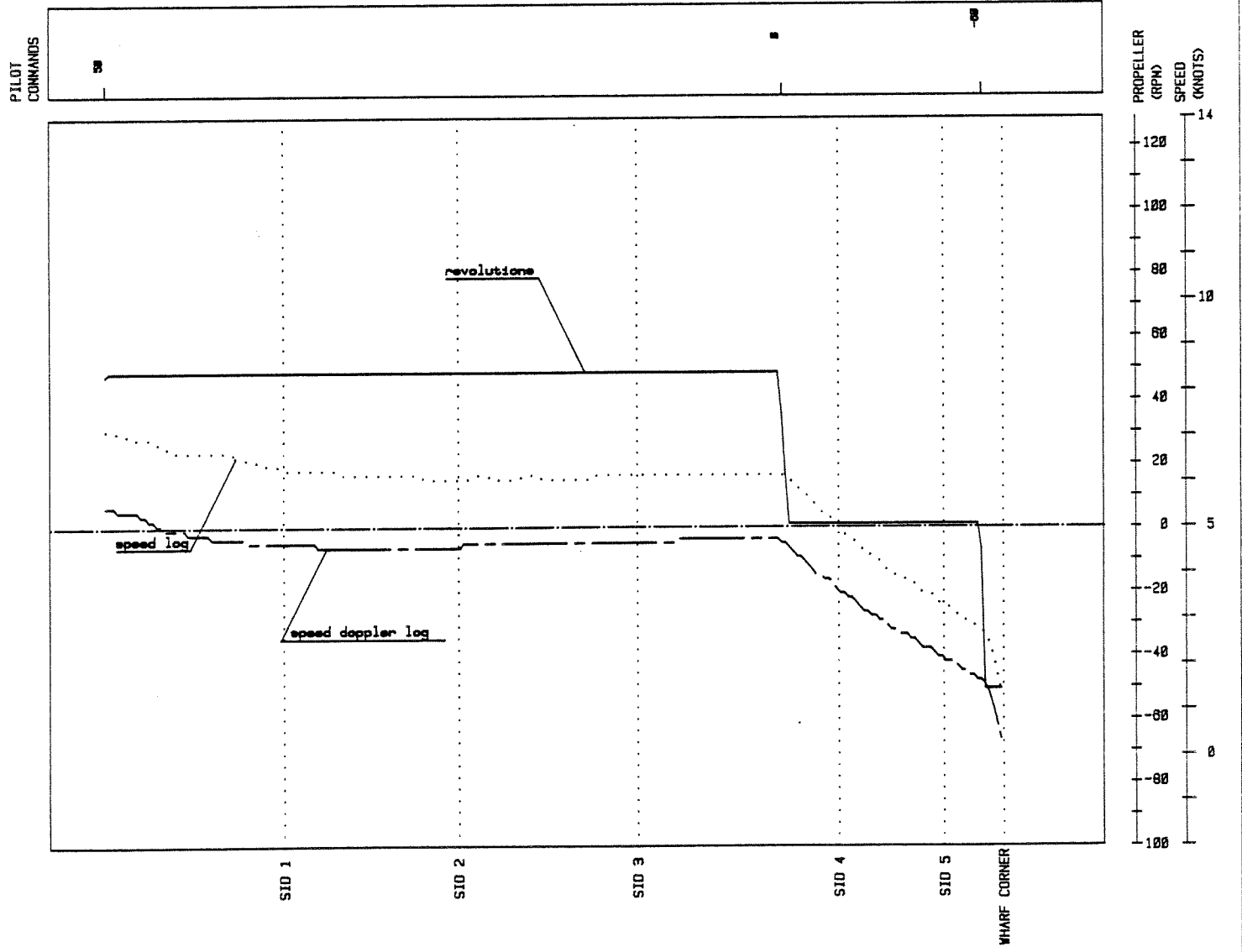
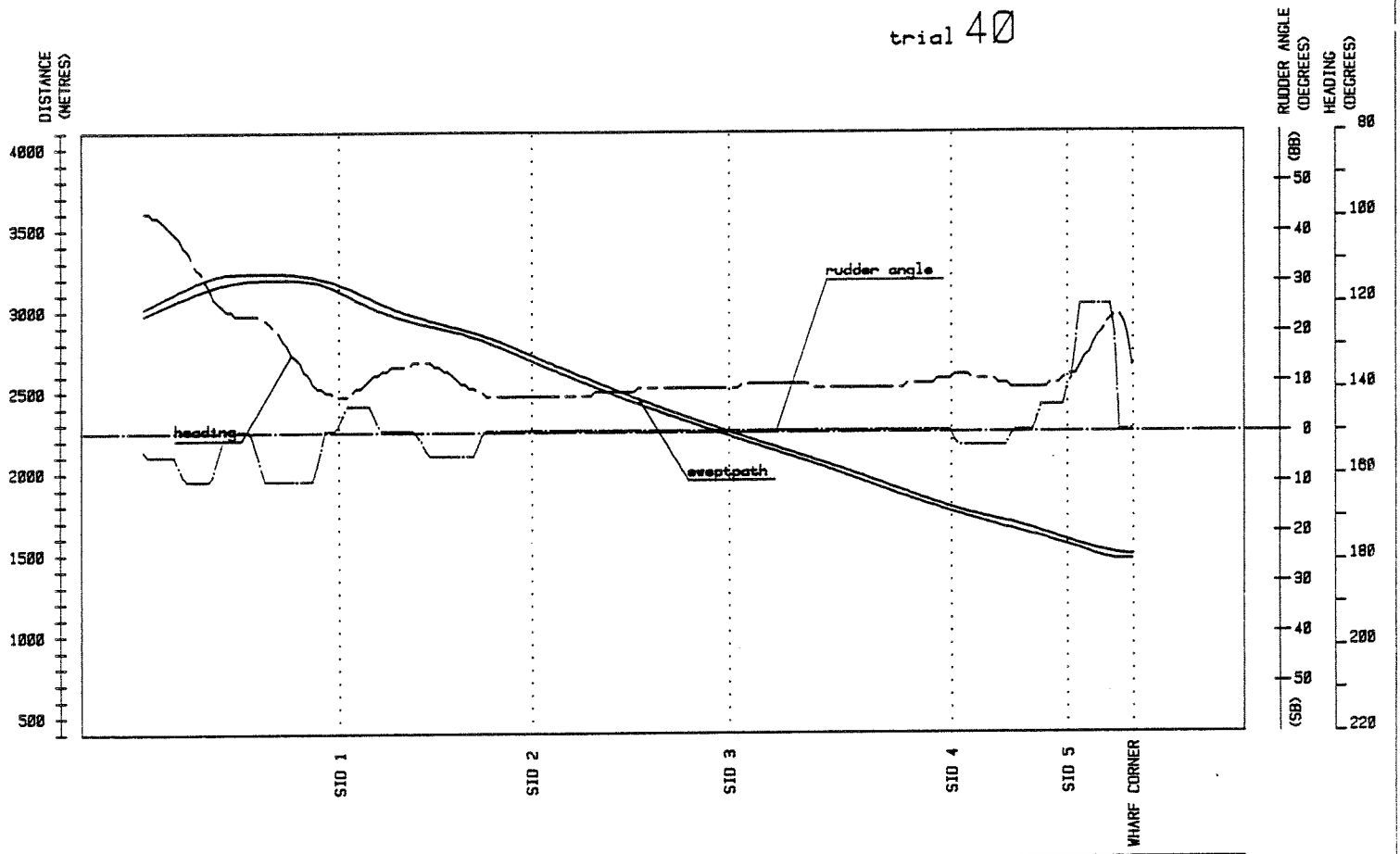
trial 39



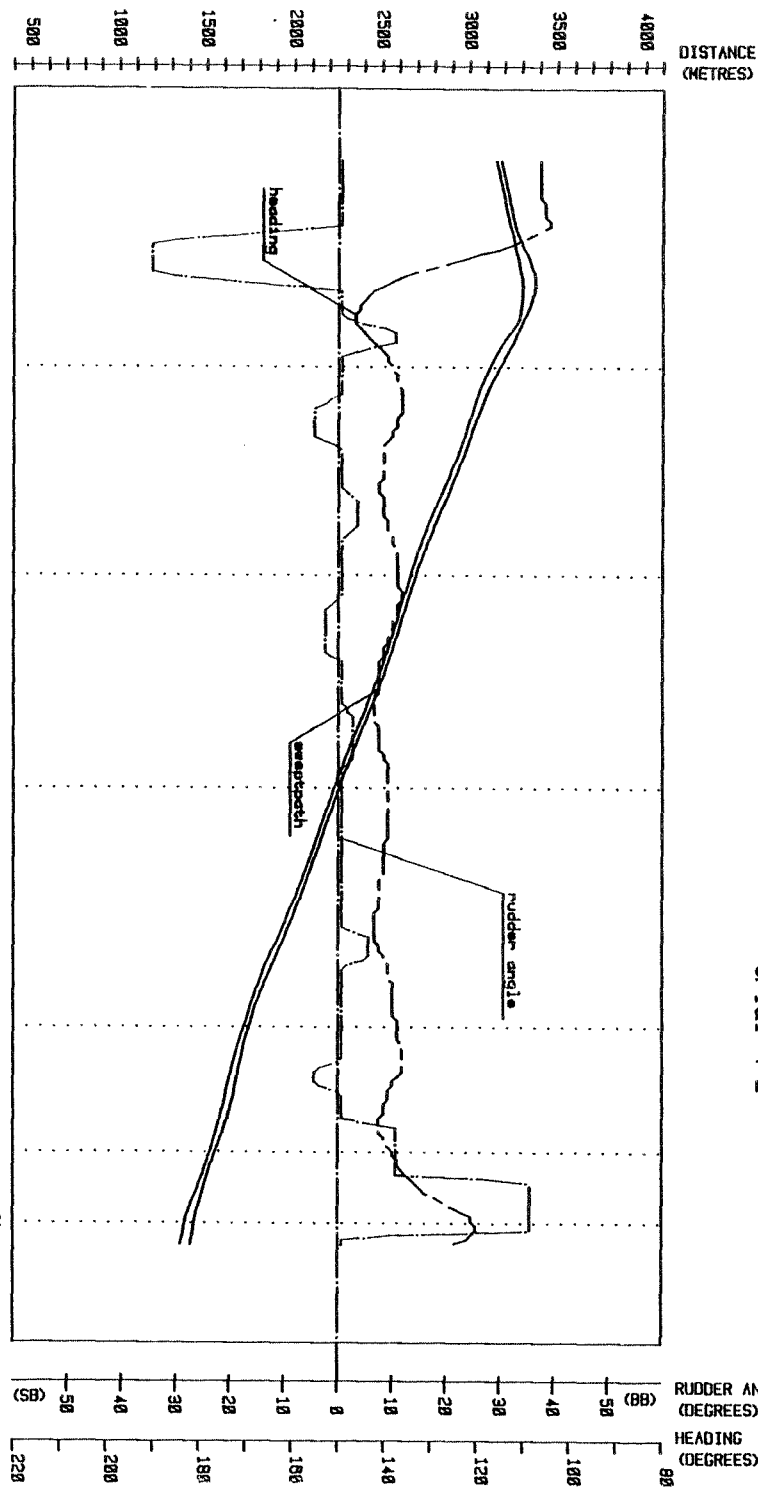


MAX EBB AT SPRING TIDE
 ship: 45.000 dwt channel depth: 12m
 winddirection: 45 degrees.
 windspeed : 10 knots.

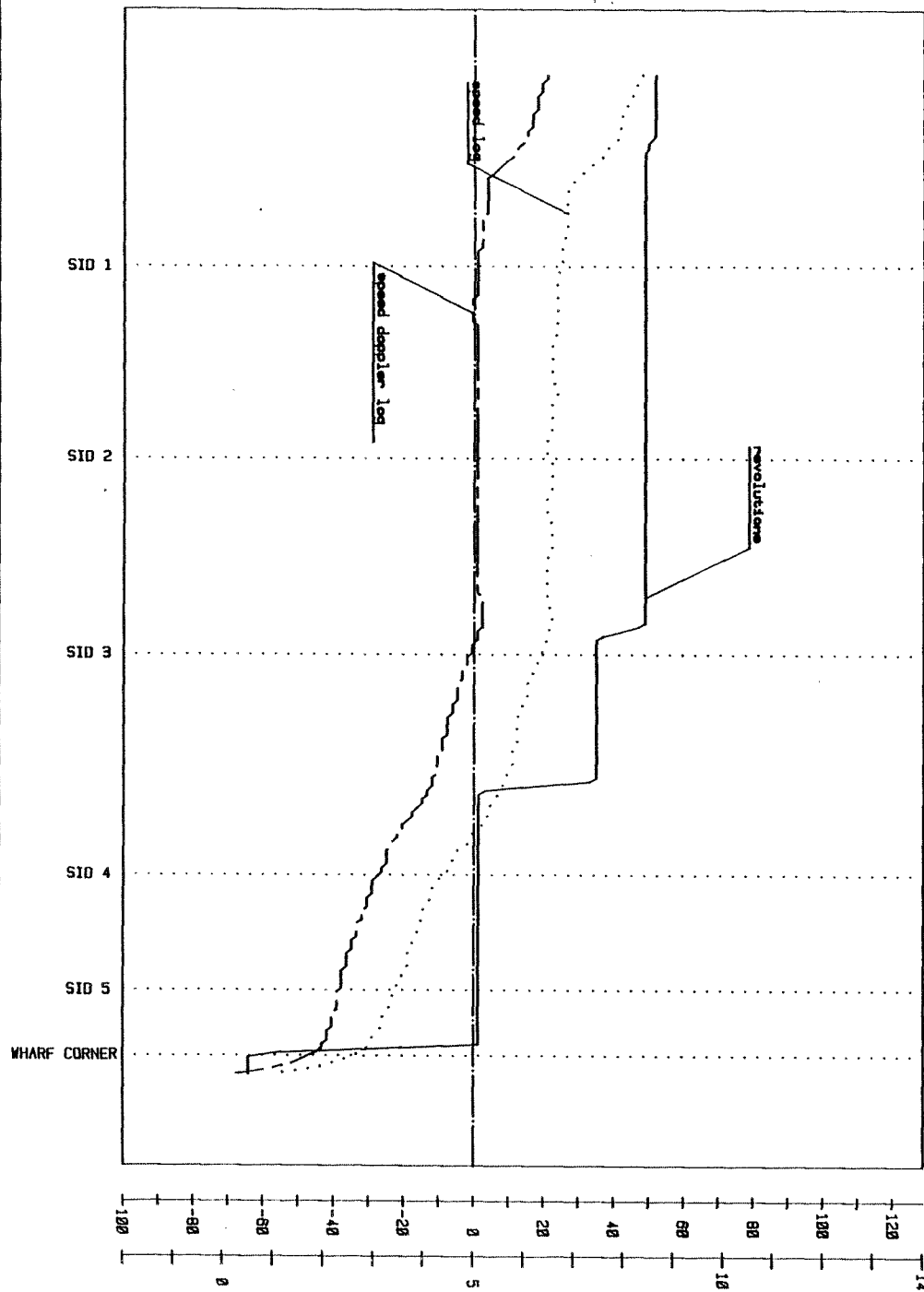
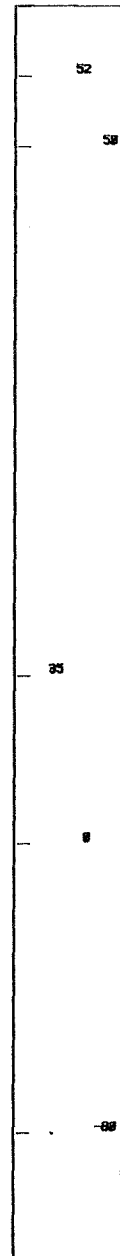
trial 40

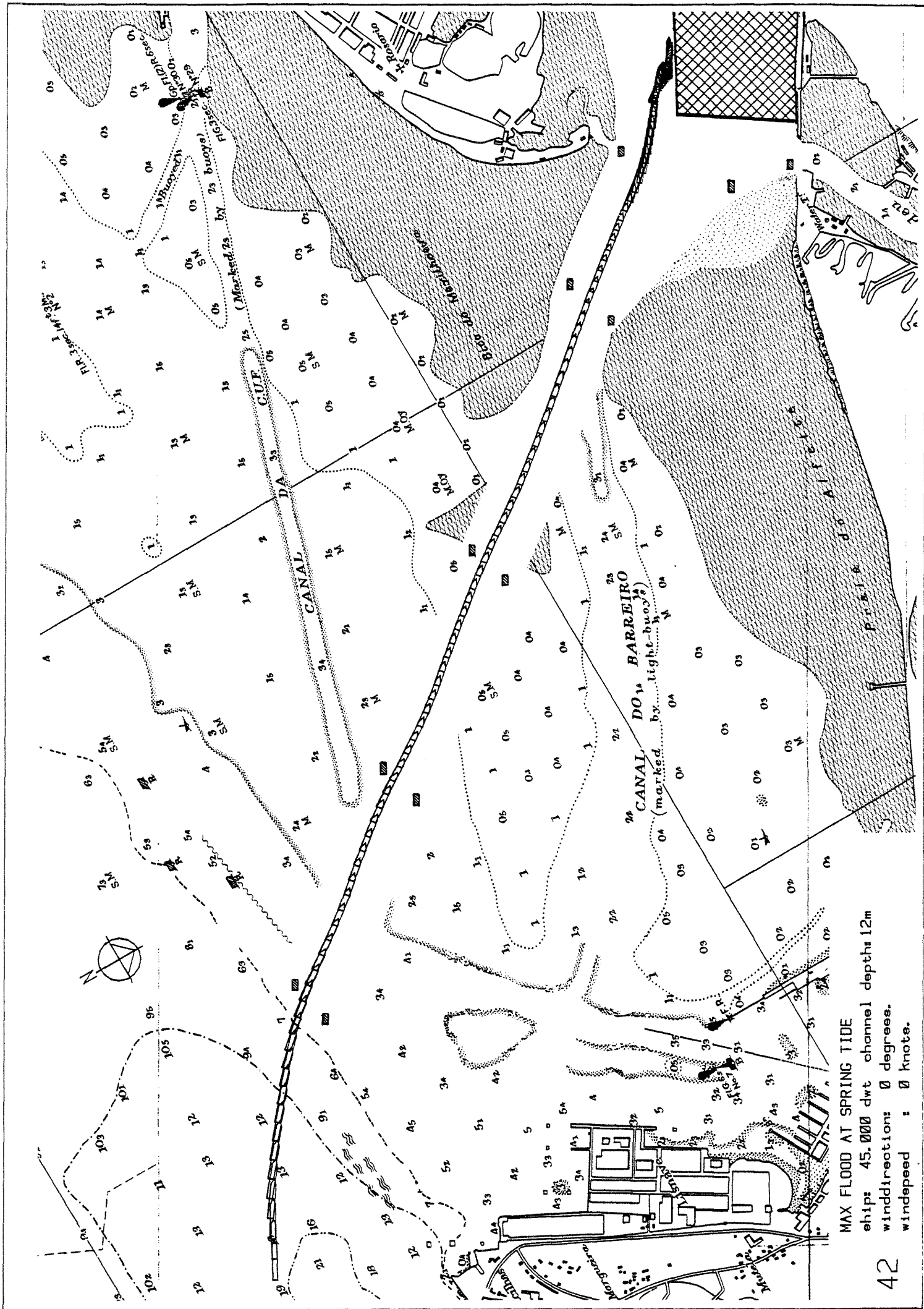


trial 41



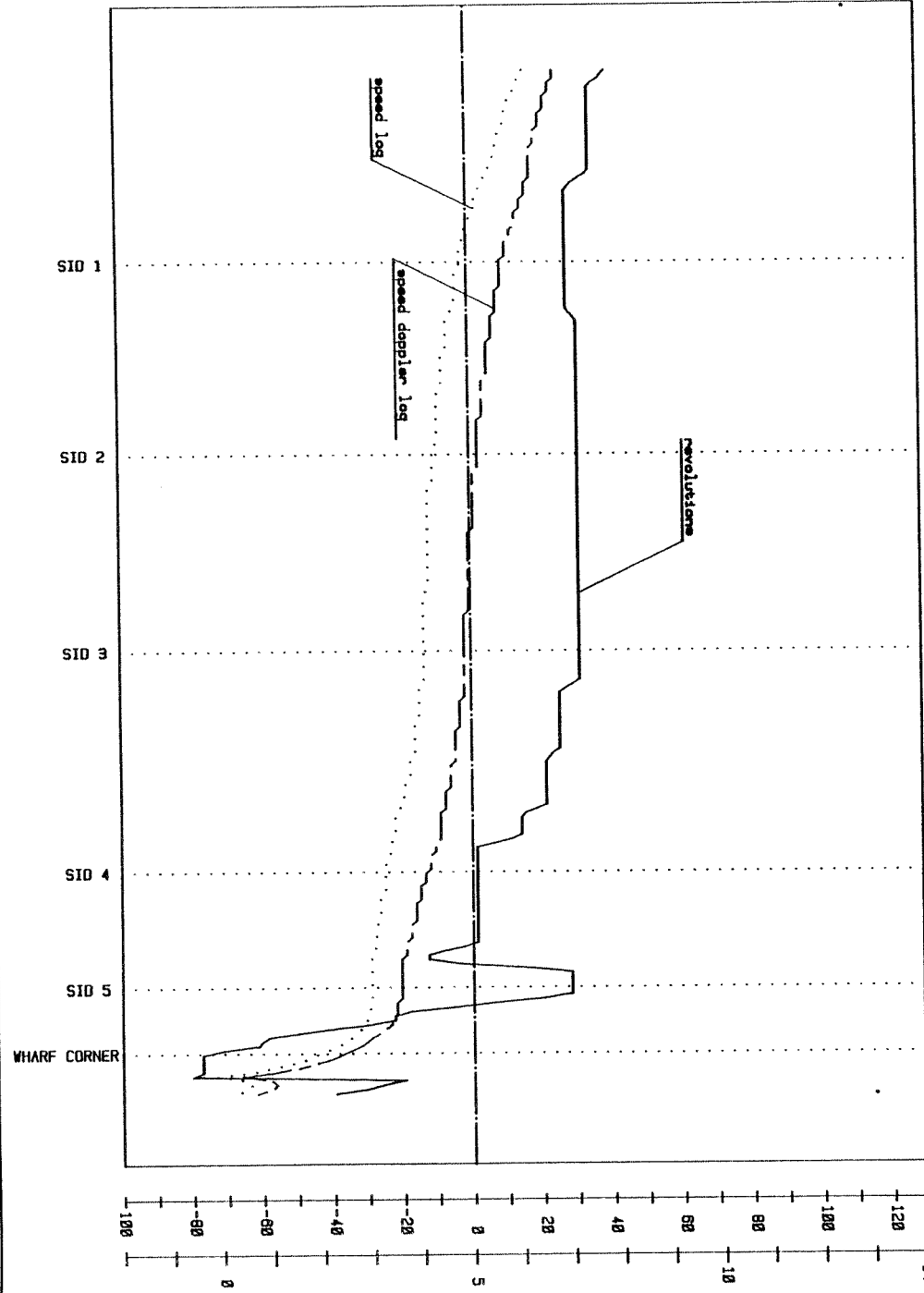
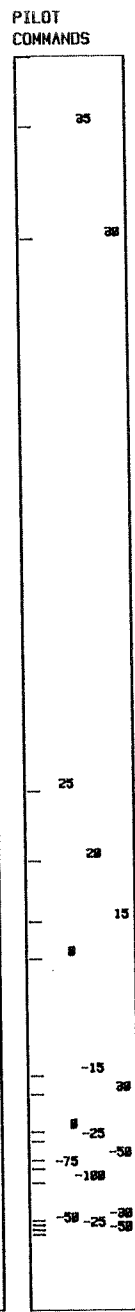
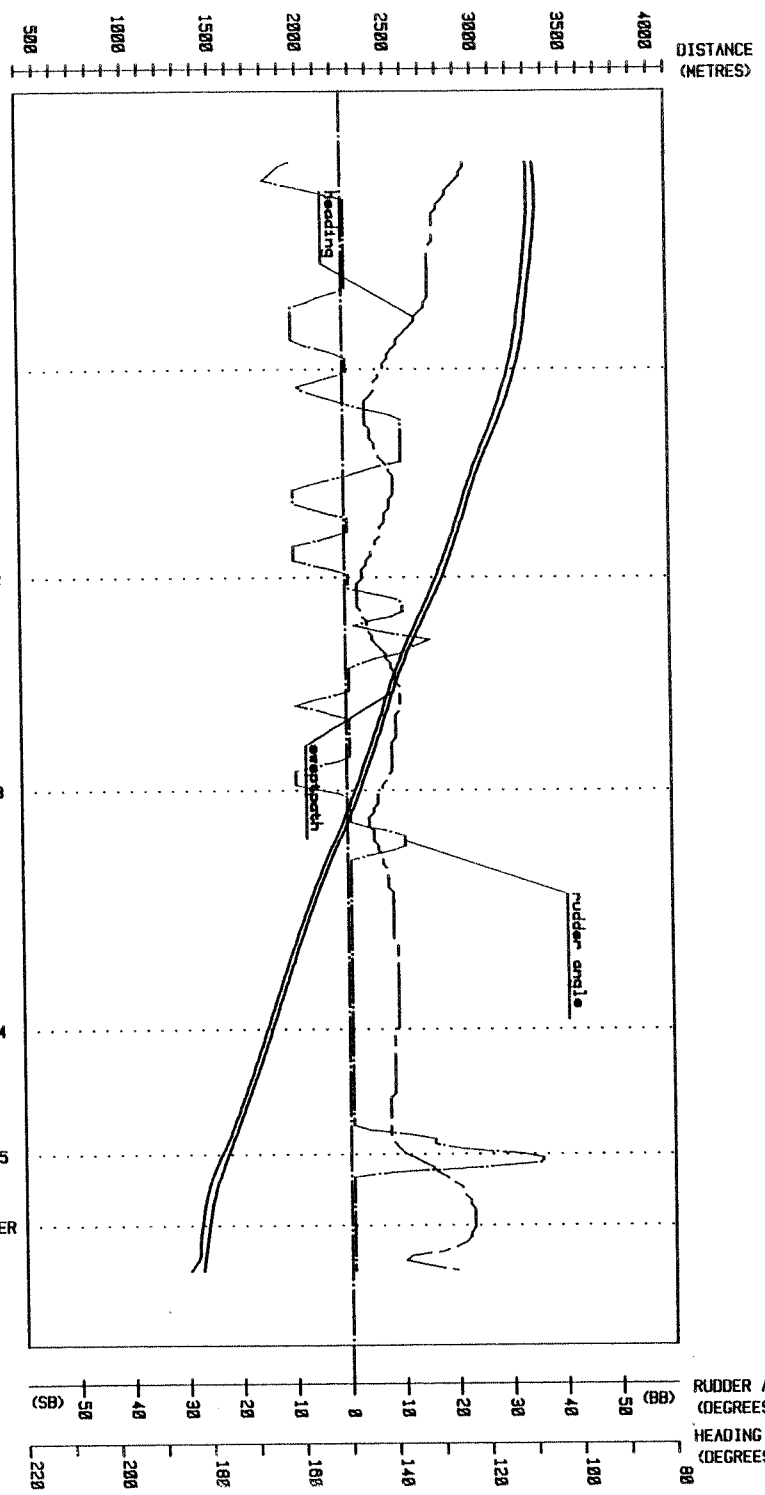
PILOT COMMANDS

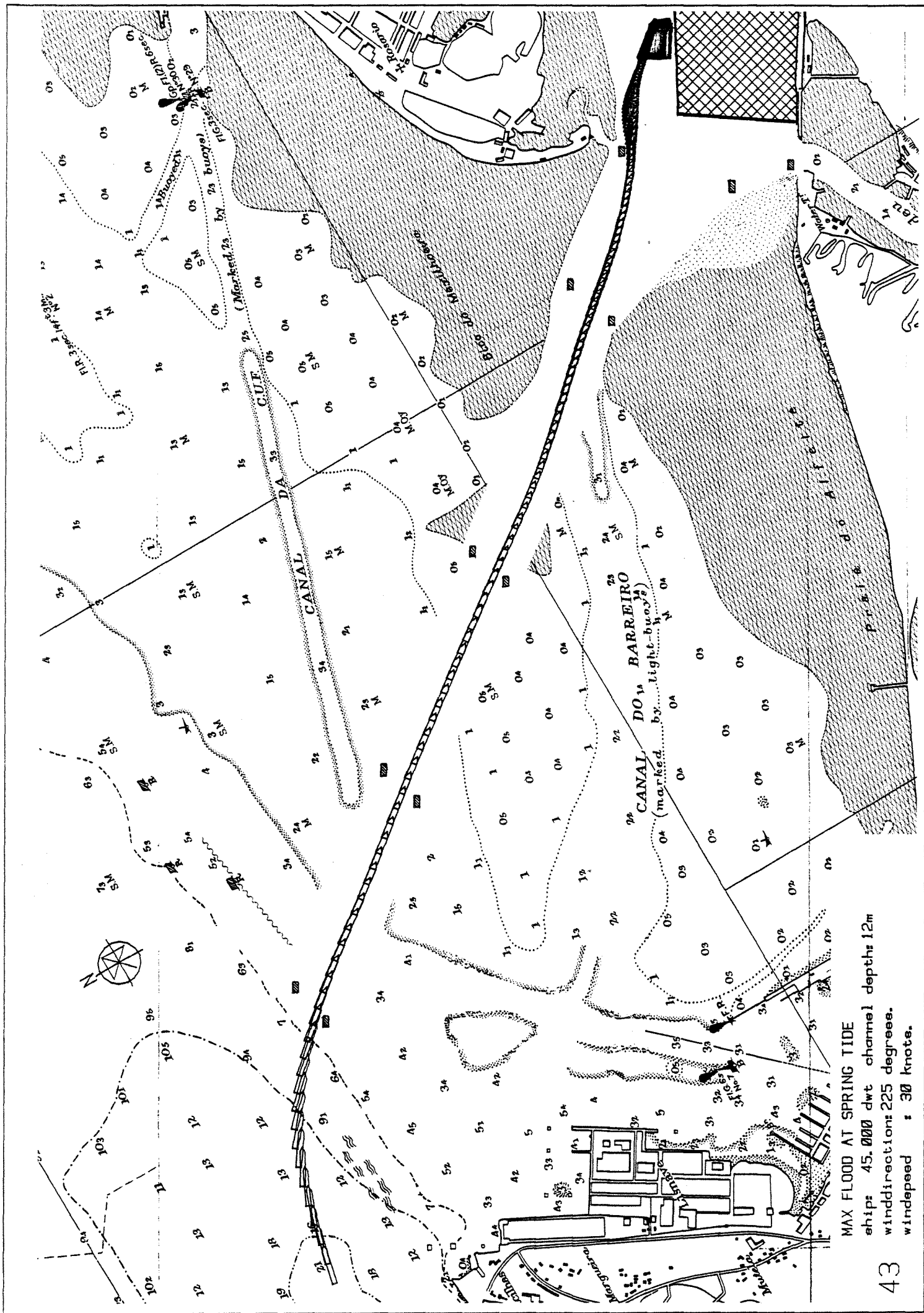




MAX FLOOD AT SPRING TIDE
 ship: 45.000 dwt channel depth: 12m
 winddirection: 0 degrees.
 windspeed : 0 knots.

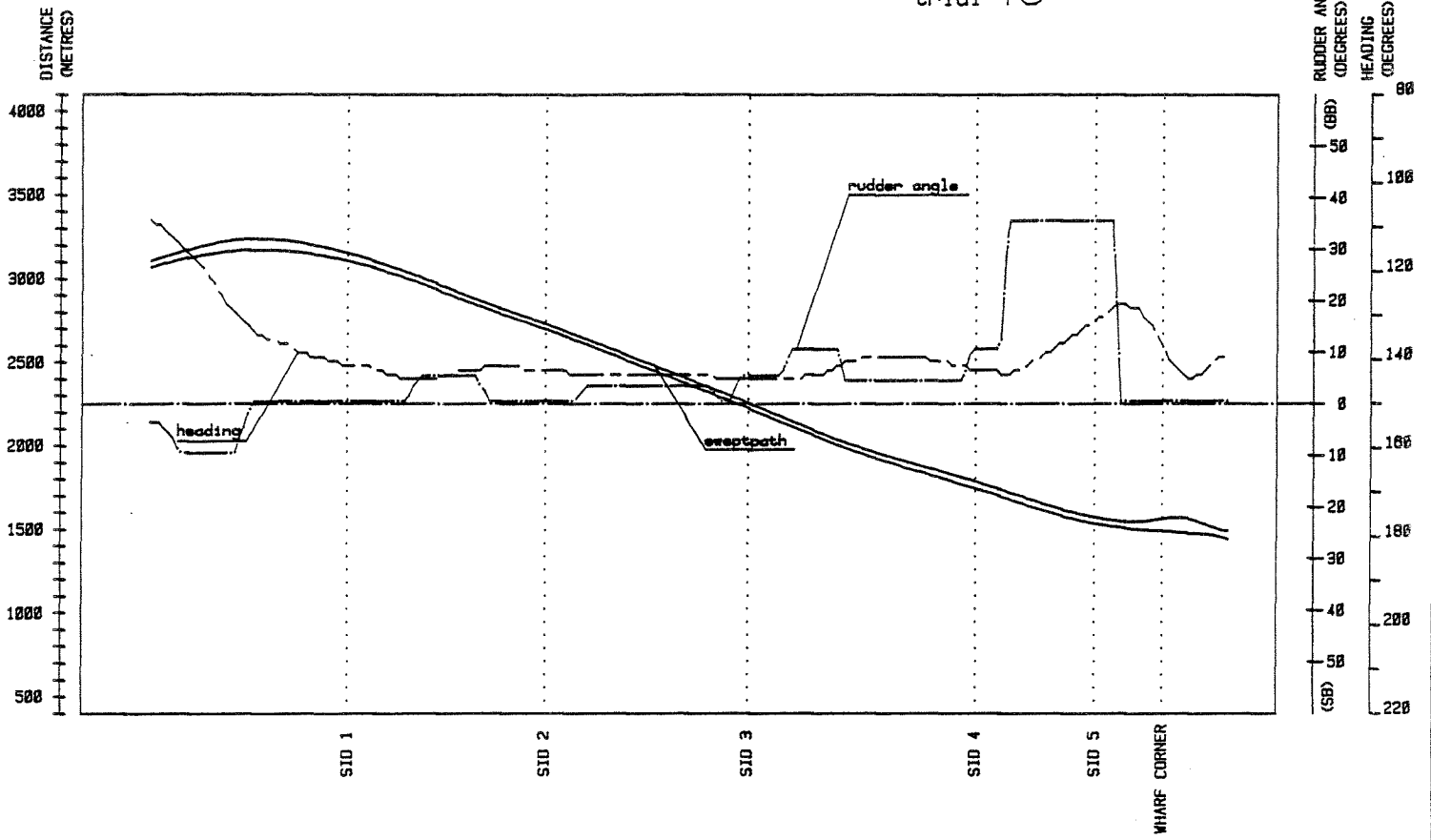
trial 42



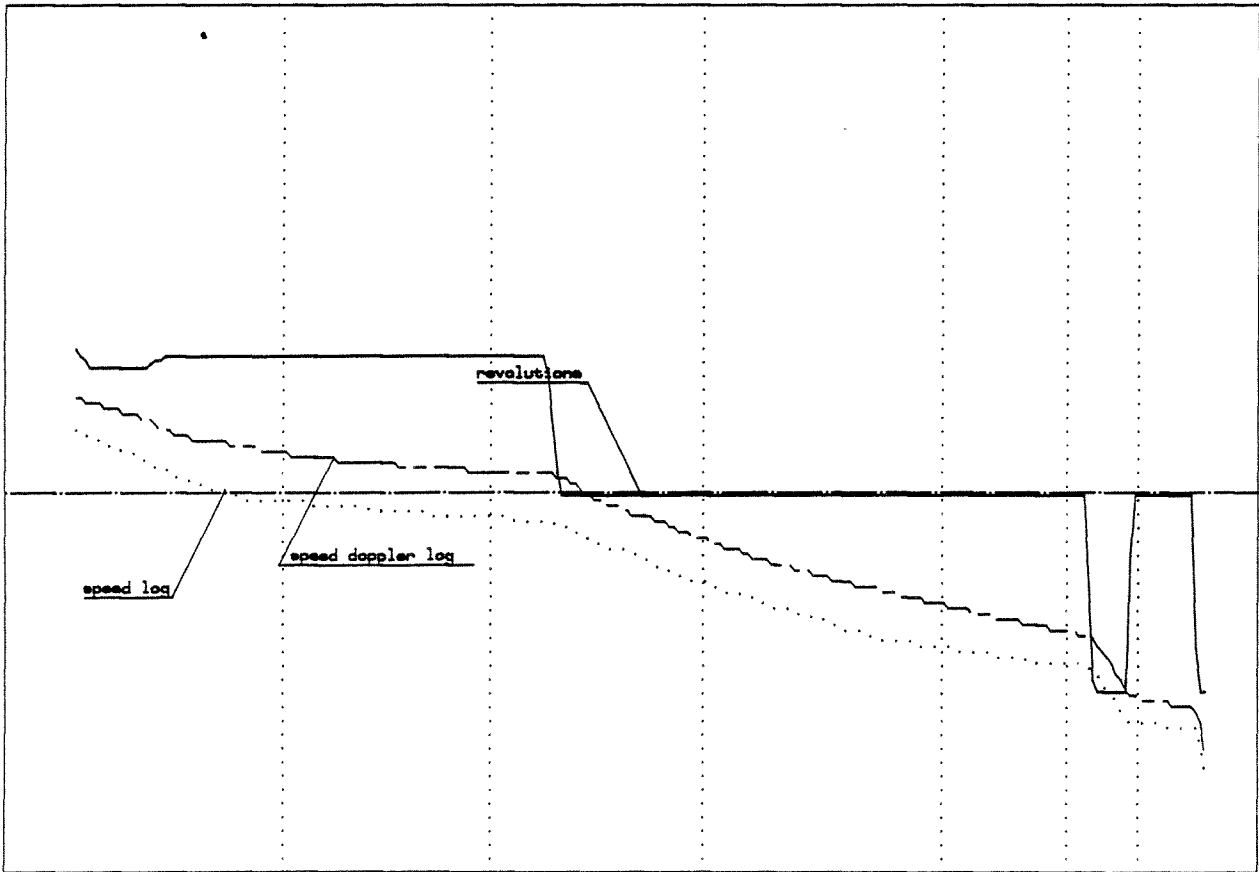


MAX FLOOD AT SPRING TIDE
 ship: 45,000 dwt channel depth: 12m
 winddirection: 225 degrees.
 windspeed : 30 knots.

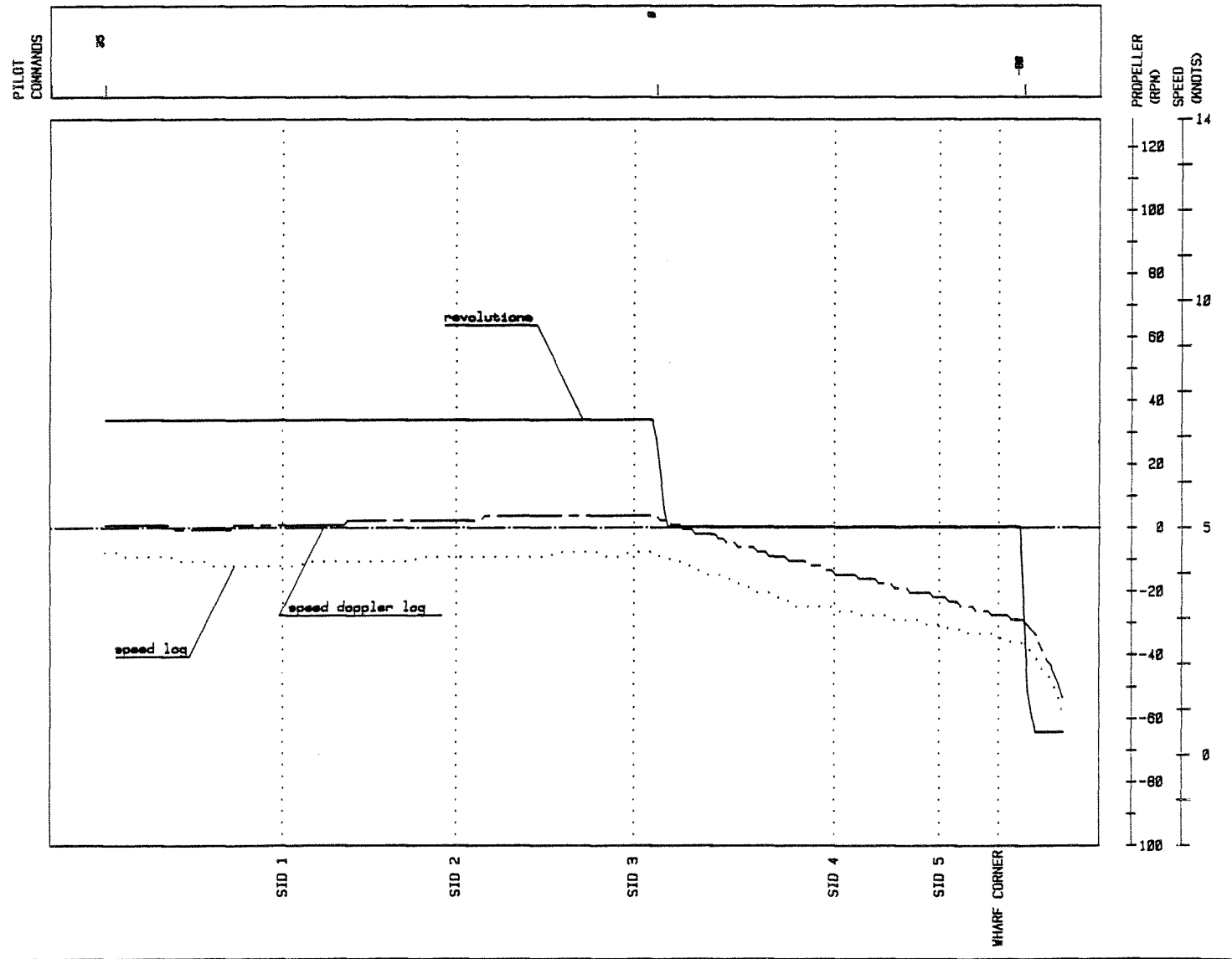
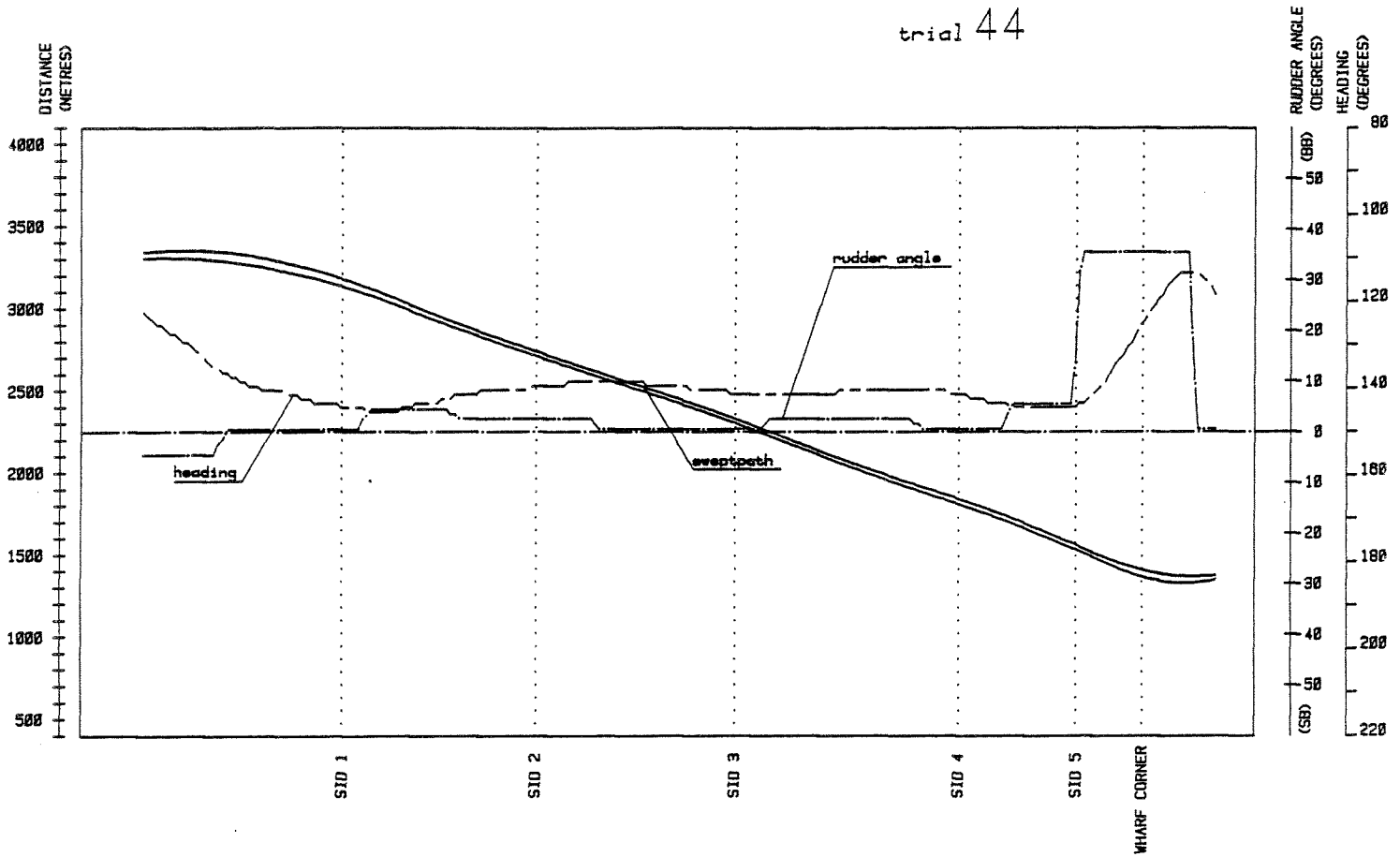
trial 43

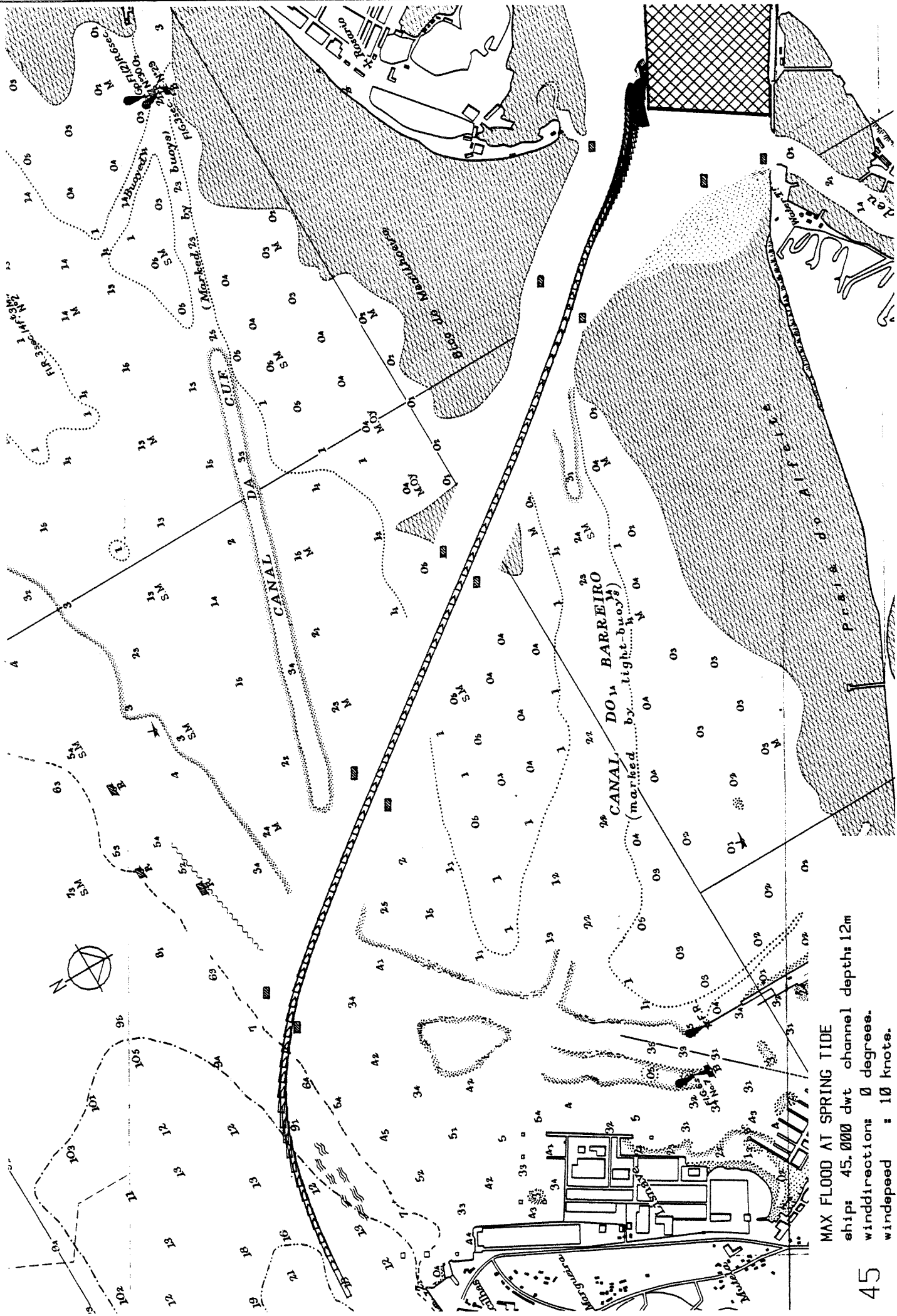


PILOT
COMMANDS



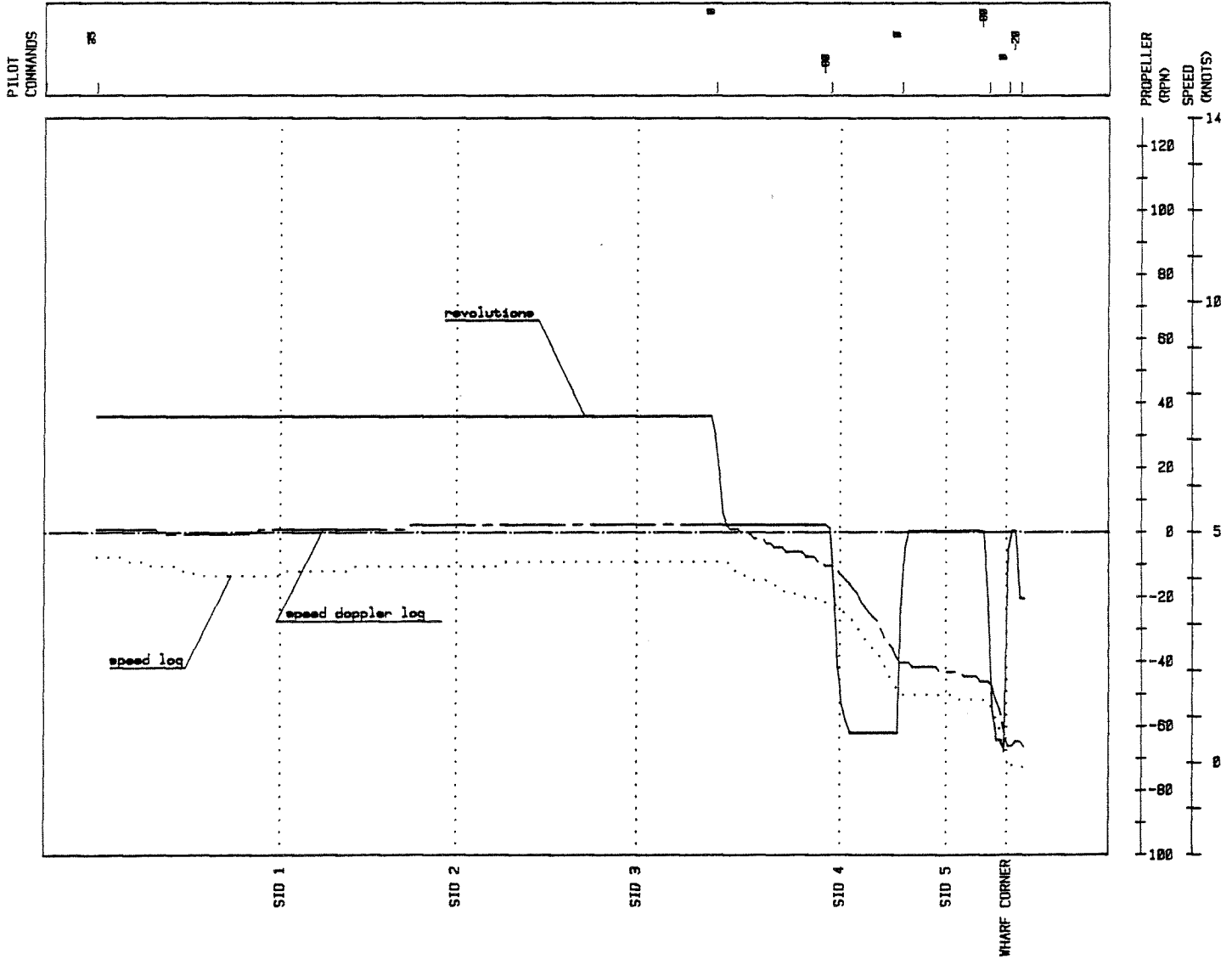
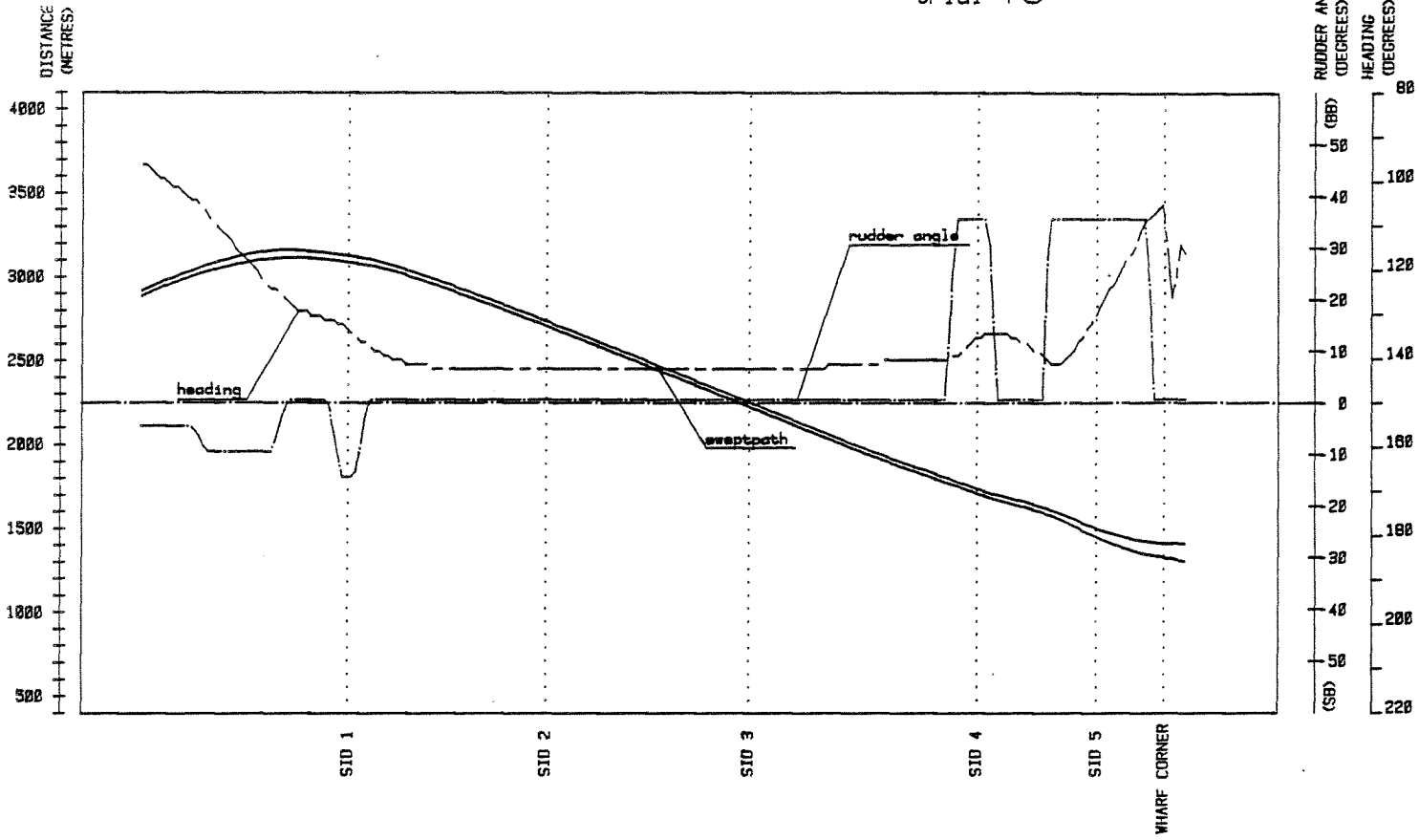
trial 44



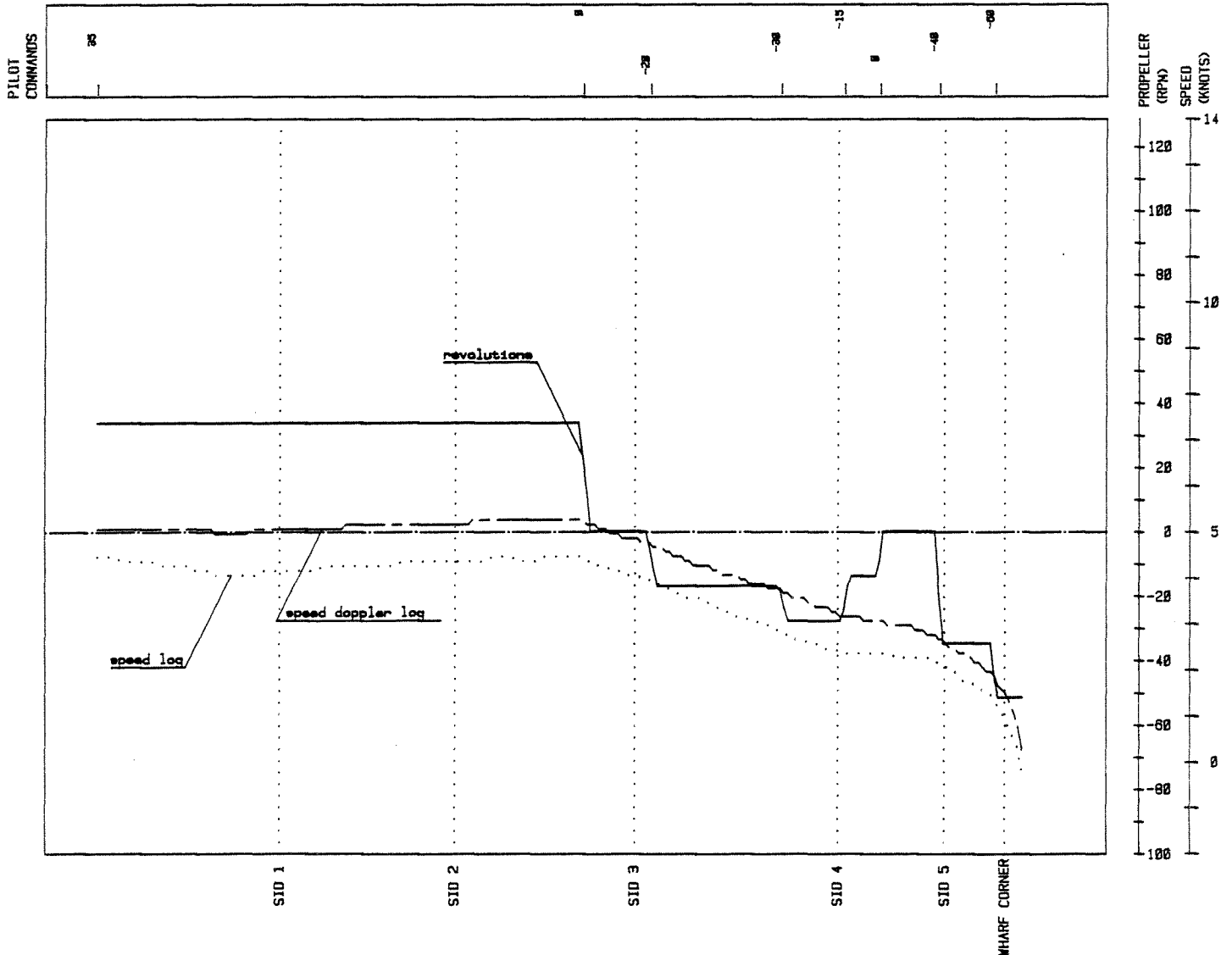
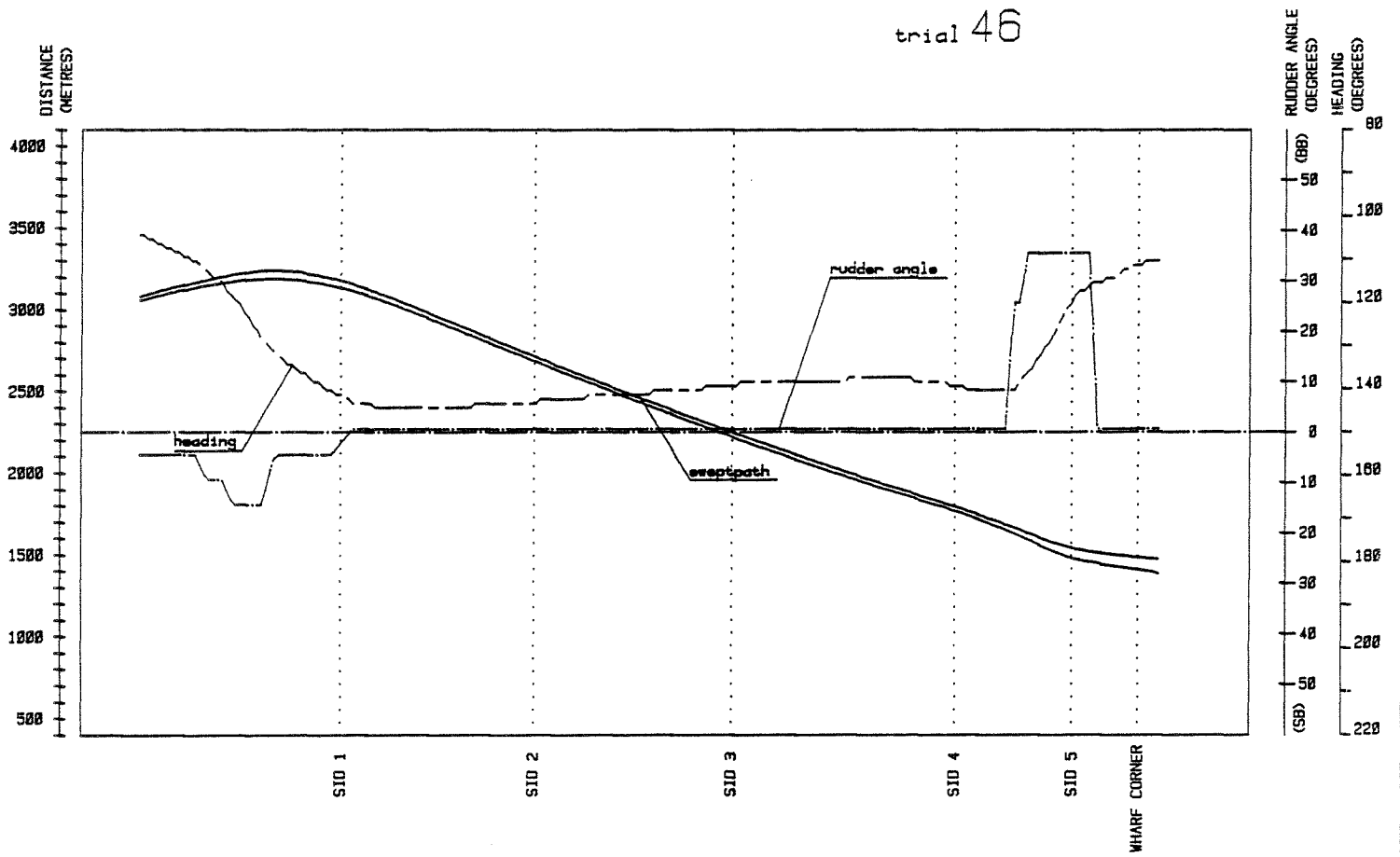


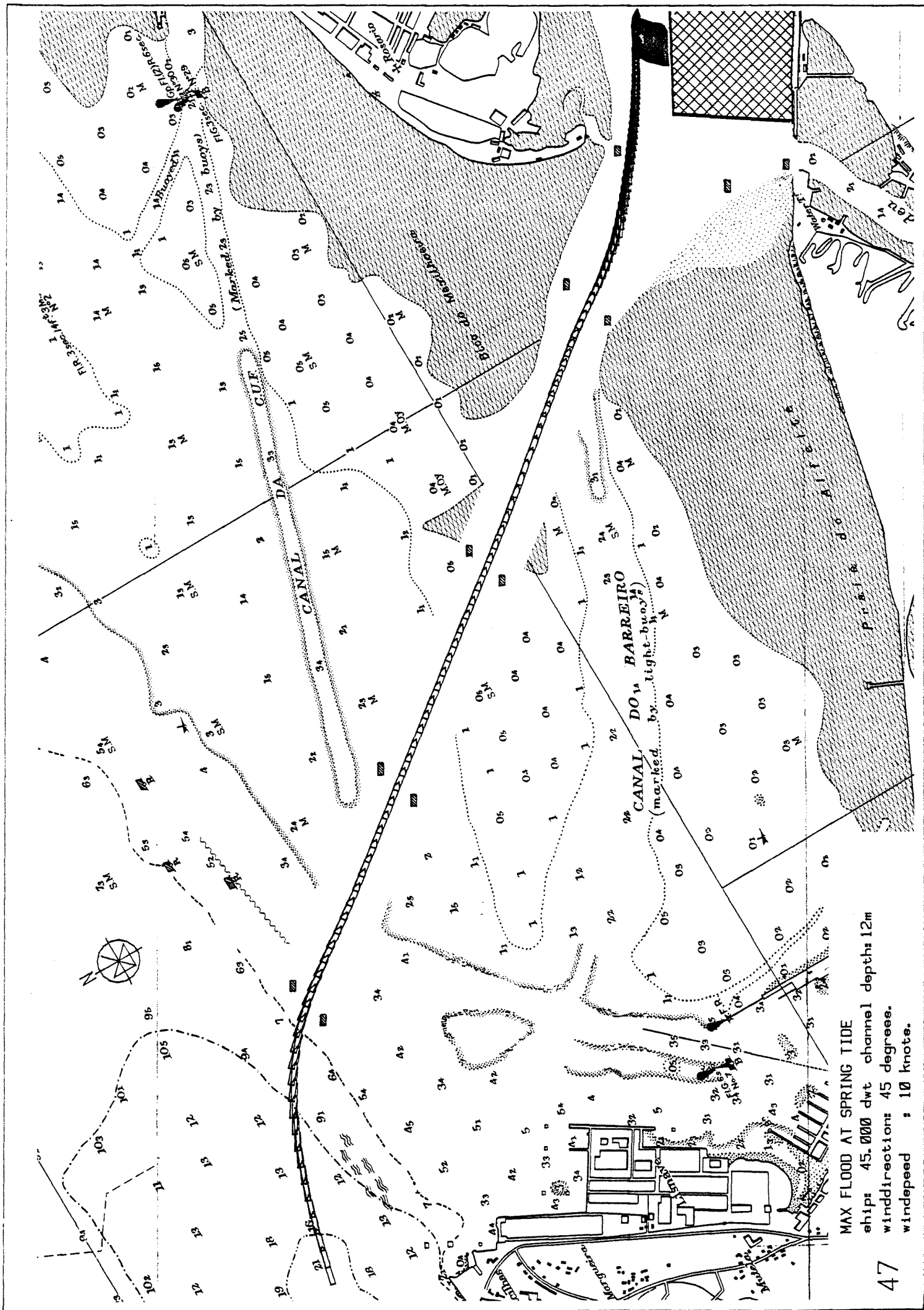
MAX FLOOD AT SPRING TIDE
 ship: 45.000 dwt channel depths: 12m
 winddirection: 0 degrees.
 windpeed : 10 knots.

trial 45



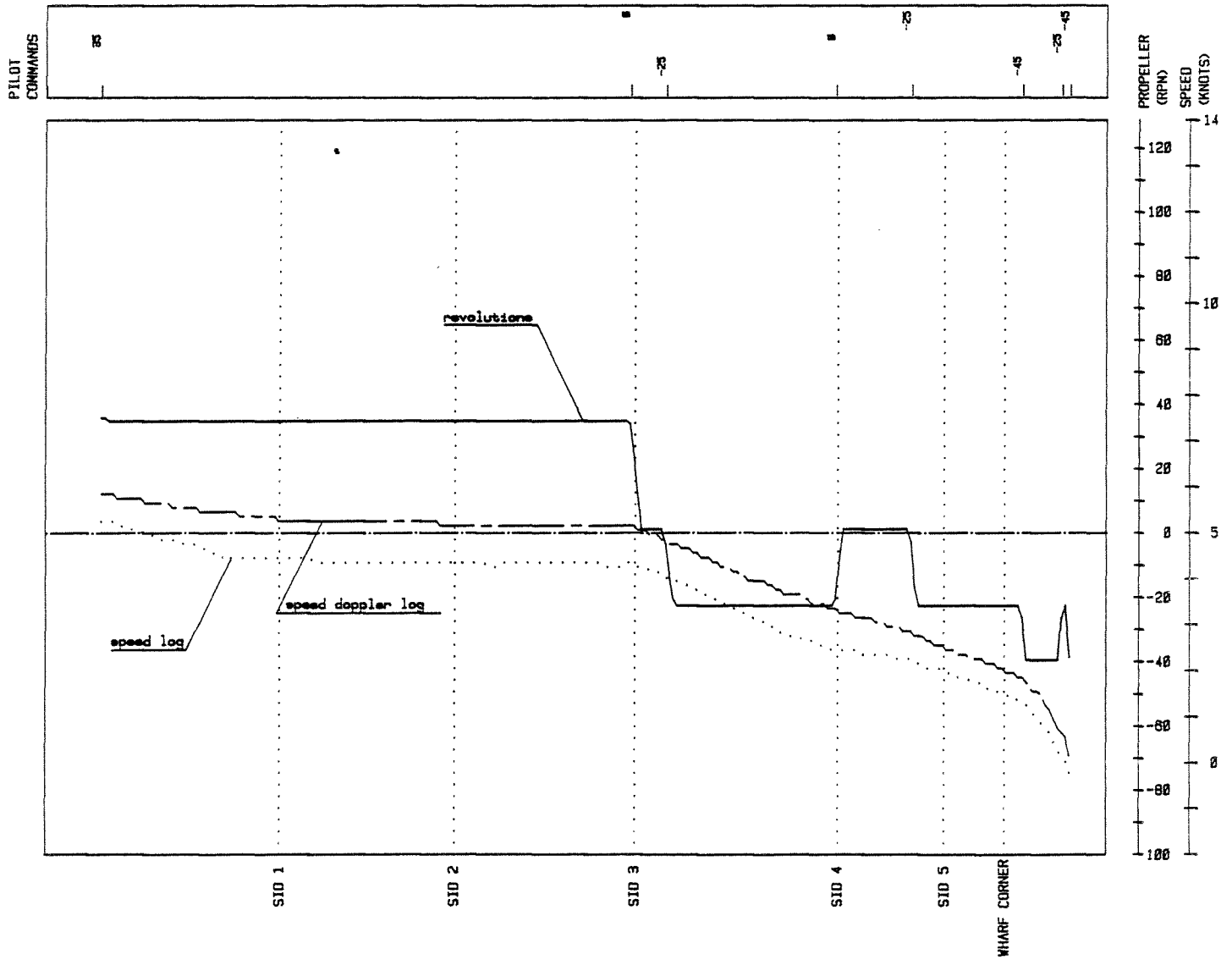
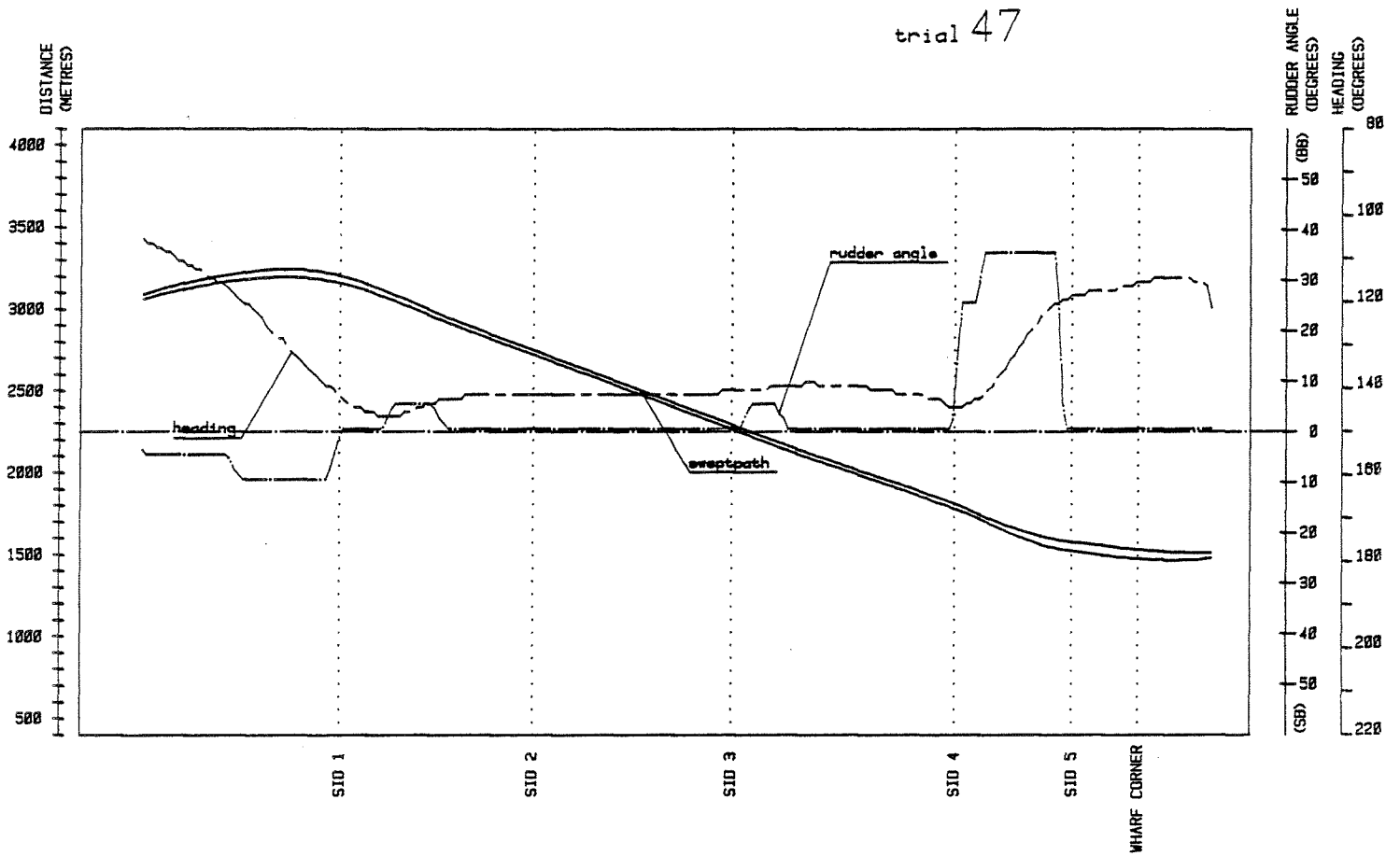
trial 46

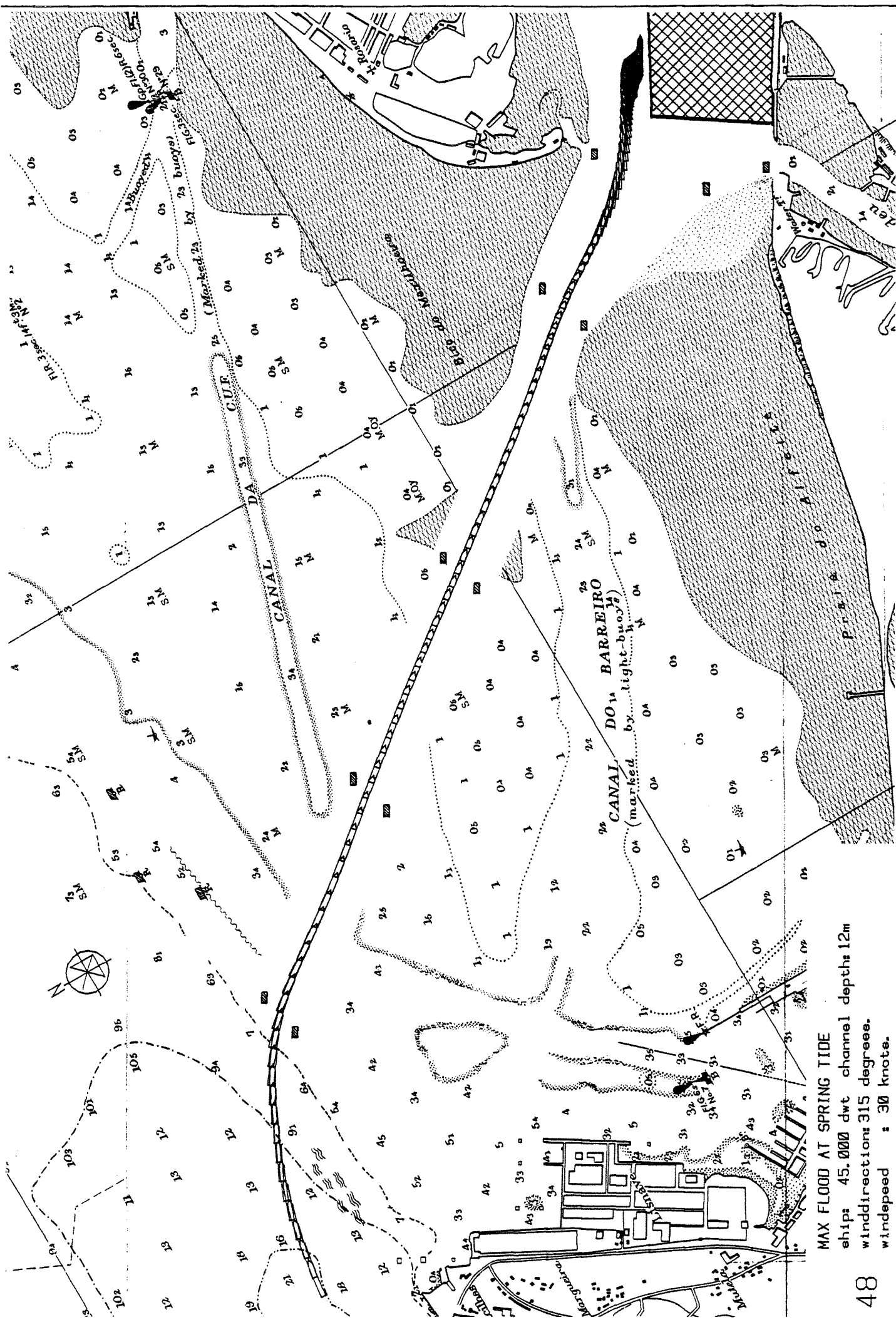




MAX FLOOD AT SPRING TIDE
 ship: 45,000 dwt channel depth: 12m
 winddirection: 45 degrees.
 windspeed : 10 knots.

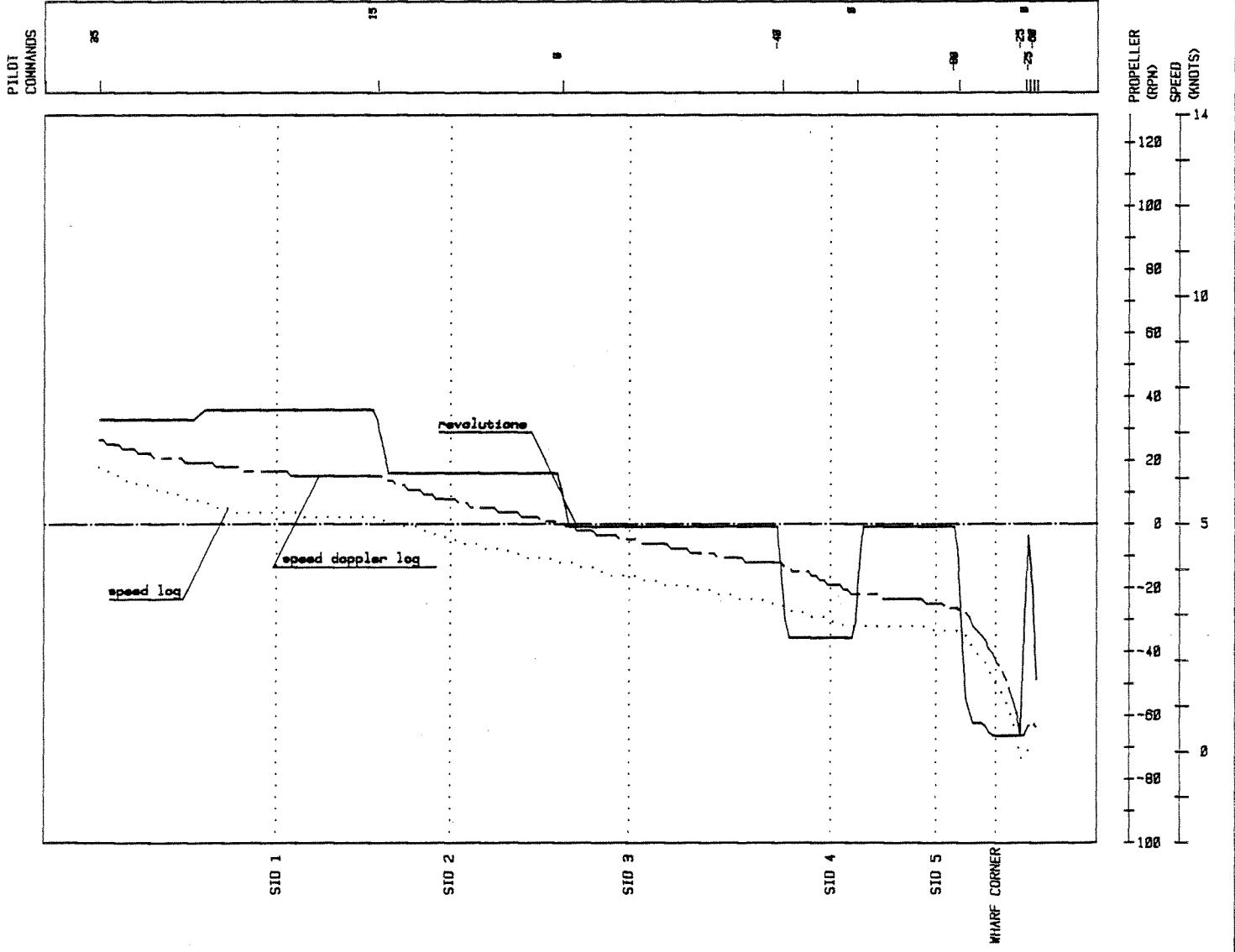
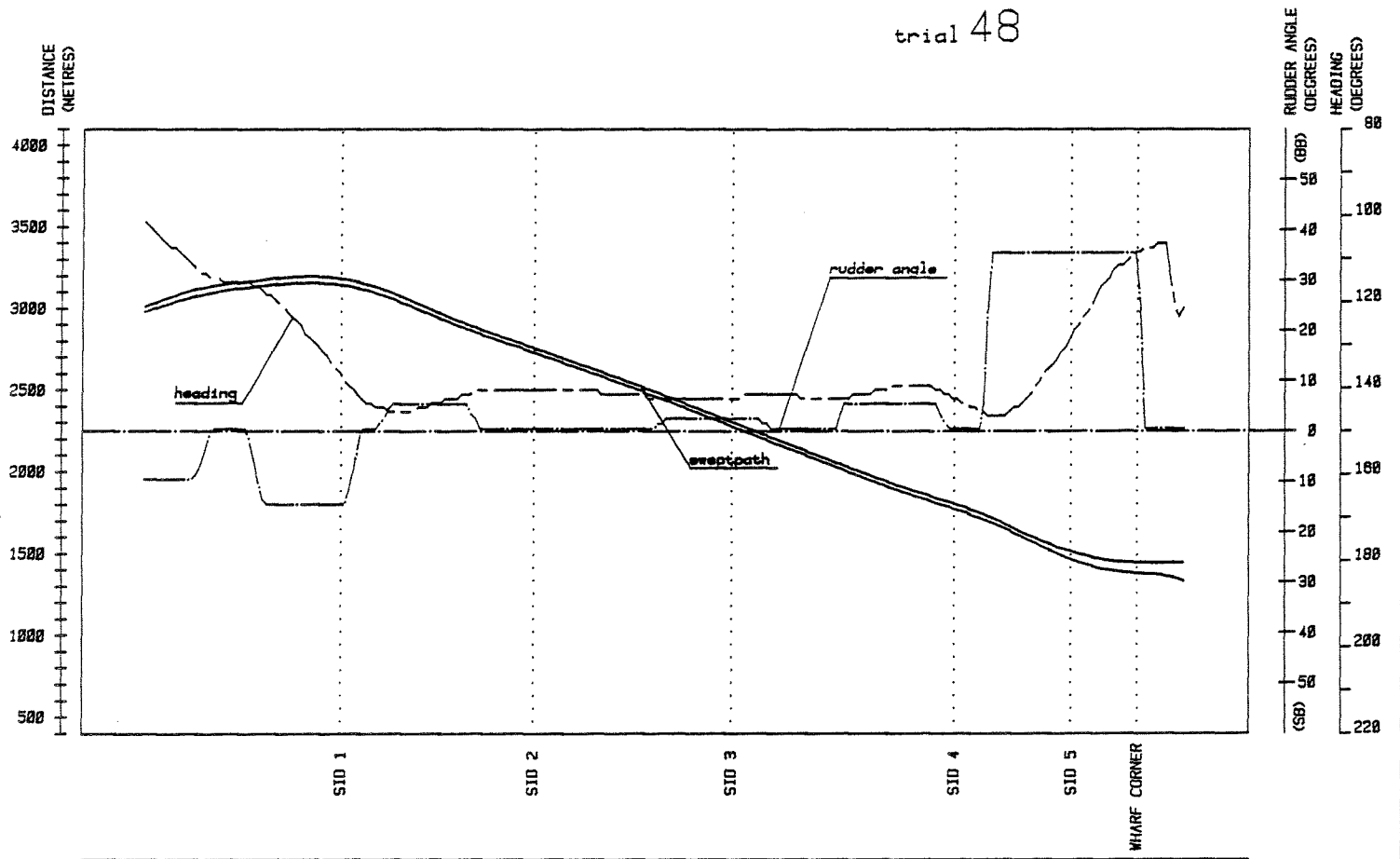
trial 47

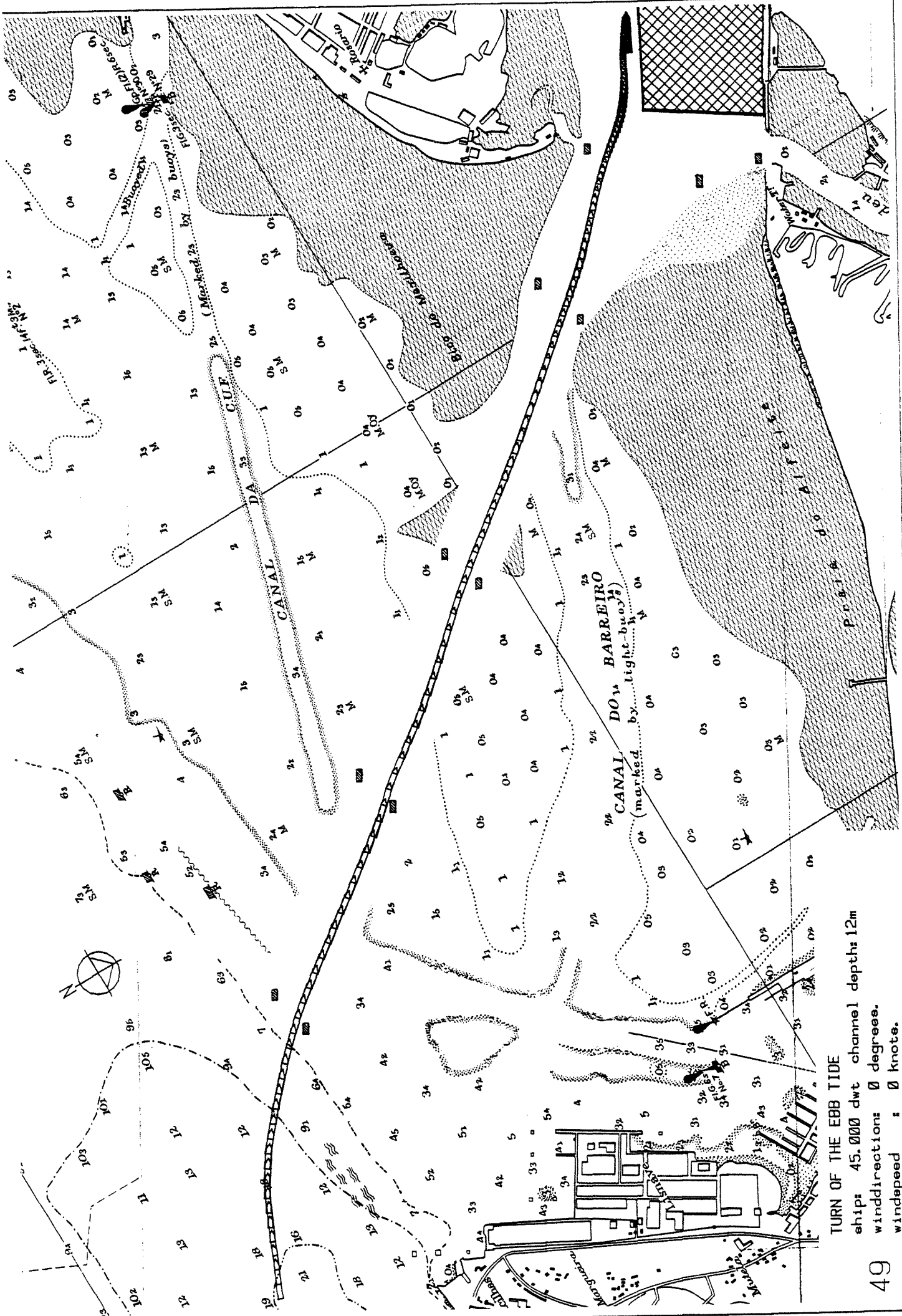




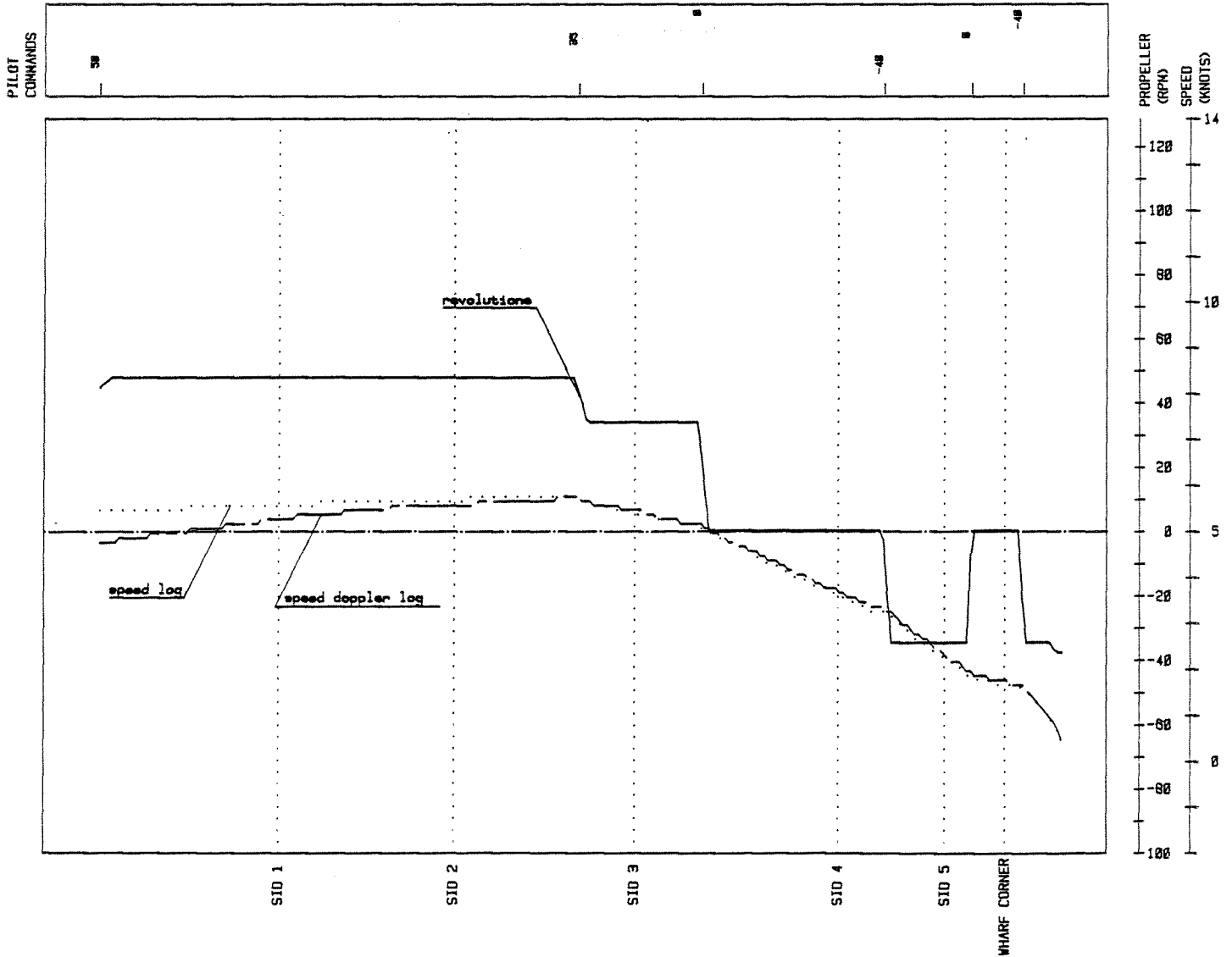
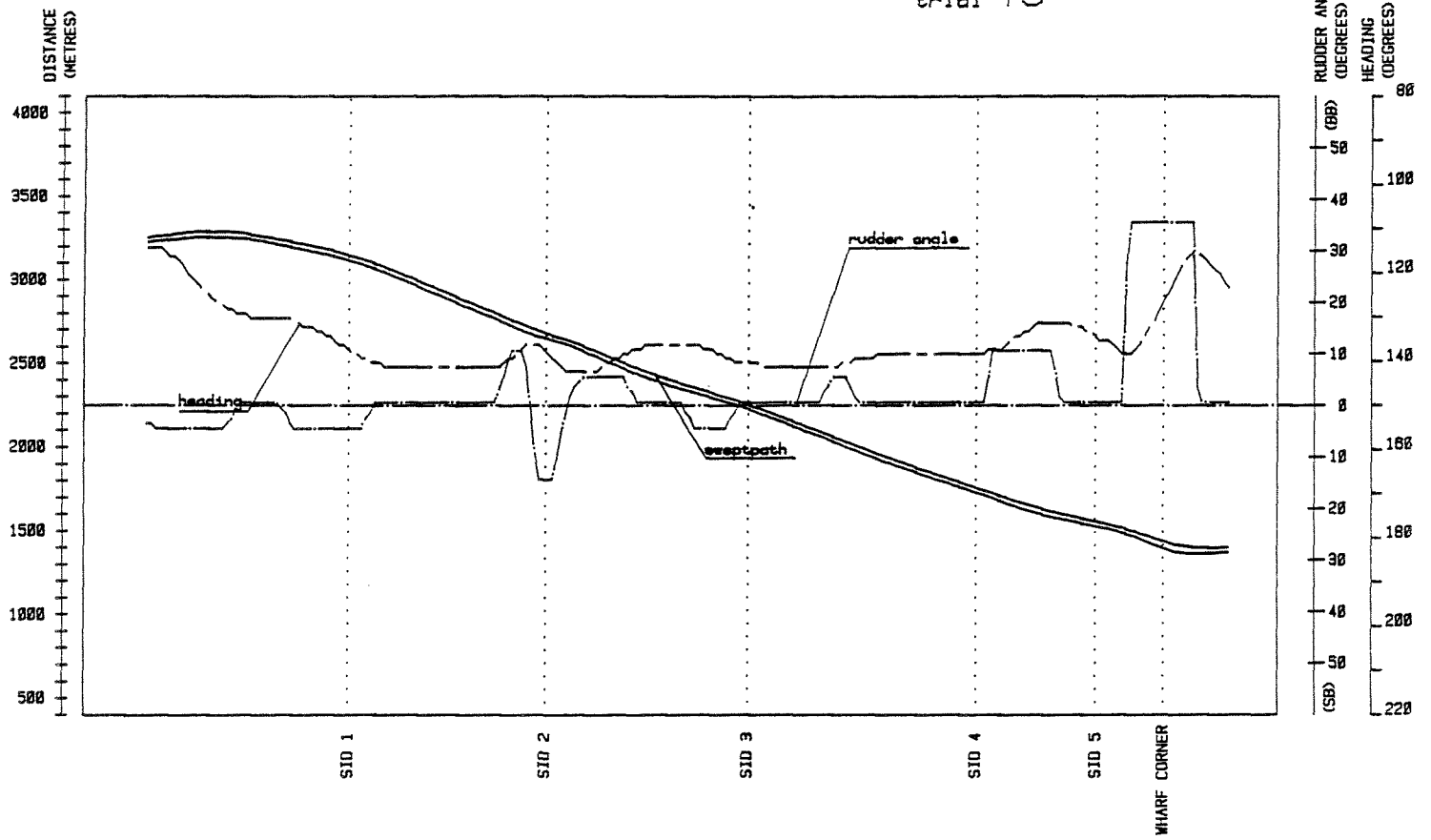
MAX FLOOD AT SPRING TIDE
 ships 45,000 dwt channel depths 12m
 wind direction 315 degrees.
 wind speed 30 knots.

trial 48

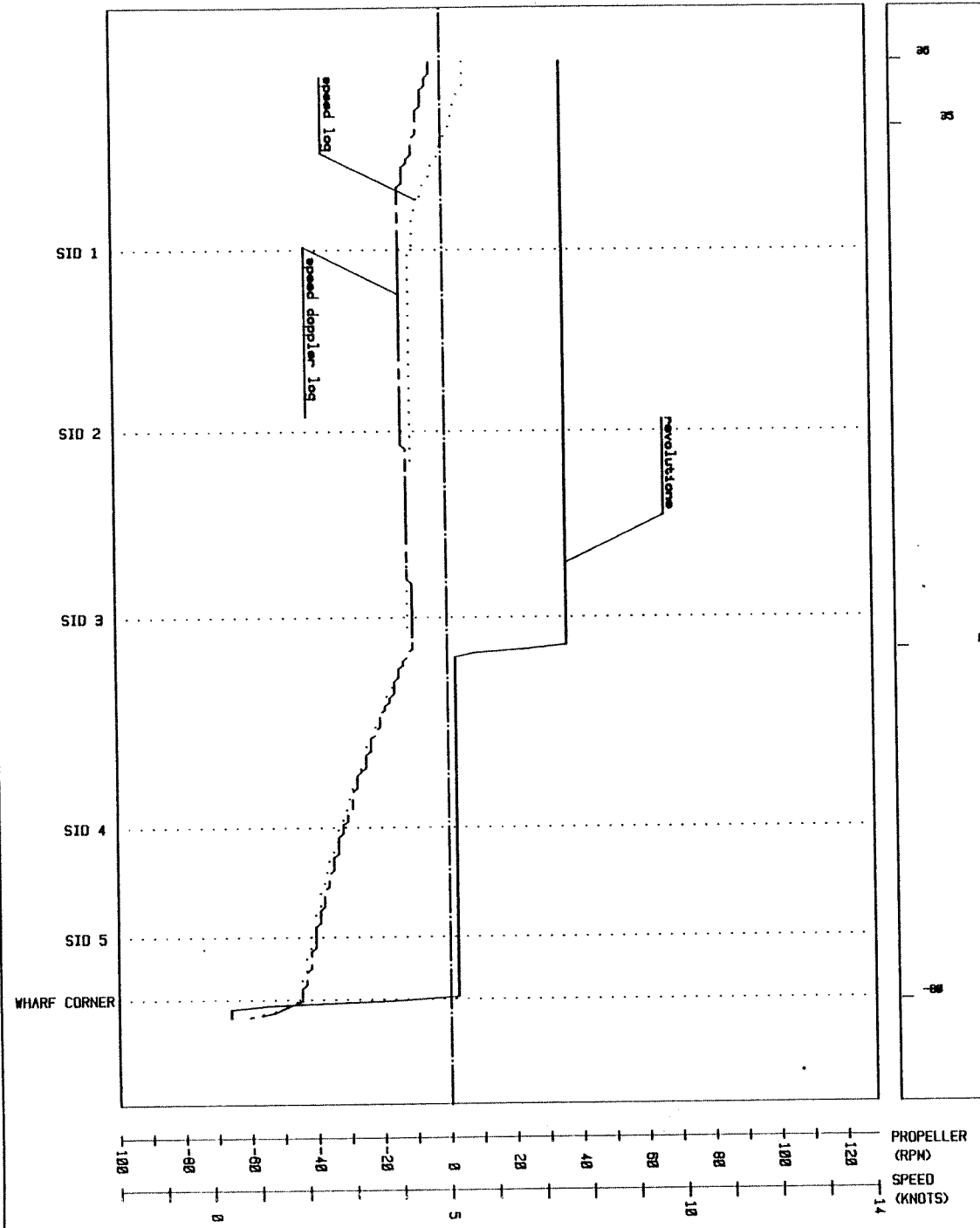
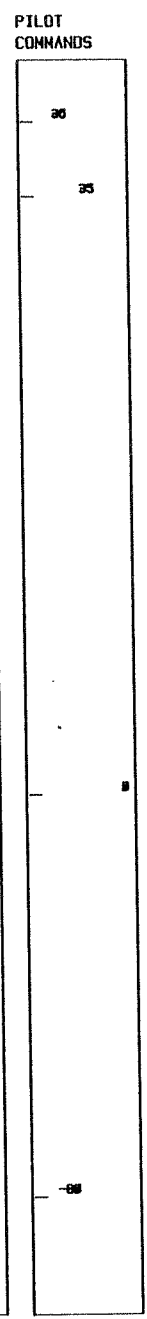
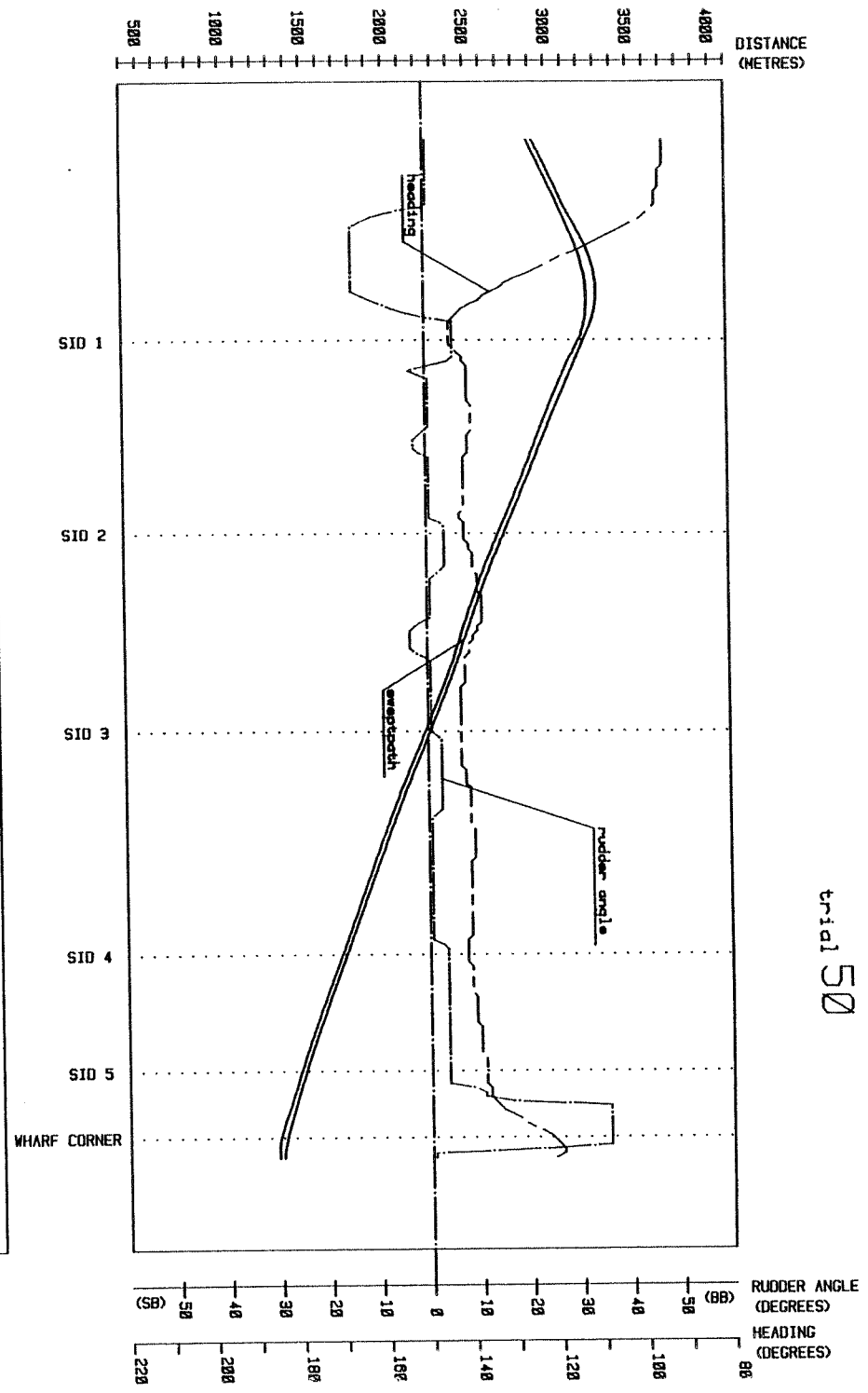




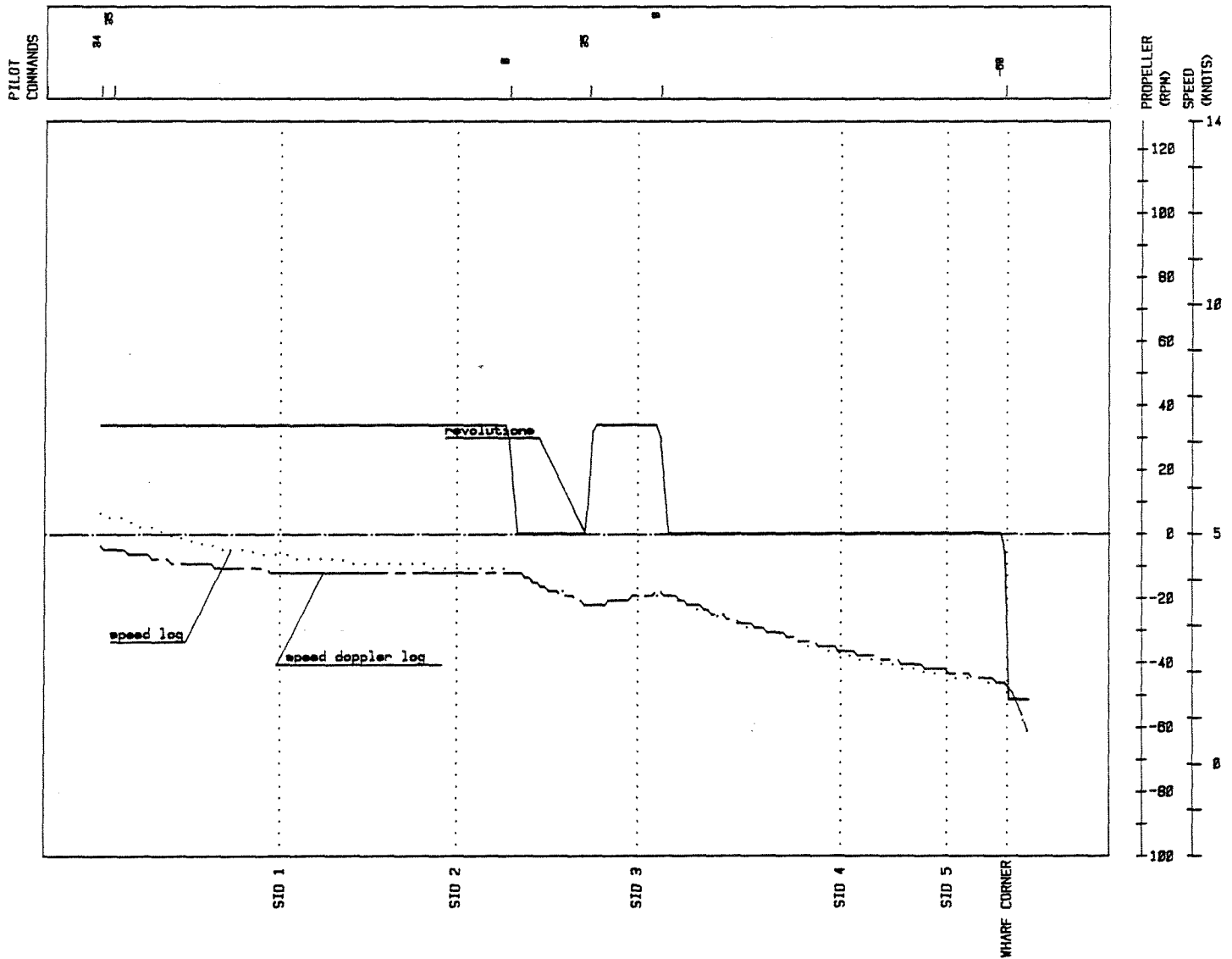
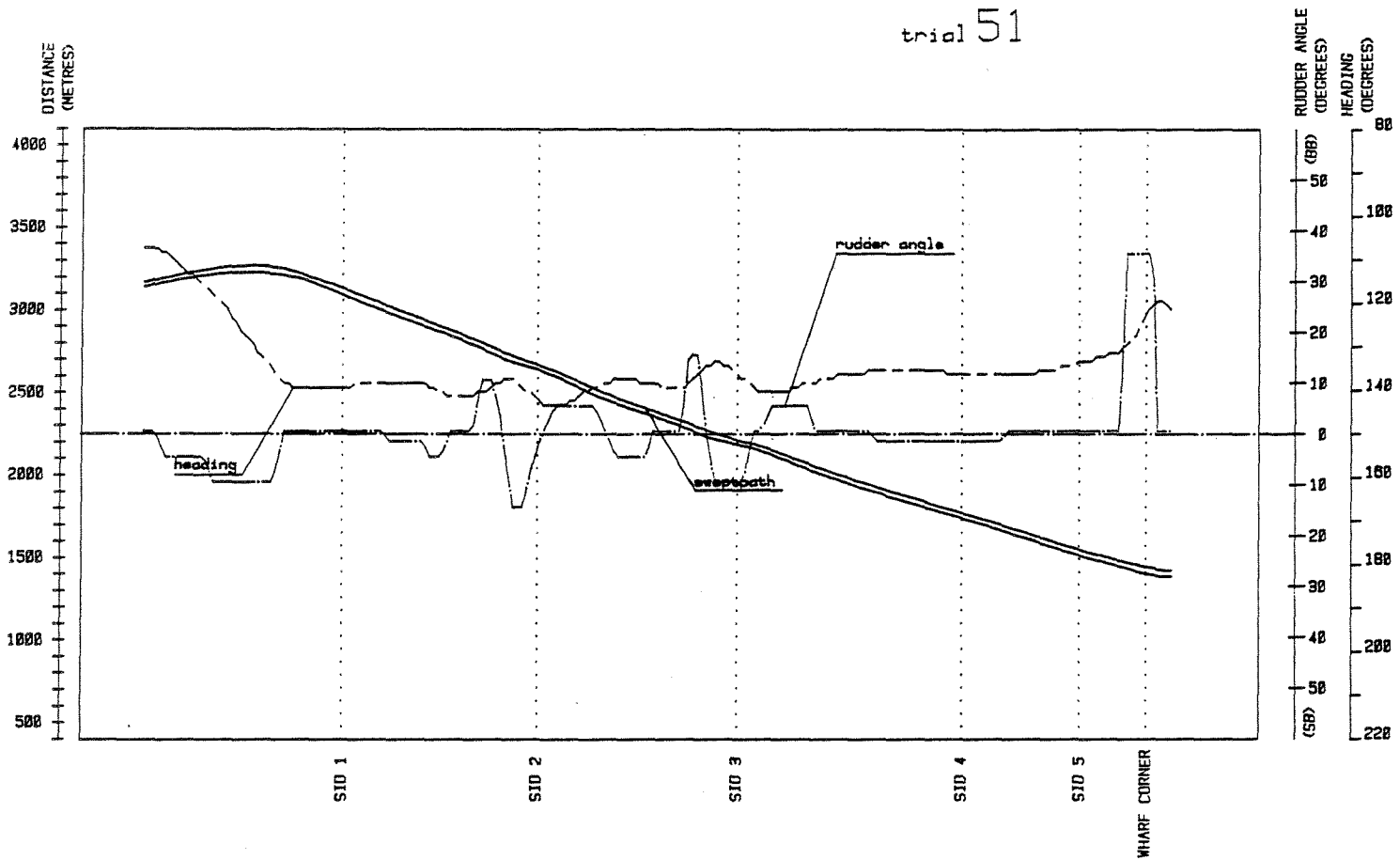
TURN OF THE EBB TIDE
 ships: 45.000 dwt channel depth: 12m
 winddirection: 0 degrees.
 windspeed : 0 knots.



trial 50

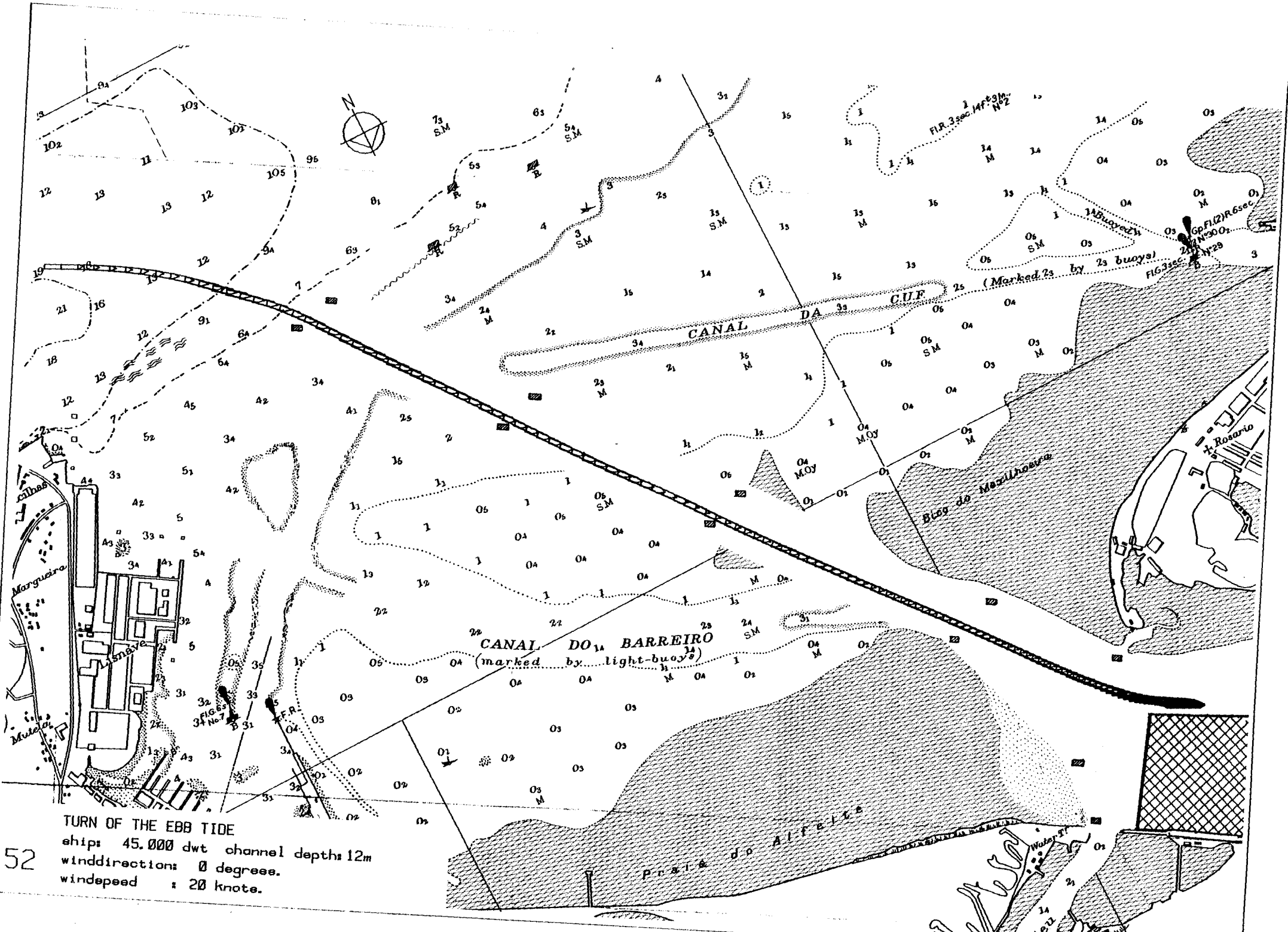


trial 51

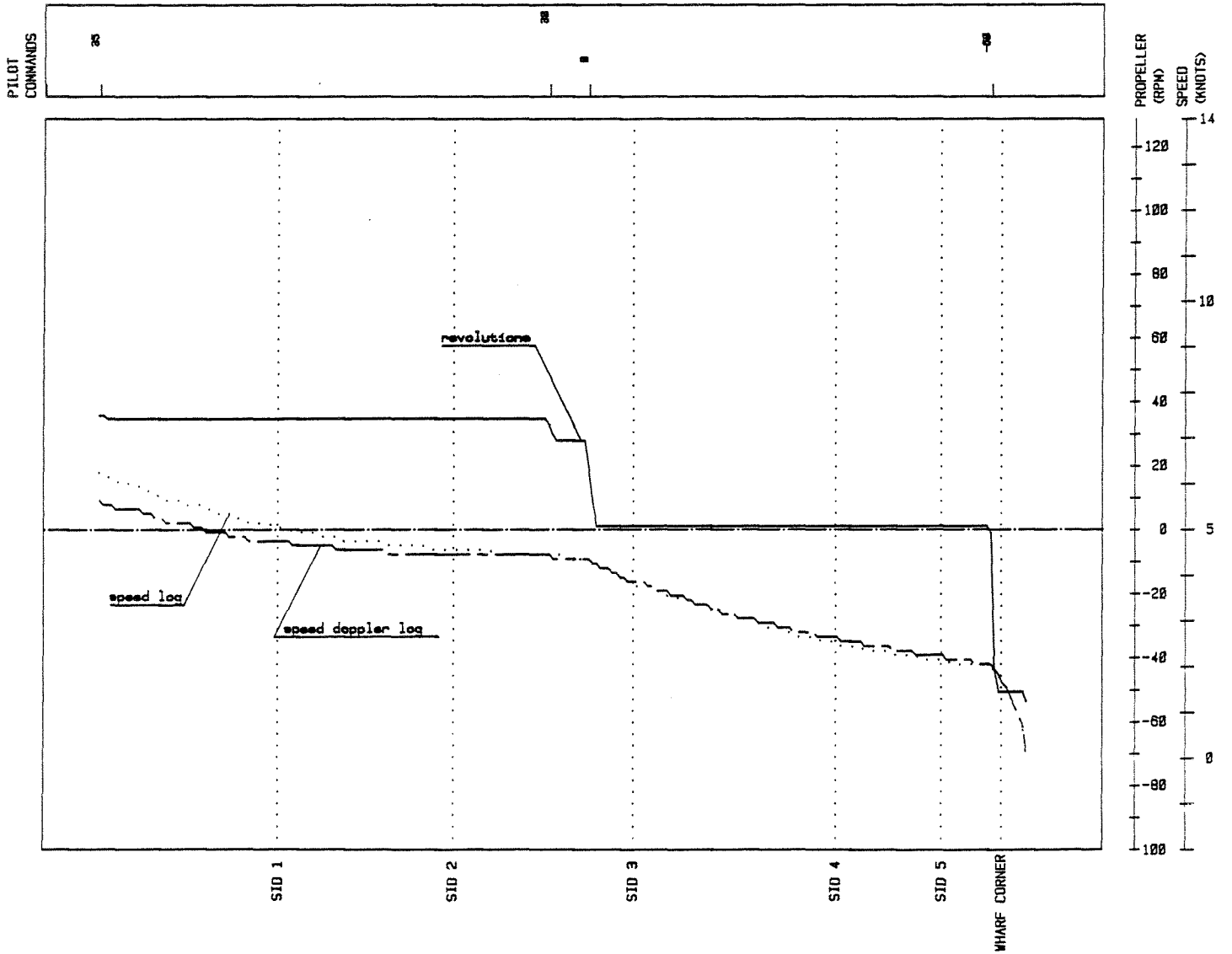
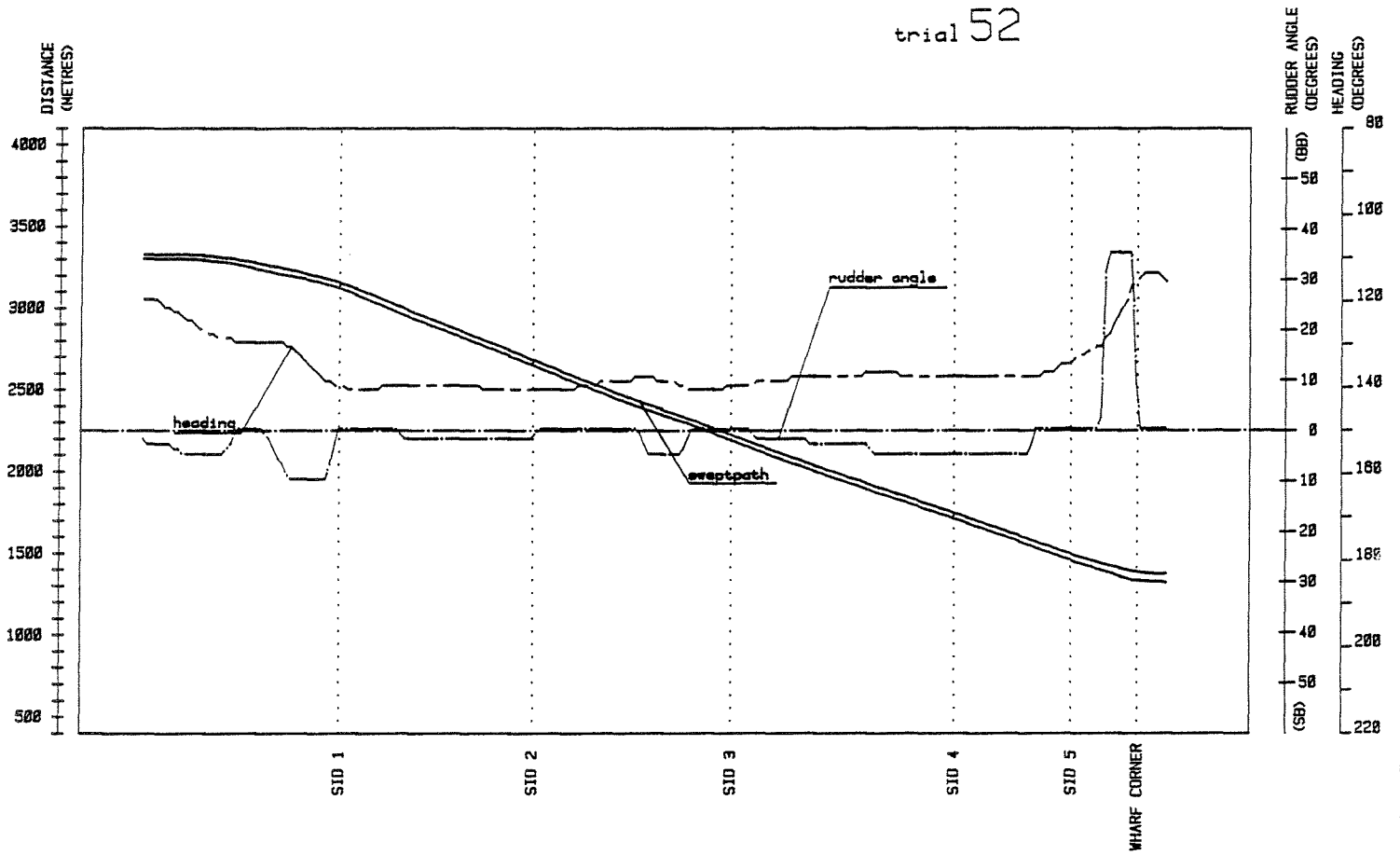


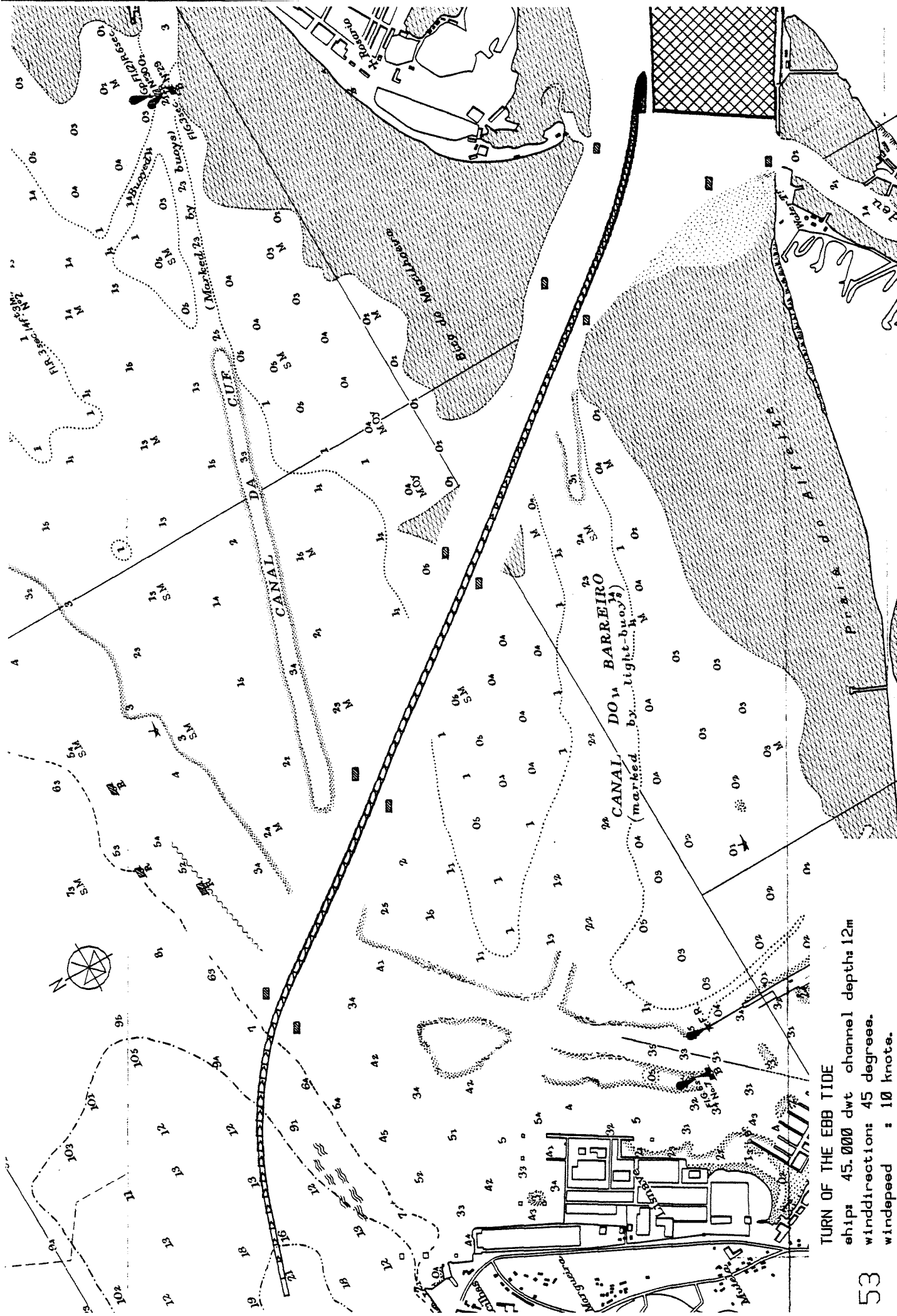
52

TURN OF THE EBB TIDE
 ships: 45.000 dwt channel depths 12m
 winddirection: 0 degrees.
 windpead : 20 knots.



trial 52

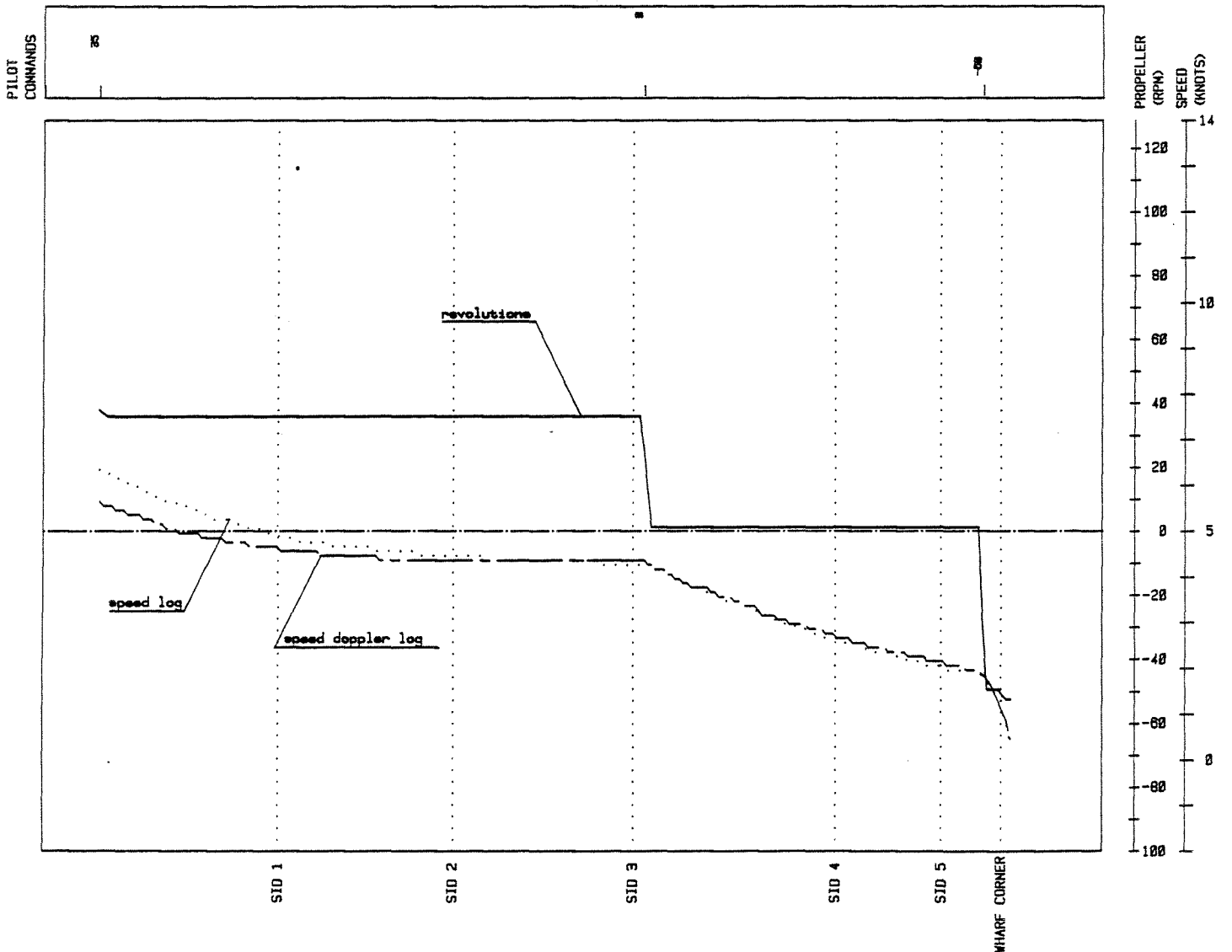
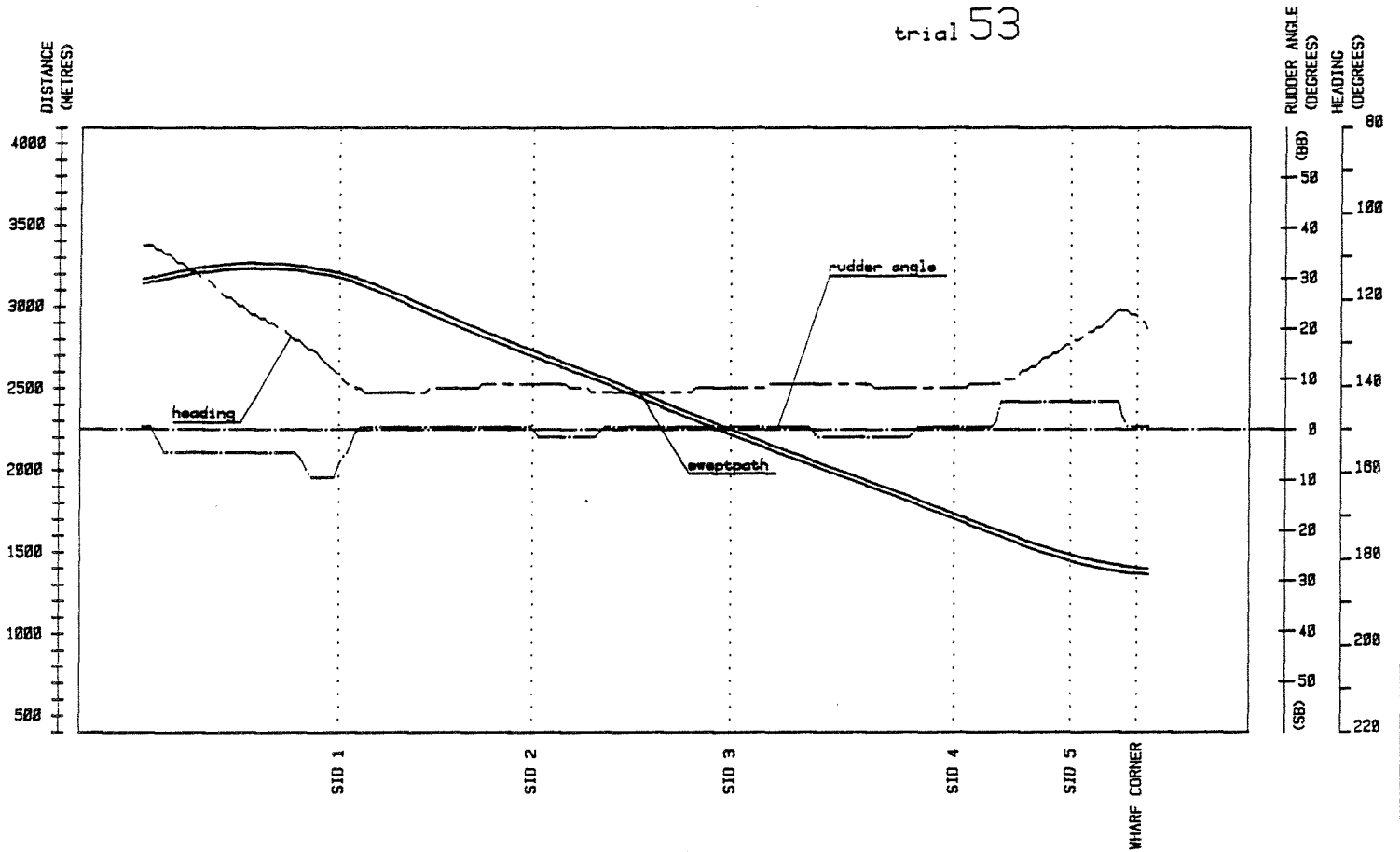


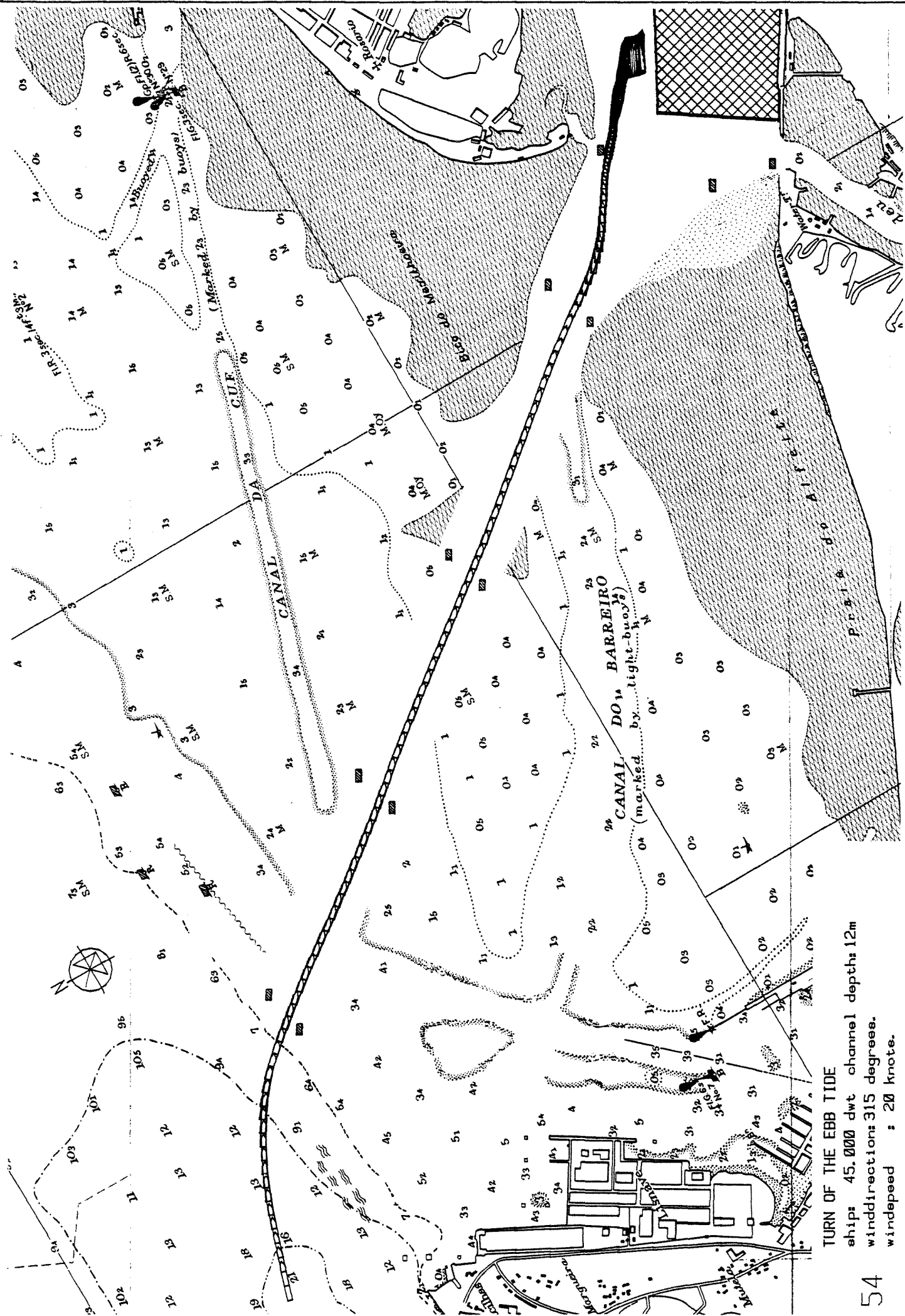


TURN OF THE EBB TIDE

ships 45.000 dwt channel depths 12m
winddirection: 45 degrees.
windspeed : 10 knots.

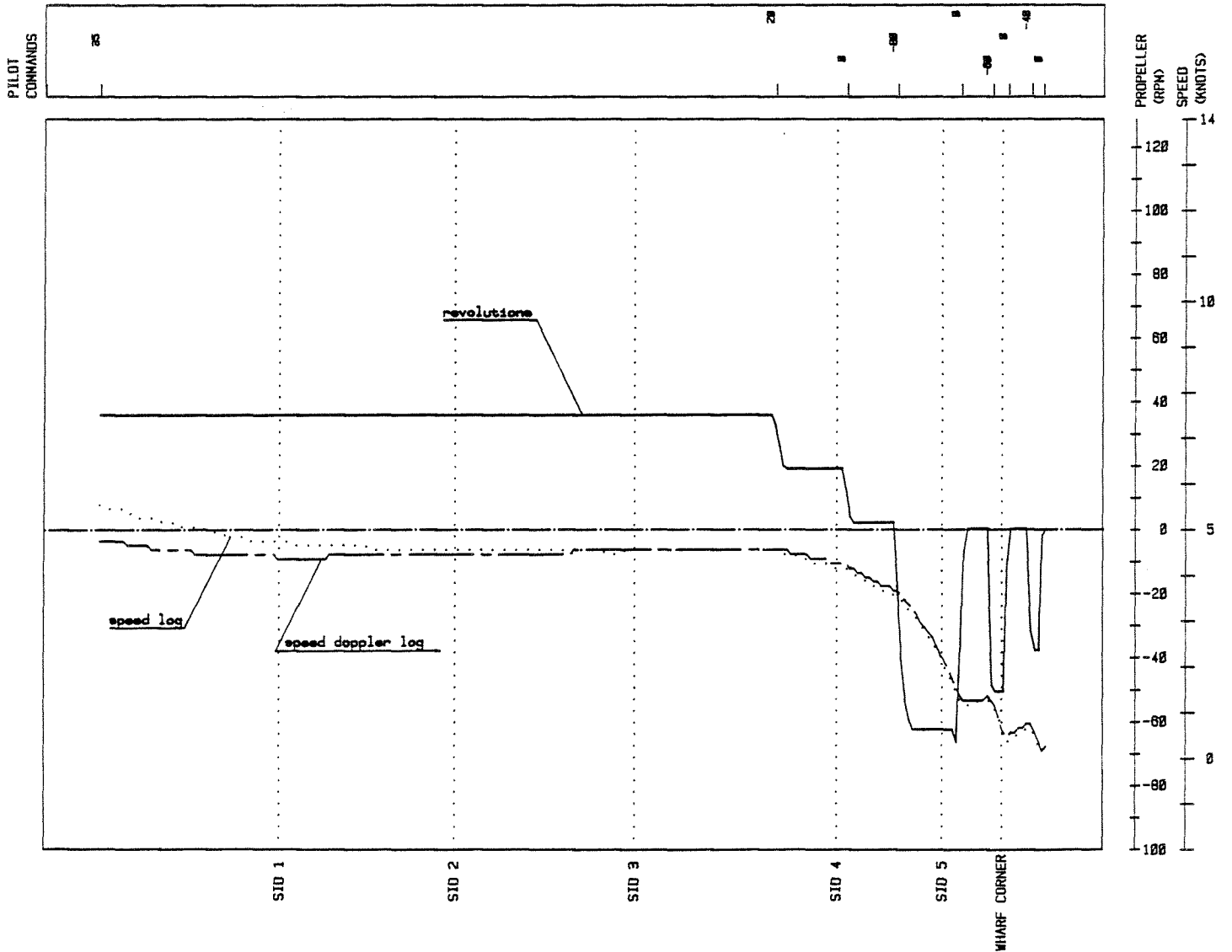
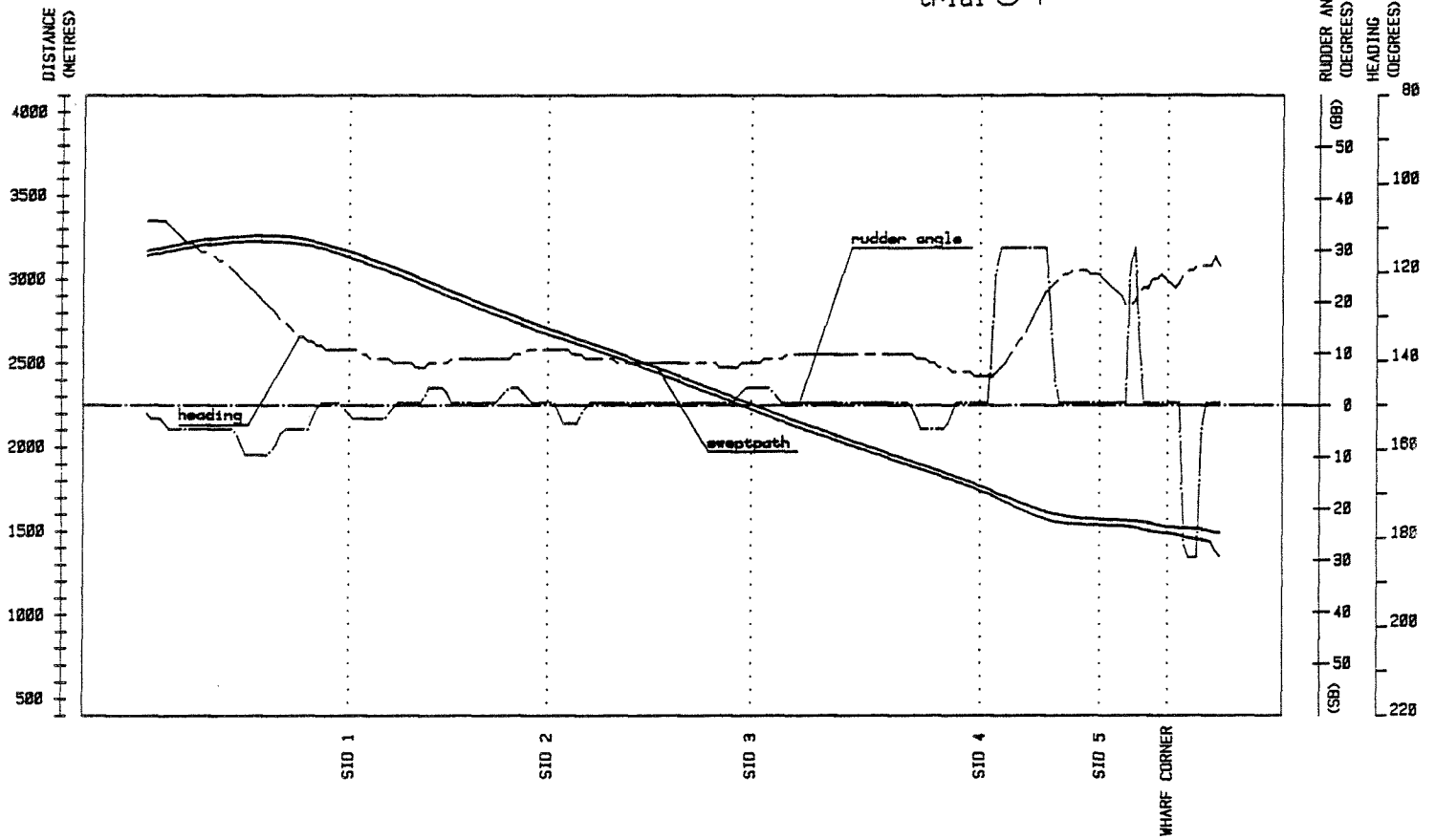
trial 53



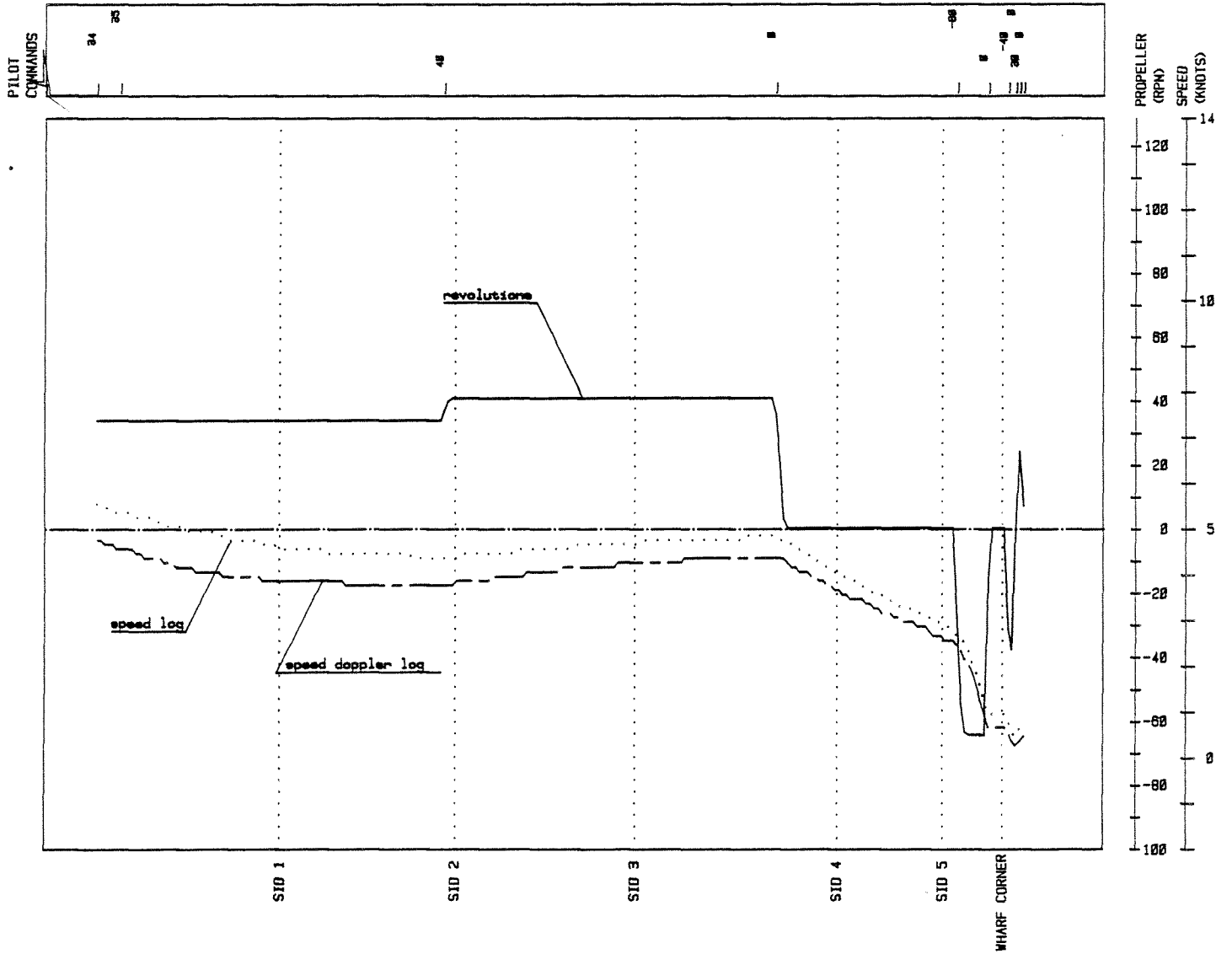
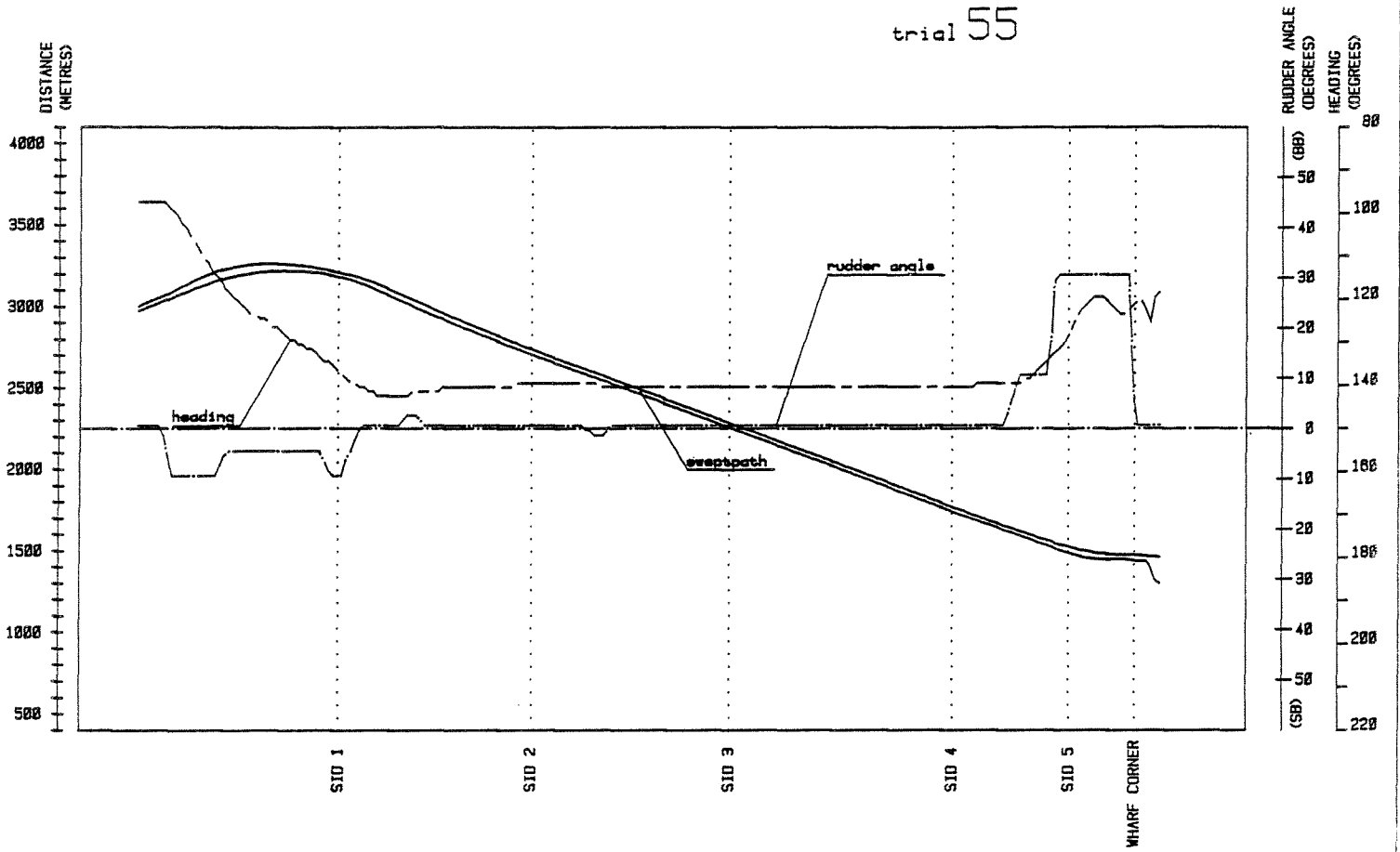


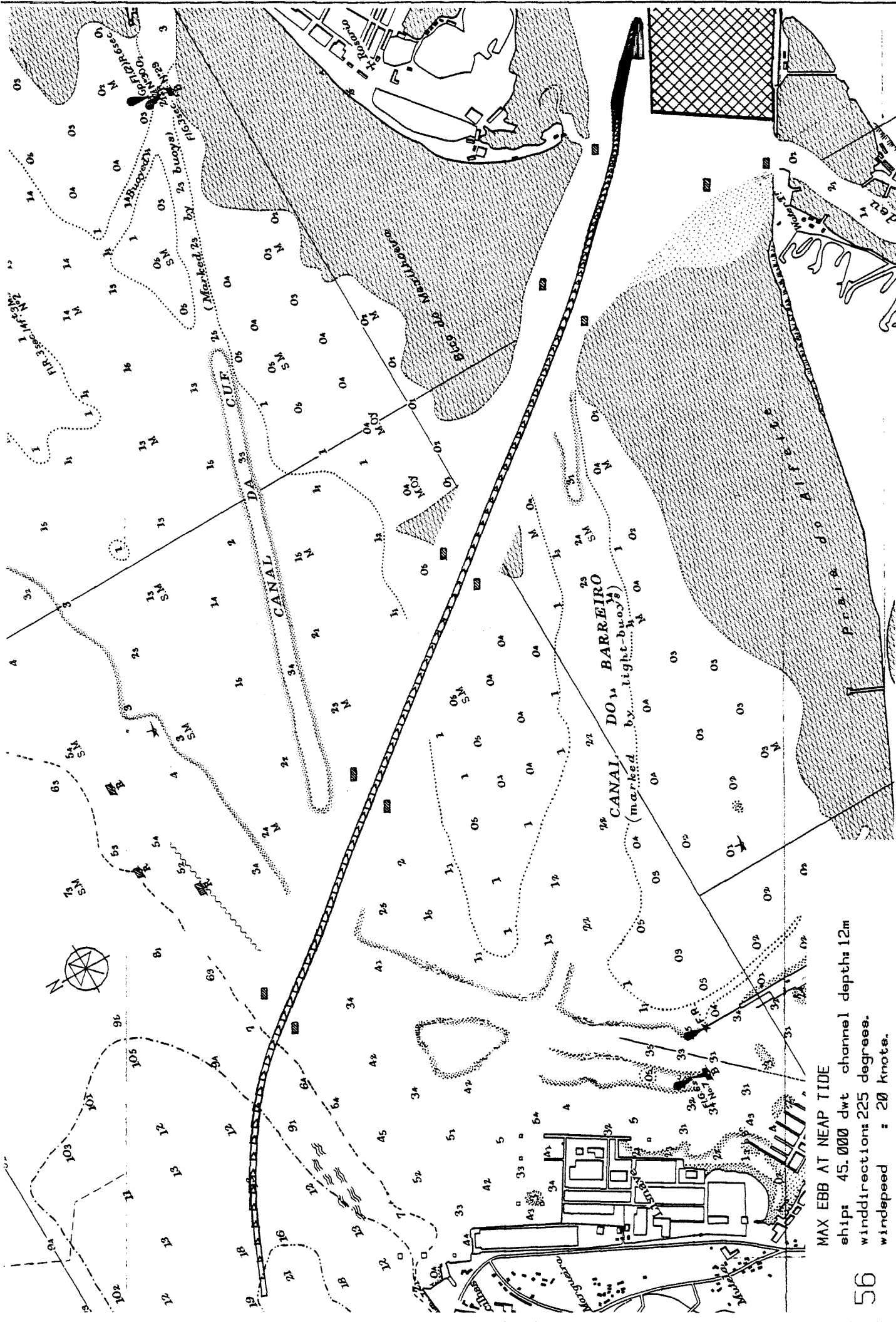
TURN OF THE EBB TIDE
 ship: 45.000 dwt channel depths: 12m
 wind direction: 315 degrees.
 wind speed : 20 knots.

trial 54



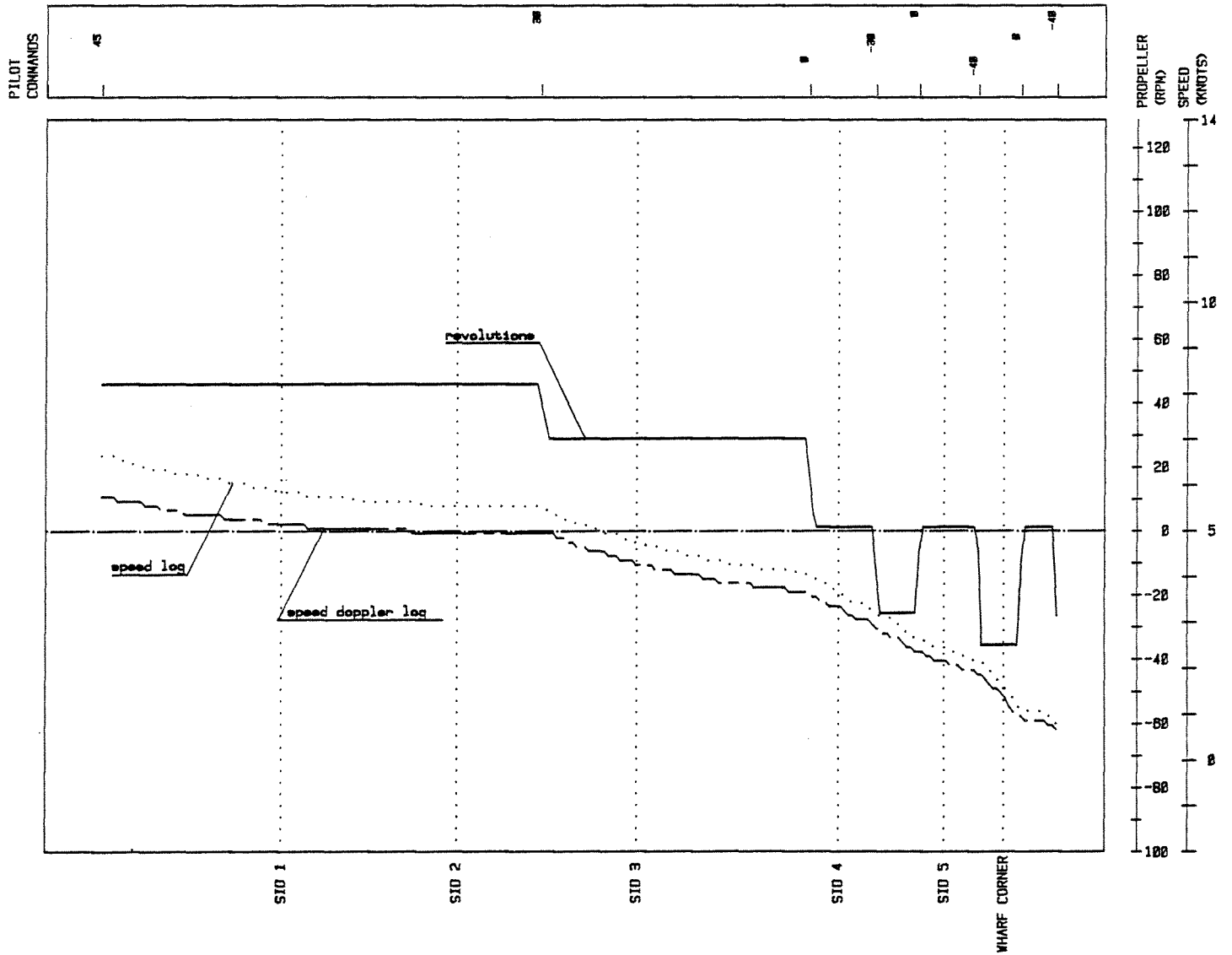
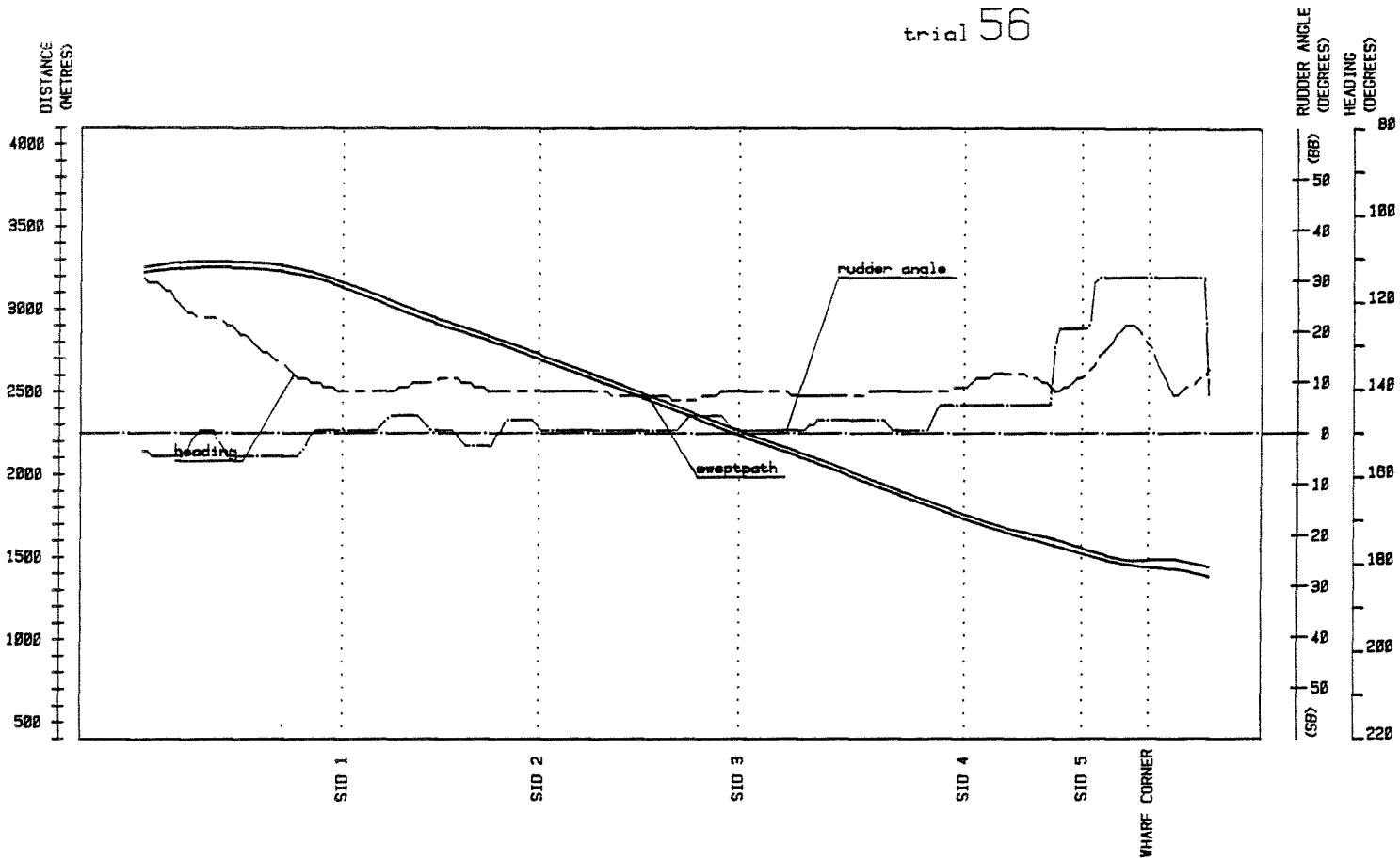
trial 55

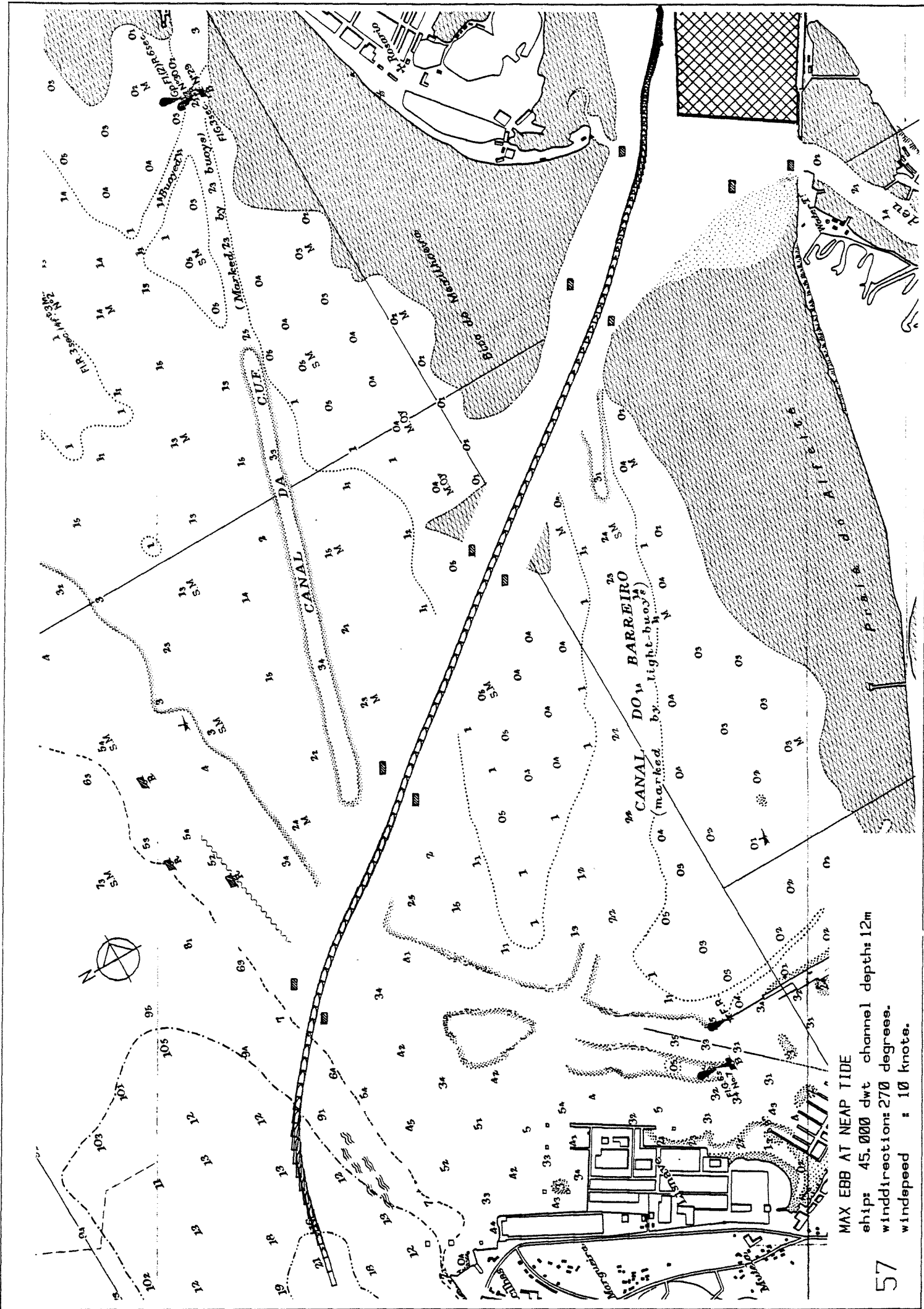




MAX EBB AT NEAP TIDE
 ships: 45,000 dwt channel depths 12m
 winddirection: 225 degrees.
 windspeed : 20 knots.

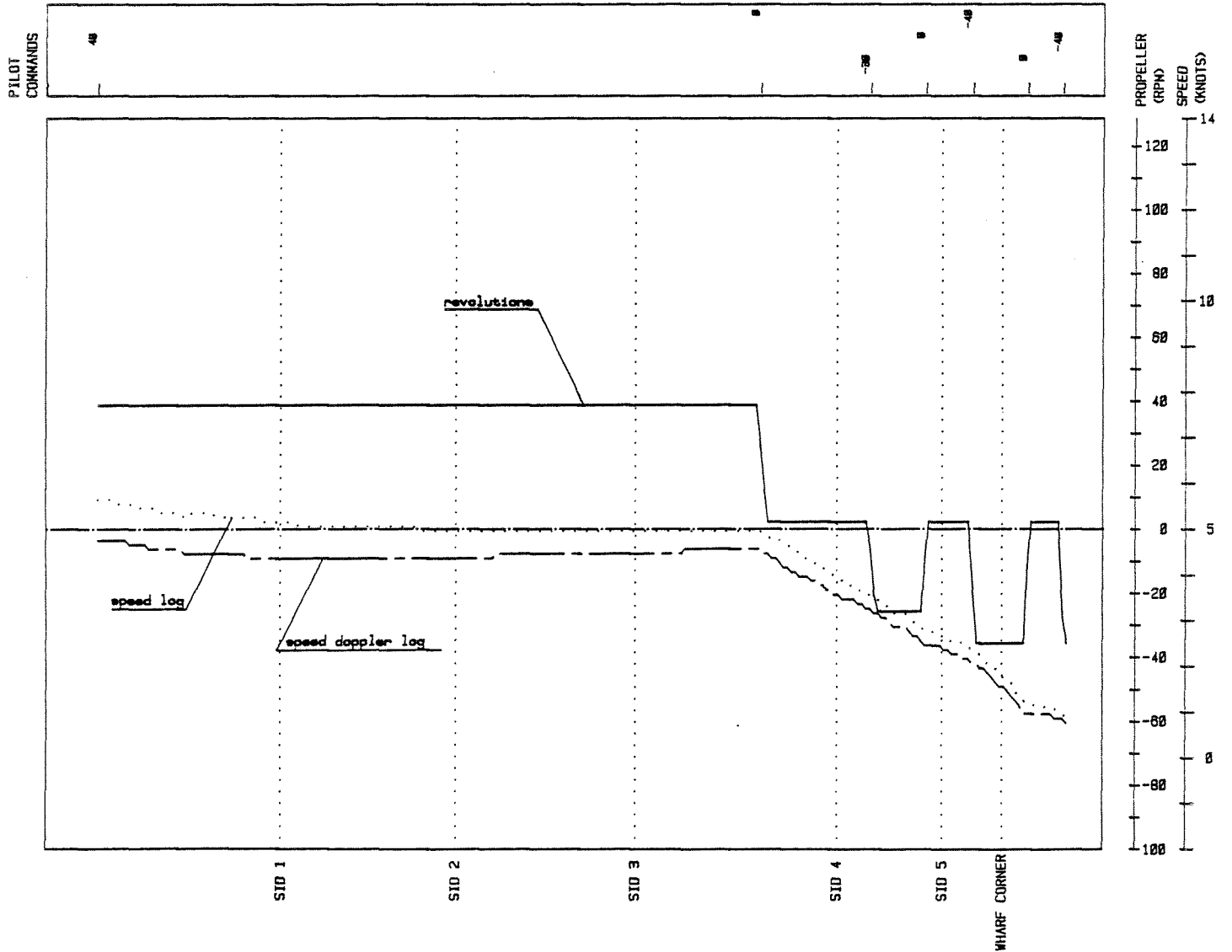
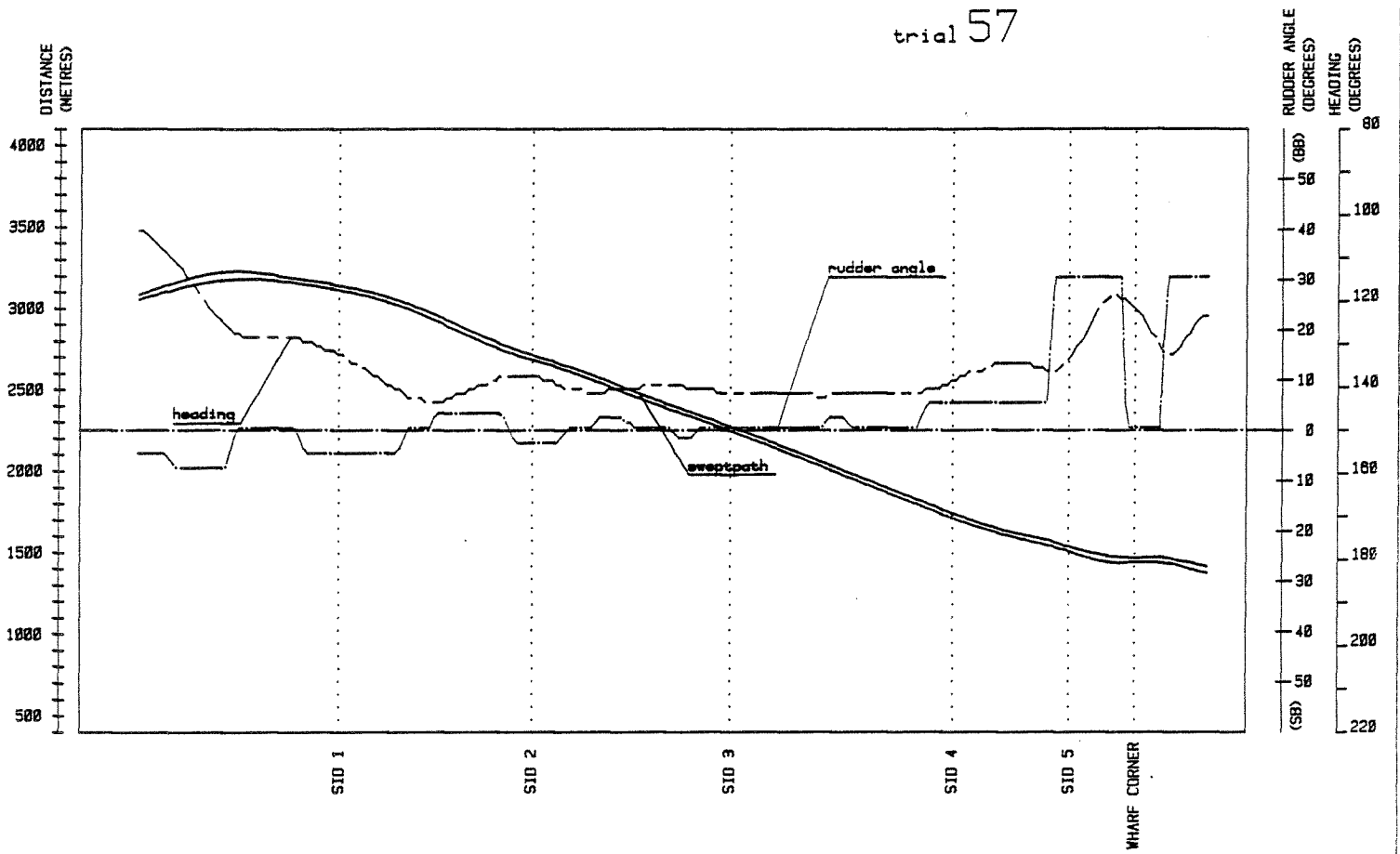
trial 56

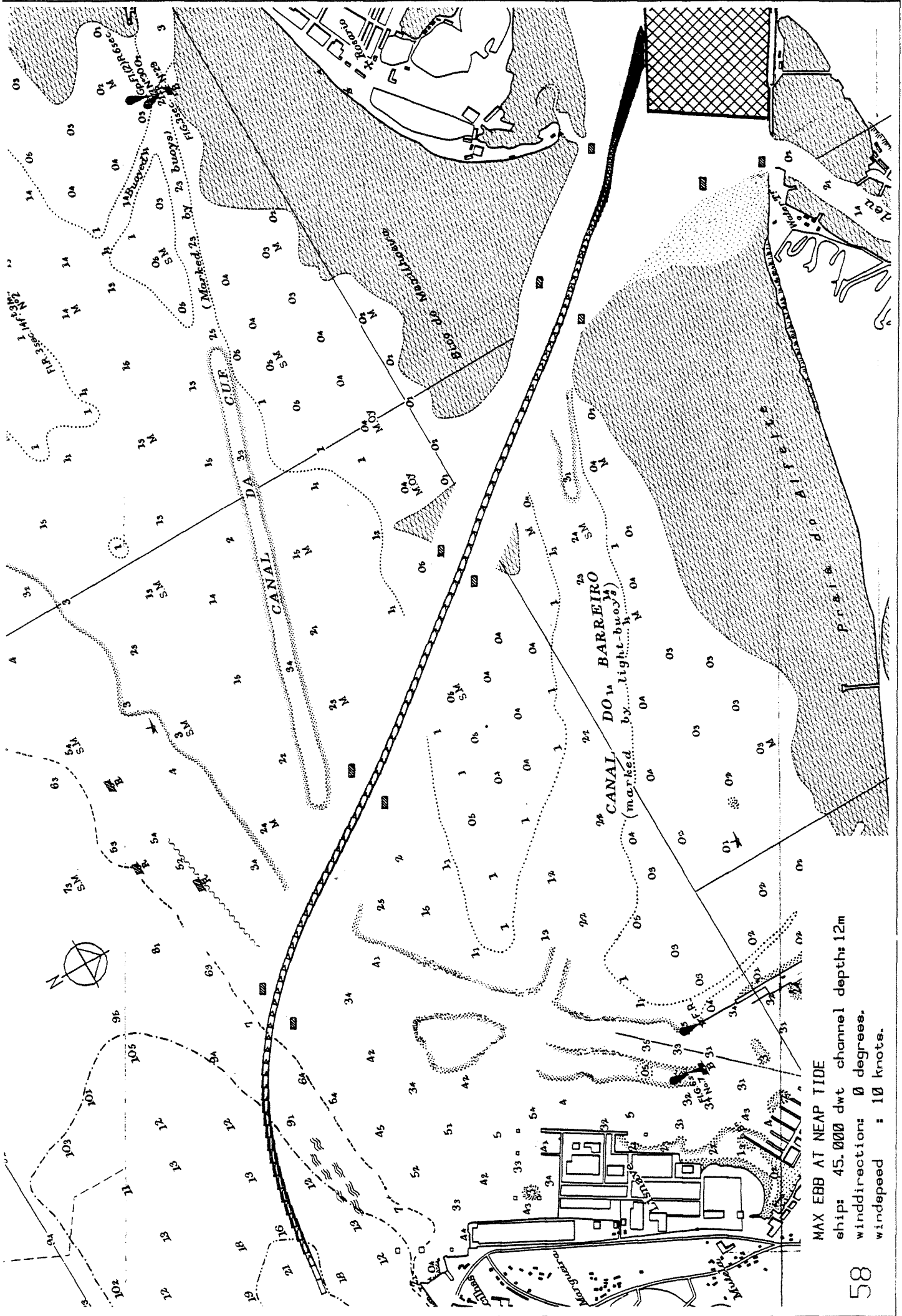




MAX EBB AT NEAP TIDE
 ships: 45,000 dwt channel depth: 12m
 winddirection: 270 degrees.
 windspeed : 10 knots.

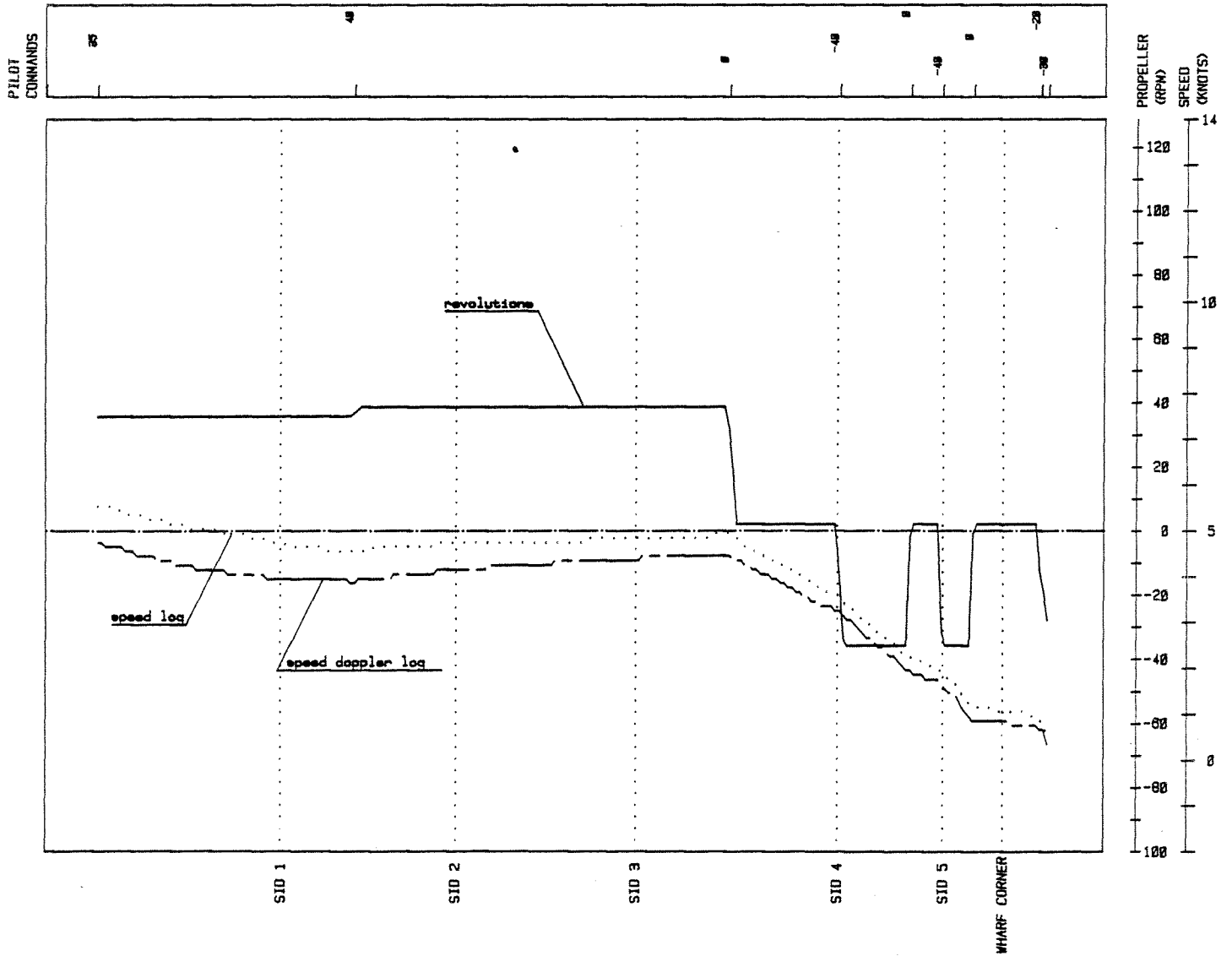
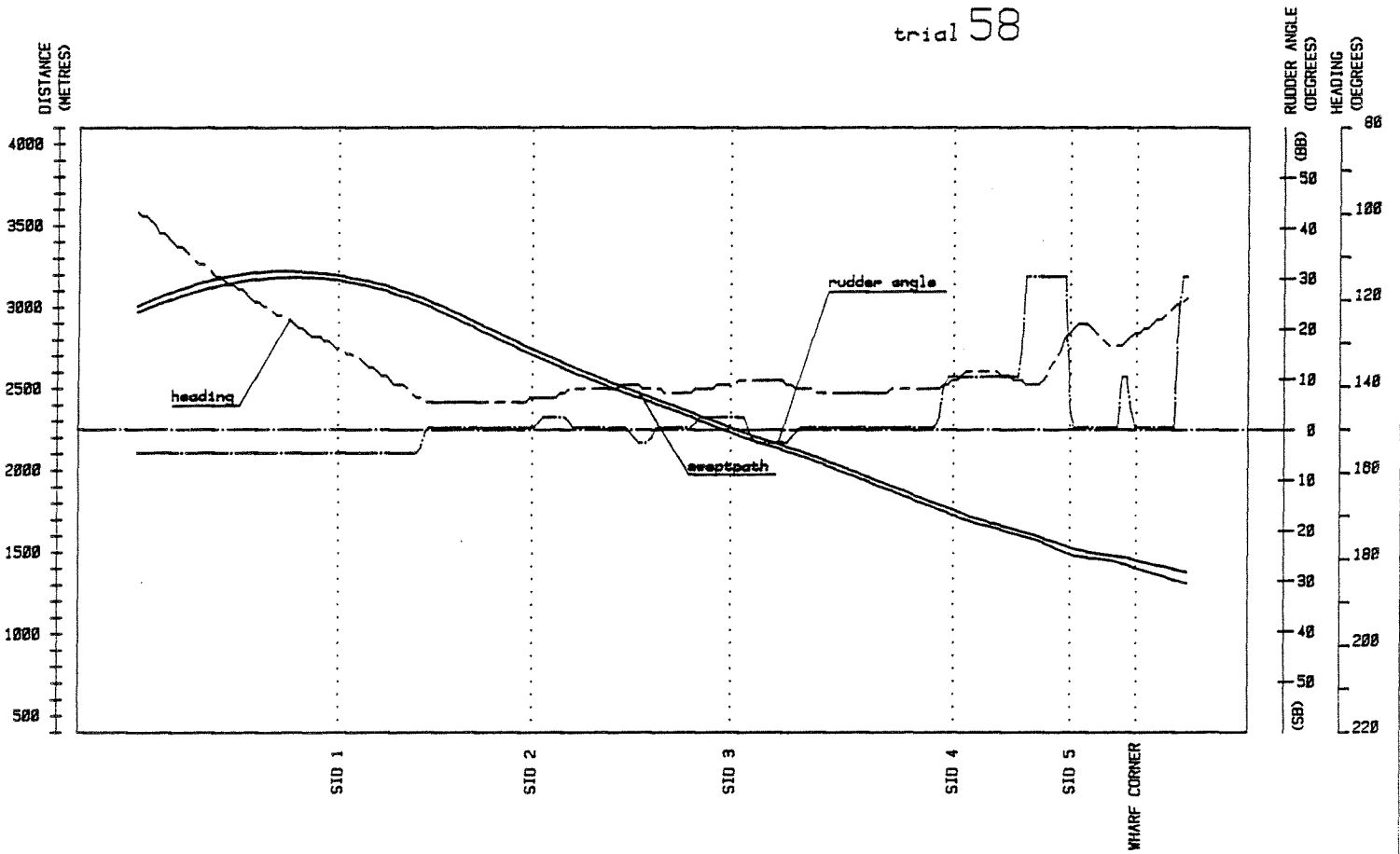
trial 57

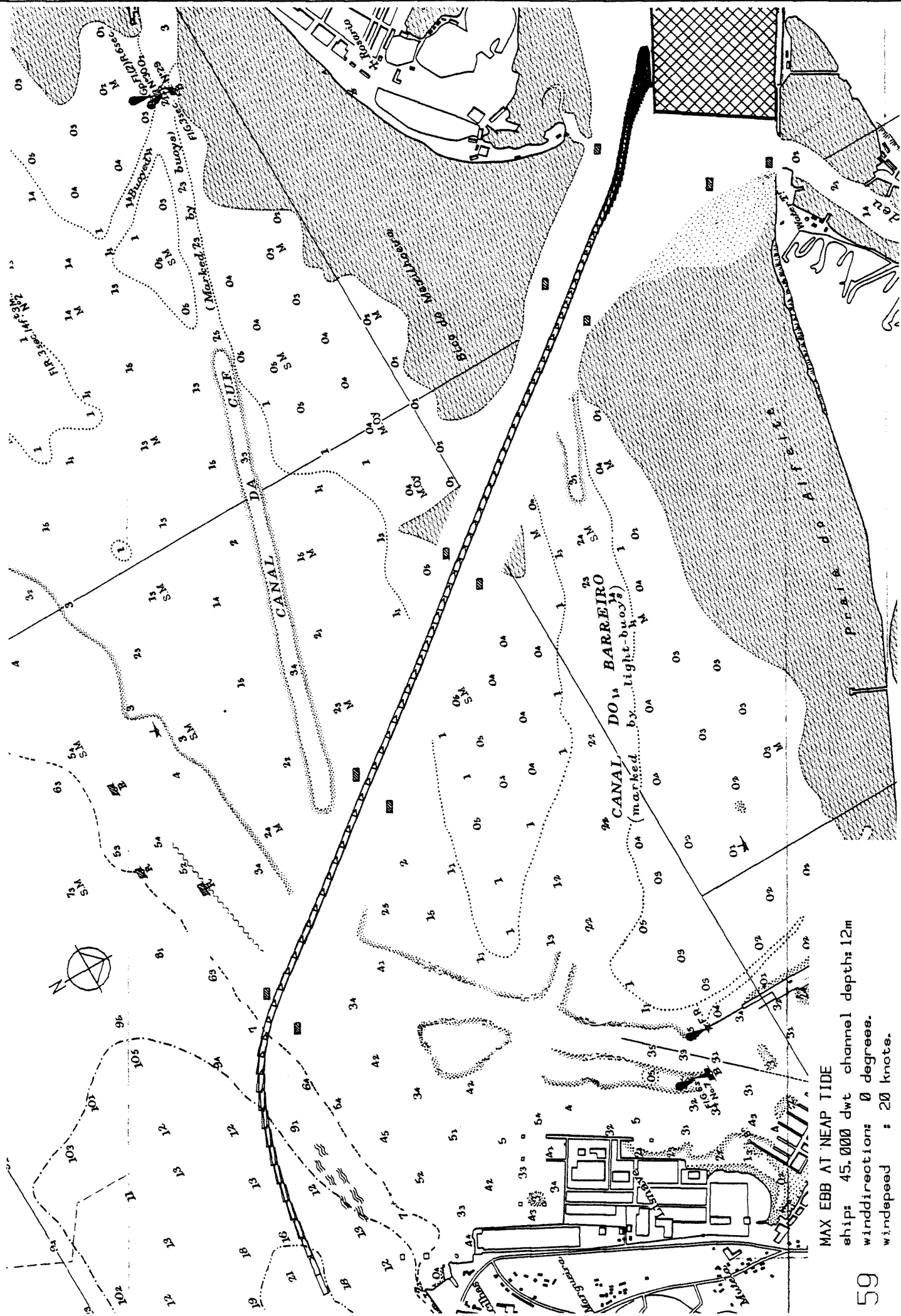




MAX EBB AT NEAP TIDE
 ship: 45.000 dwt channel depth: 12m
 winddirection: 0 degrees.
 windspeed : 10 knots.

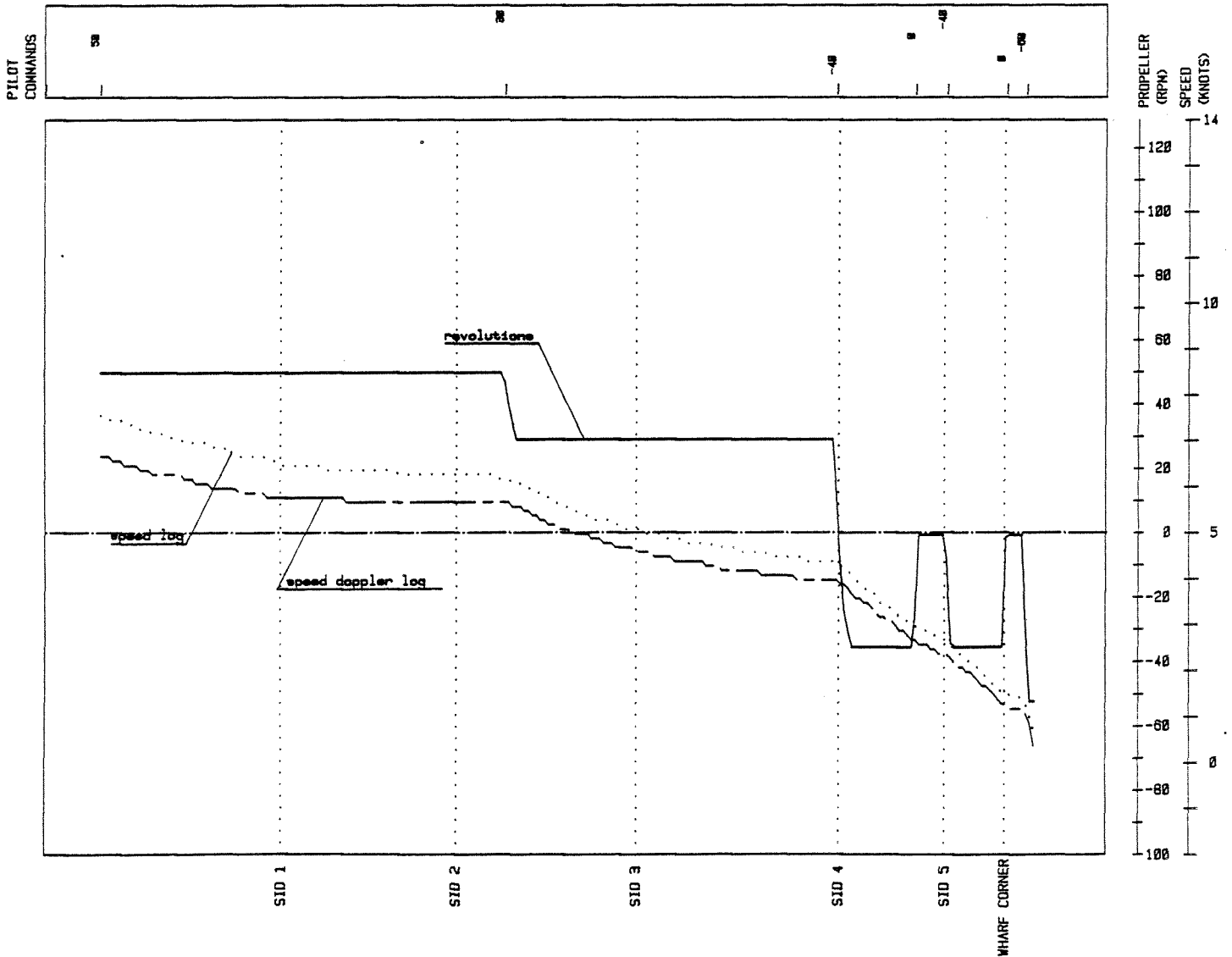
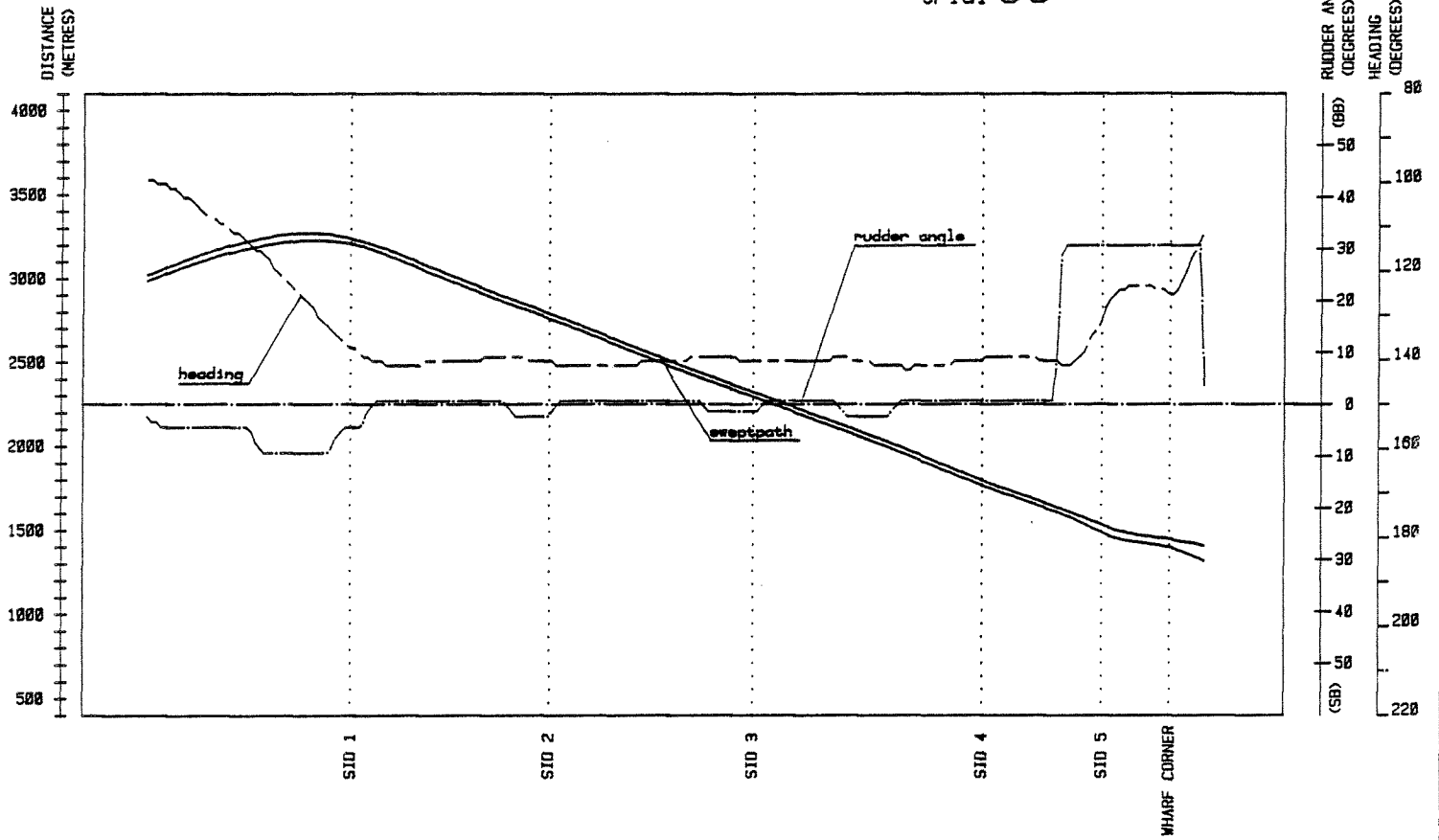
trial 58

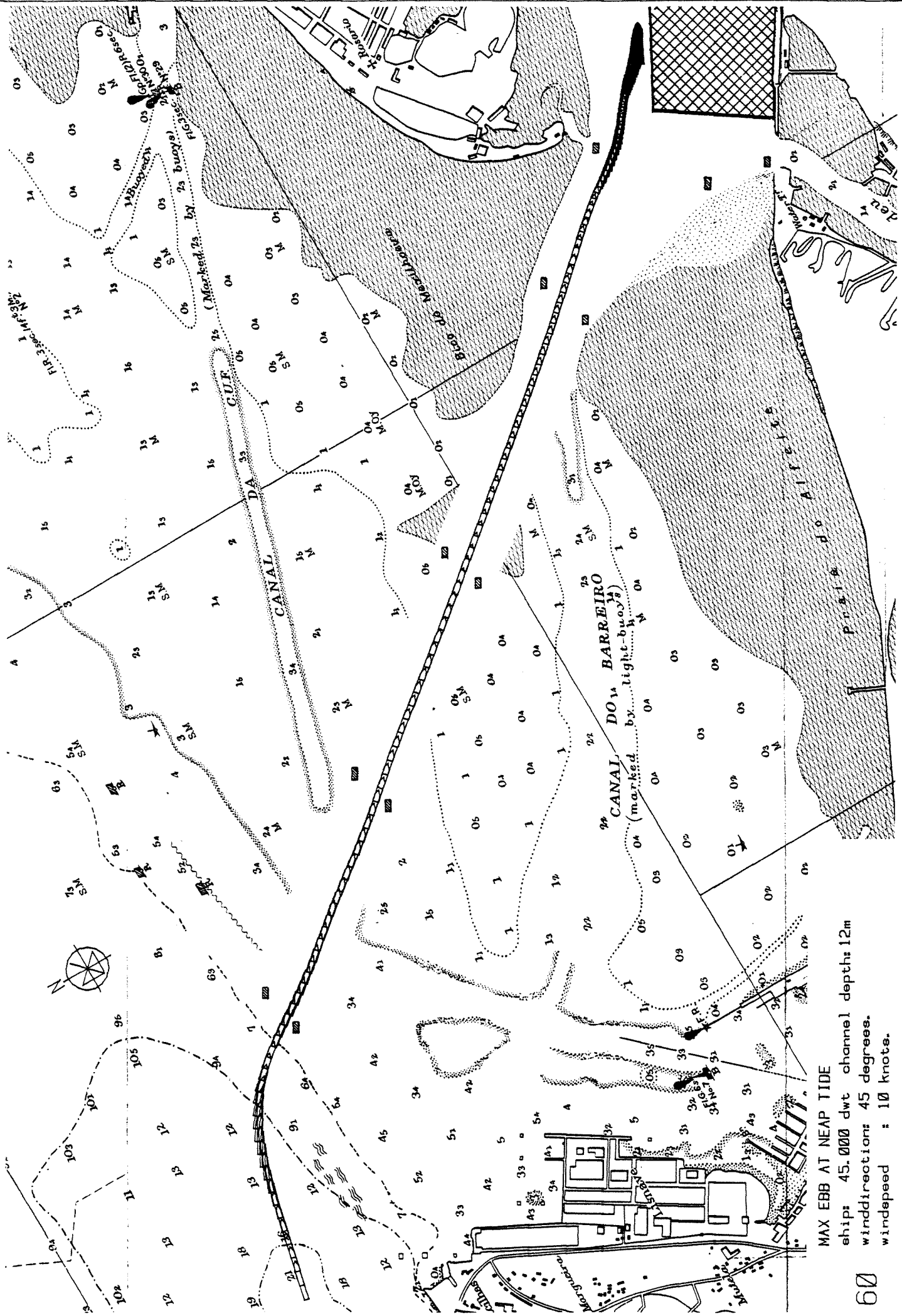




MAX EBB AT NEAP TIDE
 ship: 45,000 dwt channel depth: 12m
 winddirection: 0 degrees.
 windspeed : 20 knots.

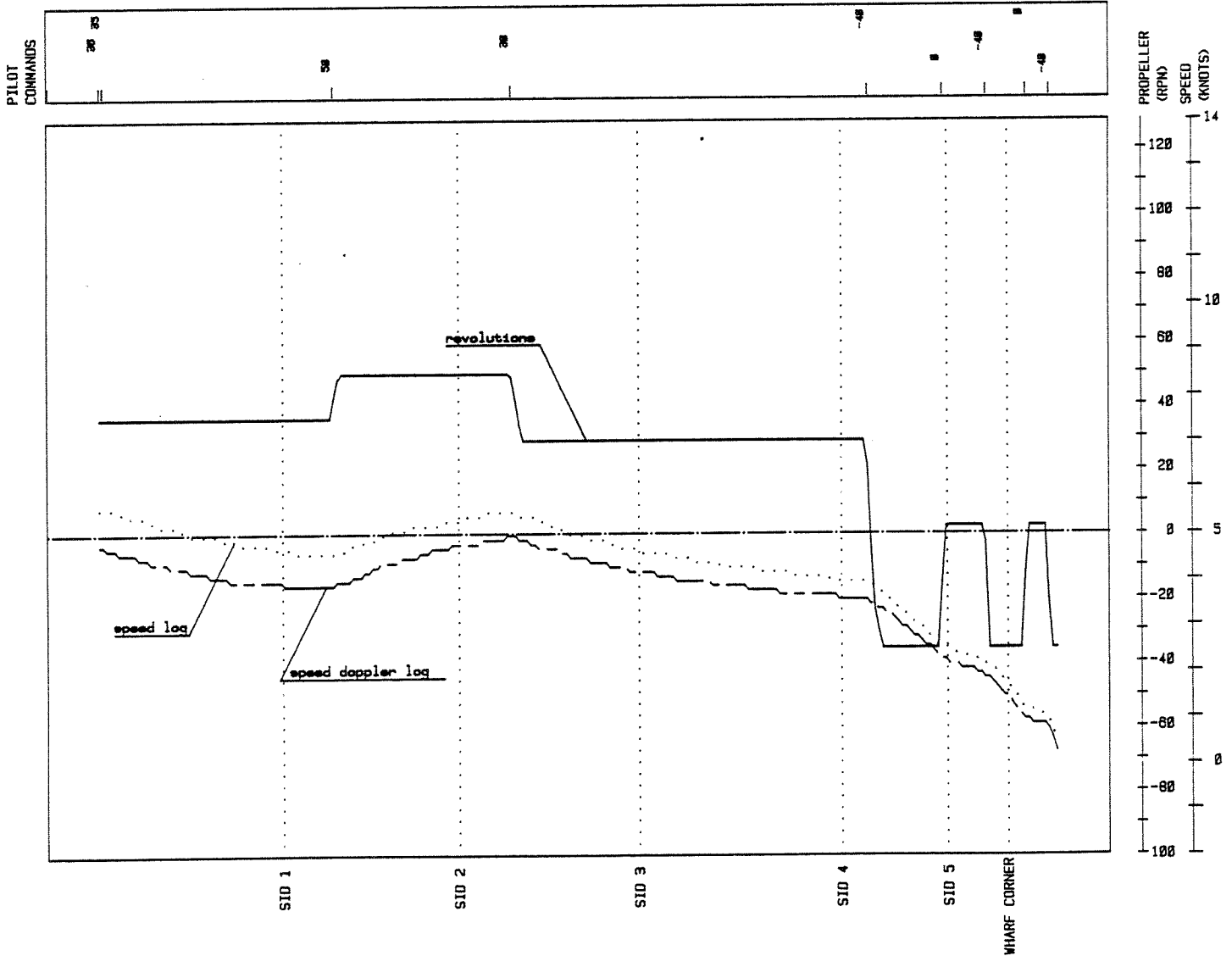
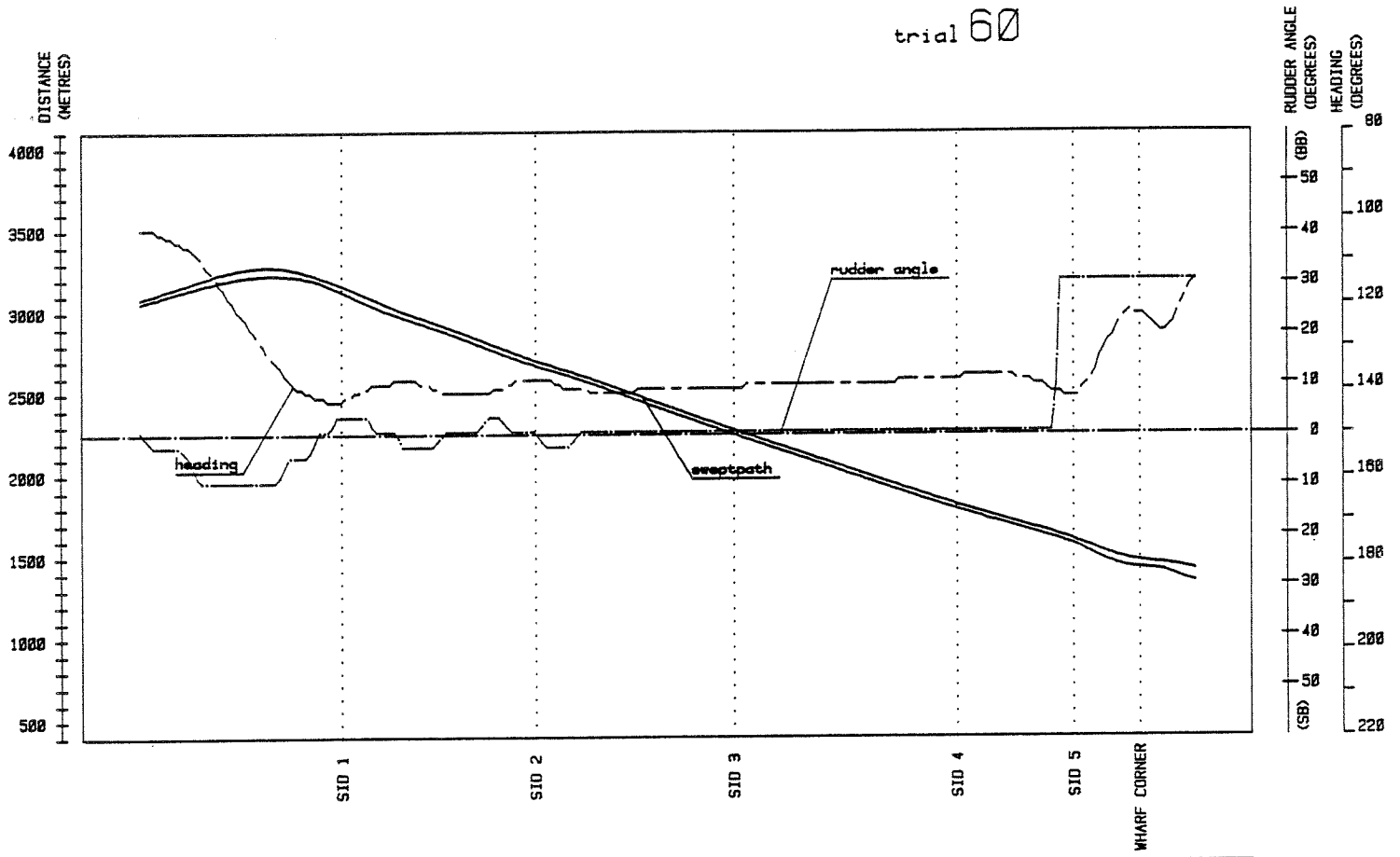
trial 59

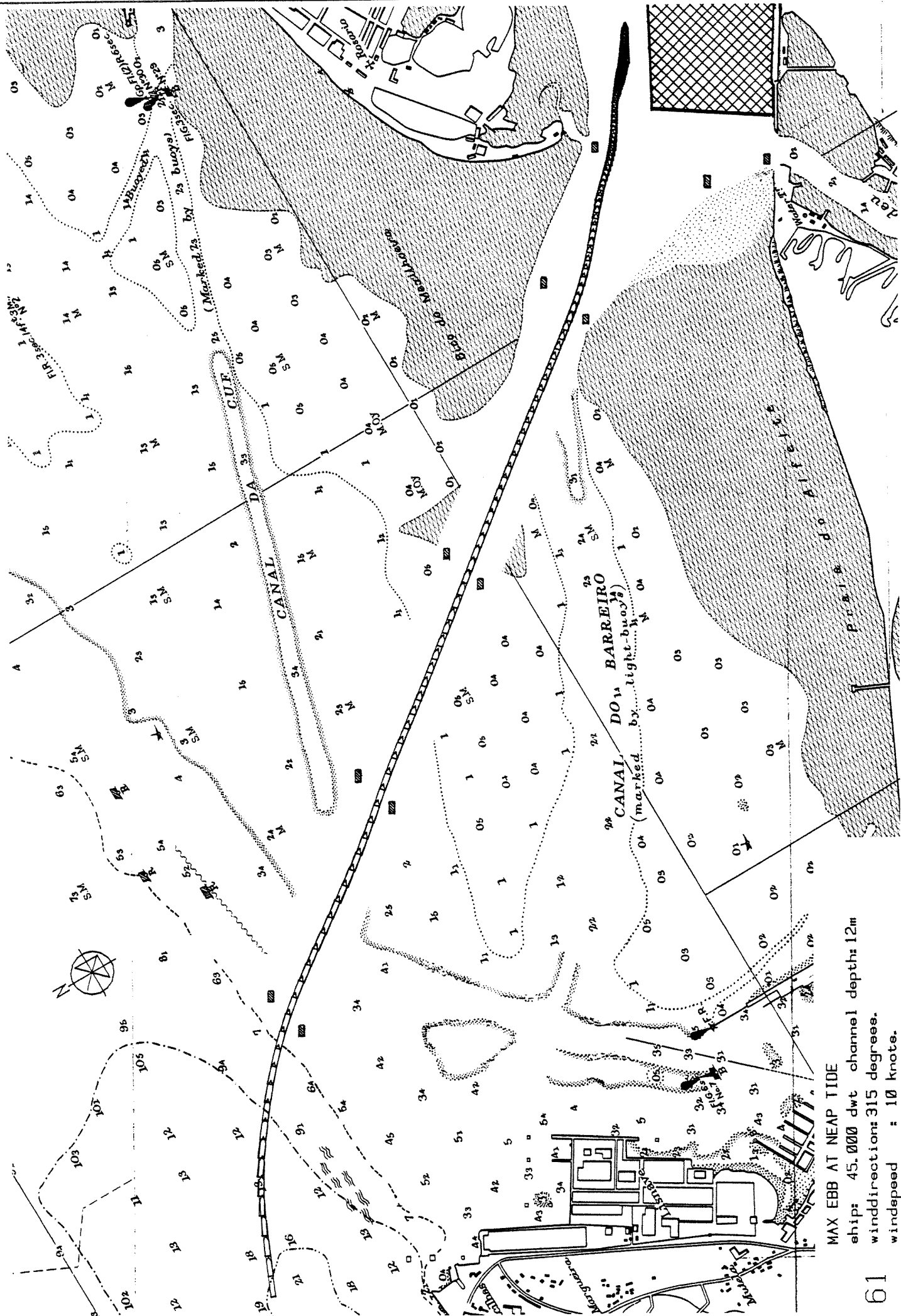




MAX EBB AT NEAP TIDE
 ship: 45.000 dwt channel depth: 12m
 wind: direction: 45 degrees.
 wind: speed : 10 knots.

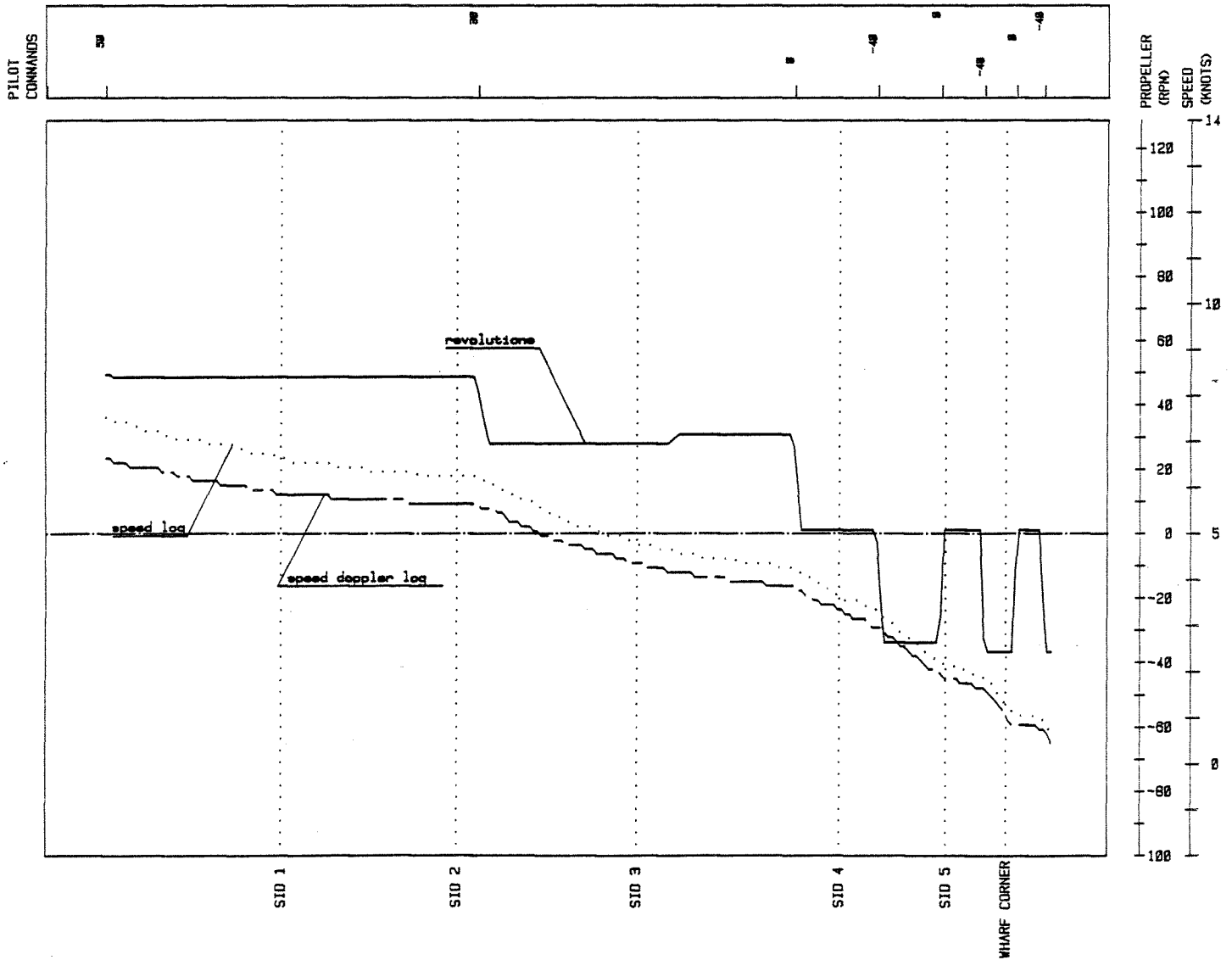
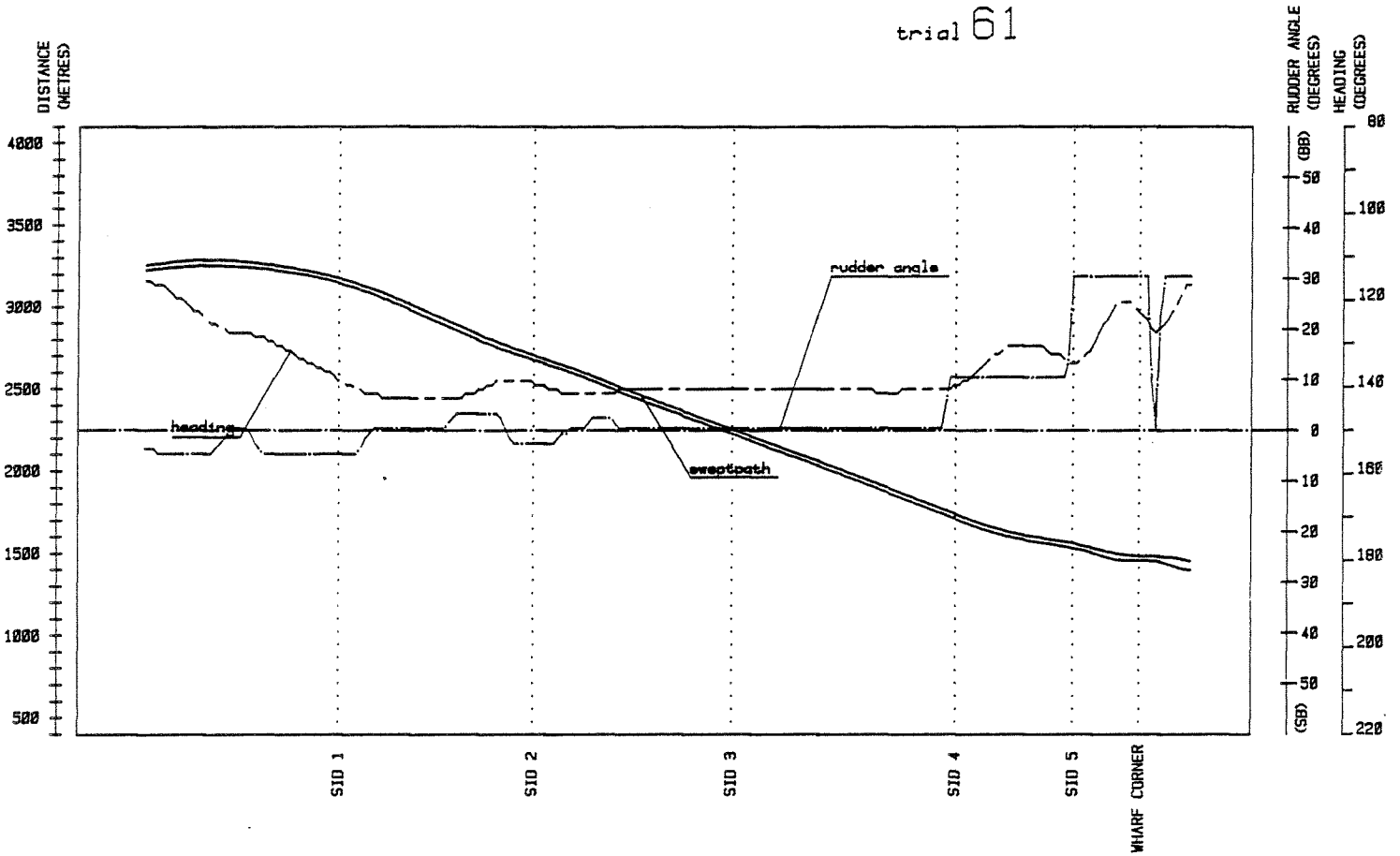
trial 60

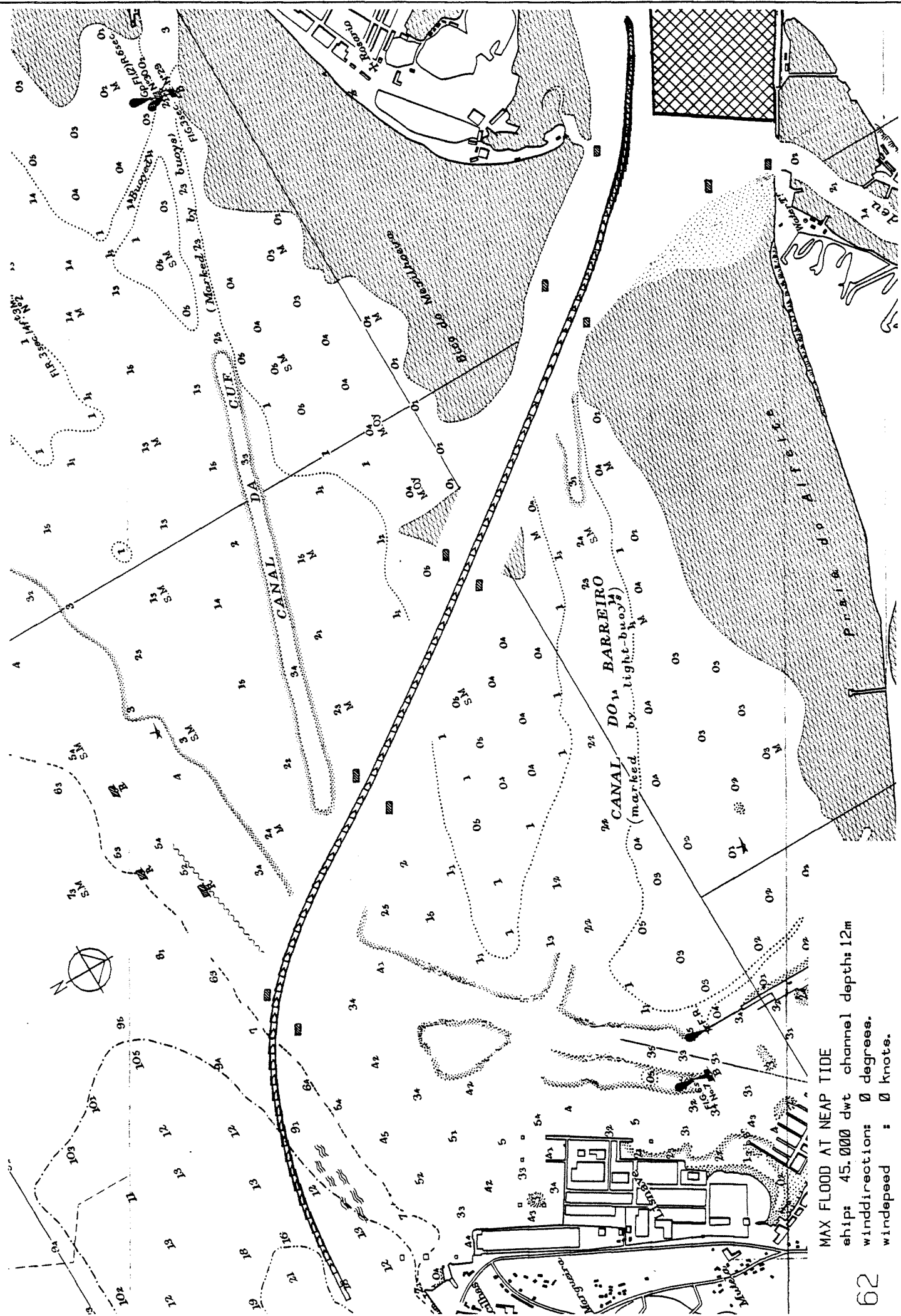




MAX EBB AT NEAP TIDE
 ship: 45.000 dwt channel depth: 12m
 winddirection: 315 degrees.
 windspeed : 10 knots.

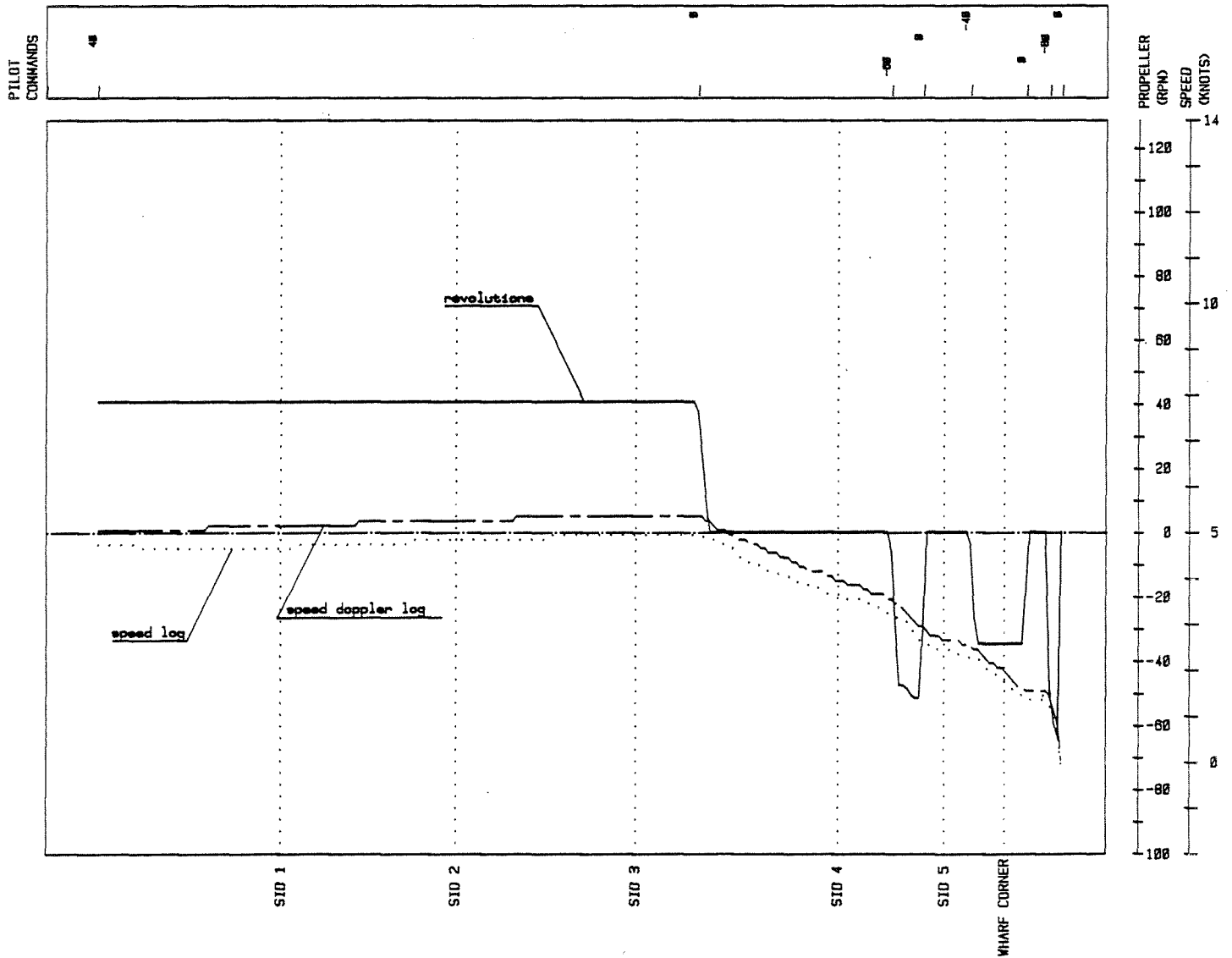
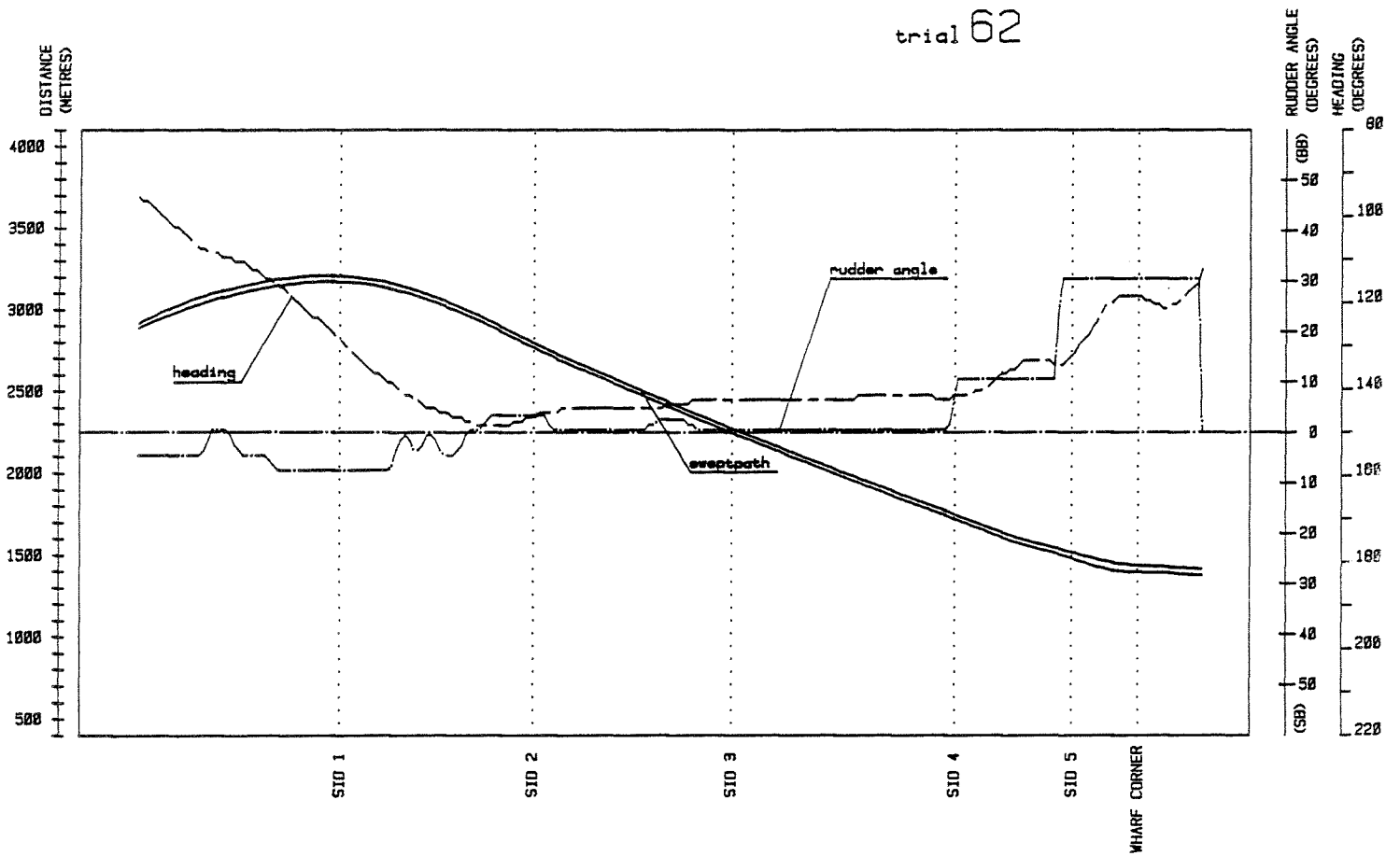
trial 61

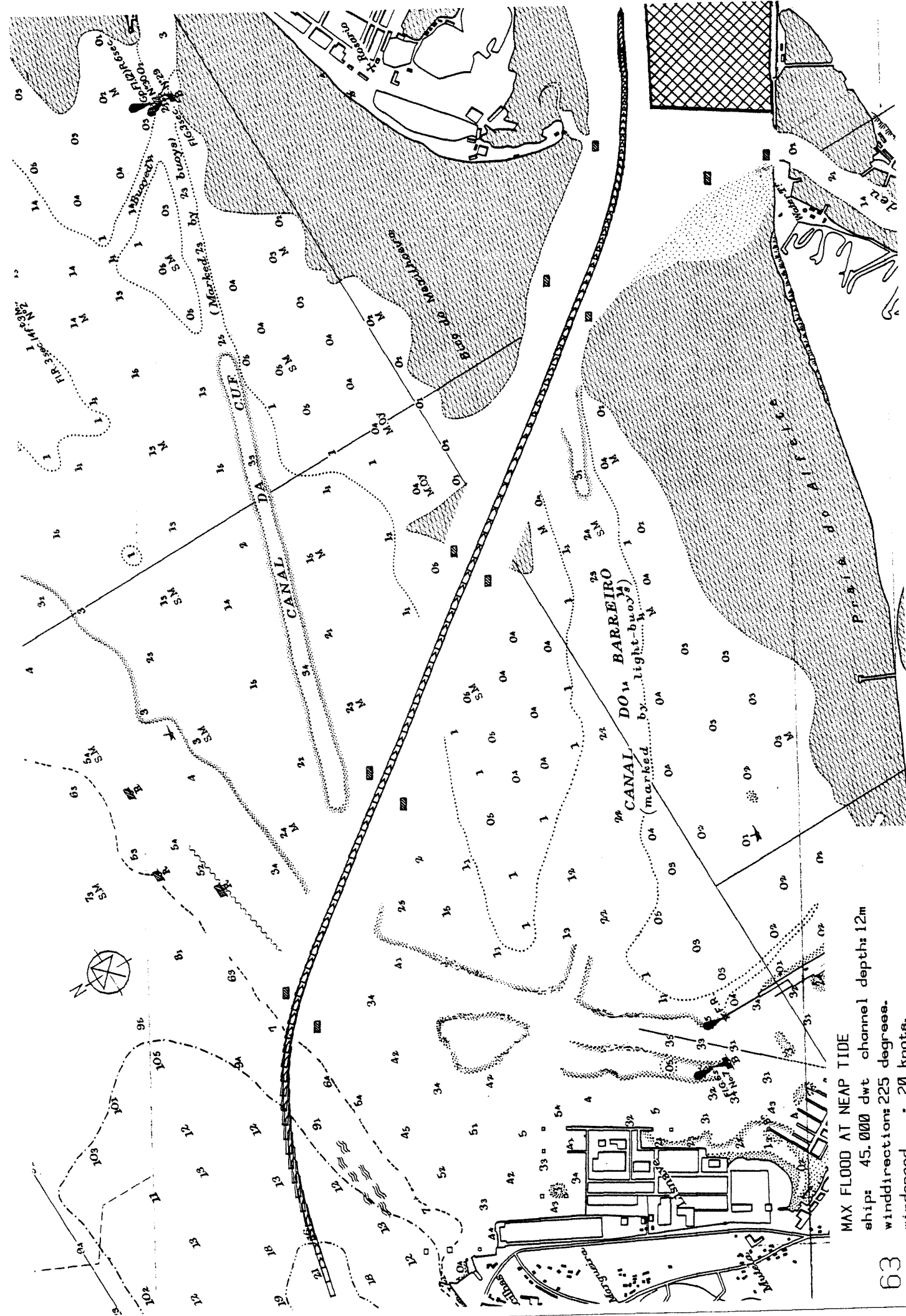




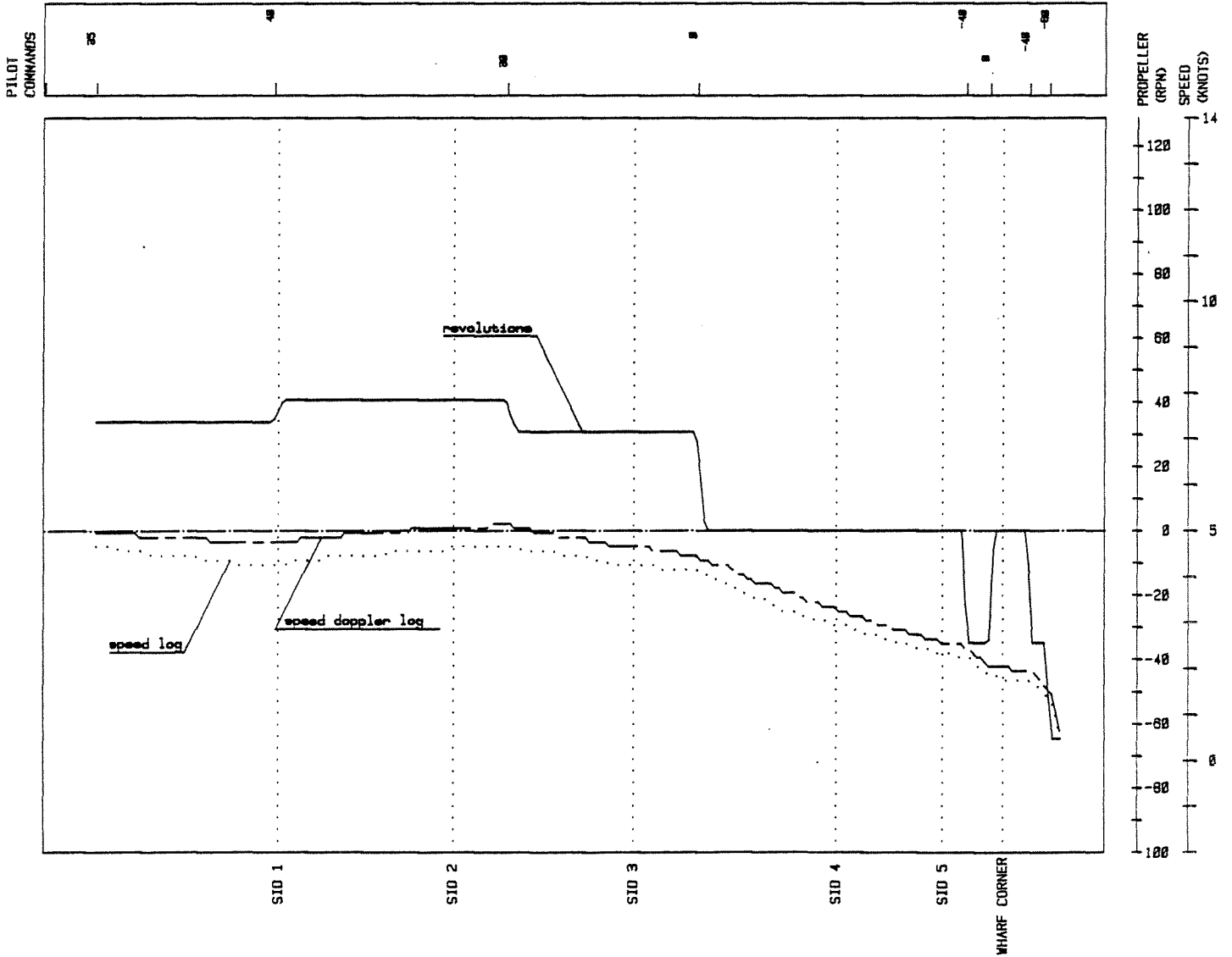
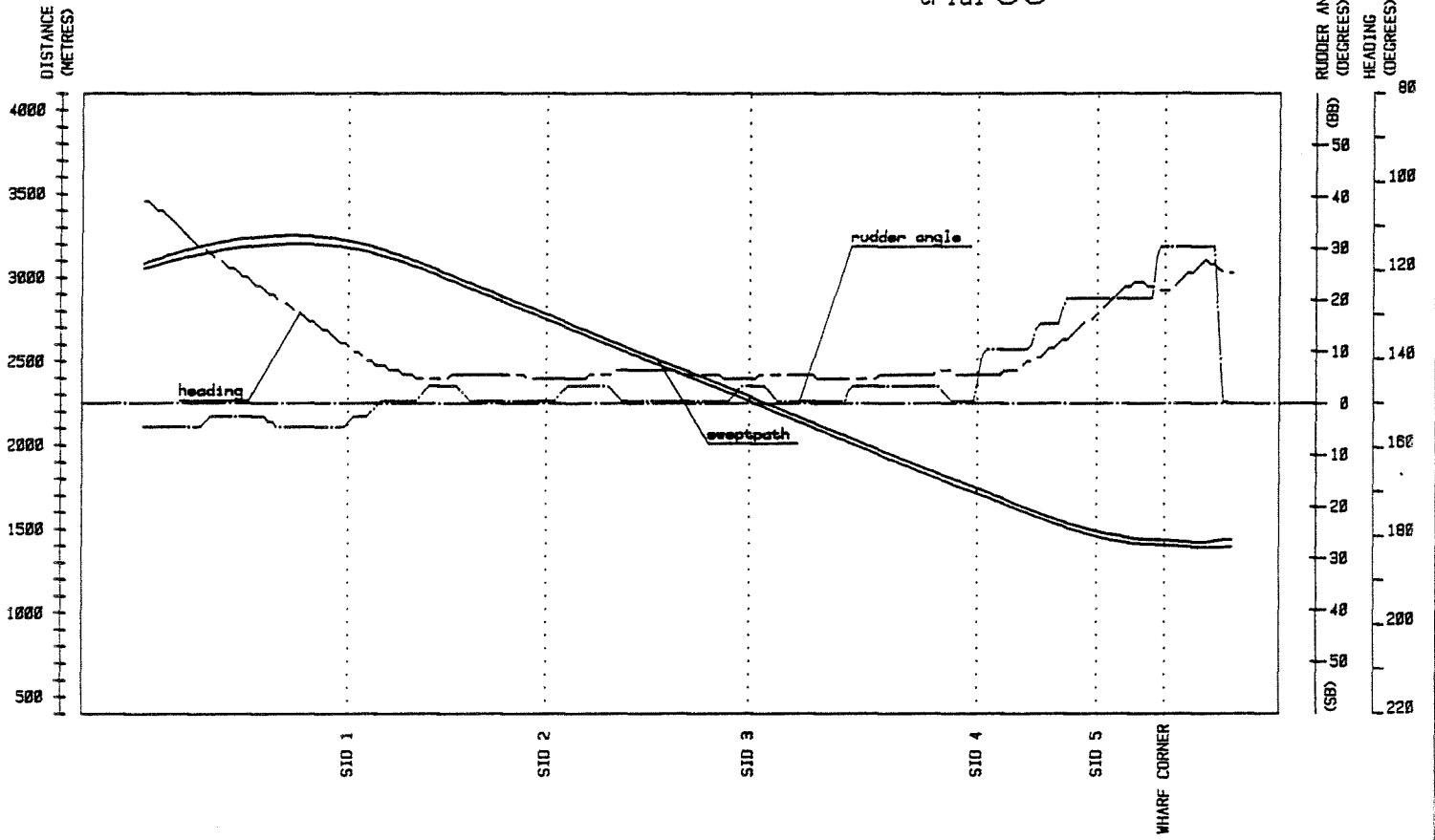
MAX FLOOD AT NEAP TIDE
 ship: 45.000 dwt channel depths 12m
 winddirection: 0 degrees.
 wind speed : 0 knots.

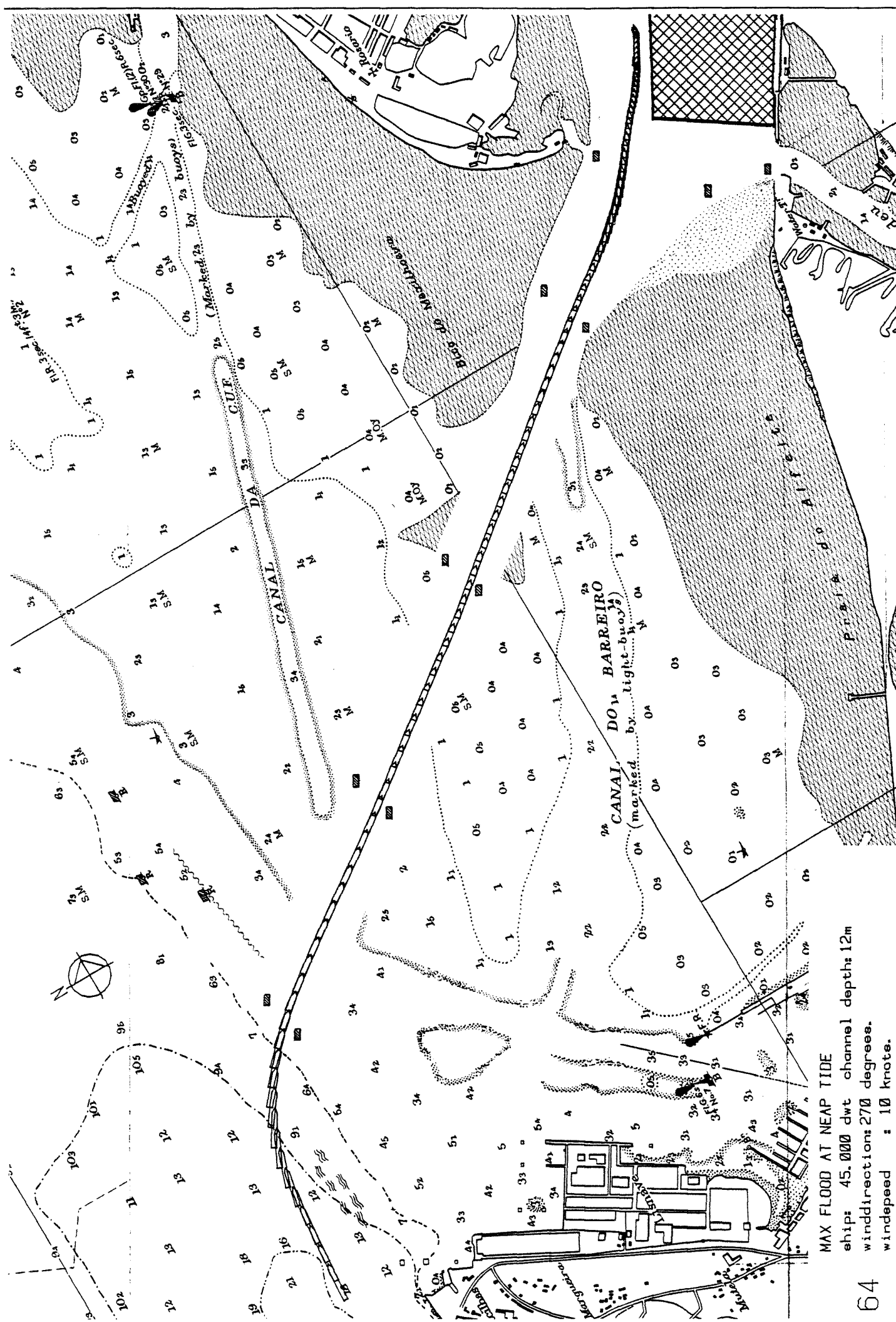
trial 62





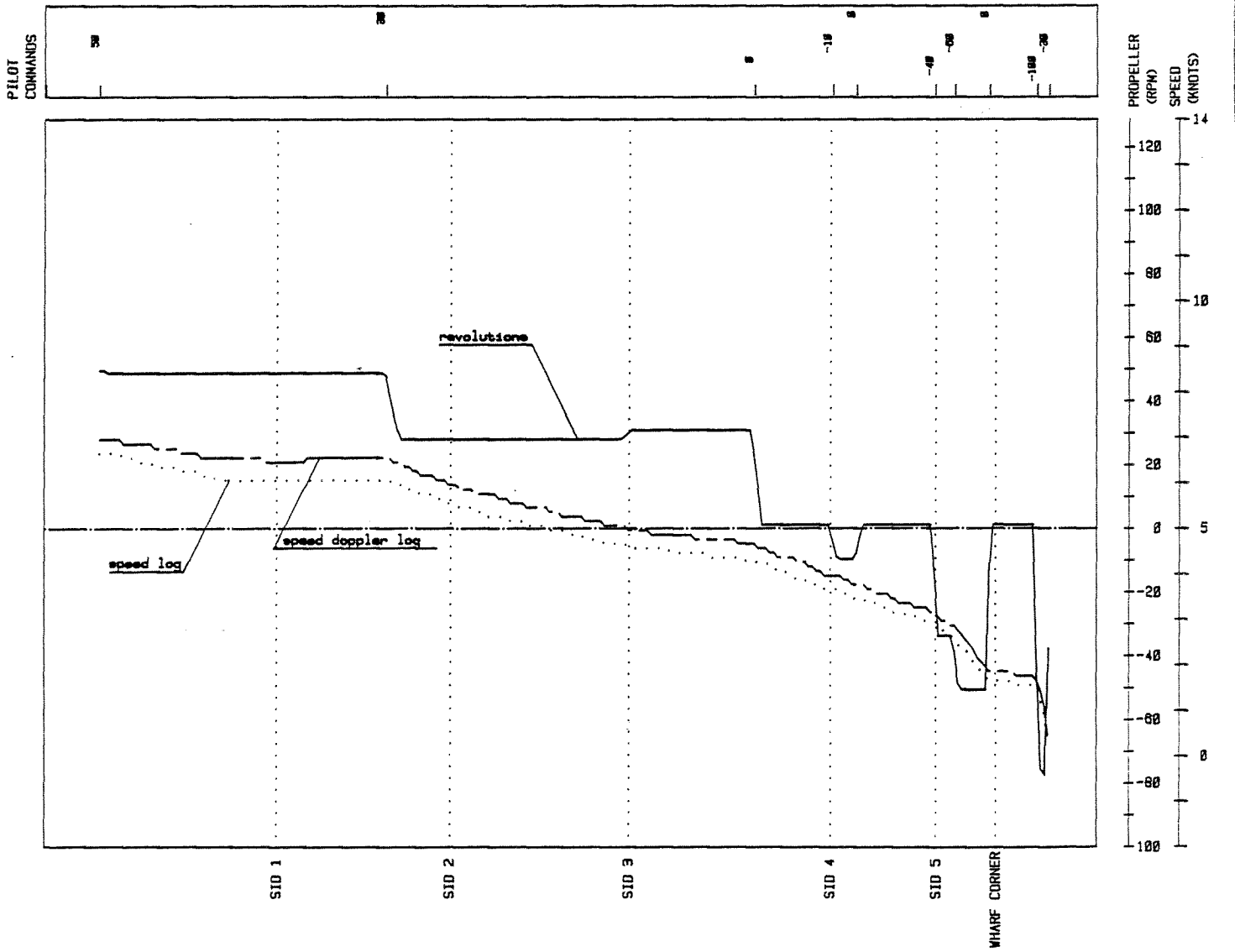
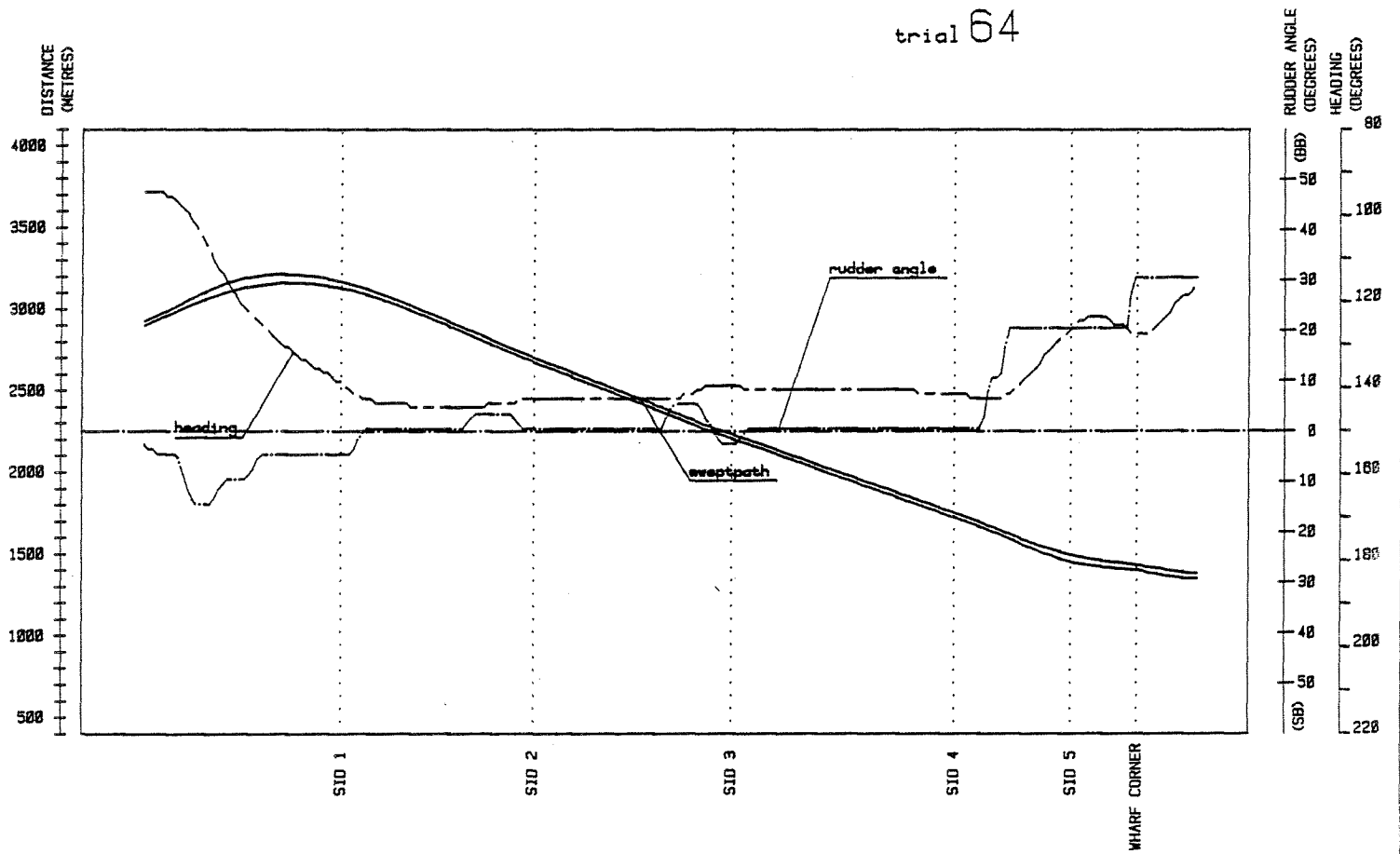
MAX FLOOD AT NEAP TIDE
 ship: 45.000 dwt channel depth: 12m
 wind direction: 225 degrees.
 wind speed : 20 knots.



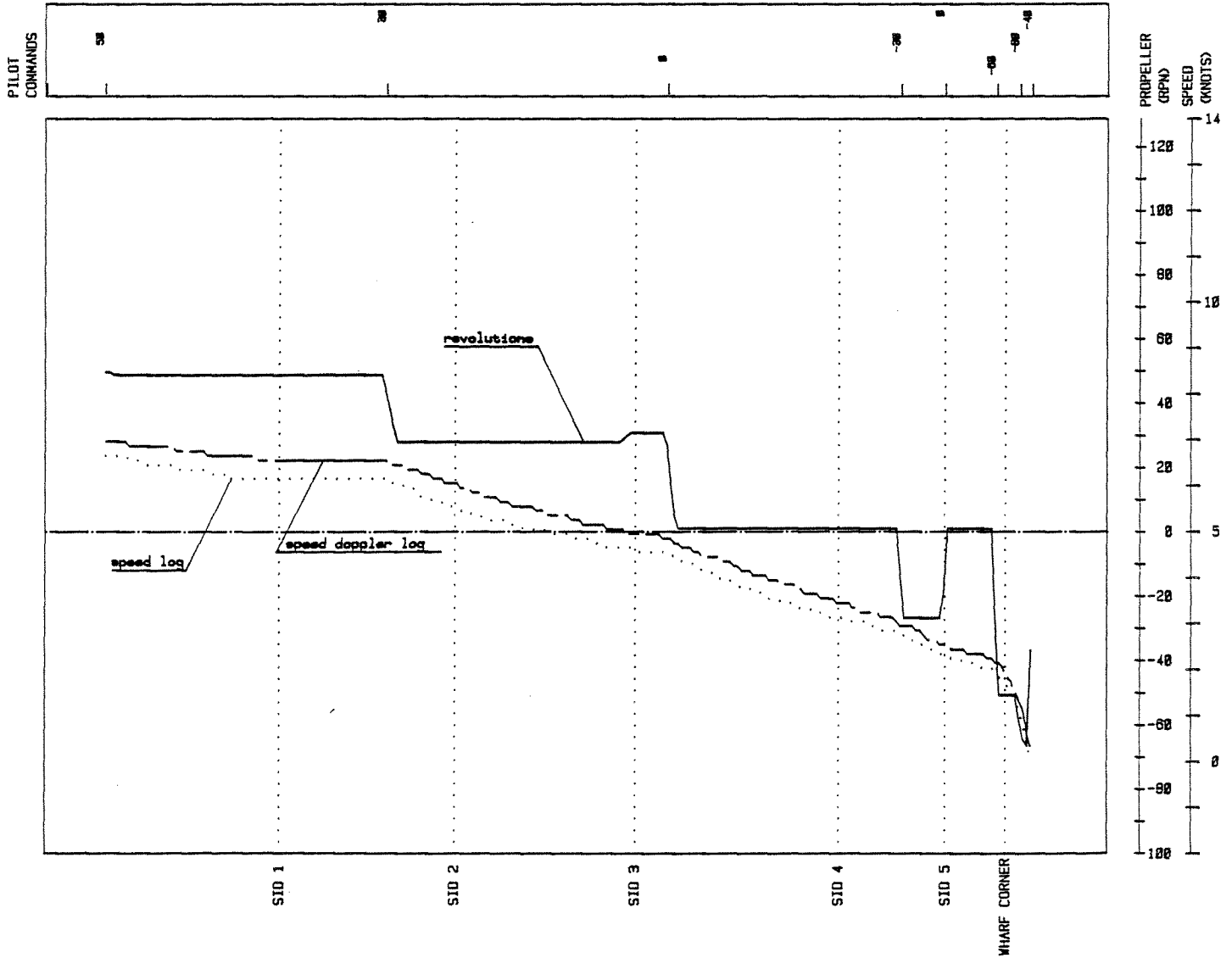
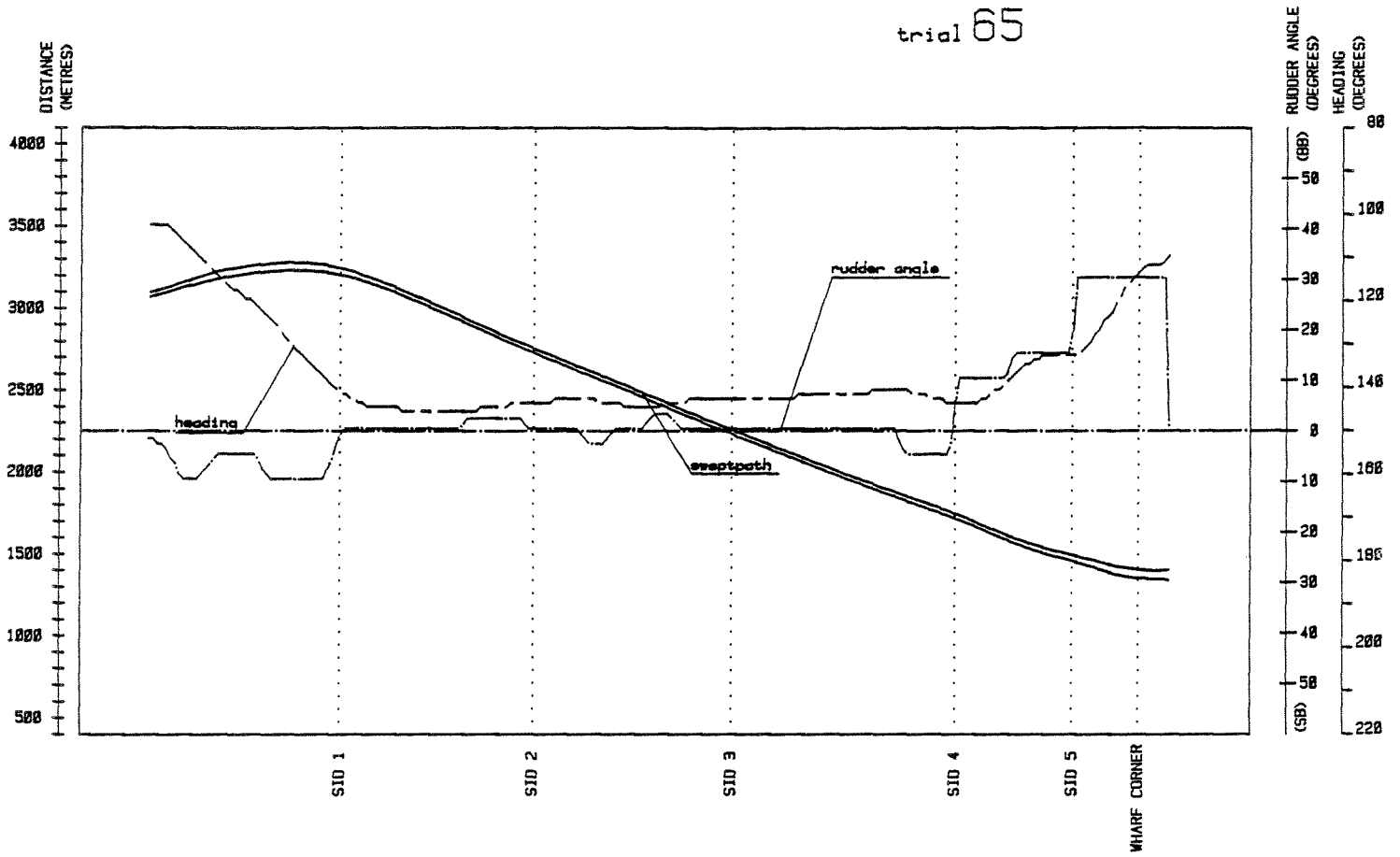


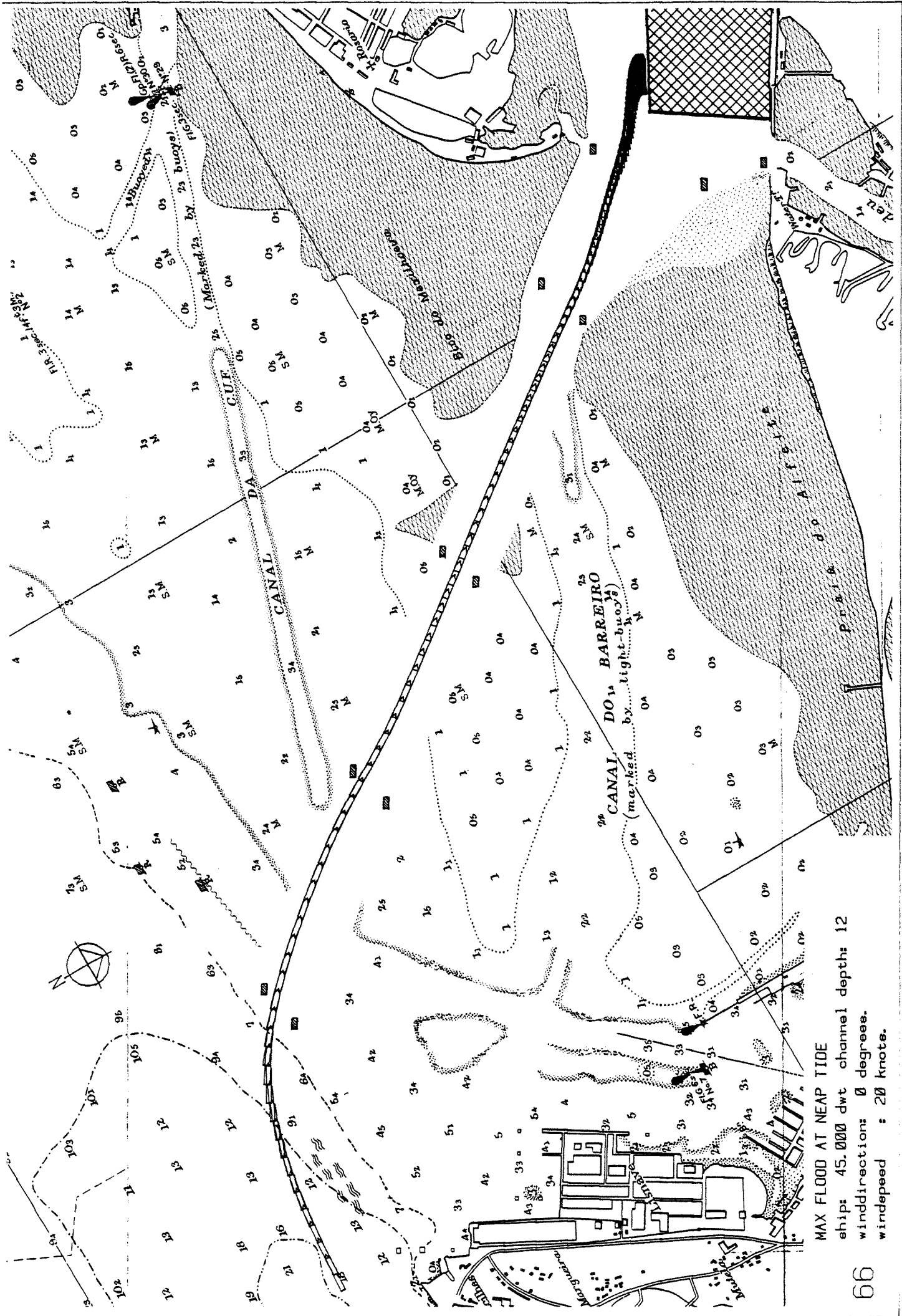
MAX FLOOD AT NEAP TIDE
 ship: 45,000 dwt channel depth: 12m
 wind direction: 270 degrees.
 wind speed : 10 knots.

trial 64



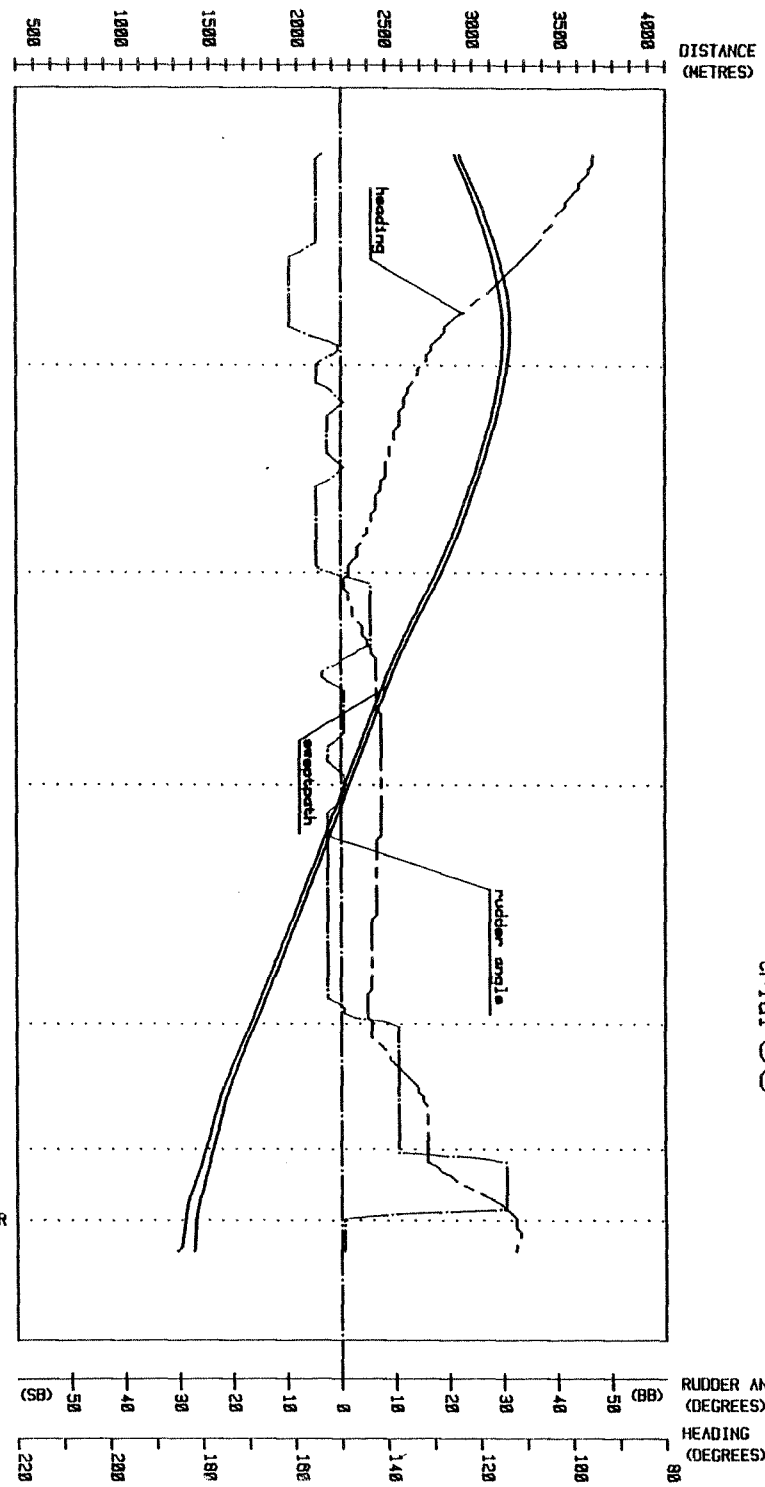
trial 65



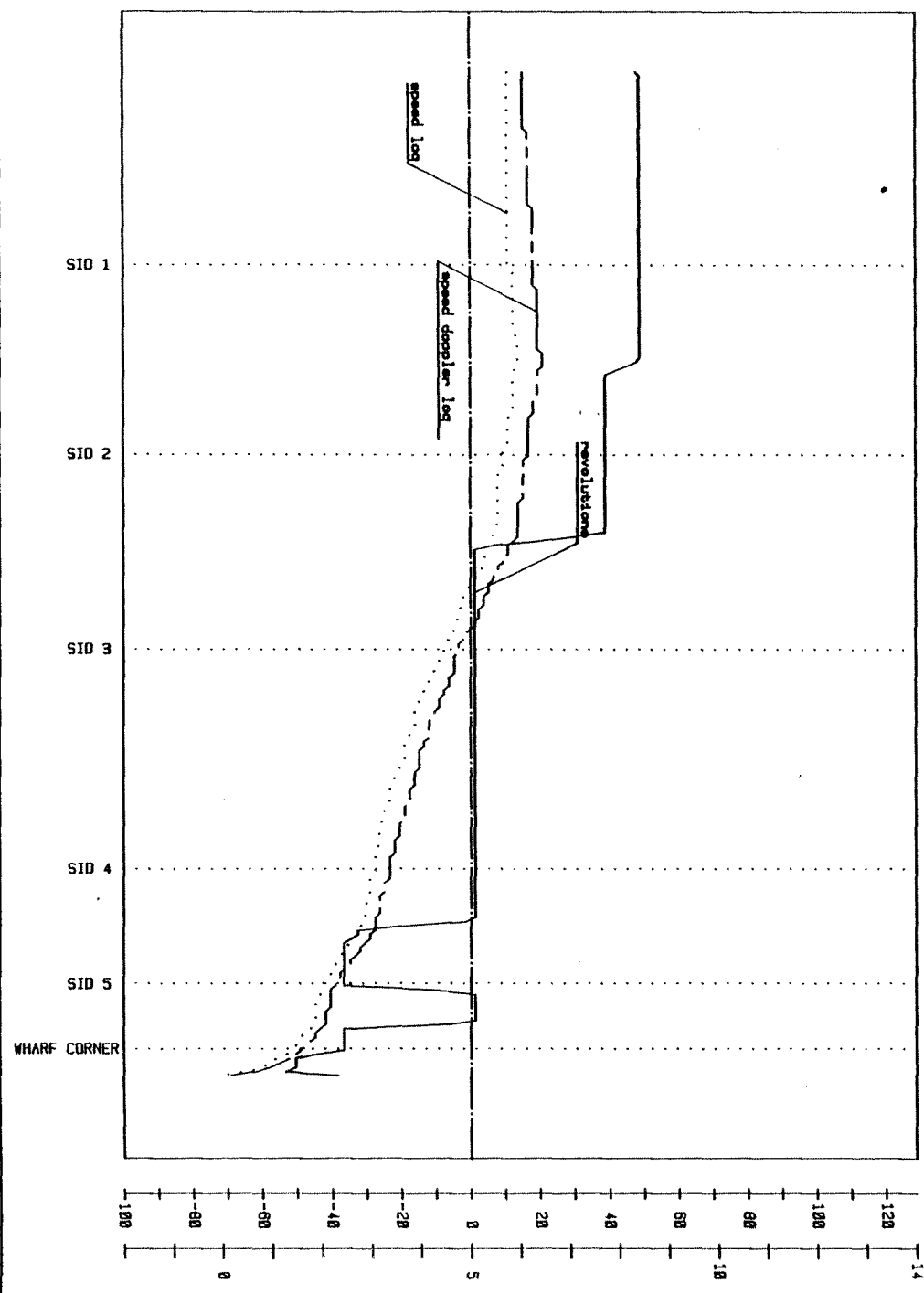
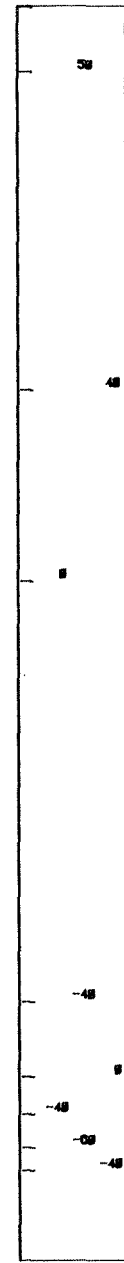


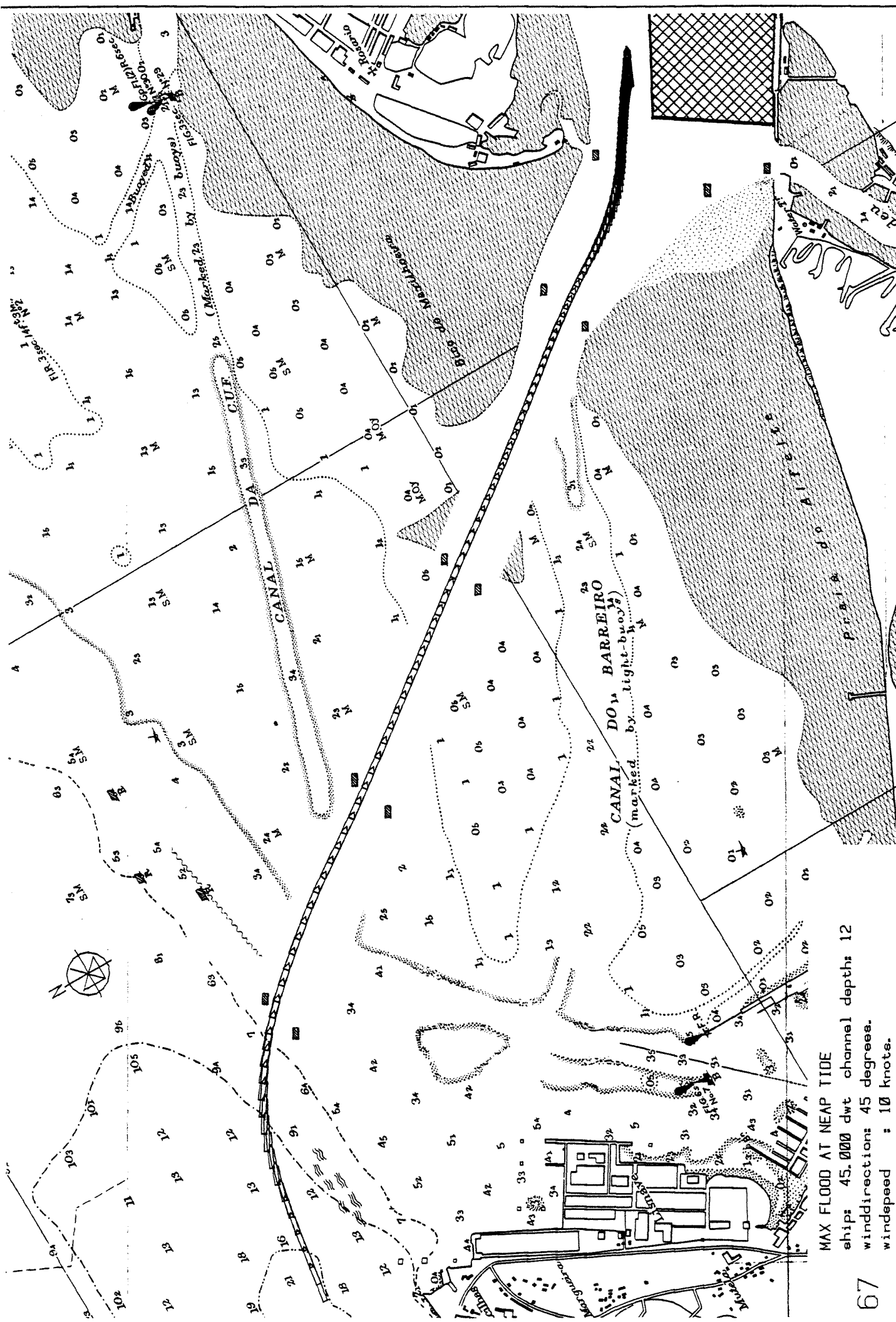
MAX FLOOD AT NEAP TIDE
 ship: 45,000 dwt channel depth: 12
 winddirection: 0 degrees.
 wind speed : 20 knots.

trial 66



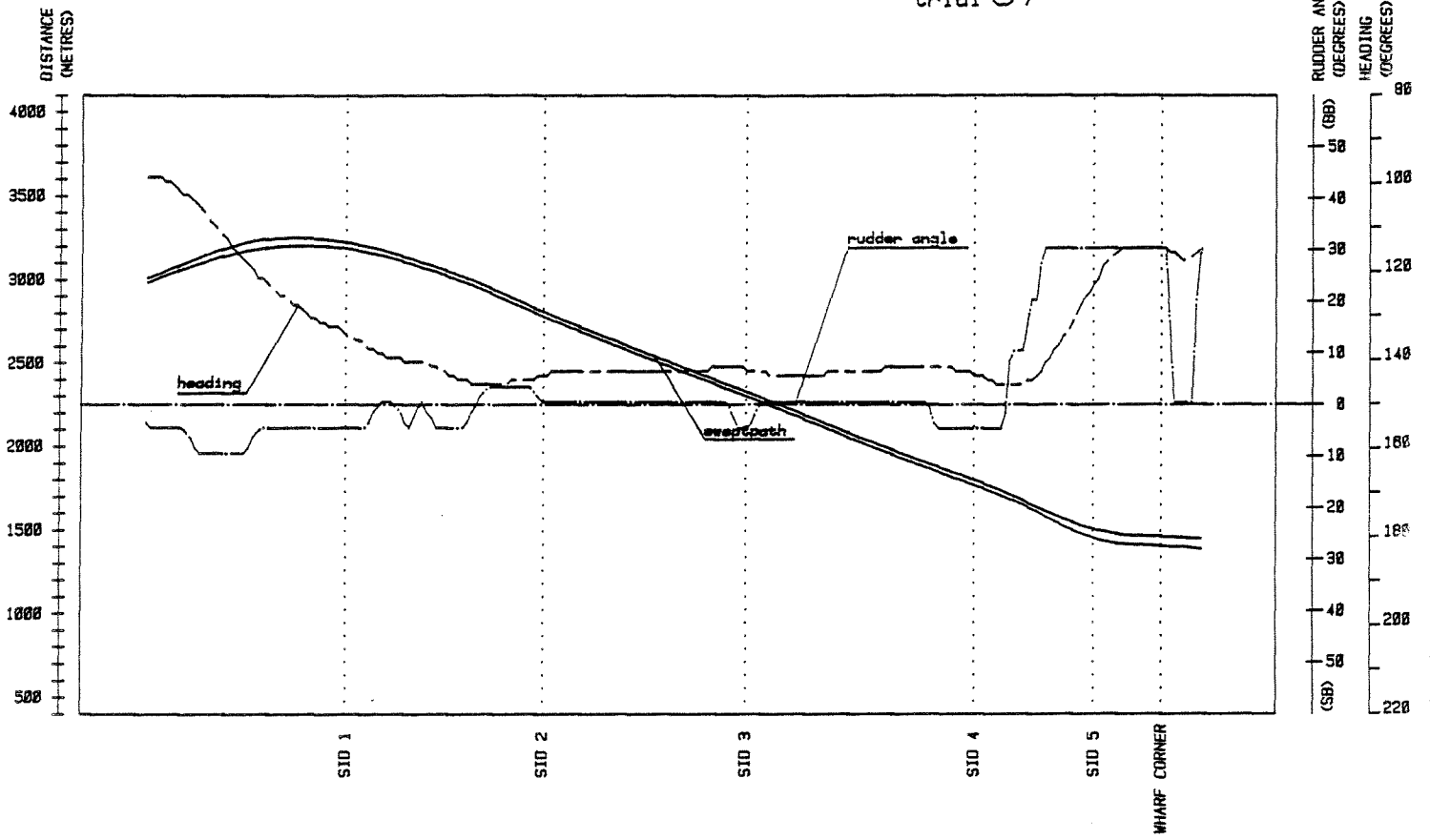
PILOT
COMMANDS



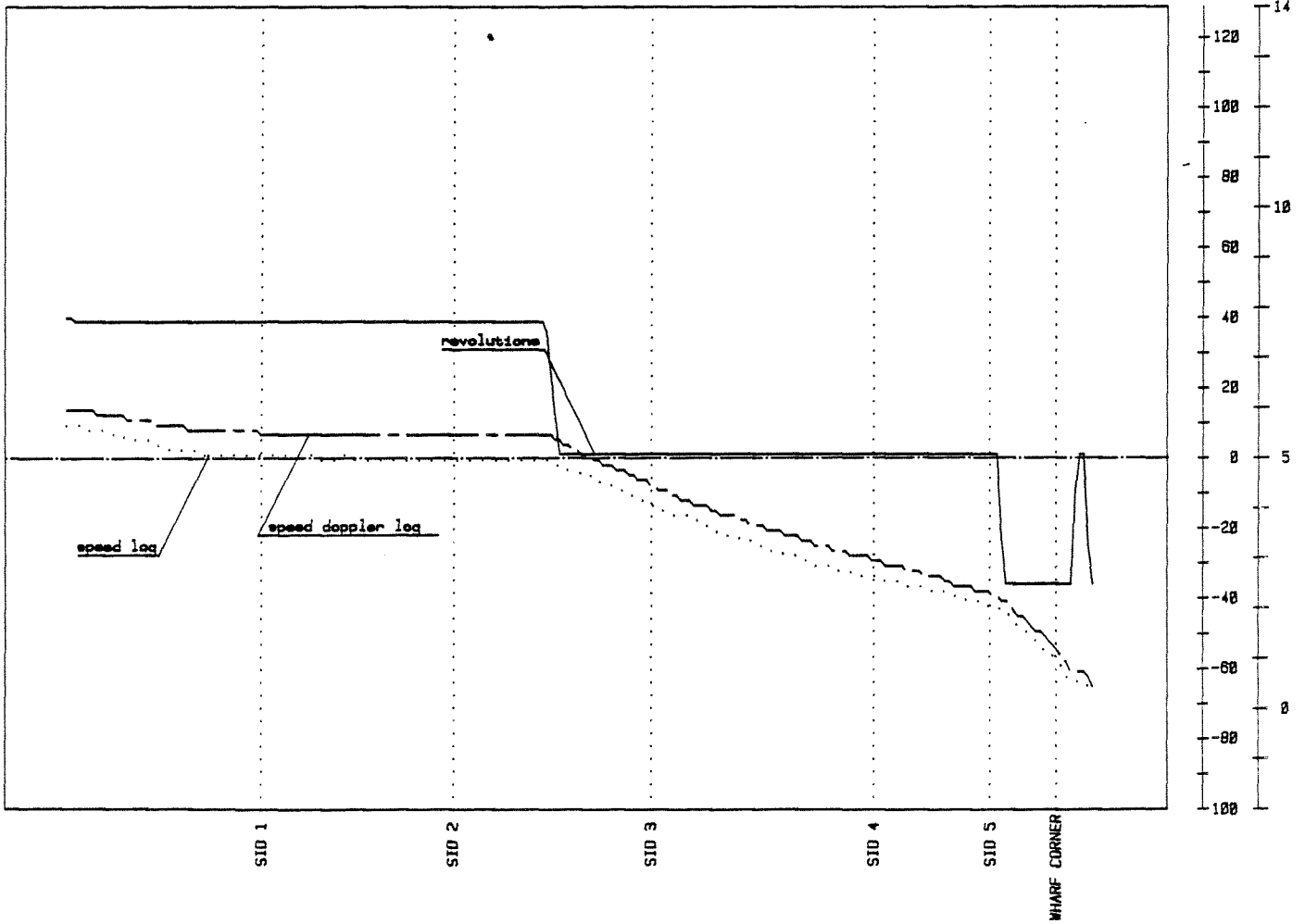
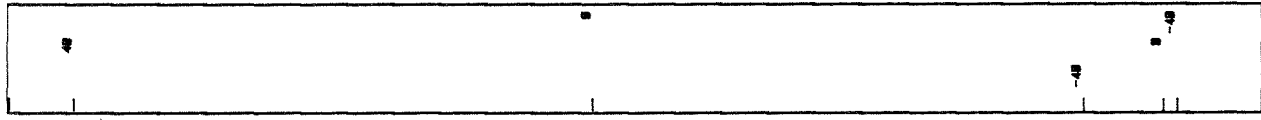


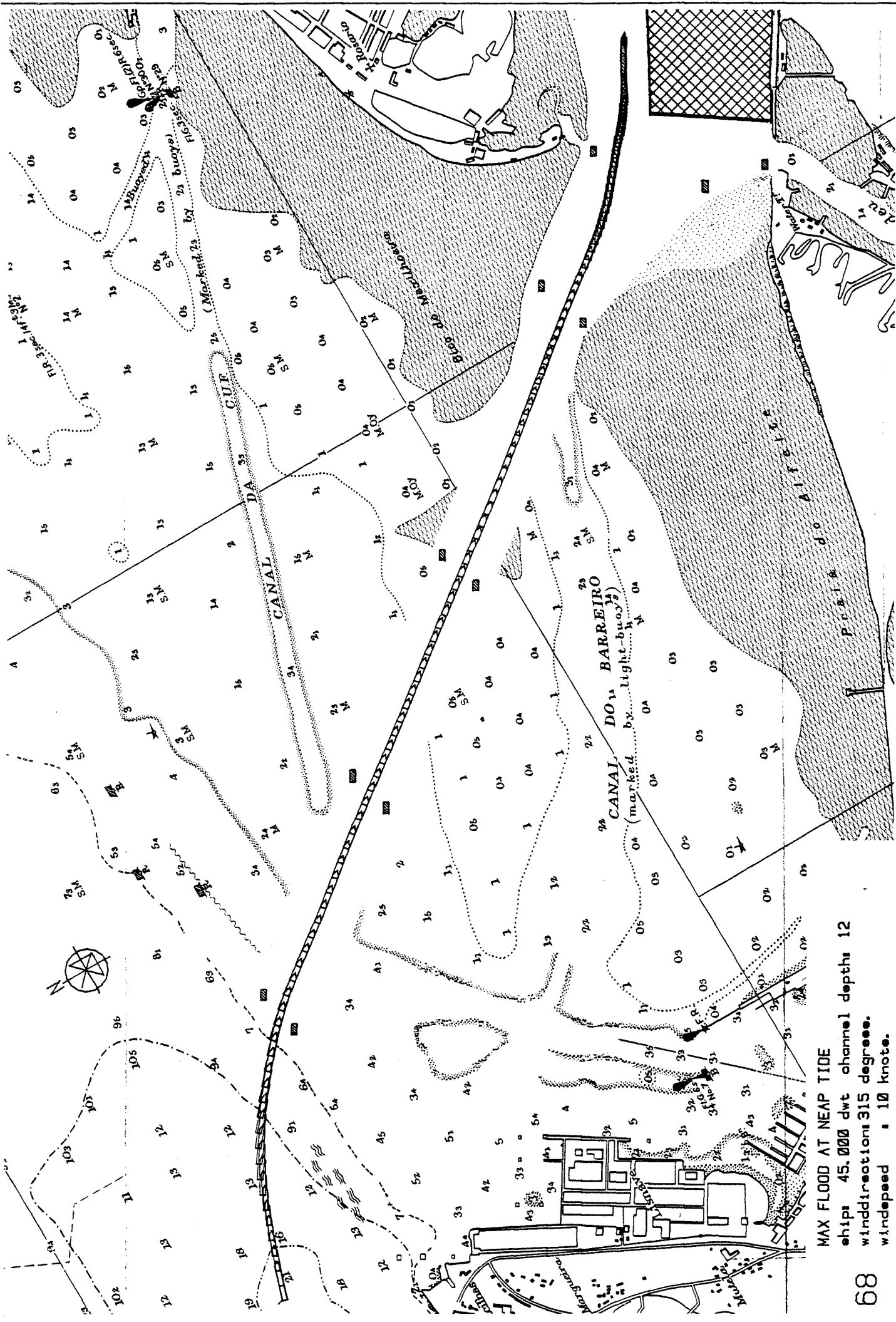
MAX FLOOD AT NEAP TIDE
 ships: 45,000 dwt channel depths: 12
 winddirection: 45 degrees.
 windeped : 10 knots.

trial 67



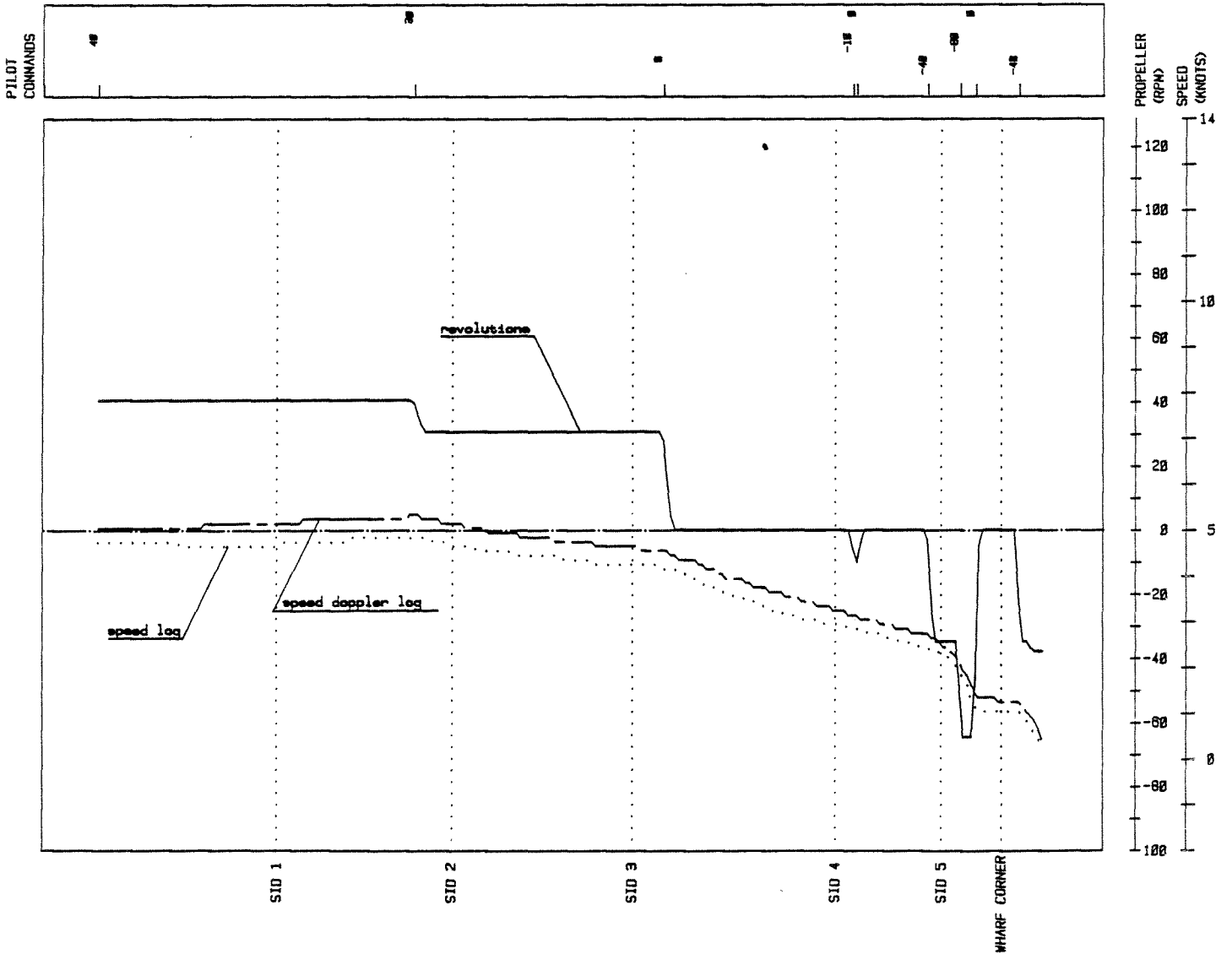
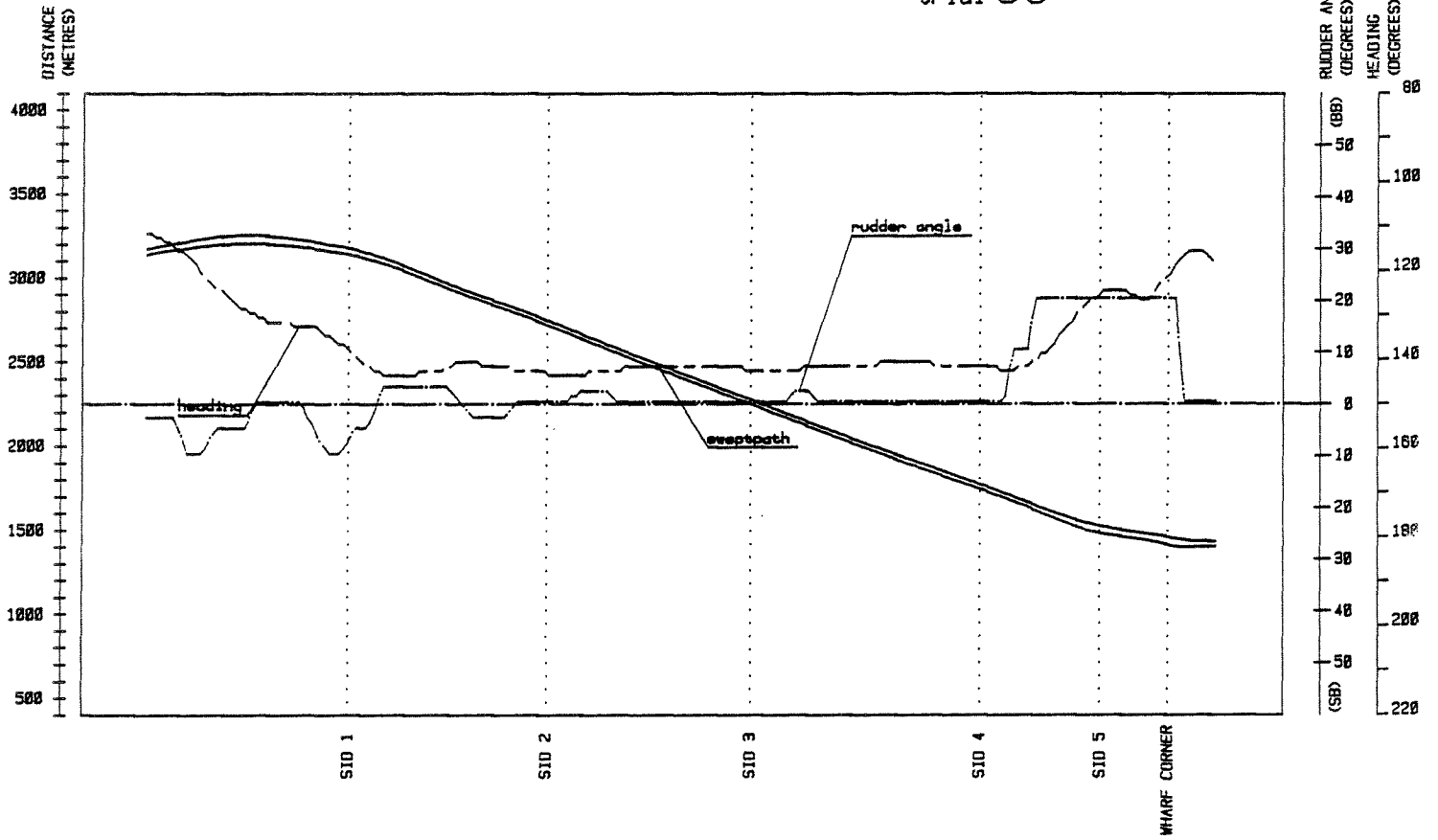
PILOT
COMMANDS

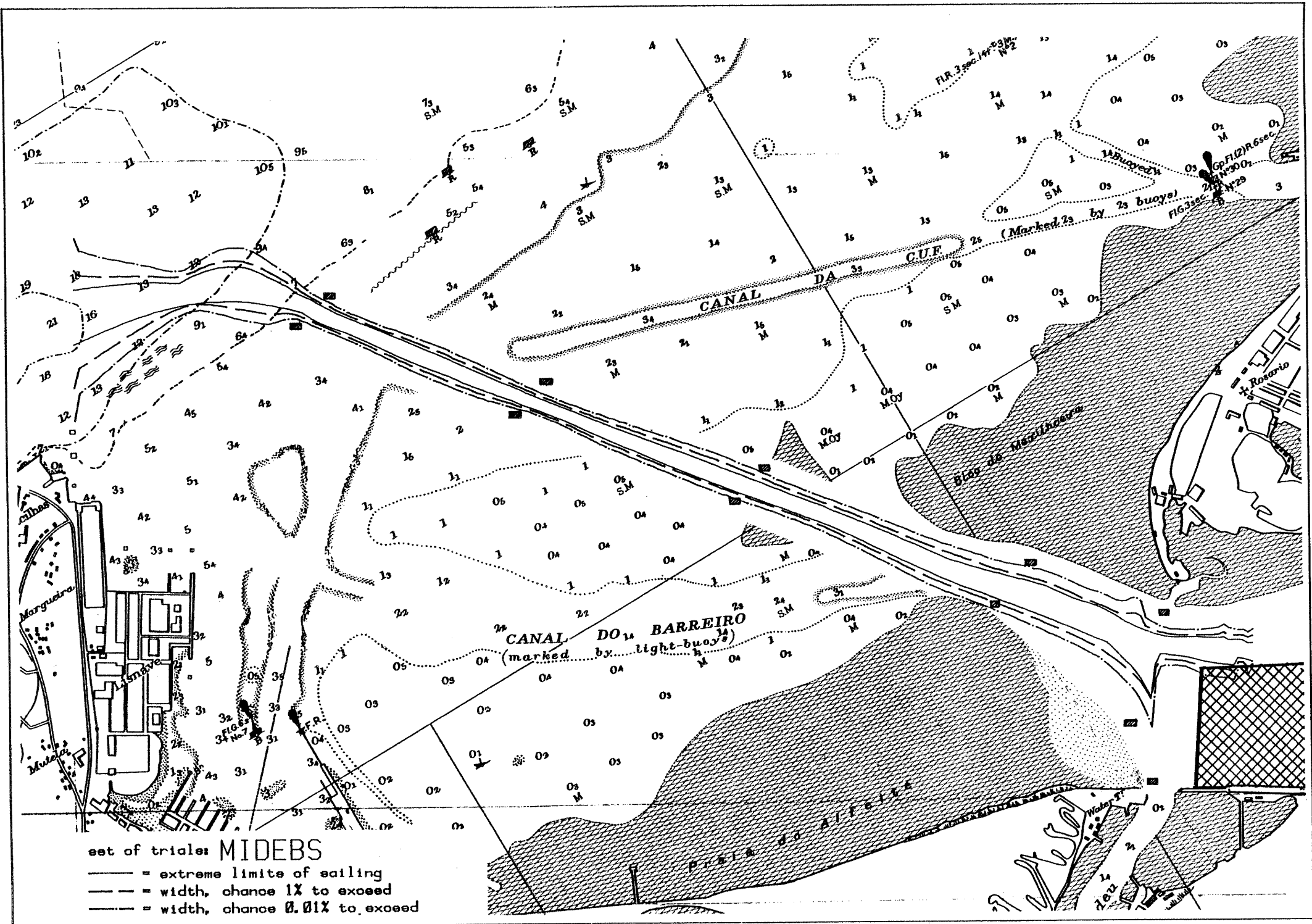




MAX FLOOD AT NEAP TIDE
 ships 45,000 dwt channel depths 12
 wind direction 315 degree.
 wind speed 10 knots.

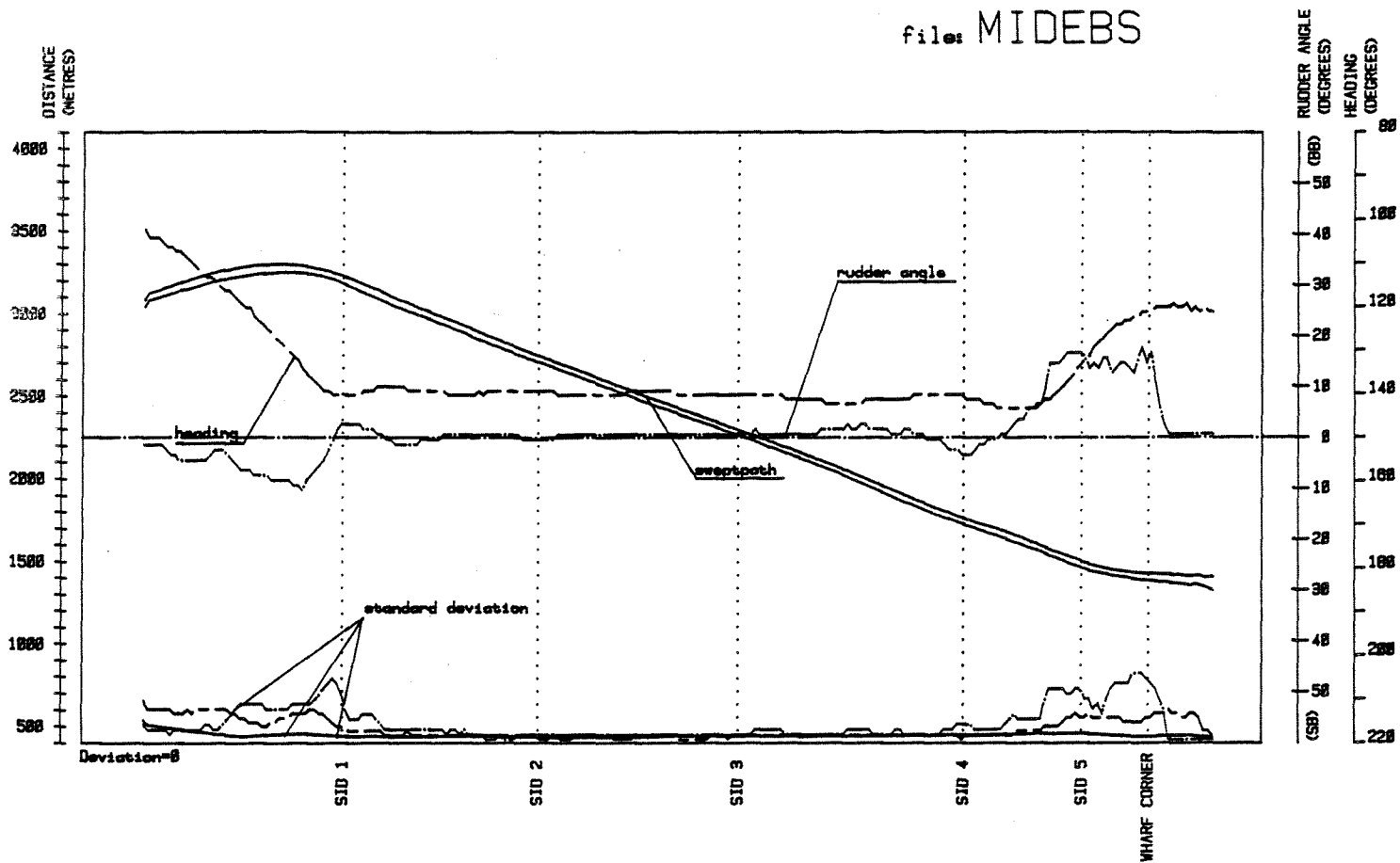
trial 68



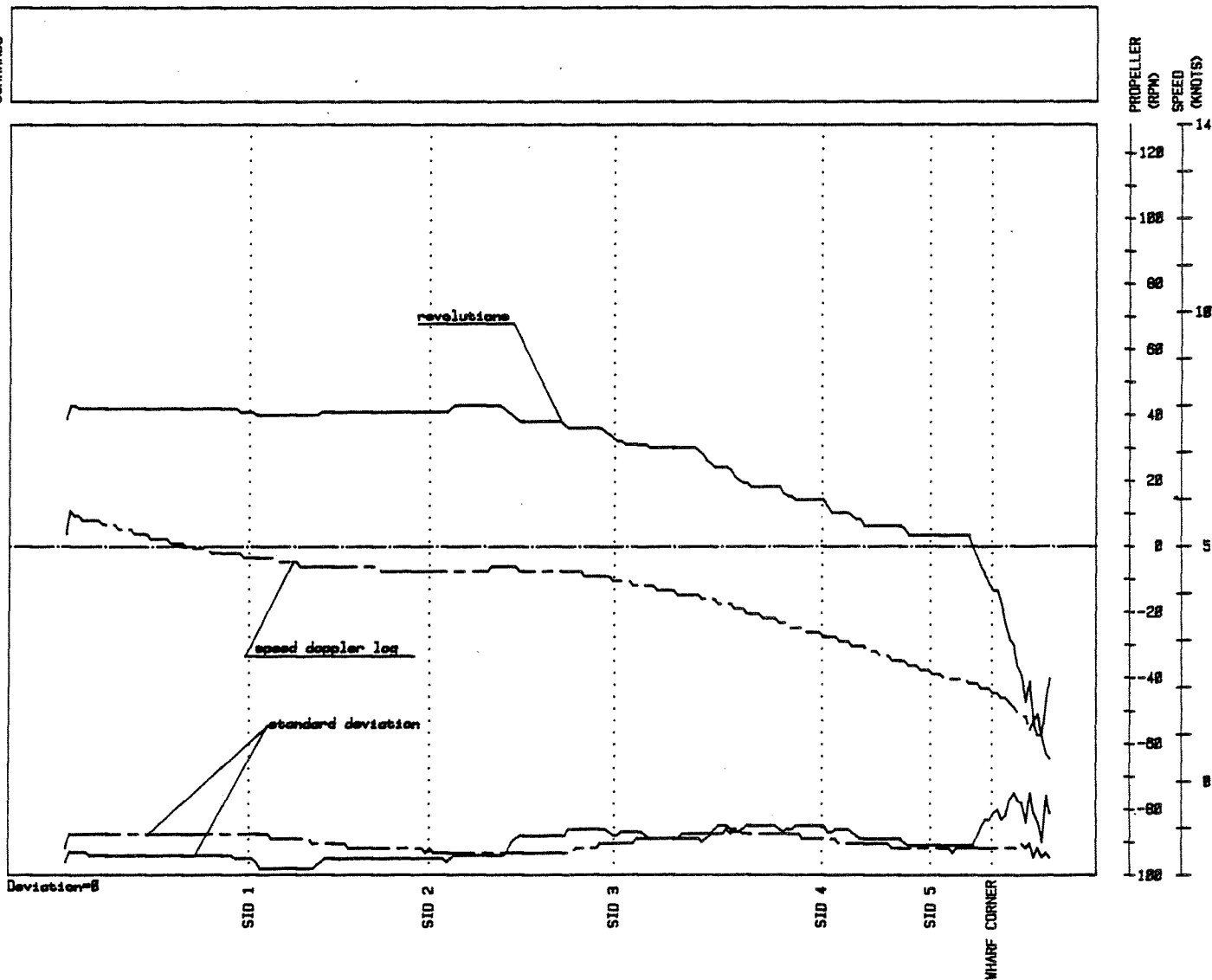


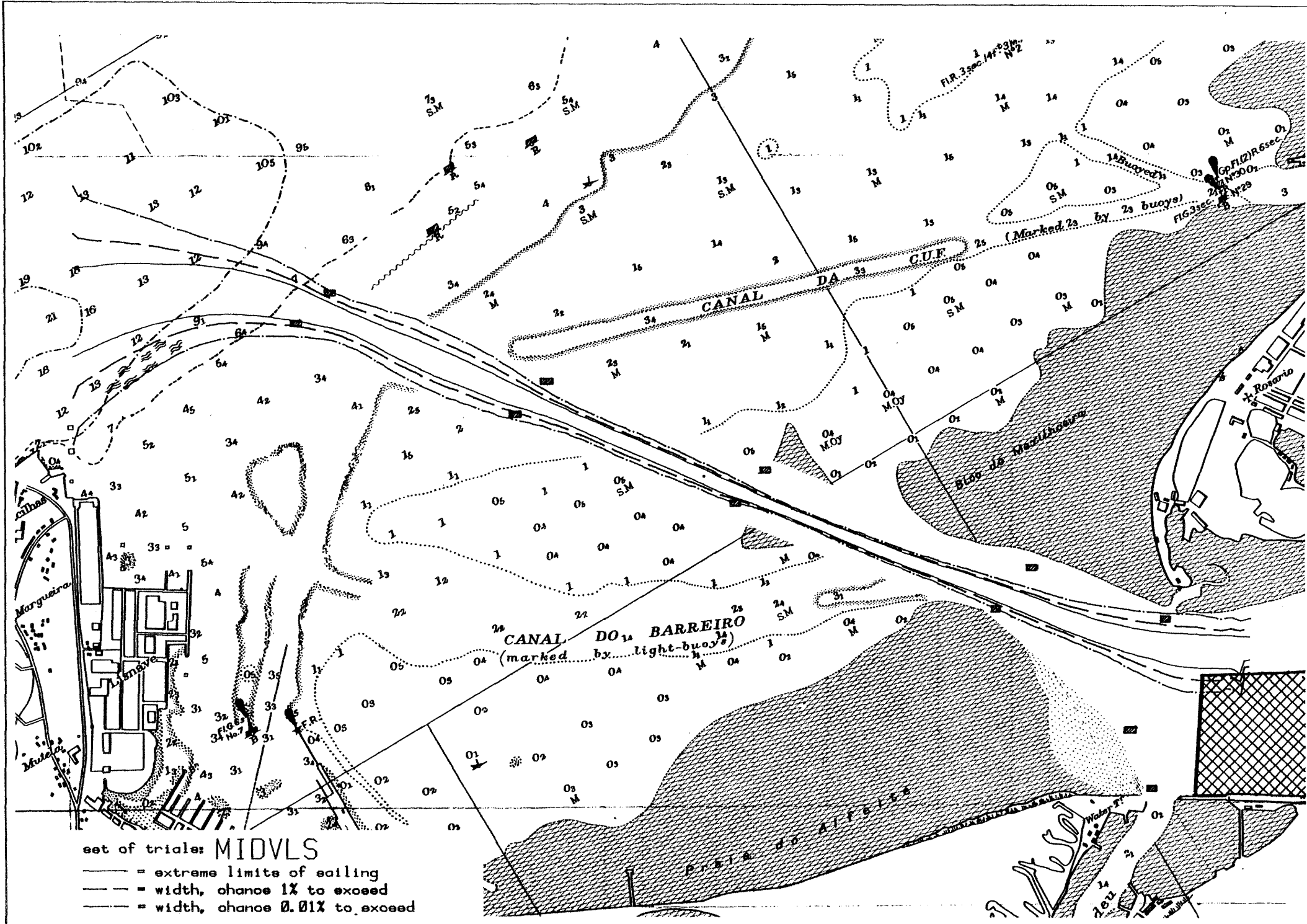
MIDEBS: 70,000 dwt at Mean Spring Ebb Tide

file: MIDEBS



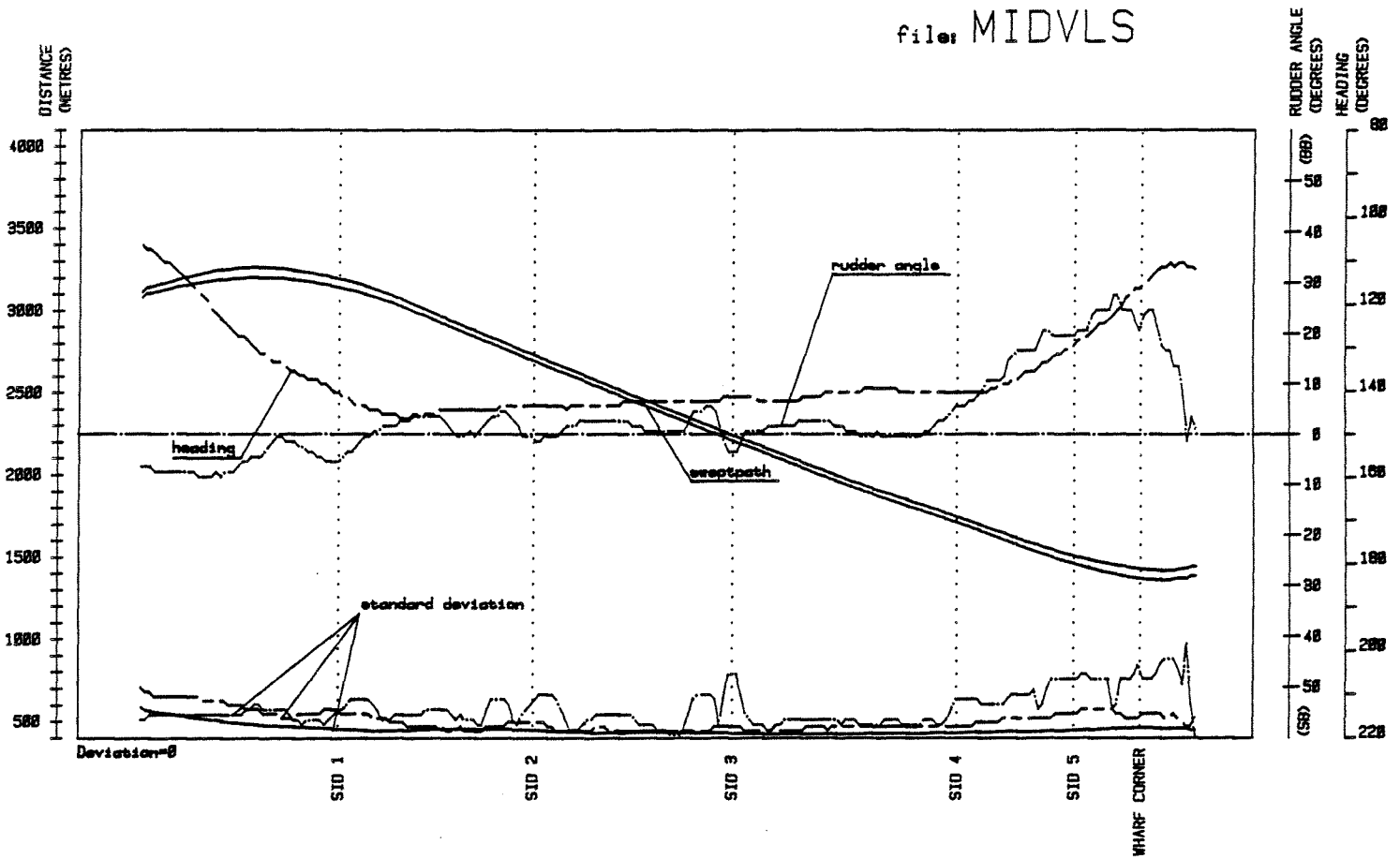
PILOT
COMMANDS



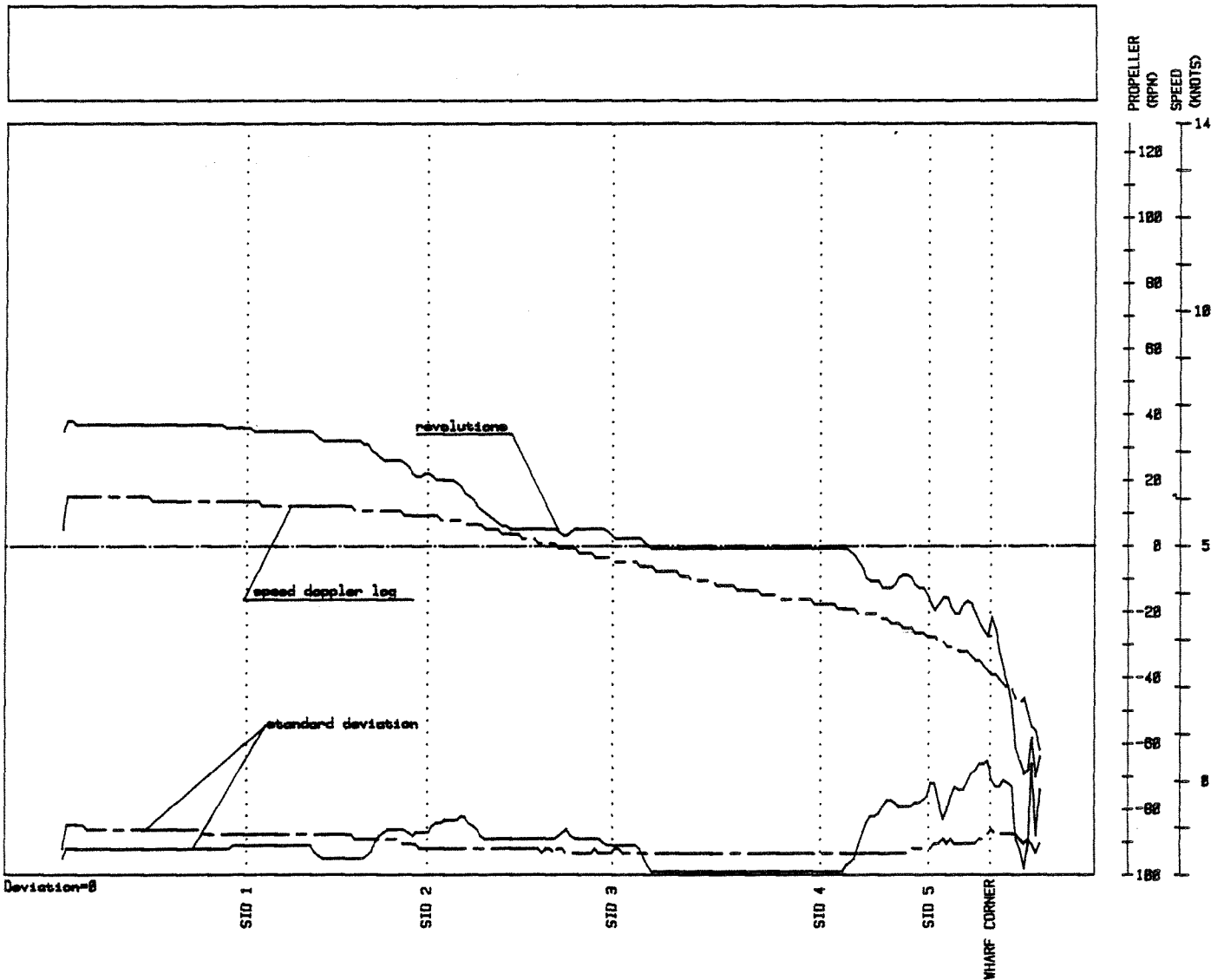


MIDVLS: 70,000 dwt at Mean Spring Flood Tide

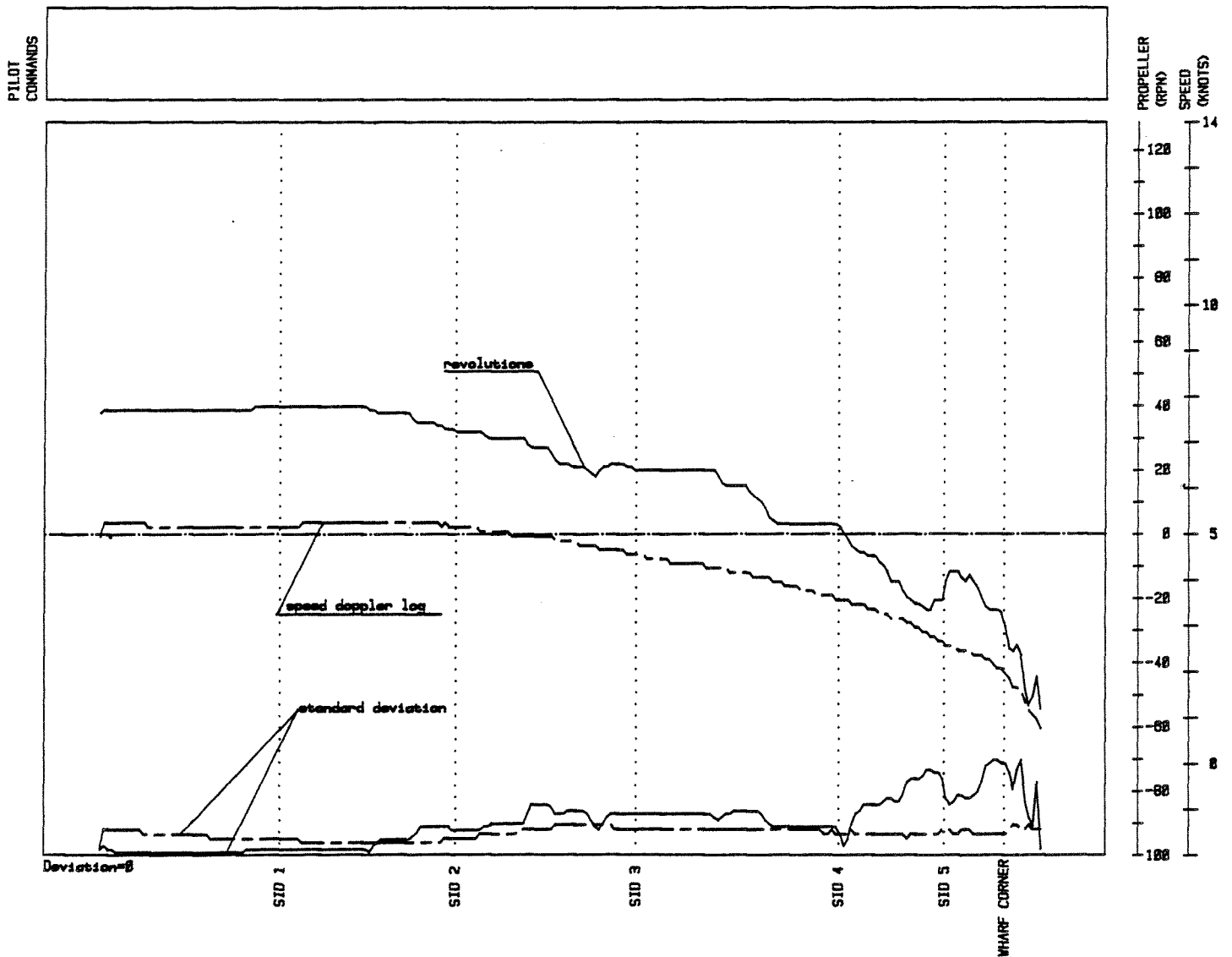
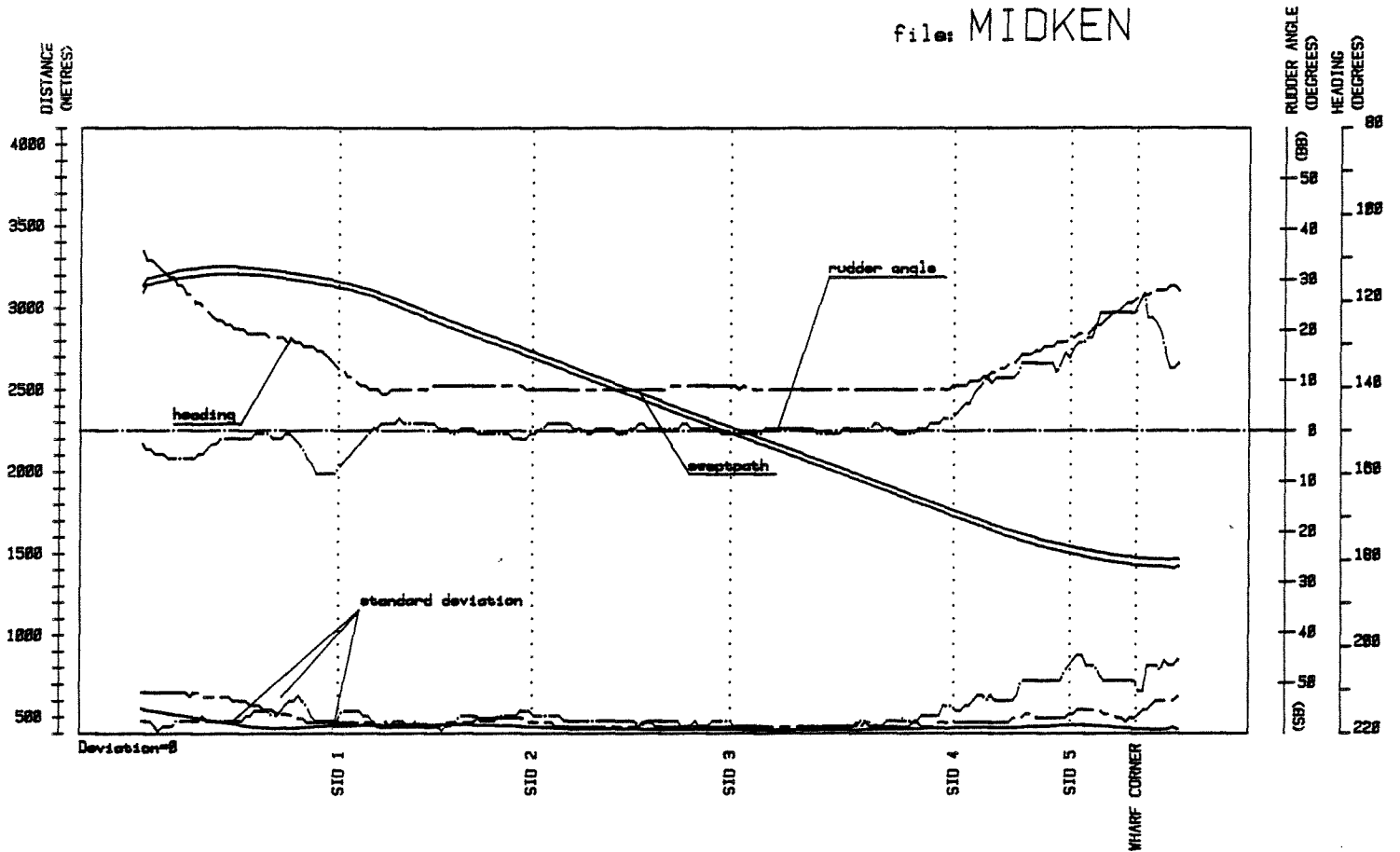
file: MIDVLS

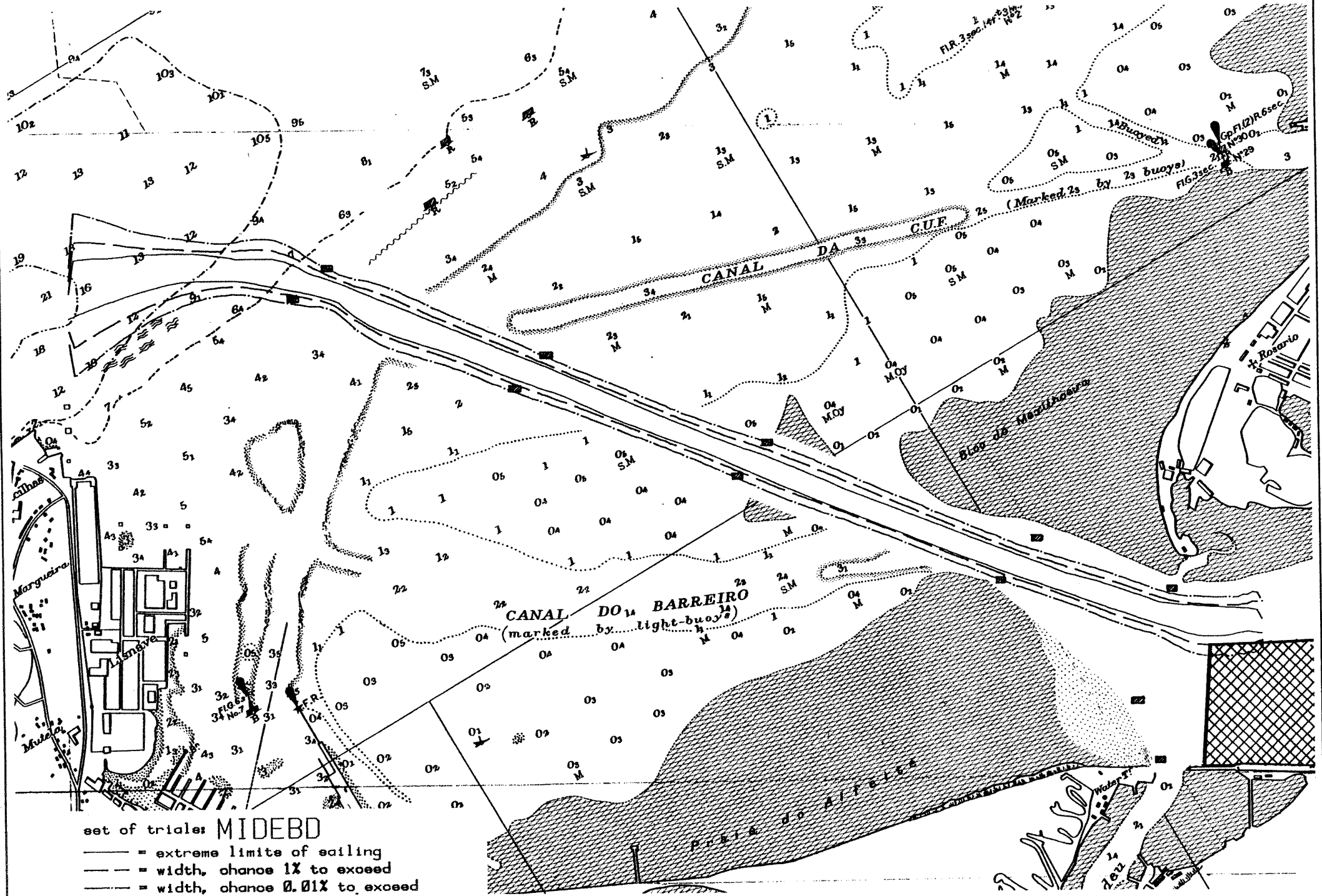


PILOT
COMMANDS



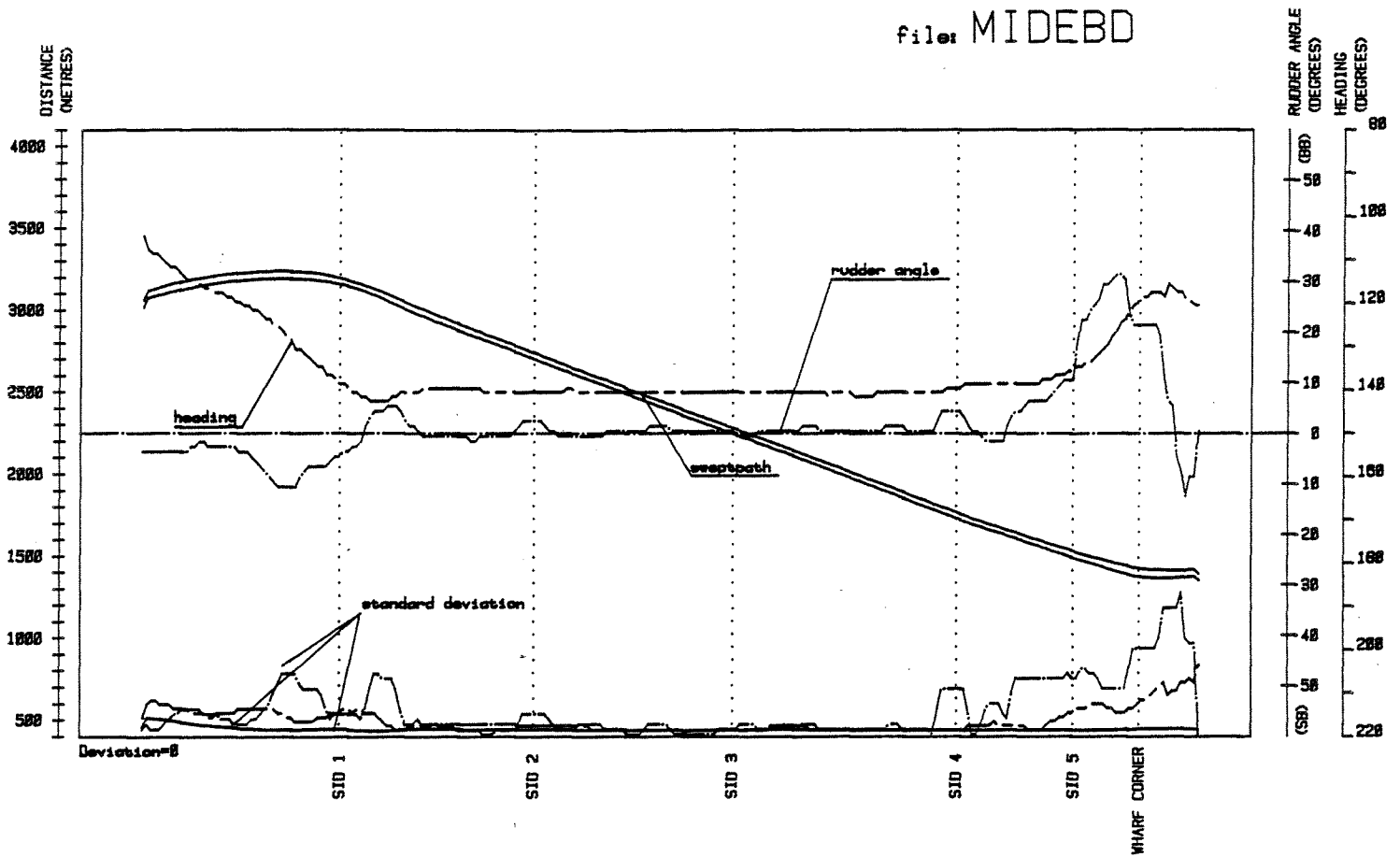
file: MIDKEN



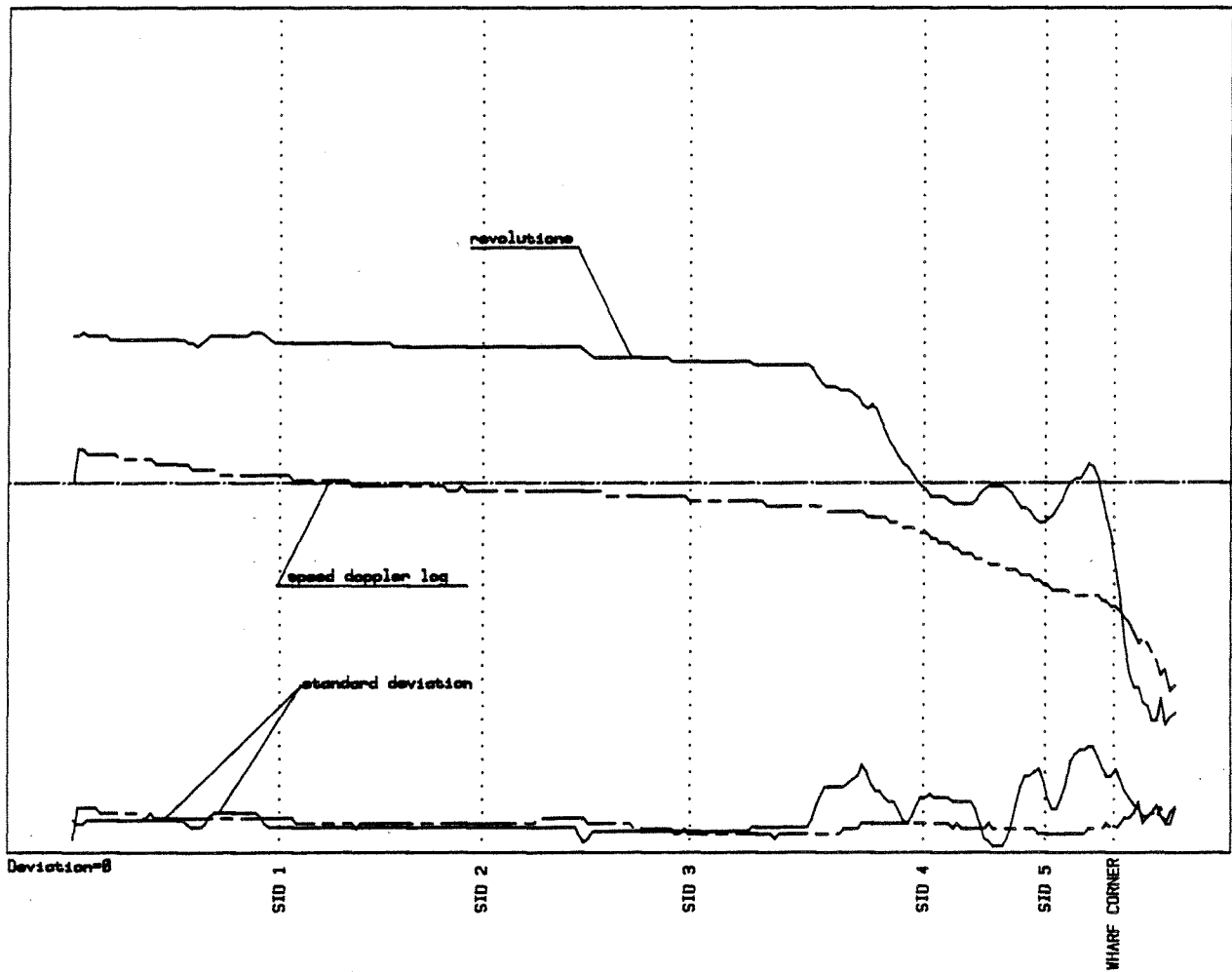


MIDEBD: 70,000 dwt at Mean Neap Ebb Tide

file: MIDEBD

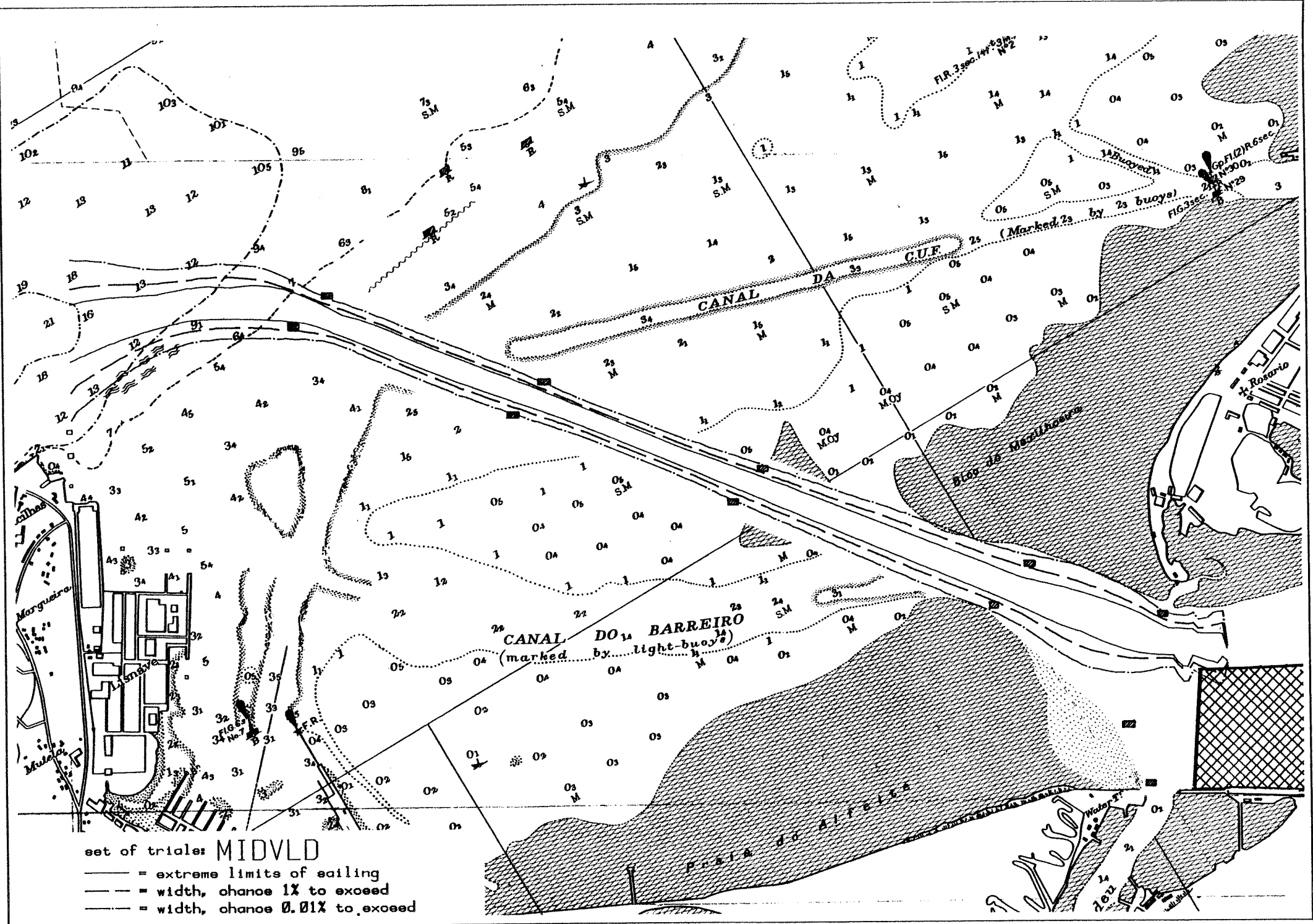


PILOT
COMMANDS

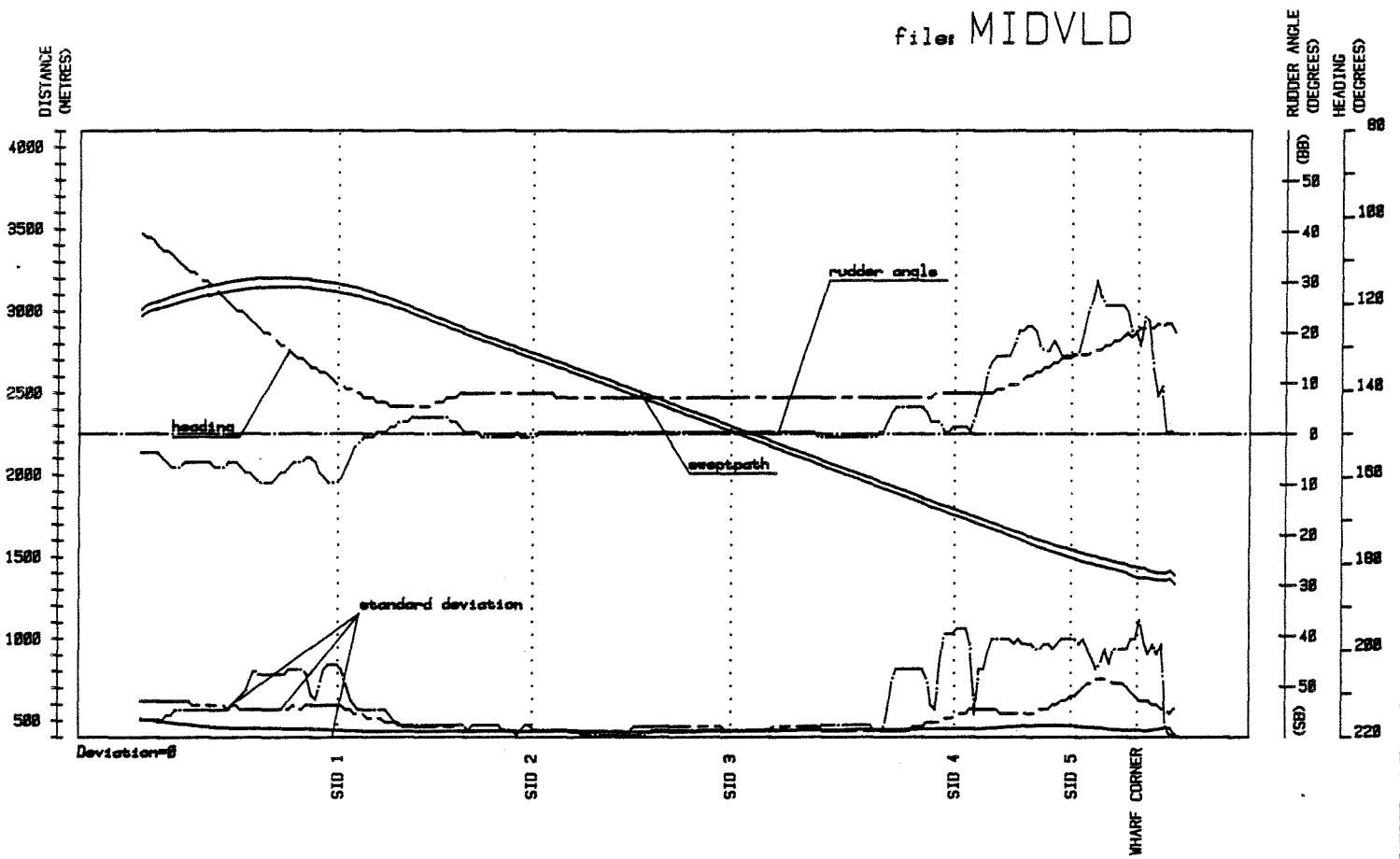


PROPELLER
SPEED
(KNOTS)

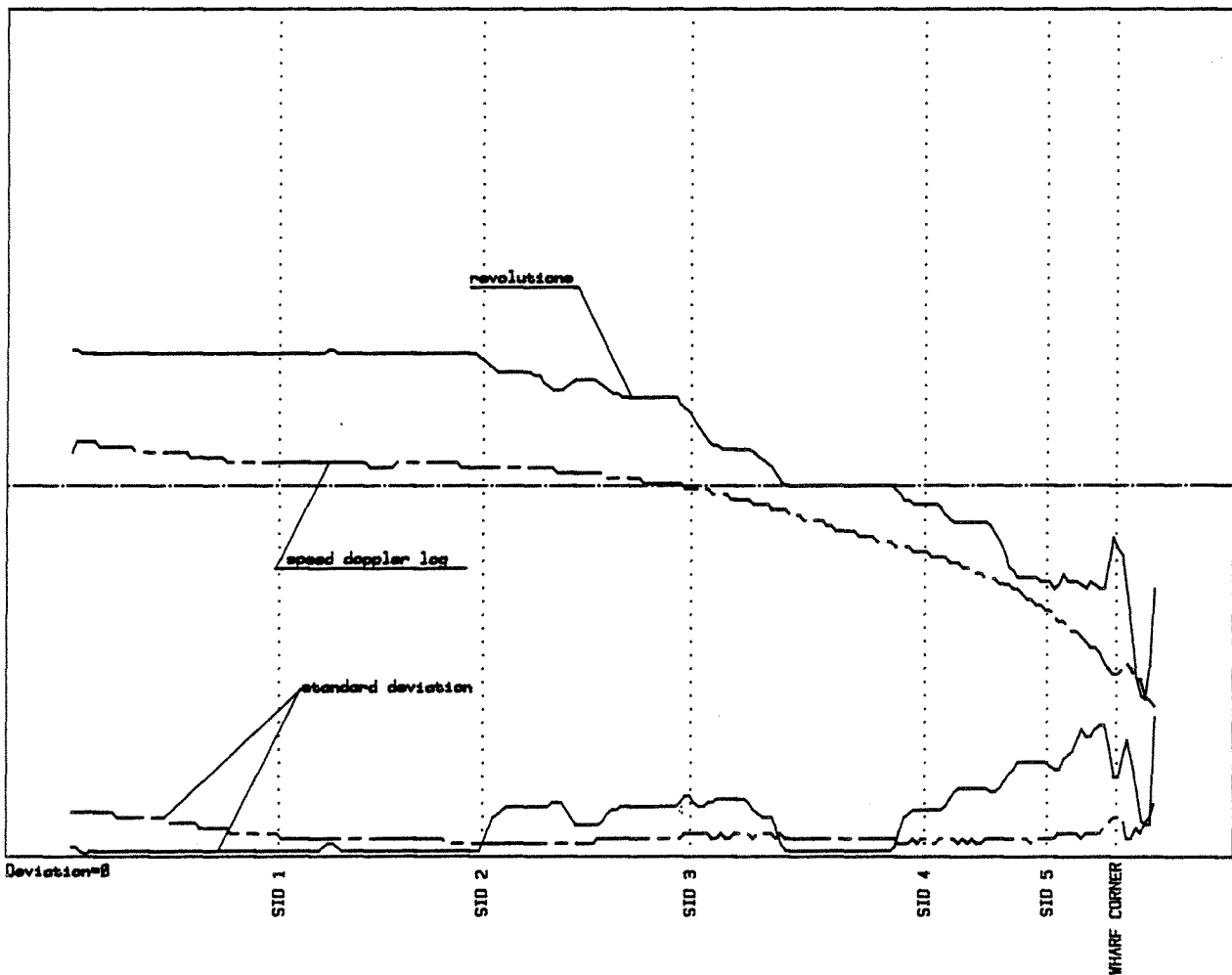
RPM



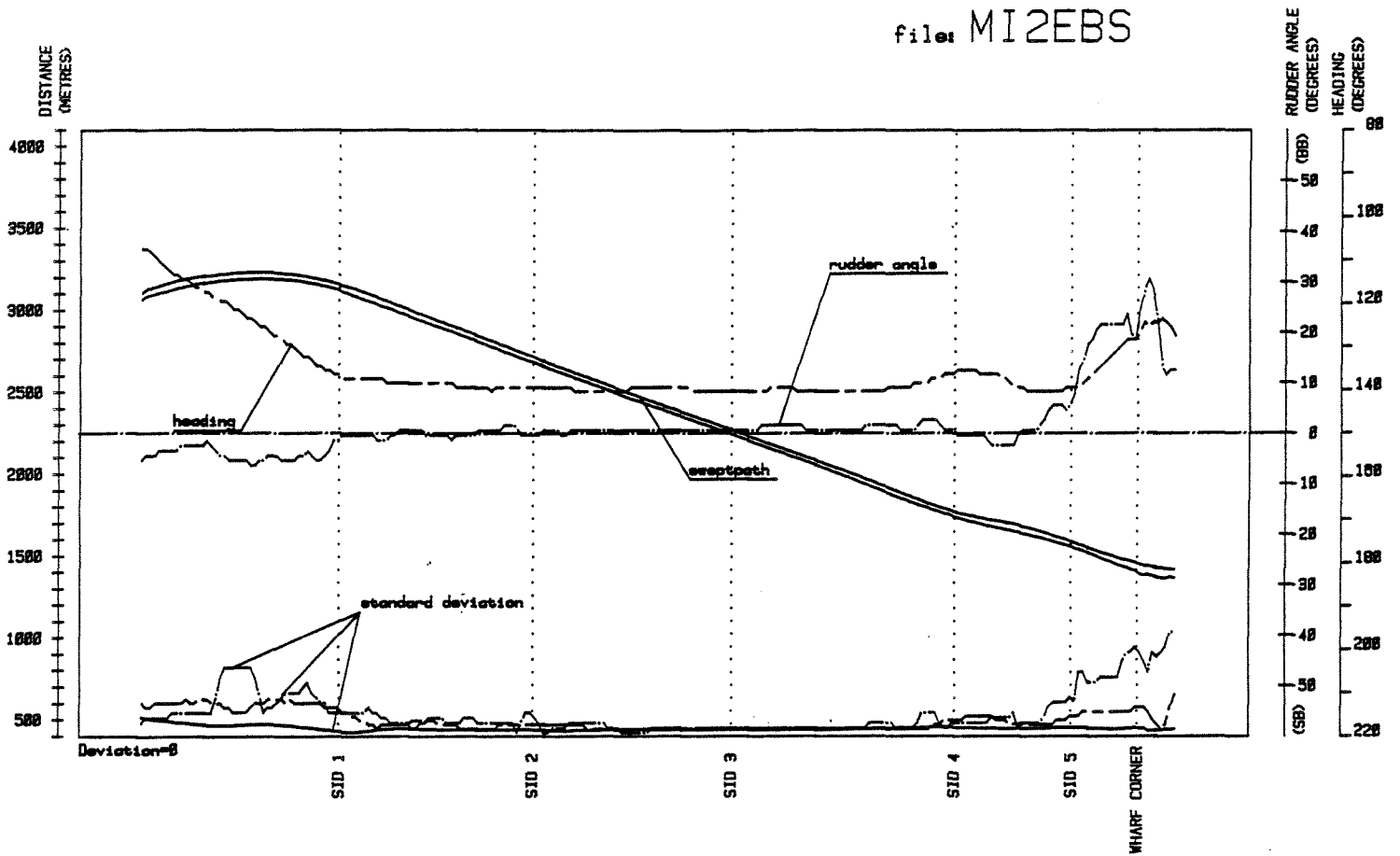
file: MIDVLD



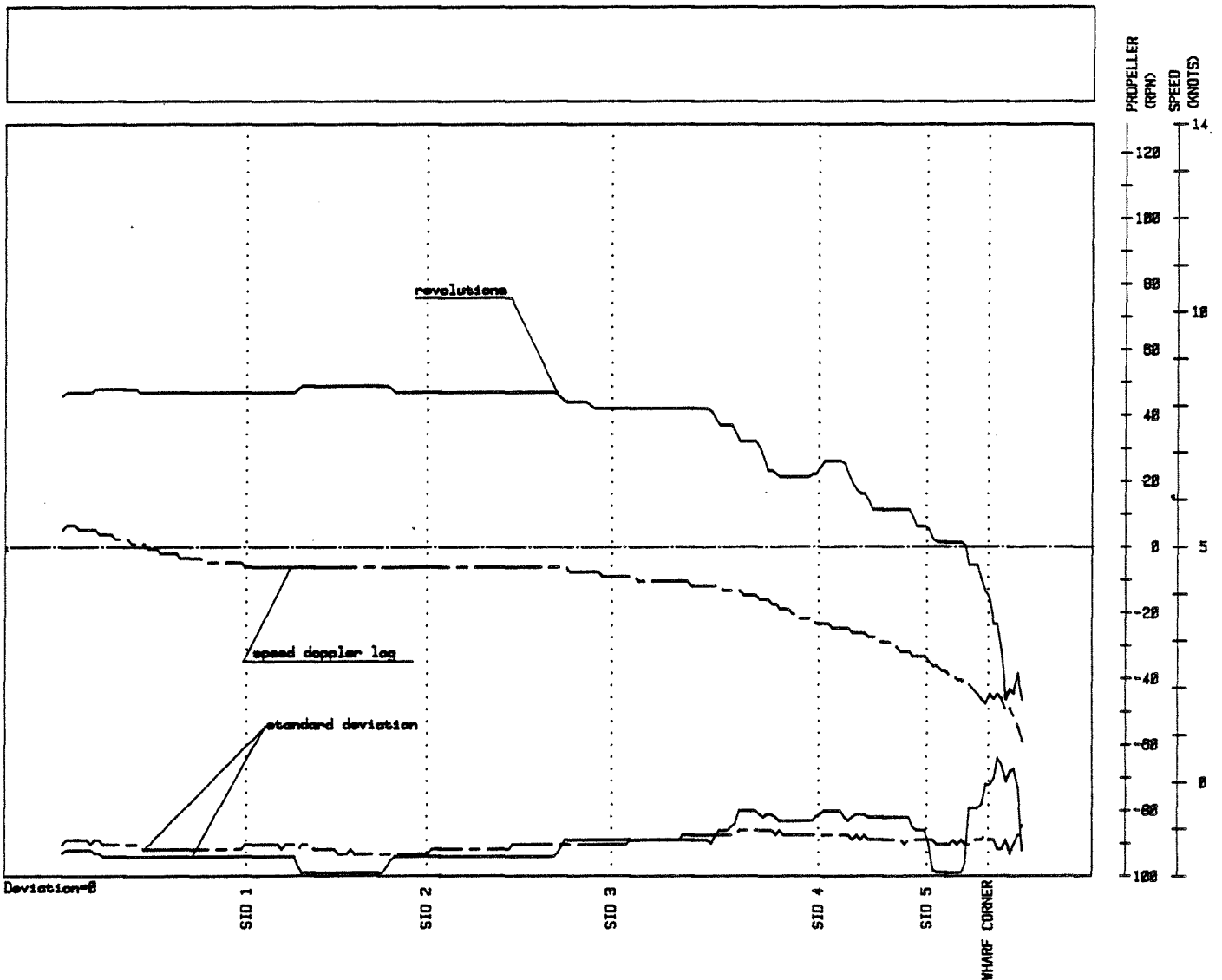
PILOT
COMMANDS



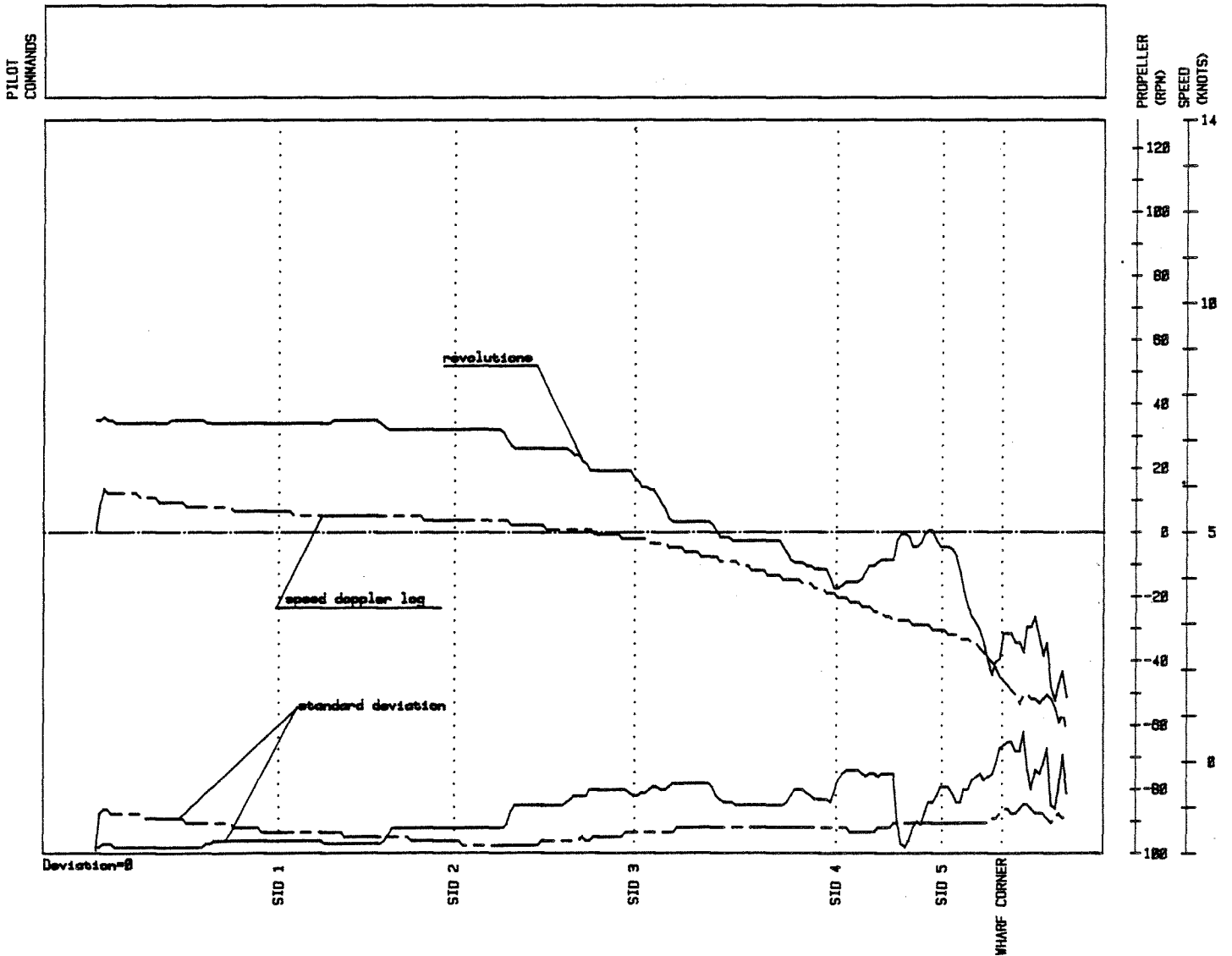
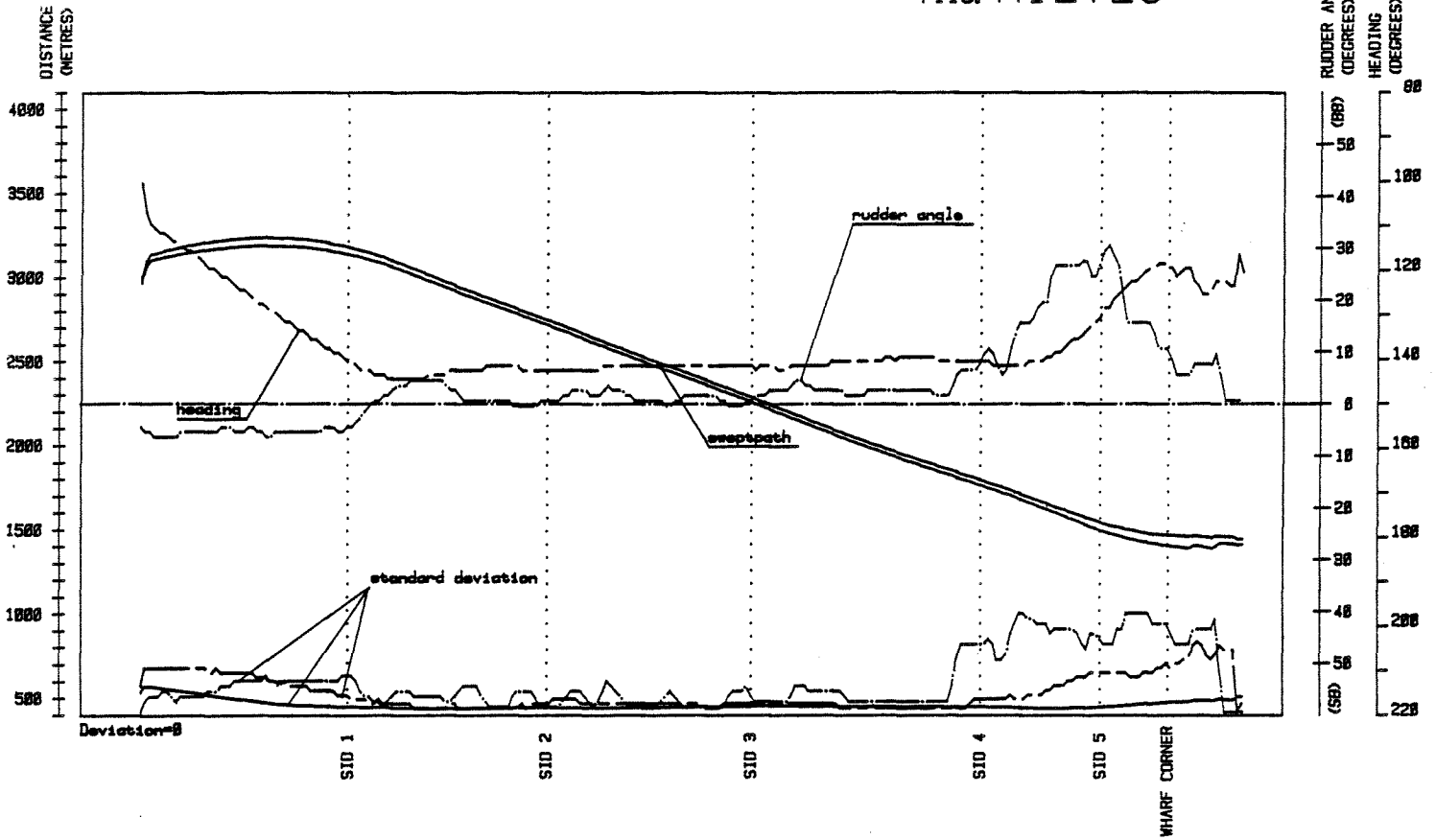
file: MI2EBS



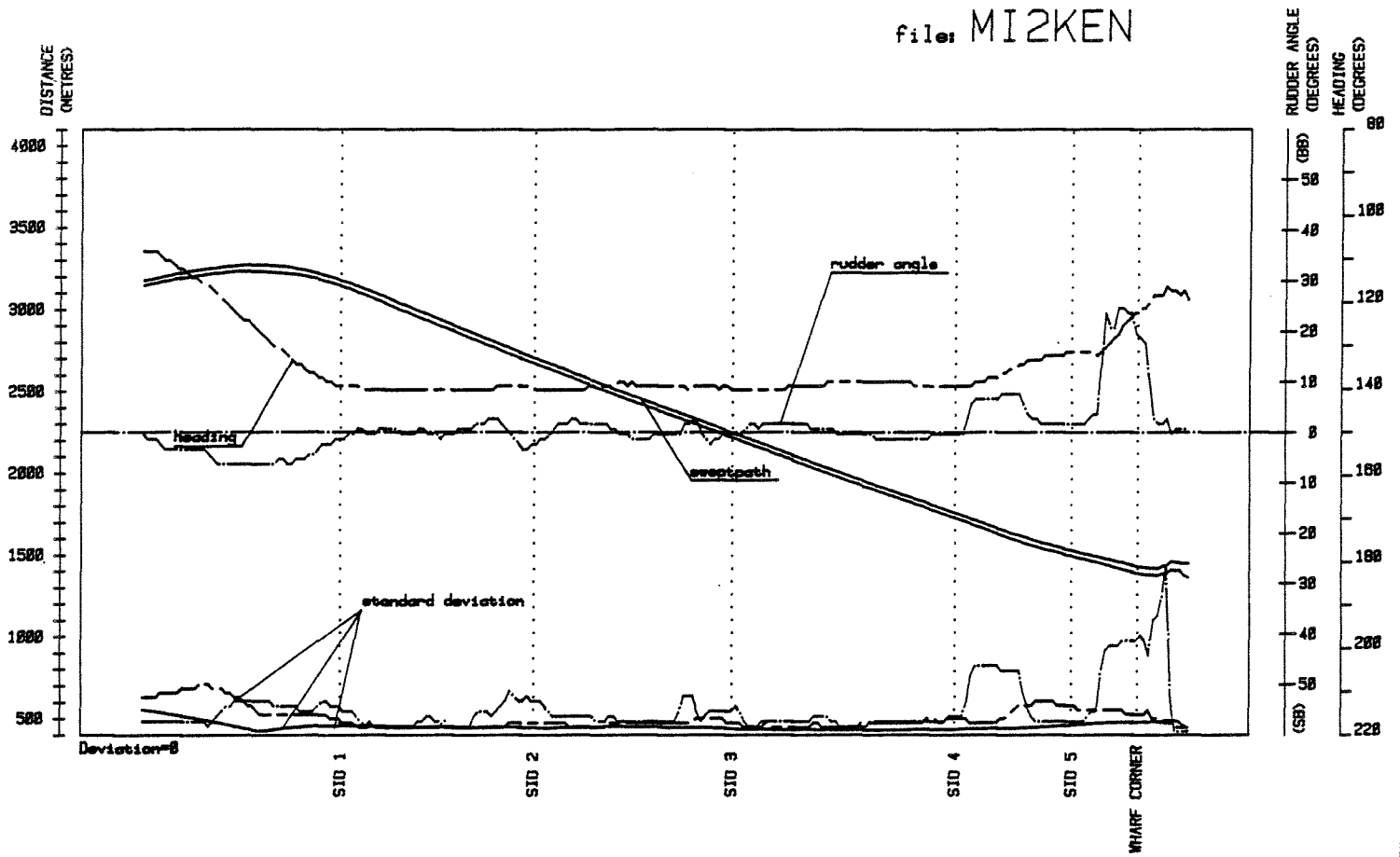
PILOT
COMMANDS



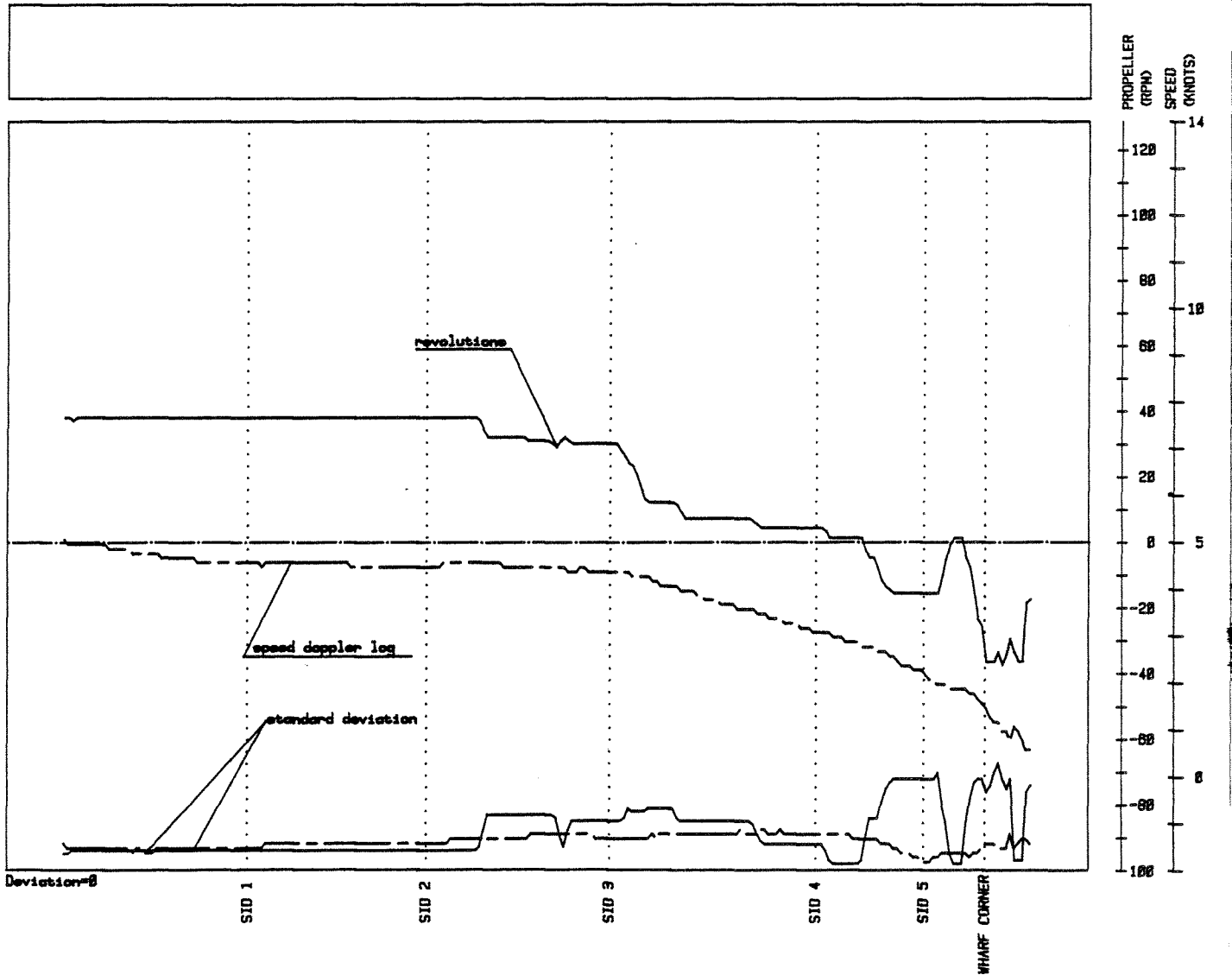
file: MI2VLS

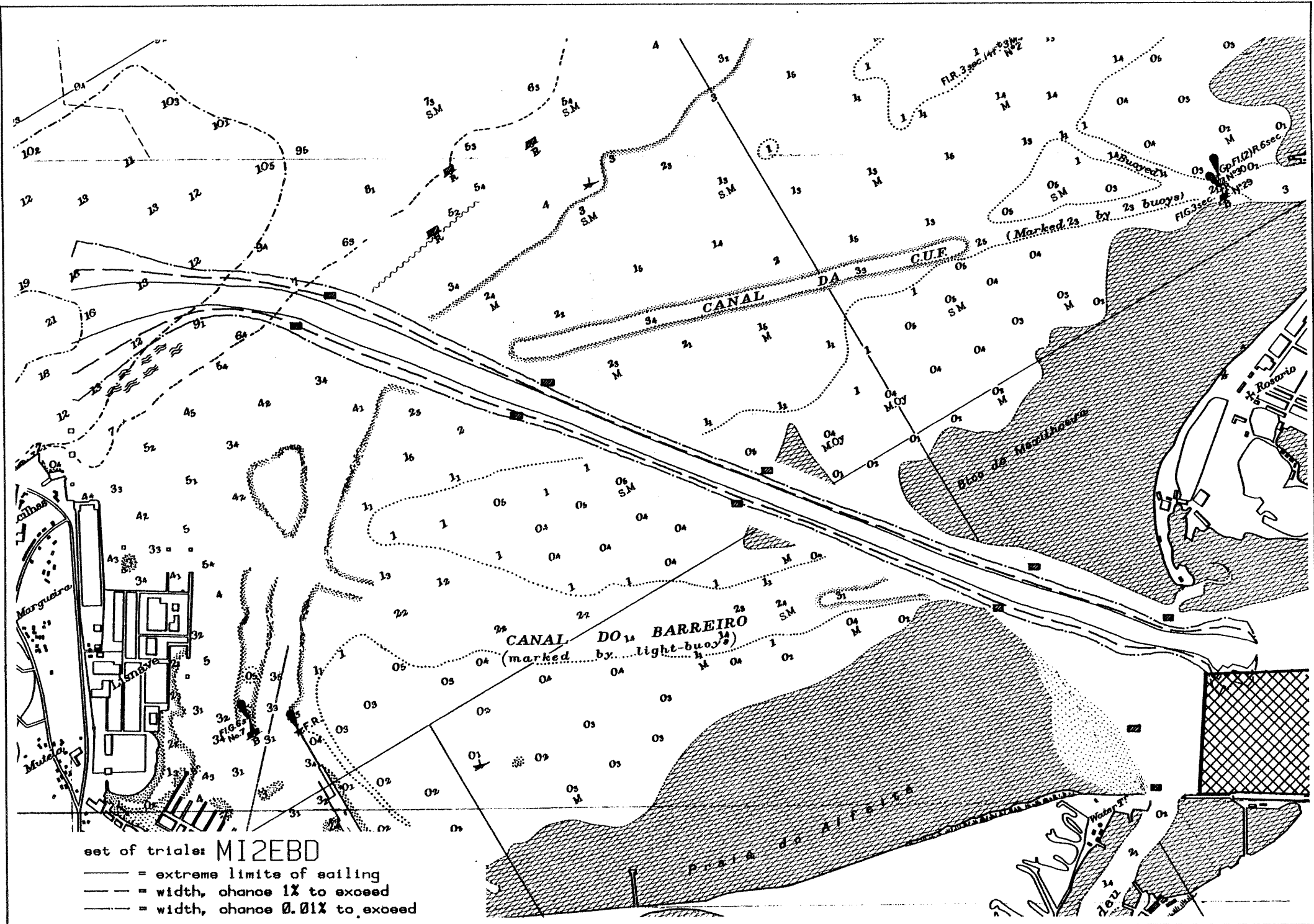


file: MI2KEN



PILOT
COMMANDS

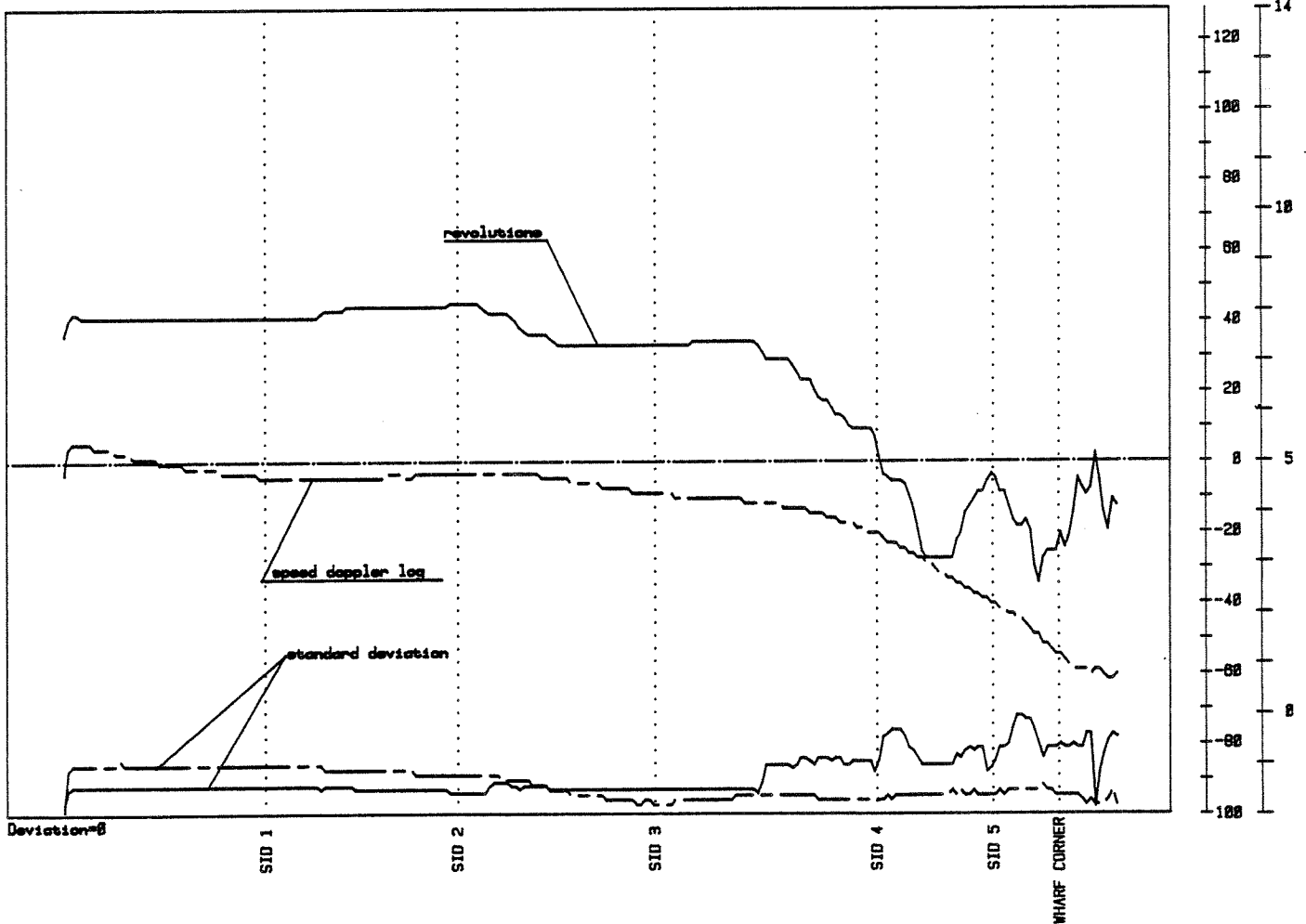
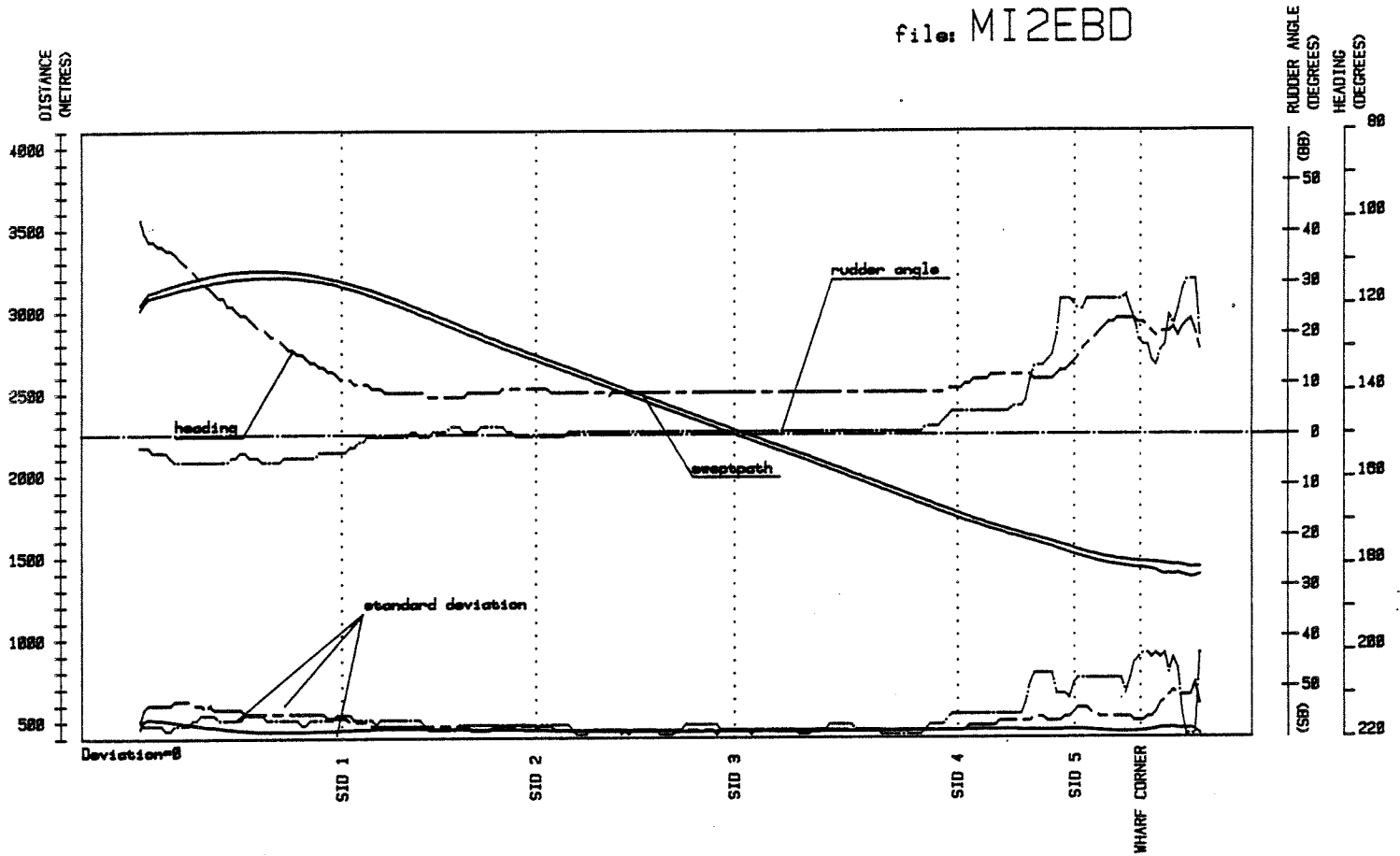




set of trials: MI2EBD

- = extreme limits of sailing
- - - = width, chance 1% to exceed
- = width, chance 0.01% to exceed

file: MI2EBD



file: MI2VLD

