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SHORT NOTE ON THE SPREAD AND HEIGHT OF TWO TYPES OF DANISH SEINES USED IN NORWAY

by

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INTRODUCTION

In order to achieve maximum efficiency of the Danish seine, it´s important to have continous information about the geometry of the gear during the different stages of hauling.

Normally, the skipper "reads" the geometry of the Danish seine by watching the ropes at the surface. From this "measurement" he estimates when to start first hauling phase (slow), and when to start second hauling phase (fast or maximum hauling speed) in order to close the net. Such

technique may be insufficient as the Danish seine fishery has developed more into rough bottom and deep sea fishery (at 200 - 300 m depth).

Several attempts had been made by fishermen to use the wireless "Scanmar" system for measuring height and spread of D.seine, but with poor or no success.

The lack of success can be explained through a combination of low "towing" speed and actual geometry of the gear in the beginning of a haul. The "Scanmar" height and distance sensors will in this way have no "stearing" towards the ship and the signal receiver (hydrophone) at the ship's hull.

MATERIAL AND METHODS

The experiments were carried out on board the commercial seine netter "Karl-Viktor" (60 ft, 375 HP) on fishing grounds in nothern Norway during May 1987. The fishing depth was approximately 50 m, using 3.5 coils (120 m each) of rope.

Two types of 180 mesh (300 mm lumen size) Danish seine were used, one standard "Selstad" gear with lead-ropes, and the other one a "Refa" gear with ropewings and a small "groundgear".

Throughout the test period the fishing and hauling procedure was performed as in the commercial fishery, and the skipper didn´t get any information about the geometry measurements.

Modifications of the attachment and construction of the "Scanmar" sensors were made, as shown in Fig. 1 and 2.

All the information from sensors were stored on tapes, and printed on paper-recordings.

RESULTS AND DISCUSSION

For most of the time during the 11 hauls, it was possible to read the signals from both the height and distance sensors. However, signals were lost for (shorter) periods, especially from the height sensor, when the ropes fastened (got stuck) around rocks.

Examples of recordings are given in Fig. 3-6, showing two hauls for each type of gear. The thick line shows the height of the net (headline to bottom) during the haul, while the thin line gives the wingspread (note the two different Y-axis).

The first phase of hauling (slow speed on the drum) started when the wingspread had decreased from approx. 120 m, as measured when starting to stretch up the ropes, to 40-45 m. The height of the net decreased rapidly from 40 m to 15-20 m during this phase. "Slow" hauling speed lasted for a period of 4 - 5 minutes.

"Maximum" (fast) hauling started when the wingspread had decreased to 15-17 m, and measured height of the net was 10 - 12 m, and lasted until the gear was at the surface 3 - 5 minutes later.

As seen from the recordings, the skipper was not able to keep steady/continous speed during the closing of the wings when using his standard procedure ("reading" the geometry at the surface). At this depht, the first phase of hauling (slow speed) should have started 3 - 4 minutes earlier, at a wingspread of approximately 60 m, in order to keep a continous speed of closing the ropes and the net.

It´s demonstrated that by small modifications of the attachment and construction of the "Scanmar" sensors, it´s possible to receive continous information about the geometry of the Danish seine throughout the haul. Such information may be

very important to achieve the maximum efficiency of the Danish seine, and it´s also a good tool for detecting when ropes are fastened on the ground and to detect when they are loos again. In this way the skipper can control the geometry of the D.seine, and know exactly when to start the different hauling speeds.

During these experiments a towed, and submerged, hydrophone was used, and may explain why signals were lost for shorter periodes. The attachment of the height sensor in a special "pocket" may have been insufficient, resulting into a bad tilt-angel.

It was not possible during these experiments to detect geometrical differences between the two types of Danish seines, due to few data.

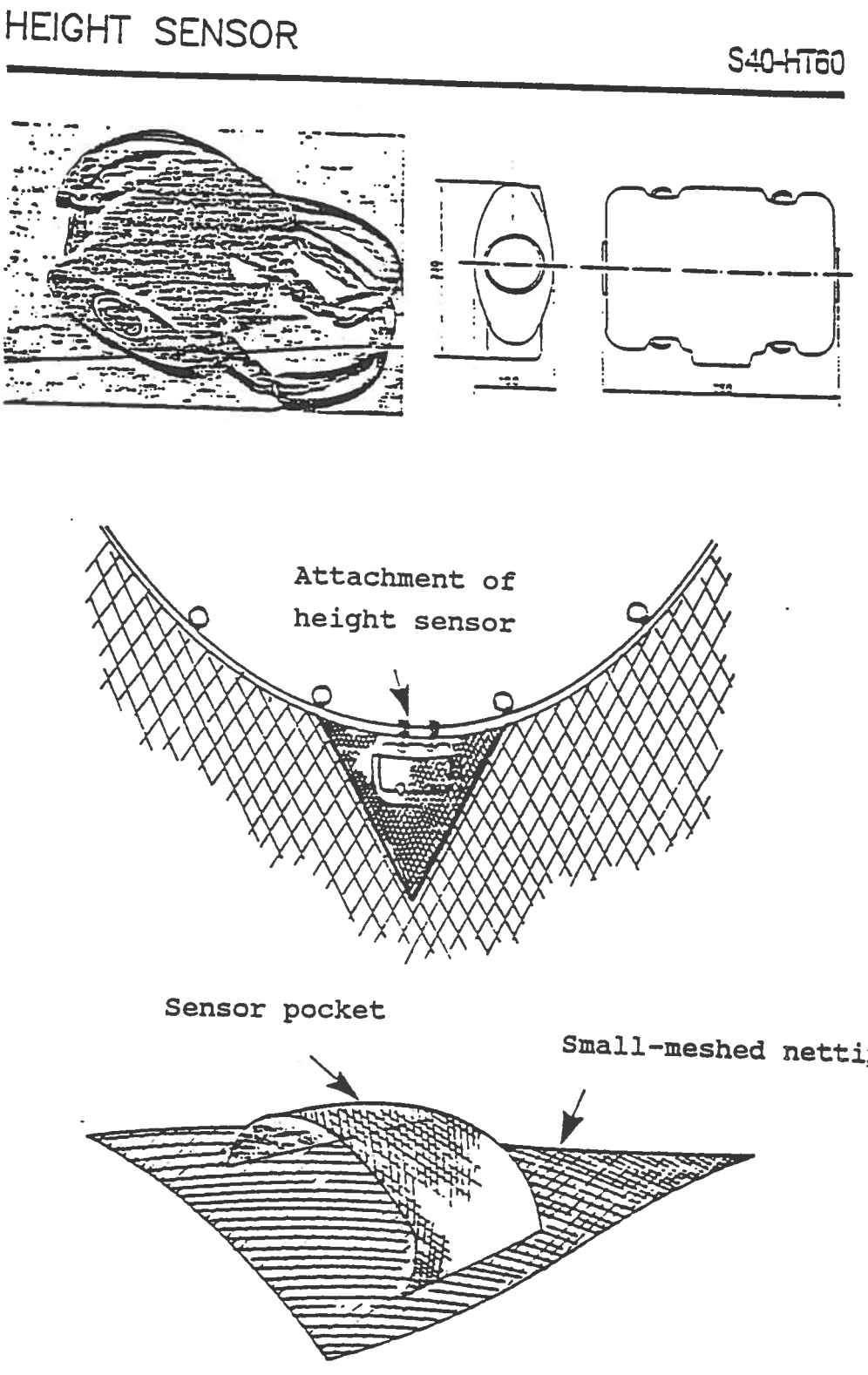
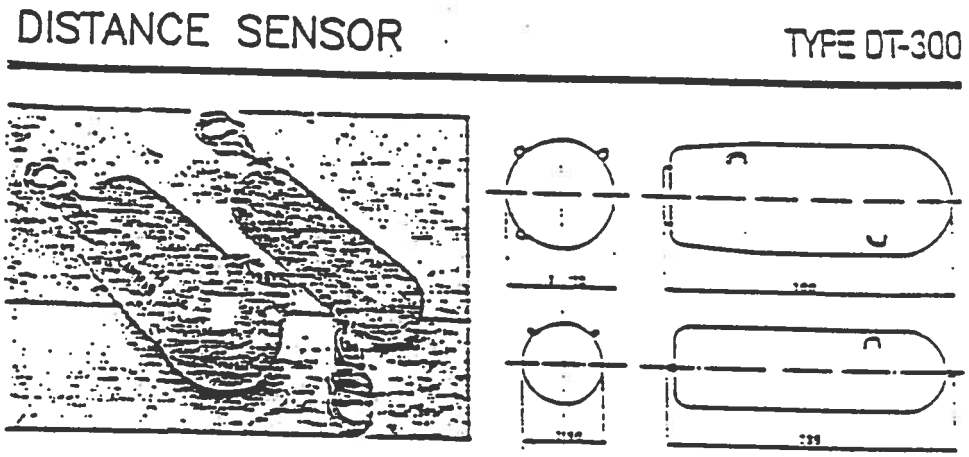
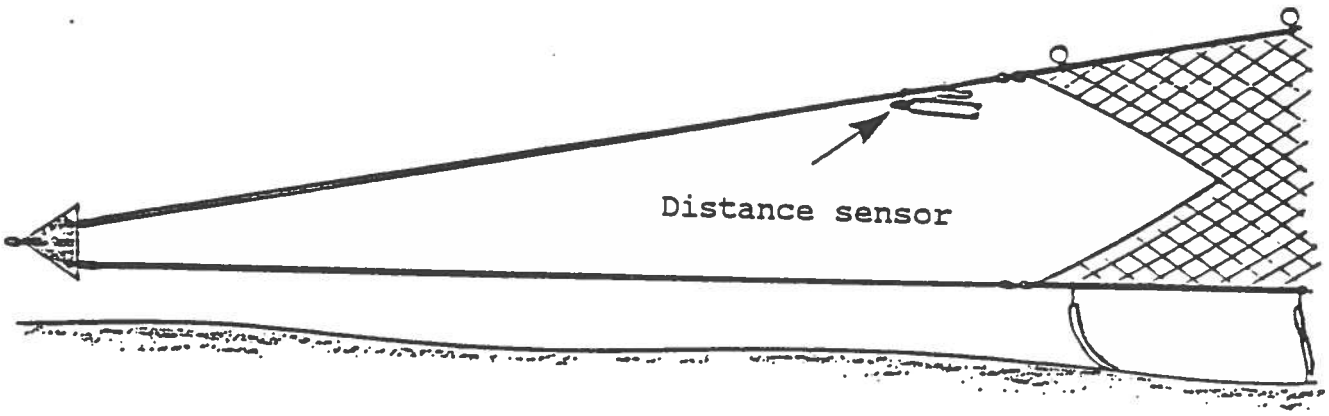


Figure 1: Scetch of the attachment for the height sensor on the headline of the Danish seine.





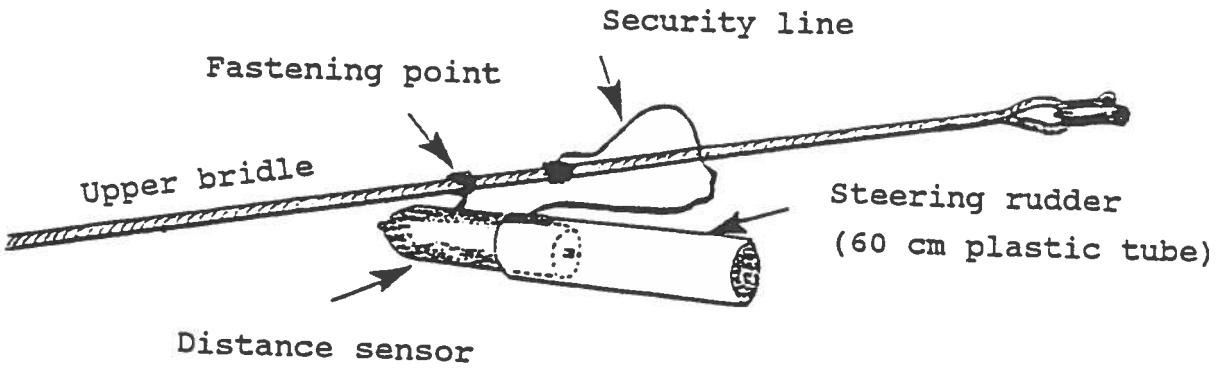


Figure 2: Scetch of the attachment for the distance sensors at the wingtips of the Danish seine.

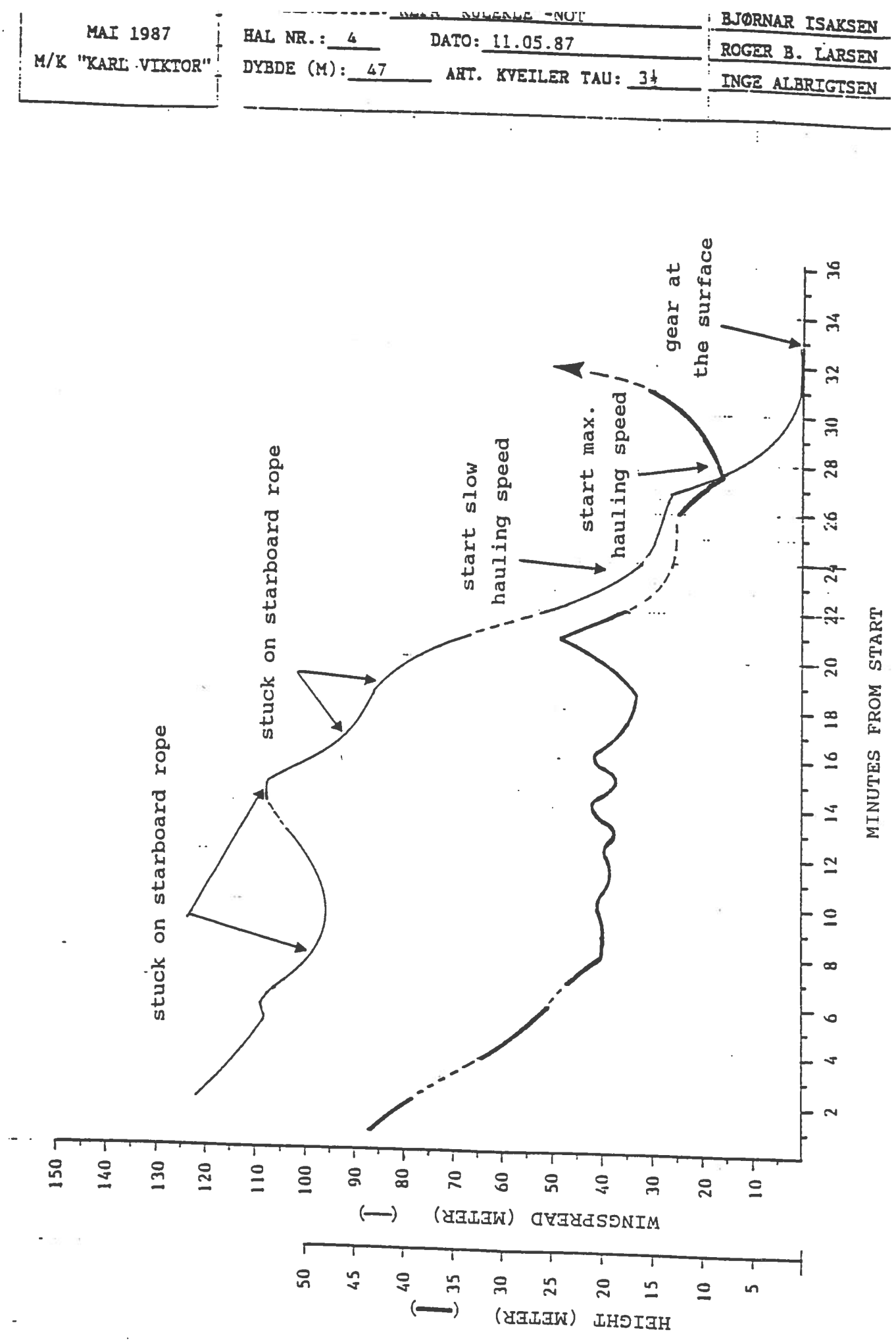


Figure 3: The "Refa" ropewing Danish seine.

MAI 1987	HAL NR.: 6	BJØRNAR ISAKSEN
M/K "KARL VIKTOR"	DYBDE (M): 46	ROGER B. LARSEN
	DATO: 12.05.87	INGE ALBRIGTSEN
	ANT. KVEILER TAU: 34	

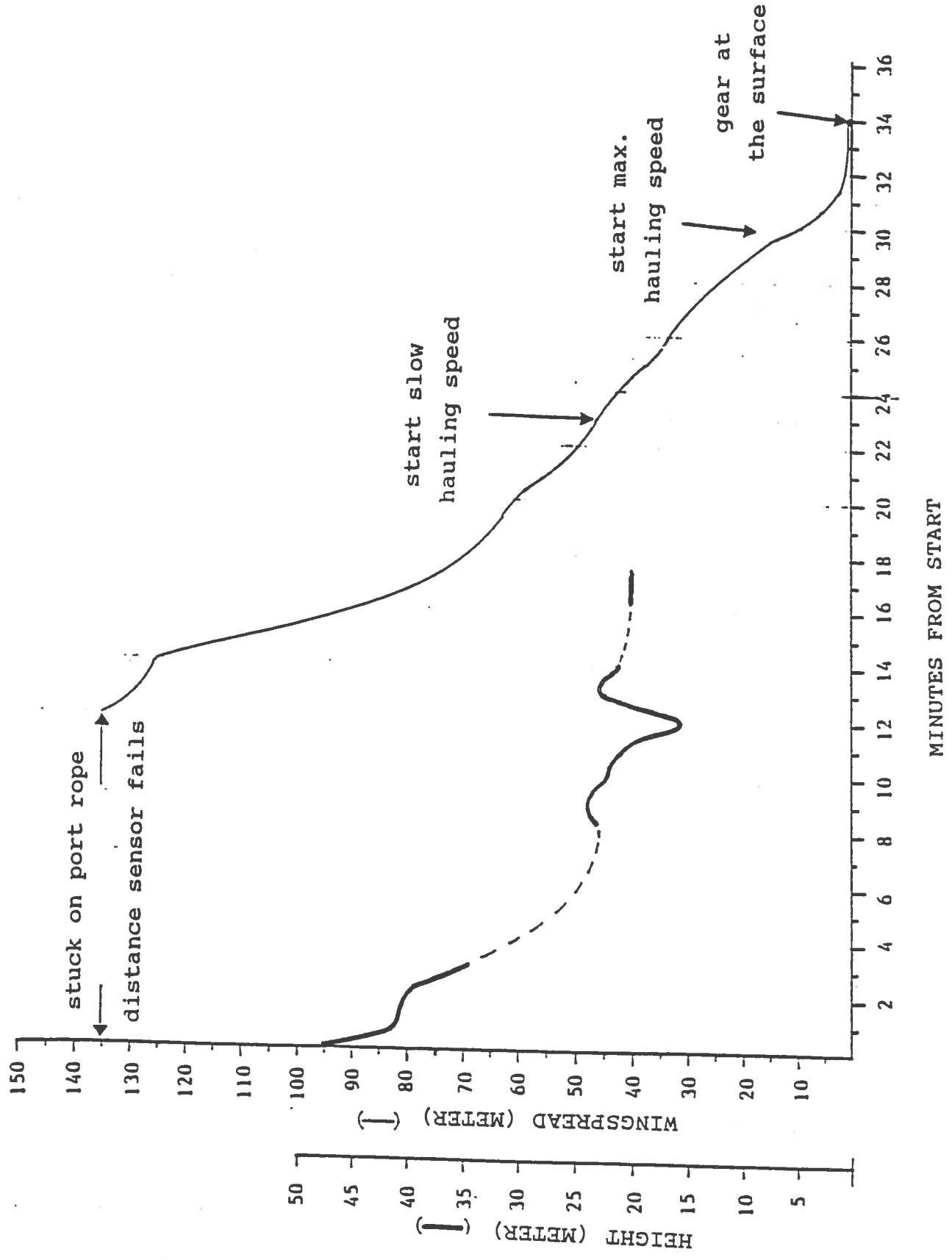


Figure 4: The "Selstad" standard Danish seine.

SNURREVADFORSØK	SNURREVADTYPE: SELSTAD TAMPENOT	BJØRNAR ISAKSEN
MAI 1987	HAL NR.: 10 DATO: 12.05.87	ROGER B. LARSEN
M/K "KARL VIKTOR"	DYBDE (M): 47 ANT. KVEILER TAU: 3¼	INGE ALBRIGTSEN

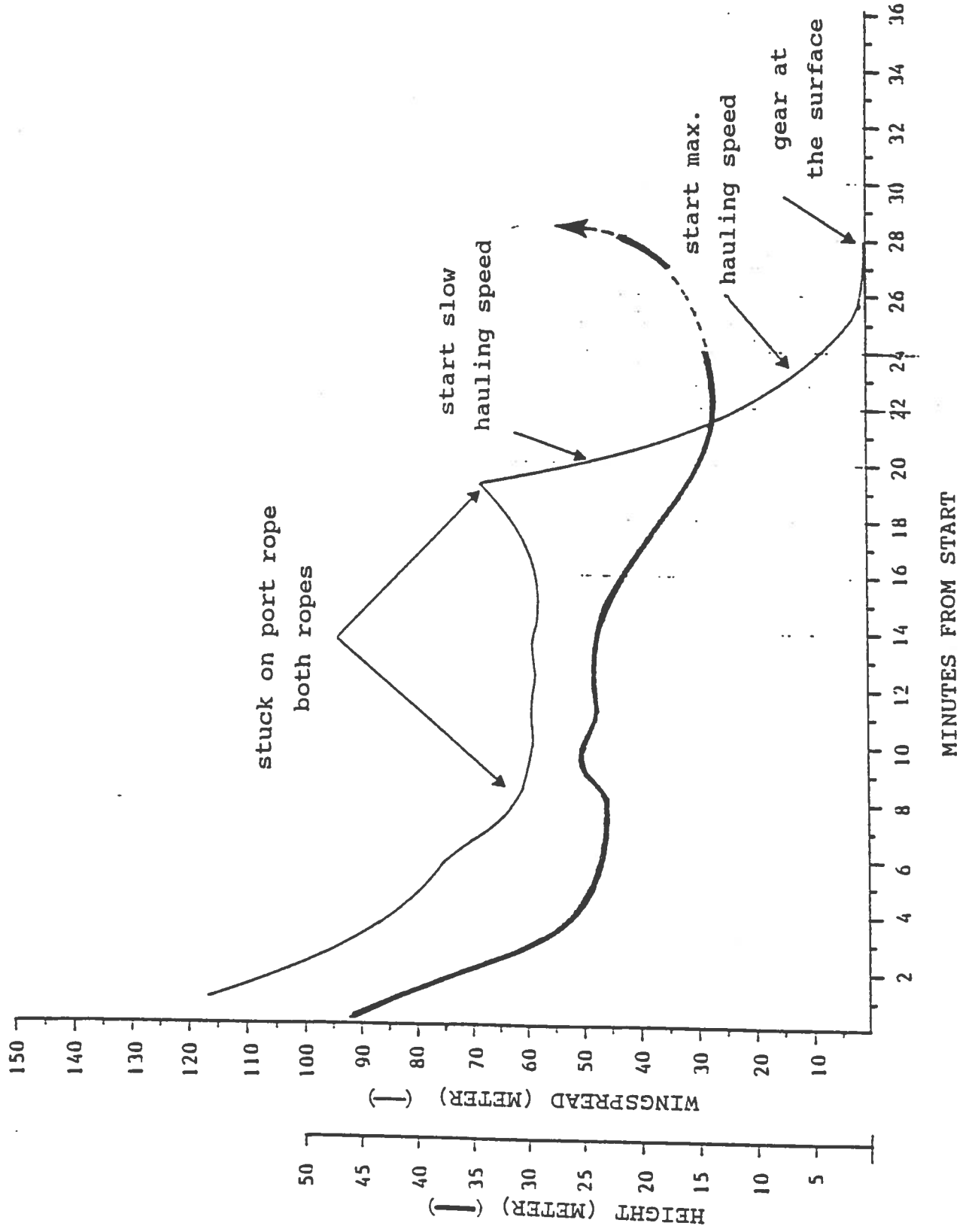


Figure 5: The "Selstad" standard Danish seine.

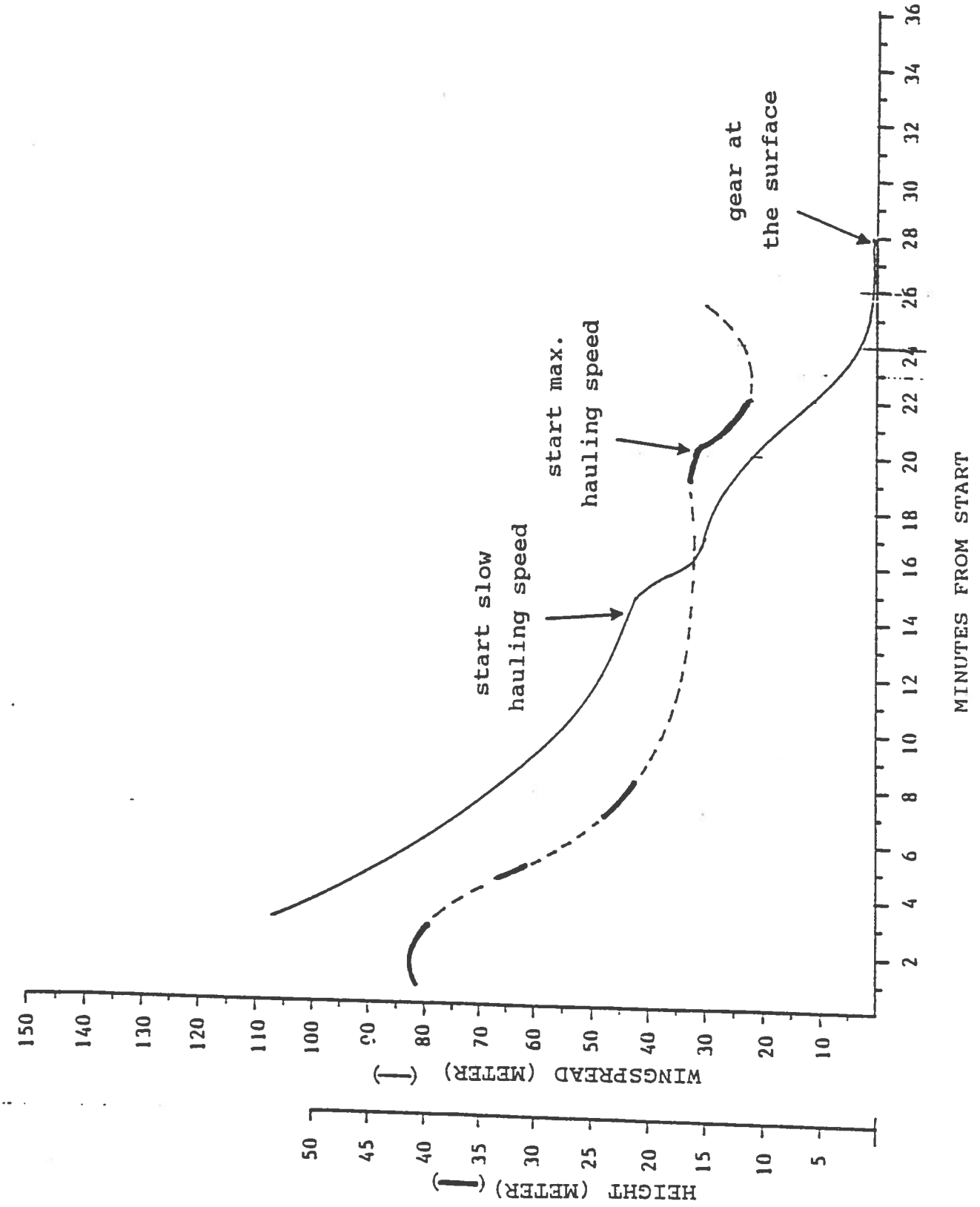


Figure 6: The "Refa" ropewing Danish seine.