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## **Report S 1999:01e**

**Accident involving MV Hyphestos,  
16-03-1998,  
Port of Malmö, M county, Sweden**

**S-02/98**

Translated from the original Swedish text at the request of the Board of Accident Investigation. In case of discrepancies between the English and the Swedish texts, the Swedish text is to be considered the authoritative version.

1999-04-23

S-02/98

Swedish Maritime Administration

601 78 NORRKÖPING

**Report S 1999:01e**

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The Swedish Board of Accident Investigation (Statens haverikommission, SHK) has investigated an accident which occurred on 16 March 1998 in the port of Malmö, M county, Sweden, involving the Liberian vessel MV Hyphestos.

In accordance with section 14 of the Ordinance on the Investigation of Accidents (1990:717) the Board submits herewith a final report of the investigation.

S-E Sigfridsson

Hans Rosengren

## Contents

<b>SUMMARY</b>	<b>5</b>
<b>1</b>	<b>FACTUAL INFORMATION</b>
<b>1.1</b>	<b>Course of events</b>
<b>1.2</b>	<b>Personal injuries</b>
<b>1.3</b>	<b>Damage to the vessel</b>
<b>1.4</b>	<b>Other damage</b>
<b>1.5</b>	<b>The crew and the pilot</b>
<b>1.6</b>	<b>The vessel and the tugboats</b>
<b>1.7</b>	<b>Meteorological data</b>
<b>1.8</b>	<b>Port data</b>
<b>1.9</b>	<b>Operational and sound recording devices</b>
<b>1.10</b>	<b>Medical information</b>
<b>1.11</b>	<b>Fire</b>
<b>1.12</b>	<b>Survival aspects</b>
<b>1.13</b>	<b>Special tests and investigations</b>
<b>2</b>	<b>ANALYSIS</b>
<b>3</b>	<b>CONCLUSIONS</b>
<b>4</b>	<b>RECOMMENDATIONS</b>

## APPENDICES

- Appendix 1 **Detailed chart of the port of Malmö**
- Appendix 2 **Graphic illustration of the course of events**
- Appendix 3 **Damages to the vessel**
- Appendix 4 **Some of the damages to the port structure**

Note: No appendices in the pdf-file.

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**S-02/98**

Report finalised 1999-04-23

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<i>Vessel, call sign</i>	MV Hyphestos, ELSQ9
<i>Owner/operator</i>	Hyphestos Inc, Monrovia, Liberia
<i>Time of incident</i>	16 March 1998, at approx. 1230 hrs <i>Note: All times in the report are given in Swedish normal time (SNT) = UTC + 1 hour</i>
<i>Location</i>	Port of Malmö, M County
<i>Weather conditons</i>	Calm, visibility 1 M <sup>1</sup>
<i>Numbers on board:</i>	Crew 29, pilots 2
<i>Personal injuries</i>	None
<i>Damage to the vessel</i>	Substantial
<i>Other damage</i>	Two cranes extensively damaged. The quay and one fender damaged
<i>Master; age and competence</i>	Age 41, valid Certificate of Competency as Master, Ocean-going, master for approx. three years
<i>Pilot; age and competence</i>	Age 51, Master mariner, master for approx. seven years, pilot for approx. ten years

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The Board of Accident Investigation (SHK) was notified on 16 March 1998 that the Liberian OBO vessel Hyphestos<sup>2</sup> had rammed the quay on that same date while docking at the oil terminal, Malmö, and had, among other things, caused extensive damage to two shore cranes.

The accident has been investigated by SHK represented by S-E Sigfridsson, chairman, and Hans Rosengren, chief operational investigator.

The investigation has been followed by the Swedish Maritime Administration represented by Sten Anderson.

SHK investigates accidents and incidents with regard to safety. The sole objective of the investigations is the prevention of similar occurrences in the future. It is not the purpose of this activity to apportion blame or liability.

## SUMMARY

The OBO vessel Hyphestos, carrying approx. 56,000 tons of coal arrived at the oil terminal in Malmö at approx. noon on 16 March 1998. Assisted by three tugs the ship was turned about in the harbour basin. It was then brought in towards the quay for berthing. During this operation the ship picked up too much speed at the same time as it failed to execute the intended starboard turn, causing it to approach the quay at an angle of approx. 45°. Attempts to stop the forward speed were unsuccessful, and the ship rammed two shore cranes, which sustained considerable damage, as well as the quay itself, where a fender was demolished and some fissures developed.

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<sup>1</sup> M=Nautical mile=1852 m

<sup>2</sup> An OBO vessel (Ore Bulk Oil) is a vessel, which is designed to carry both solid and liquid goods in bulk.

The ship's bow was penetrated above the water line and a number of plates and braces were deformed.

The accident occurred because speed and distance to the quay were misjudged, and available resources were not optimally utilized. Contributing causes were poor communication between the ship's officers and the pilot as well as between the pilot and the masters of the tugs.

### **Recommendations**

None.

## **1. FACTUAL INFORMATION**

### **1.1 Course of events**

On 16 March 1998 at approx. 0700 hrs the OBO vessel Hyphestos, loaded with approx. 56,000 tons of coal, arrived at the pilot boarding area at buoy M1 north-west of Helsingborg. The pilot and an apprentice pilot boarded.

There was heavy fog and the visibility was 0.1–0.2 M.

The vessel proceeded at reduced speed southward towards Malmö. The traffic was fairly heavy at times with, among others, a large number of fishing boats.

The visibility improved very slowly. When Landskrona had been passed, preparations were made to anchor and wait for better conditions before entering the fairway leading into the oil terminal at Malmö.

The weather forecast predicted improved visibility, and this took place. When the visibility became 0.5–1 M, the ship started its approach towards the buoy-marked fairway with the assistance of the tugboats Bohus, Dunker, and Kullen. The Bohus was connected at the bow and the Dunker at the stern. The Kullen was not connected, in order to be able to push on the Hyphestos' starboard quarter when it turned about in the harbour basin.

At the end of the fairway the speed of the Hyphestos was reduced by a reversing manoeuvre combined with the Dunker pulling astern.

When the Hyphestos was inside the harbour basin she came to a full stop and the turn about to starboard was started by having the Bohus and the Dunker pull hard at the same time as the Kullen pushed. Towards the completion of the turn, the Dunker was in a position where her towing cable risked being damaged, and she was coming too close to one of the buoys. Because of this she informed the pilot that she would be forced to terminate her pulling action. The pilot ordered the Dunker to slacken her cable and just "follow along" and wait for further orders.

When the turn about was completed shortly thereafter, the Hyphestos was positioned with her bow pointing toward the middle of the quay at an angle of approx. 45°. The distance from the bow to the quay was approx. 200 m.

The pilot intended to move the ship closer to the quay on this course and then turn starboard and place her parallel to the quay at a distance of about one ship's breadth. The Kullen and the others would then push and pull her into the desired position.

With this intent the Bohus pulled full ahead. At the same time the pilot asked for a "kick" forward by ordering "dead slow ahead" for a short period of time. For technical reasons, this order was carried out via the master as "slow ahead".

The Hyphestos approached the quay at a speed of approx. 2 knots. When she was 40–50 m away, the chief officer called from the fo'c's'le "40–50 meters to go. The speed is too high." The pilot ordered "slow astern". The master changed to "half astern" and then immediately "full astern".

The tug Bohus had now changed the direction and towed full 40°–60° to starboard. The Dunker, which until now had not received any orders since the turn about, was also ordered to pull full on the Hyphestos' port quarter.

The anticipated turn to starboard did not take place, and the ship approached the quay on more or less the same course.

Since the three shore cranes, nos. 82, 83, and 84, were placed close together in the middle of the quay, the chief officer quickly realized the danger to the crew on the fo’c’s’le, and ordered them to leave it immediately; then he himself followed.

The bow of the Hyphestos struck first crane no. 83, and then no. 84, after which it rammed the quay fender.

After the collision the ship could be turned away from the quay and berthed as planned.

## **1.2 Personal injuries**

None.

## **1.3 Damage to the vessel**

Substantial.

## **1.4 Other damage**

Two cranes were extensively damaged. The quay and one of its fenders were damaged

## **1.5 The crew and the pilot**

### ***The crew***

The ship’s officers, who came from the former Yugoslavia, were properly certified for their tasks and they spoke English fluently.

The master had served on the Hyphestos for four months and had served as master for approx. three years, primarily in large tankers. He had served as chief officer for several years in ships similar to the Hyphestos. He had been a ship's officer for a total of approx. eleven years.

He felt himself to be familiar with the manoeuvring characteristics of the Hyphestos, and considered her easy to handle.

In addition to the master, a second officer (at the engine-room telegraph), a helmsman and a deck hand were present on the bridge at the time of the berthing. The chief officer was in charge on the fo’c’s’le and the other second officer was on duty at the poop.

### ***The pilot***

The pilot had worked at the Malmö pilot station for about ten years, and before then he had been an officer in the merchant navy; 6–7 years of that time as the master of large tankers.

The apprentice pilot served as radar look-out during the passage through Öresund (the Sound). During the actual harbour manoeuvre, he acted solely as observer.

## 1.6 The vessel and the tugboats

### *The vessel*

<i>Owner/operator</i>	Hypheostos Inc, Monrovia, Liberia
<i>Year built</i>	1983
<i>Length over all</i>	243.47 m
<i>Length between pp</i>	235.01 m
<i>Breadth, max.</i>	32.26 m
<i>Depth, moulded</i>	20.53 m
<i>Draught, max.</i>	14.4 m
<i>Dead weight</i>	77,610 tons
<i>Gross</i>	45,025
<i>Main engine</i>	MAN, 13,200 kW

### *The tugs*

The tug Bohus has a bollard pull power of approx. 38 tons and is a conventional tug. She was connected to the Hypheostos' bow using her own towing cable. The master was a master mariner and had served in tugboats for 31 years.

The tug Dunker has a bollard pull power of 40 tons and is a so-called “tractor tug”, a more modern type of tug with large manoeuvring capabilities and flexibility. She was connected to the Hypheostos' stern at the centerline, using her own towing cable. The master was a master mariner and had served onboard the Dunker as master since she was new, about ten years ago.

The tug Kullen is somewhat smaller, and was also commanded by a very experienced master. The Kullen was used to push the starboard quarter of the Hypheostos when the ship was turned about. She was then ordered to stand by until she should push on the starboard bow at the time of berthing.

## 1.7 Meteorological data

When entering the buoy-marked fairway, there was no wind and only a very slow north-going current. The visibility was approx. 1 M. There was no current in the harbour basin.

## 1.8 Port data

A detailed chart is annexed to the report (appendix 1).

## 1.9 Operational and sound recording devices

None. None were required.

## 1.10 Medical information

There was no indication that the mental capacity or physical condition of either the crew or the pilot should have had any bearing on the course of events.



### 1.11 Fire

There was no fire.

### 1.12 Survival aspects

There was no immediate danger for the on-board personnel or any other persons in the harbour.

### 1.13 Special tests and investigations

The course of events of the incident has been simulated at the Merchant Marine Academy in Kalmar. In the simulator, the pre-programmed training area of Öresund was used, supplemented with detailed data on the harbour basin in Malmö. The ship model used in the simulation was that of a bulk carrier with dimensions similar to the *Hypheastos*<sup>1</sup>. The model had the following main particulars:

<i>Length over all</i>	234 m
<i>Breadth</i>	32.2 m
<i>Draught</i>	12.8 m
<i>Displacement</i>	73,113 tons
<i>Main engine</i>	5,889 kW

Since the simulator is designed for simpler manoeuvres and tugboat handling, different scenarios were tested, where it was possible to study the positioning and activities of the tugs.

The results of the simulations can be summarized as follows:

- 1 A slowing down operation before the turn, executed through a reversing manoeuvre by the ship and the Dunker pulling full astern, is fairly easy to carry out.
- 2 A turn about in the harbour basin can easily be executed by having the Bohus and the Dunker pulling full and the Kullen pushing on the starboard quarter.
- 3 With the Dunker only “following along”, the Bohus pulling full ahead, and with a “kick” “slow ahead” from the *Hypheastos*' main engine, the speed at the time of impact would be 2–3 knots, which agrees with the information provided by witnesses on the quay.
- 4 If the Dunker, after the turn about had been used for stopping and a starboard turn made to a position paralleling the quay, the berthing could have been carried out as planned.

A probable scenario is illustrated in appendix 2.

## 2 ANALYSIS

There is nothing to indicate that there were any technical problems before or during the berthing manoeuvre. Nor is there anything pointing to language difficulties, which might have caused misunderstandings or uncertainty in communication.

The passage through the buoy-marked fairway into the oil terminal was undertaken without any problems and so was the speed reducing action before the turn about. The only problem came when the Dunker stated that she could no longer pull as planned.

After the turn about the Hypheustos should be brought closer to the quay at an angle of approx. 45°. The Bohus was pulling full ahead. At about the same time a “kick” ahead was executed by the Hypheustos. When only a very short distance remained to the quay, the Bohus towed starboard at 45°–60°, still pulling hard.

The simulations undertaken by the SHK, using a model with characteristics similar to the Hypheustos', confirm that the Bohus pulling full in combination with a “kick” of about one minute's duration could generate a speed of 2–3 knots within the existing area.

The simulations also show that it is quite feasible to carry out the planned manoeuvre. However, it would require that the action be combined with the Dunker towing full on the port quarter. As a result the Hypheustos' forward speed would have been substantially lower.

The pilot's opinion is that the whole manoeuvre was performed as planned, but that he must have misjudged the distance to the quay. He became aware too late of how close the ship was to the quay, the fairly high speed and the failed turn to starboard. The requested reversing manoeuvre came too late to have any effect.

Since the Bohus was towing ahead and only pulled to starboard near the end of the operation, the Hypheustos steered straight towards the quay. Not even in the final stage, when the bow of the Hypheustos was very close to the quay, and the Bohus was pulling hard, was it possible to make much of a turn. It is not inconceivable that a negative pressure was created when the propeller of the Bohus agitated the water between the bow of the Hypheustos and the quay and in that case countered the desired turn.

The Dunker was not active after the turn about, and was ordered to just “follow along”. If the Dunker had been used properly, it would have been quite possible to reduce the speed. Furthermore, the stern could have been brought towards port, which would have resulted in a turn to starboard and would have increased the distance between the bow and the quay. The pilot states that he understood this, but that he did not want to position the large ship parallel to the quay too soon, not wanting to risk the necessity of the time-consuming process of pushing the ship sideways towards the quay.

There was very little communication between the Hypheustos and the tugs during the entire manoeuvring operation in the harbour basin. The probable reason for this is that the masters of the tugboats were considered to be very experienced and very familiar with their tasks. Possibly it was thought that they did not need any further instructions. It must be assumed, however, that the crews on board the individual tugs could not have been aware of the full

scenario at all times. If there had been better information and more instruction, the accident could probably have been prevented.

### **3 CONCLUSIONS**

The accident occurred because speed and distance to the quay were misjudged, and available resources were not optimally utilized. Contributing causes were poor communication between the ship's officers and the pilot as well as between the pilot and the masters of the tugs.

### **4 RECOMMENDATIONS**

None