

Report of safety investigation

COLLISION

BETWEEN THE CONTAINER CARRIER

CMA CGM LAPEROUSE

AND THE RIVER-SEA COASTER

THEBE

ON 23TH DECEMBER 2010

IN THE OFF VLIELAND TSS (NORTH SEA)

Warning

This report has been drawn up according to the provisions of Clause III of Act No 2002-3 passed by the French government on 3rd January 2002 and to the decree of enforcement No 2004-85 passed on 26th January 2004 relating to technical investigations after marine casualties and terrestrial accidents or incidents and in compliance with the “Code for the Investigation of Marine Casualties and Accidents” laid out in Resolution MSC 255 (84) adopted by the International Maritime Organization (IMO) on 16 May 2008.

It sets out the conclusions reached by the investigators of the *BEA*mer on the circumstances and causes of the accident under investigation.

In compliance with the above mentioned provisions, the analysis of this incident has not been carried out in order to determine or apportion criminal responsibility nor to assess individual or collective liability. Its sole purpose is to identify relevant safety issues and thereby prevent similar accidents in the future. The use of this report for other purposes could therefore lead to erroneous interpretations.

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Abbreviation list

AIS	:	Automatic Identification System
ARPA	:	Automatic Radar Plotting Aid
BEAmer	:	<i>Bureau d'enquêtes sur les évènements de mer</i> (MAIB French counterpart)
CPA	:	Closest point of approach
DPA	:	Designated Person Ashore
ECDIS	:	Electronic Charts Display Information System
IMO	:	International Maritime Organisation
MOU	:	Memorandum Of Understanding
MRCC	:	Maritime Rescue Coordination Centre
OOW	:	Officer Of the Watch
RIF	:	French International Register
SAT C	:	INMARSAT-C
SITREP	:	SITUation REPort
STCW	:	<i>Standards of Training, Certification and Watch keeping</i>
TCPA	:	Time of CPA
TEU	:	Twenty-foot equivalent units
ULCS	:	Ultra Large Container Ship
UTC	:	Universal Time Coordinated
VDR	:	Voyage Data Recorder
VHF	:	Very High Frequency

1 CIRCUMSTANCES

On 23 December 2010, the container carrier *CMA CGM LAPEROUSE* sailed from Le Havre bound to Hamburg.

At the end of the afternoon, as she was within the off Vlieland TSS, off the Netherlands, she was overtaking two vessels, among which *THEBE* a ballasted coaster heading from Terneuzen to Hamburg.

During her overtaking manoeuvre, *CMA CGM LAPEROUSE* collided *THEBE* port stern with her bulb, then more on the bow with her starboard stern. There were no wounded nor pollution.

Both vessels have had hull damages but remained manoeuvrable. *THEBE* went to Den Helder harbour and *CMA CGM LAPEROUSE* continued to run to Hamburg, with Den Helder MRCC agreement.

To date, despite several requests from BEAmer, no information had been transmitted by the shipping company operating *THEBE*.

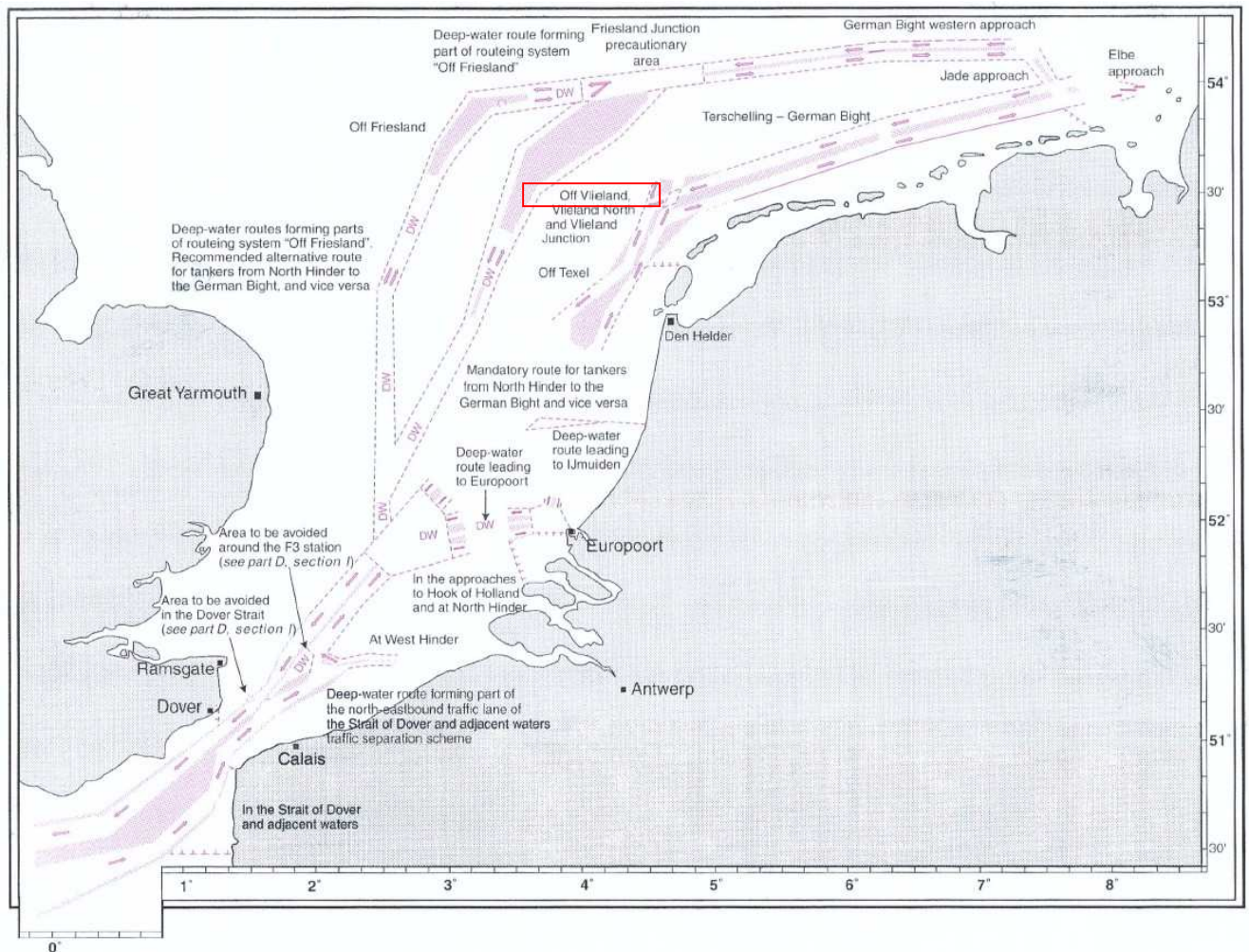
2 BACKGROUND

The off Vlieland TSS is one of the North Sea TSS closest to the coast. It has a junction with the recommended routes Terschelling - German Bight.

CMA CGM LAPEROUSE was appointed to the French Asia Line 5. The Northern Europe Asia turnaround is done in 70 days (economical speed). This vessel is part of the fleet owned by the CMA CGM shipping company and flies the French International Register (RIF) flag.

THEBE is part of a seven river-sea multi-purpose coaster flotilla. All of them are of the same type and fitted to carry containers. She is owned by the German Shipping company Lauterjung Group, as well as ten general cargo vessels, six bulk carriers, five container carriers and two car carriers.

THEBE sails in Northern Europe.



3 VESSELS

3.1 CMA CGM LAPEROUSE

CMA CGM LAPEROUSE had been built in 2010 at the Daewoo shipyard in Okpo South Korea. She is part of the ULCS new generation of vessels, with a capacity to carry 13,344 TEU. She benefits from the green ship technological breakthrough.

- Length overall : 365.50 m ;
- Breadth : 51.20 m ;
- Depth : 29.90 m ;
- Freeboard : 1440 mm ;
- Displacement : 157,138 metric tons ;
- Main engine: Sulzer 80.905 kW – 14 cylinders ;

- Propeller : 1 (fixed pitch) ;
- Service speed : 25.4 kts.

The bridge is fitted with all the equipments and aids to navigation allowing to practice e-navigation, according to IMO terminology, and in particular it possible to overlay selected ECDIS and AIS data on the radar display, depending on the operator's choice.

Note that with a 24 mile range, the dangerous echoes are shown in red in the ARPA Target Data window.

Special characteristics of the vessel :

While the vessels of the previous class have only one bridge castle located at about 240m from the bow and at 120m of the stern, the vessels of the new generation, the *CMA CGM CHRISTOPHE COLOMB* class, have a bridge castle afore at 145 m from the bow and at 220 m from the stern. A block abaft is located above the engine room.

This design improves the visibility afore and thus the blind distance is reduced to 330 m (the maximum allowed is 500 m), but as the major part of the length of the vessel is located abaft, it is a parameter to take into account for manoeuvres and evolutions.

She is classed by Bureau Veritas. She had been inspected (MOU) only once in Hamburg on 25 December, after the accident.

After her hull damages have been repaired in this port, she sailed on 12 January bound to Rotterdam.

3.2 THEBE

THEBE had been built in 2000 by the Tulcéa shipyard, in Romania. She flies the Antigua & Barbuda flag.

- Call sign : V2OS ;
- Length overall : 89.70 m ;
- Beam : 11.65 m ;
- Draught : 5.80 m ;
- Deadweight : 2,500 t ;

- Main engine : Deutz 1500 kW ;
- Propeller : 1 (fixed pitch) ;
- Service speed : 12.5 kts.

The vessel is fitted with only one hold capable of 52 TEU. The hold is closed by two folding covers able to receive 72 TEU. The ballasting capacity is 1112 m³.

The bridge, located abaft above the engine room and the accommodations, is fitted with tilt cylinders in order to go under bridges during river navigation. As it is a wrap-around type bridge the visibility at sea is good all-around.

It is fitted with :

- radars (1 of with for the river) ;
- 1 gyro-pilot and 1 autopilot ;
- 1 SAT C ;
- 1 VHF ;
- 1 echo sounder ;
- 1 AIS ;
- no ECDIS, no VDR.

The vessel is classed by Bureau Veritas. Since 2001 she had 19 MOU visits, 3 of which with deficiencies in relation to the crew qualifications, the charts and the radio communication means.

In November 2008, she hooked on a trawler fishing gear in the Baltic Sea.

4 CREWS

4.1 CMA CGM LAPEROUSE

The French-Filipinos crew was made of 27 crewmembers 3 of whom where cadets or trainees.

The **Master**, French nationality, was 47. He has held a Master Ocean certificate since January 2002 and the required STWC qualifications, he has done almost all his career as a cadet then as an officer in the CGM company then in the CMA CGM company. He has been a master since April 2004.

In 2010 he had been training the masters of the company on a navigation simulator for 4 months.

He joined the ship at Le Havre on 21 December 2010. He had never been before at sea with the fourth officer.

The **first officer**, French nationality, was 32. He had been before at sea with the fourth officer.

The **fourth officer**, OOW at the time of the collision, French nationality, was 29. He has been a certificated officer since July 2010 and has held the required STWC qualifications since May 2009.

His work experience as an officer can be broken out into 6 months 13 days as an engineer and 4 months 18 days as a deck officer aboard CMA CGM vessels. His service record is good. He joined the ship on 21 December. Officer in charge of the safety he was in charge of the watch daily from 4 am to 8 am and from 4 pm to 8 pm.

A **cadet** being for the first time at sea was on the bridge at the time of the collision.

The **helmsman**, on deck duty from 1 pm to 6 pm, was not on the bridge but could have been called up at any time by the OOW, according to the work organisation in force until the day of the accident. The dead man's control alarm system was on. This organisation was however contrary to the SOLAS convention during dark periods.

4.2 THEBE

The complement is made of 7 crewmembers.

Aboard this type of vessel, the work organisation is generally based on a two shift watch (6 hours on watch – 6 hours off watch) shared by the master and the first officer, while the 2 deck crewmen are working during the daytime.

5 SEQUENCE OF EVENTS

(Time : UTC +1)

On 23 December,

Weather conditions : North-north-easterly wind force 8 to 9 Beaufort; heavy sea. Visibility around 6 miles.

Foreword : the following sequence of events has been written as it had been sensed on *CMA CGM LAPEROUSE* bridge.

At **3.50 pm**, the Fourth officer came to the bridge to take over his second watch at sea since the departure from Le Havre.

At **4.00 pm**, after the hand over, he was on his own on the bridge where he would be soon joined by a cadet.

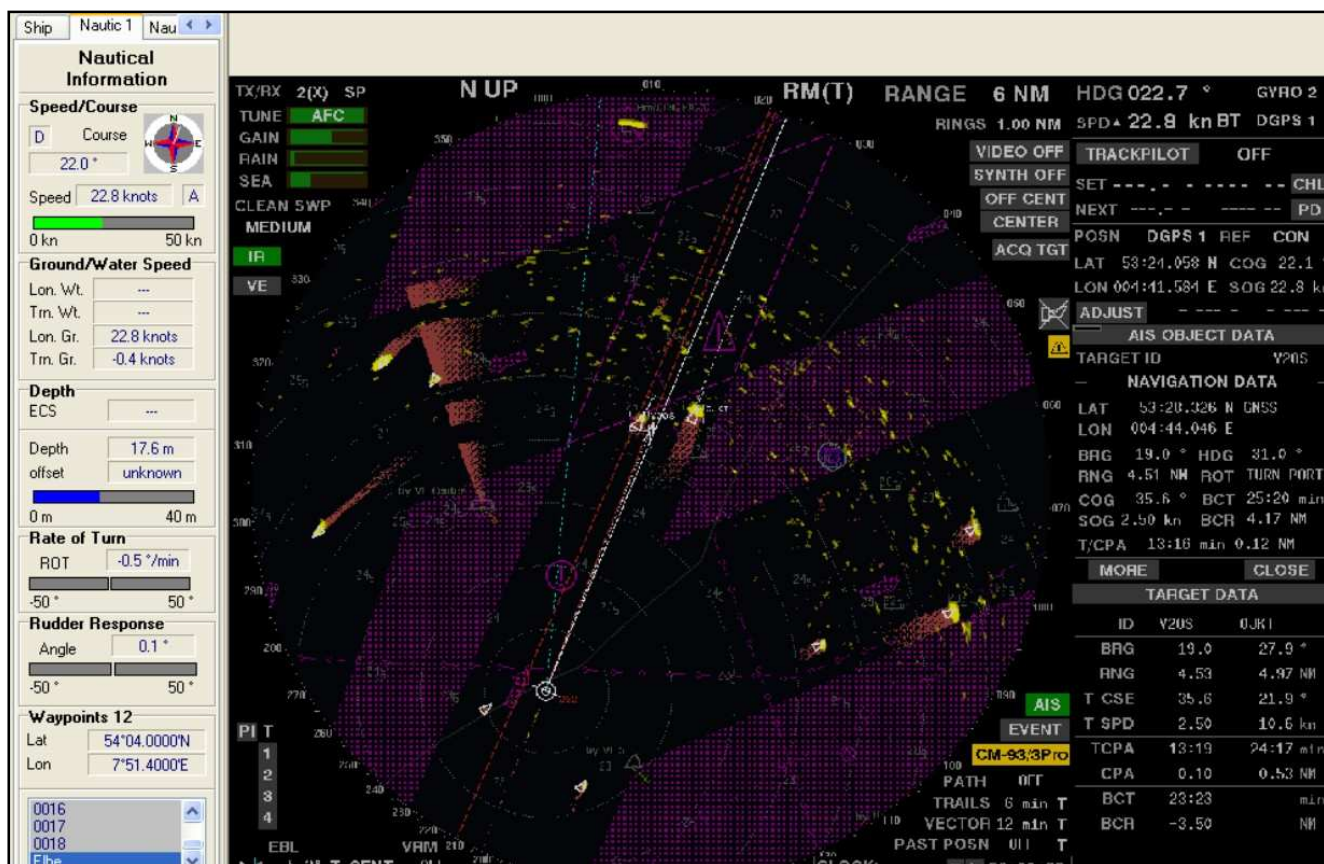
At **6.00 pm**, *CMA CGM LAPEROUSE* was in the off Vlieland TSS northeast bound lane. She was heading 023° at 22 knots. Both radars were on and were monitoring two northeast bound vessels and a crossing vessel on starboard. One of the northeast bound vessels (call sign V2OS, *THEBE*) was at 7.2 miles ahead hardly on port. She was doing 15° sheers and her speed was varying from 2 to 4 knots.

Between **4.00 pm** to **6.00 pm**, the master came several times on the bridge to check the situation and he assessed it was perfectly under the OOW's control.

At **6.06 pm**, *THEBE* had been taken over on her starboard by the other northeast bound vessel (call sign OJKT), whose speed was 12 knots.

At **6.06.24 pm**, *THEBE* call sign appeared in red in the ARPA Target Data window.

At **6.08 pm**, *THEBE* was at 4.5 miles in the middle of the northeast bound lane. Her CPA was 0.1 mile and her TCPA was 13 min 19 sec. Her stern light was visible to the naked eye.



Situation at 6.08.02 pm

The OOW compared and contrasted the 2 available solutions to take over *THEBE* :

- taking over on starboard : *THEBE* being hardly on the port bow, this option would limit the extend of the alteration of the course, but the downside was the resulting close situation with the crossing vessel on starboard (call sign PJKY) ;
- taking over on port : the important top hamper of the vessel would be under the wind impact and the alteration of the course would be more important.

Until **6.18 pm**, *THEBE* CPA remained around 0.2 mile (the CPA variations were generated by the yawing course of *THEBE*; cf. ARPA data record in appendix B).

At **6.18 pm**, after he had been hesitating, the OOW decided to come on the left in order to leave *THEBE* clear on starboard. He used the gyro-pilot control to monitor a 8° to 10° alteration of the course.



Situation at 6.18 pm

CMA CGM LAPEROUSE came very slowly to the set course, which the OOW put down to the 3° per minute limitation of the course alteration by the gyro-pilot or to the fact that he forgot to confirm the new course set.

At **6.22 pm**, *CMA CGM LAPEROUSE* was then heading 005° after the OOW had shifted to manual steering for a faster course alteration.

At **6.22.15 pm**, *CMA CGM LAPEROUSE* bow collided *THEBE* stern without any impact had been sensed on the bridge.

The OOW anxious to know if there was room enough for the stern to keep clear from *THEBE* during the swing, went on the starboard wing. He saw *THEBE* very close but still on the bow, then he came back immediately to meet the helm.

But *CMA CGM LAPEROUSE* stern collided *THEBE*. No impact had been sensed on *CMA CGM LAPEROUSE* bridge.

The position was: latitude 53°29'.3 N – Longitude : 004°44'.8 E.

At **6.24.20 pm**, the master called up by the cadet came instantly to the bridge. Informed by the OOW on the situation and on the doubt about the collision, he reduced speed then stopped just by *THEBE*.

At **6.24.44 pm**, *THEBE* emitted a MAYDAY signal.

At **6.25.13 pm**, Den Helder MRCC answered to *THEBE* and launched the rescue operation.

At **6.33 pm**, *CMA CGM LAPEROUSE* offered her assistance to the MRCC.

At **6.50 pm**, *CMA CGM LAPEROUSE* master called the vessel DPA who initiated a crisis cell at the company headquarters.

VDR data had been saved.

At **7.12 pm**, after a damage assessment *THEBE* sailed to Den Helder port, while *CMA CGM LAPEROUSE* resumed her voyage to Hambourg where she had done her commercial operations then she went under repairs (cf. damage pictures file in appendix C - CMA CGM data).

No pollution had been observed.

6 ANALYSIS

The method selected for this analysis is the method usually employed by *BEA*mer for all its investigations, in compliance with the “Code for the Investigation of Marine Casualties and Accidents” laid out in Resolution MSC 255(84) adopted by the International Maritime Organization (IMO).

The factors involved have been classed in the following categories :

- **natural factors ;**
- **material factors ;**
- **human factor ;**
- **other factors.**

In each of these categories, *BEAMer* investigators have listed the possible factors and tried to qualify them relatively to their characters :

- **certain, probable, hypothetical ;**
- **causal or underlying ;**
- **circumstantial, inherent ;**
- **aggravating ;**

with the aim to reject, after examination, factors with no influence on the course of events and to retain only those that could, with a good probability, have a real influence on the course of facts. The investigators are aware that maybe they have not given an answer to all the issues raised by this accident. Their aim remains to avoid other accident of the same type; they have privileged with no *a priori* an inductive analysis of the factors which have a significant risk of recurrence due to their inherent character.

6.1 NATURAL FACTORS

Weather conditions did not interfere with *CMA CGM LAPEROUSE* course and speed, but on the contrary *THEBE* manoeuvrability was on the edge to be impaired by the weather conditions.

6.2 MATERIAL FACTORS

BEAMer had not identified any material factor that could have contributed directly or not to the accident.

6.3 HUMAN FACTORS

6.3.1 CMA CGM LAPEROUSE

The fourth officer has been on the bridge since 4.00 pm without the helmsman. The cadet who joined him at the beginning of the watch was totally inexperienced. Between 4.00 pm and 6.00 pm as the situation was easy to deal with, the OOW did not inform the master of any doubt, as he had noticed his presence on the bridge at several occasions.

Although his attention had been drawn before 6.00 pm, on *THEBE*, a vessel he was closing with a speed difference of about 20 knots, he had, as it seems not memorized her call sign which was displayed on the ARPA (cf. VDR record). He had nevertheless the intention to manoeuvre in order to overtake her and for training purpose he asked questions to the cadet about the manoeuvre to be undertaken.

Until 6.18 pm, he was hesitating on the choice of the side on which overtaking *THEBE*. The distance between the two vessels was then 1.39 mile, the CPA was 0.16 mile. When he had made up his mind, it was already too late.

About 20 minutes before the collision, *THEBE* stern light and deck lights were visible to the naked eye. According to his statement, the fourth officer had been too much confident on this visual observation.

As he did not correlate enough a visual observation with the ARPA, the fourth officer had committed a misjudgement, driving to a late decision making.

This late decision making is the **causal factor** of the accident.

It is nevertheless noticed or reminded :

- That this officer although he was qualified to be the OOW in any circumstances, was not greatly experienced on a bridge;
- that this officer had joined two days before a vessel with structural differences (great length abaft) and with equipment differences (particularly on the bridge) with those he was accustomed to work aboard;
- that the bridge watch hand over had been very short;
- that the presence of the helmsman could have been beneficial for the lookout as the latter would have doubtlessly alerted the OOW, and for the taking over manoeuvre by shifting the steering wheel to manual control;
- that the watch during commercial operations and the new officer in charge of the safety training visits did not give him a chance to rest;
- that the fact to overtake a vessel even with a great differential speed, seems to be the slowest manoeuvre to undertake. This could drive to “forget” that it is urgent to alter course.

6.3.2 *THEBE*

This type of vessel, designed more as a river vessel than as a seagoing vessel, is allowed to sail at sea without any restriction, with a mostly reduced crew. Numerous accidents had revealed the total lack of lookout or at least a poor lookout .

In the case of *THEBE*, one can only notice the lack of last minute manoeuvre (Rule 17 – Stand-on vessel manoeuvre) or the lack of attempt to call on the VHF to worry about a forthcoming collision.

7 EXECUTIVE SUMMARY

The collision of *THEBE* by *CMA CGM LAPEROUSE* is attributable to the human factor :

- Late decision due to a misjudgement of the *CMA CGM LAPEROUSE* OOW ;
- Lack of attempted last minute manoeuvre of *THEBE*.

Notice that the absence of the helmsman on *CMA CGM LAPEROUSE* bridge had not been neutral in this event.

8 MESEARES TAKEN

CMA CGM shipping company has immediately modified the watch organisation and the work organisation on board its vessels, and strictly implements the SOLAS convention now on.

9 RECOMMENDATIONS

The *BEAmer* reminds to the **IMO** the necessity to take into consideration the river-sea vessel status from a shipbuilding point of view, as well as from a manning point of view (complement)

The *BEAmer* recommends to the **CMA CGM shipping company** to improve the process to help OOWs to familiarize themselves with new vessels (e.g. being OOW with a supervisor during the first days of a North tour or training periods for OOWs on a bridge simulator).

Annexe A

Appendix A

Décision d'enquête ***Enquiry decision***



Bureau d'enquêtes sur
les événements de mer

Paris, le 07 JAN. 2011
N/réf. : BEAmer



00 000 1

D É C I S I O N

La Ministre de l'Écologie, du Développement Durable, des Transports et du Logement ;

- Vu la loi n° 2002-3 du 3 janvier 2002 relative aux enquêtes techniques après événements de mer ;
- Vu le décret n° 2004-85 du 26 janvier 2004 relatif aux enquêtes techniques après événement de mer, accident ou incident de transport terrestre ;
- Vu le décret du 09 septembre 2008 portant délégation de signature (Bureau d'enquêtes sur les événements de mer) ;
- Vu le décret du 09 juin 2008 portant nomination du Directeur du Bureau d'enquêtes sur les événements de mer ;
- Vu le SITREP 00052 établi le 23 décembre 2010 par les garde-côtes Néerlandais ;

D E C I D E

Article 1 : En application de l'article 14 de la loi sus-visée, une enquête technique est ouverte concernant la collision entre le *CMA CGM LA PEROUSE* et le *THEBE* survenue le 23 décembre 2010 au large du port de Den Helder (Pays-Bas).

Article 2 : Elle aura pour but de rechercher les causes et de tirer les enseignements que ces événements comportent pour la sécurité maritime, et sera menée dans le respect des textes applicables, notamment le titre III de la loi sus-visée et la résolution MSC 255 (84) de l'Organisation Maritime Internationale.

Ministère de l'Écologie,
du Développement durable,
des Transports
et du Logement

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Pour la Ministre et par délégation
le Directeur du BEAmer
Jean-Pierre MANNIC



Annexe B
Appendix B

VDR

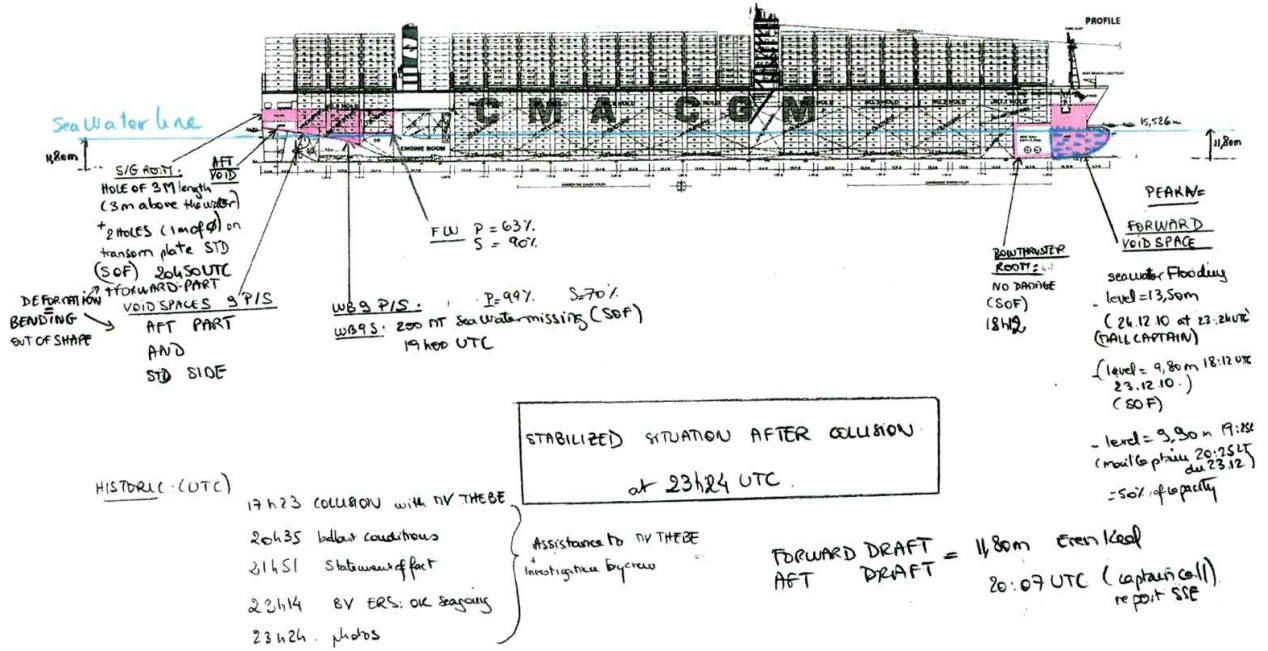
Heure LT	LP		V20S				Distance	Observation
	Cap	Vitesse	Cap	Vitesse	CPA	TCPA		
18h00	22,9	22,6					7,2	
18h02	22,9	22,8					6,5	
18h04	22,9	22,5					6	
18h06	23,6	22,5					5,2	2ème contrebordier dépasse V20S par td
18h06mn24s			9,7	2,4	0,41	14mn58s	5,08	alarme CPA V20S
18h08	22,7	22,8	35	2,5	0,1	13mn19s	4,53	
18h10	22,7	22,5	26	4,1	0,16	12mn36s	3,4	
18h12	23,1	22,5	24,6	2,2	0,22	9mn39s	3,26	
18h14	22,9	22,7	14,7	3,9	0,32	8mn21s	2,67	
18h16	23,6	22,8	31,7	4,8	0,18	6mn39s	2,02	
18h18	23	22,5	29,9	3,8	0,16	4mn23s	1,39	
18h18mn40s	22	22,5						LP vient à gauche
18h19mn00s	19,5	22,4	28,2	2,3	0,14	3mn05s	1,05	
18h19mn30s	18,5	22,6	28,1	2,8	0,1	2mn40s	0,89	
18h20mn00s	16	22,4	28,7	3,6	0,07	2mn19s	0,73	
18h20mn30s	12,7	22,4	27,2	2,8	0,03	1mn45s	0,57	
18h21mn00s	11,2	22,1	23,5	3,1	0,01	1mn15s	0,42	
18h21mn30s	9,5	22	21,5	2,3	0	0mn43s	0,26	
18h22mn00s	5,4	22,1	21,5	3,5	0,01	0mn16s	0,09	
18h22mn15s	0,01	21,8	29	6,6	0,02	0mn03s	0,02	collision
18h22mn30s	349,6	21	28	4,9	0,02	<i>valeur négative</i>	0,06	appel VHF du THEBE
18h23mn00s	329,7	18,9	32,4	3,1				
18h23mn30s	325,5	19,7	32,4	3,1				
18h23mn38s	324,7	19,5						stagiaire appelle le cdt
18h24mn00s	326,7	19,5						LP vient à droite
18h24mn20s	334	19,3						cdt en passerelle
18h24mn44s	347,5	18,6						MAYDAY du THEBE
18h25mn13s								MRCC répond
18h26mn30s	19,6	17,7						LP commence à ralentir
18h28mn40s	33	18,4						Public adress du cdt
18h29mn20s								cdt appelle le THEBE

LP : CMA CGM LAPEROUSE

V20S : THEBE

Avaries
Damages
(Documents CMA CGM)

CMA CGM LAPEROUSE



CMA SHIPS

LAPEROUSE 31/12/2010

THEBE



Annexe D
Appendix D

Carte
Chart

