Report of safety investigation

Stranding
of the chemical tanker vessel
SICHEM OSPREY
on 10 February 2010
on Clipperton Island

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.

PLAN DU RAPPORT

APPENDIX LIST

Abbreviation list

AB	:	Able Bodied Seaman
AIS	:	Automatic Identification System
ARPA	:	Automatic Radar Plotting Aid
***BEA*mer**	:	*Bureau d'enquêtes sur les évènements de mer* (MAIB French counterpart)
CEPPOL	:	French navy anti-pollution centre
ECDIS	:	Electronic Chart Display and Information System
EEZ	:	Exclusive Economic Zone
GPS	:	Global Positioning System
IMO	:	International Maritime Organisation
ISM Code	:	International Safety Management Code
LOF 2000	:	Lloyd's Standard Form of Salvage Agreement
MRCC	:	Maritime Rescue Coordination Center
OOW	:	Officer Of the Watch
RACON	:	RAdar beacon
SCOPIC	:	Special Compensation P&I Club Clause
SOG	:	Speed Over Ground
STCW	:	Standard of Training, certification and Watchkeeping
UKHO	:	United Kingdom Hydrographic Office
UTC	:	Universal Time Coordinated
VRM	:	Variable Range Marker
WAAS	:	Wide Area Augmentation System
WGS	:	World Geodetic System

1 CIRCUMSTANCES

On 10 February 2010 at 4.36 am local time, the chemical tanker *SICHEM OSPREY*, on her way from Panama to Ulsan (South Korea) stranded at more than 16 knots on the north-easterly part of Clipperton Island, although an OOW and a lookout AB were on the bridge and no damage was reported prior to the accident. A 100 metre fore part of the vessel had been grounded. No pollution had been observed.

A major salvage plan had been rapidly set out by the French authorities.

After less than 48 hours, a salvage agreement was signed between the owner and the Svitzer Salvage company.

After number of attempts, and two cargo lightening operations done by pumping to an alongside vessel, *SICHEM OSPREY* had been refloated on 6 March 2010, with the help of 2 tugs.

Investigation management :

SICHEM OSPREY stranded in an uninhabitated area. About a week after the accident, it turned out that the risk of « serious harm to the environment » was a priori ruled out : this marine casualty was therefore not a very serious marine casualty according to IMO 849 (20) § 4.2. For this reason *BEA*mer did not undertake the trip to the area which would have involved heavy logistics.

However, from the 10 February, *BEA*mer had been constantly informed of the sequence of events by the head of the French Polynesia Maritime Administration Department. The minutes of the auditions, done by a police officer supported by two interpreters (French to English and French to Russian, respectively OOW and marine aboard the French Navy Frigate *COURBET*), had been received by *BEA*mer on 3 March 2010. The copies of ship's papers and recordings (VDR and ECDIS) had been received on 25 May 2010 by *BEA*mer. These pieces of information were sufficient to allow the writing of this report.

*BEA*mer expressed the wish to lead the investigation and the Maritime board in Malta acceded to the request.

2 BACKGROUND

Clipperton Island, although situated at more than 5000 km from Tahiti Island, is in the French Polynesia Maritime Area. This coral atoll is uninhabitated and the French sovereignty is secured by the presence six days a year of a French Navy vessel (North Pacific Ocean French deployment). A French-Mexican agreement (in force since 1 May 2007) specifies the regulation to the benefit of Mexican fishing vessels in Clipperton EEZ. In relation with *SICHEM OSPREY* stranding and the incurred risks of harm to the environment, the crisis management and the sovereignty assertion by the French authorities had a high level of priority.

Clipperton Rock gives good radar echoes at a 14 nautical miles range (French Sailing directions K11). But there is no lighthouse nor buoyage system.

Eitzen Chemical (Singapore) Private Ltd is linked to Eitzen Chemical ASA, which head office is at Oslo (Norway) and operates a 80 vessel fleet, 62 of which are owned by the company. *SICHEM OSPREY* technical management is carried out by V.Ships UK Glasgow (Scotland).

V.Ships is built of a 30 recruitment office network ; the most important offices are in Philippines, India, Russia and Ukraine.

At the end of December 2009 the vessel sailed from Estonia bound to The south-east of the USA, then Korea via Panama canal. The ports of loading were Norfolk (soy or vegetable fat), Baton Rouge (xylene) and Houston (tallow or animal fat). Scheduled unloading ports were Ulsan, Pusan and Taice-Kxang.

3 VESSEL

Built in 2009 in Busan (Korea) *SICHEM OSPREY* is a double hull Combined Chemical and Oil Tanker.

3.1 Main characteristics

Vessel details :

- Length overall : 170.11 m ;
- Breadth overall : 26.23 m ;
- Gross tonnage : 17 789 ;

- Depth : 15.60 m ;
- Draught : 10.01 m ;
- Deadweight : 25 432 t ;
- Number of tanks : 14 ;
- Load volume (100%) : 31 287 m^3 ;
- Inerting plant : nitrogen ;
- Ballasting capacity : 13 724 t ;
- Main engine : B & W 6 cyl. 7 860 kW at 129 rpm ;
- Operating speed : 15.5 kts ;
- Call sign : 9HTP9 ;
- OMI Registration Number : 9396024 ;
- AIS : yes ;
- ECDIS : KEIKI ;
- VDR : JRC.

Classed by ABS (*American Bureau of Shipping*).

The vessel is new ; the bridge ergonomics, the equipments in good operating order are fit for the navigation program (see appendix B).

3.2 Load and risks

(See appendix B)

- 6,000 t of vegetable fat dispatched in 4 tanks ;
- 6,000 t of animal fat dispatched in 3 tanks ;
- 10,500 t of xylene dispatched in 7 tanks.

Vegetable and animal fat : risk to get caught in lime for wildlife and flora. No risk for the crew.

Xylene : lighter than water (density 0.87) xylene spreads rapidly and evaporates in a couple of hours being transformed into vapours that could be dangerous for the crew (headache, dizziness, balance lost, and so on). Vapours are heavier than the air and are mostly flammable.

Risks for marine environment affects only the foreshore. The product is labelled toxic.

It is one of the 30 most produced chemical compounds in the USA.

4 CREW

The crew was made of 19 members among which 8 officers (4 deck officers).

Captain : 50 years old ; STCW titles up to date ; Russian.
He has begun his career in the merchant navy in 1979 as an AB. Officer in 1975, then captain in 2009, he has been *SICHEM OSPREY* captain since 28 January 2010.
He was sailing on this line for the first time and had not known the other officers before.

First officer : 43 years old ; STCW titles up to date ; Ukrainian.
OOW since 1986.
On board *SICHEM OSPREY* since 26 December 2009.
On watch from 4 am to 8 am and from 4 pm to 8pm. **OOW at the time of the stranding**, he was sailing on this line for the first time.

Second officer : 27 years old ; STCW titles up to date ; Russian.
OOW since 2005.
On watch from 0 am to 4 am and from 12 am to 4 pm. **Navigation officer, he was sailing on this line for the first time**.

Third officer : 25 years old ; STCW title up to date ; Latvian.
On watch from 8 am to 12 am and from 8 pm to 12 pm.

Cadet : 22 years old ; Latvian.
Has been on board as a lookout for three months and it was his first embarkation. On watch from 10 pm to 6 am followed by a 36 hour rest. **He was on watch at the time of the stranding**.

Operating personnel were Filipinos.

5 SEQUENCE OF EVENTS

(Aboard time : UTC - 7)

On **28 January 2010**, *SICHEM OSPREY* sailed from Houston and crossed Panama canal between 5 and 6 February.

From 9 to 10 February, the following paper charts had been used : UKOH 4811 until 9 February 2 pm then UKHO 4802 until 10 February 4 am. The course shaped on chart 4802 seems to have been erased; fixes plotted every 2 hours are nevertheless well visible. The track had been shaped inshore the 110-fathom line (200m) which surrounds Clipperton Island (see appendix C).

Starboard ECDIS displays a track at 0.5 mile of the centre of Clipperton Island in an area where the depths are from 0 to 30 m. The course was represented by a 30 m wide corridor (see appendix D).

On **9 February** from **4 pm** to **12 pm**, heading 280°, SOG over 17 kts (worked out from the fixes plotted on chart 4802).

On **10 February**,

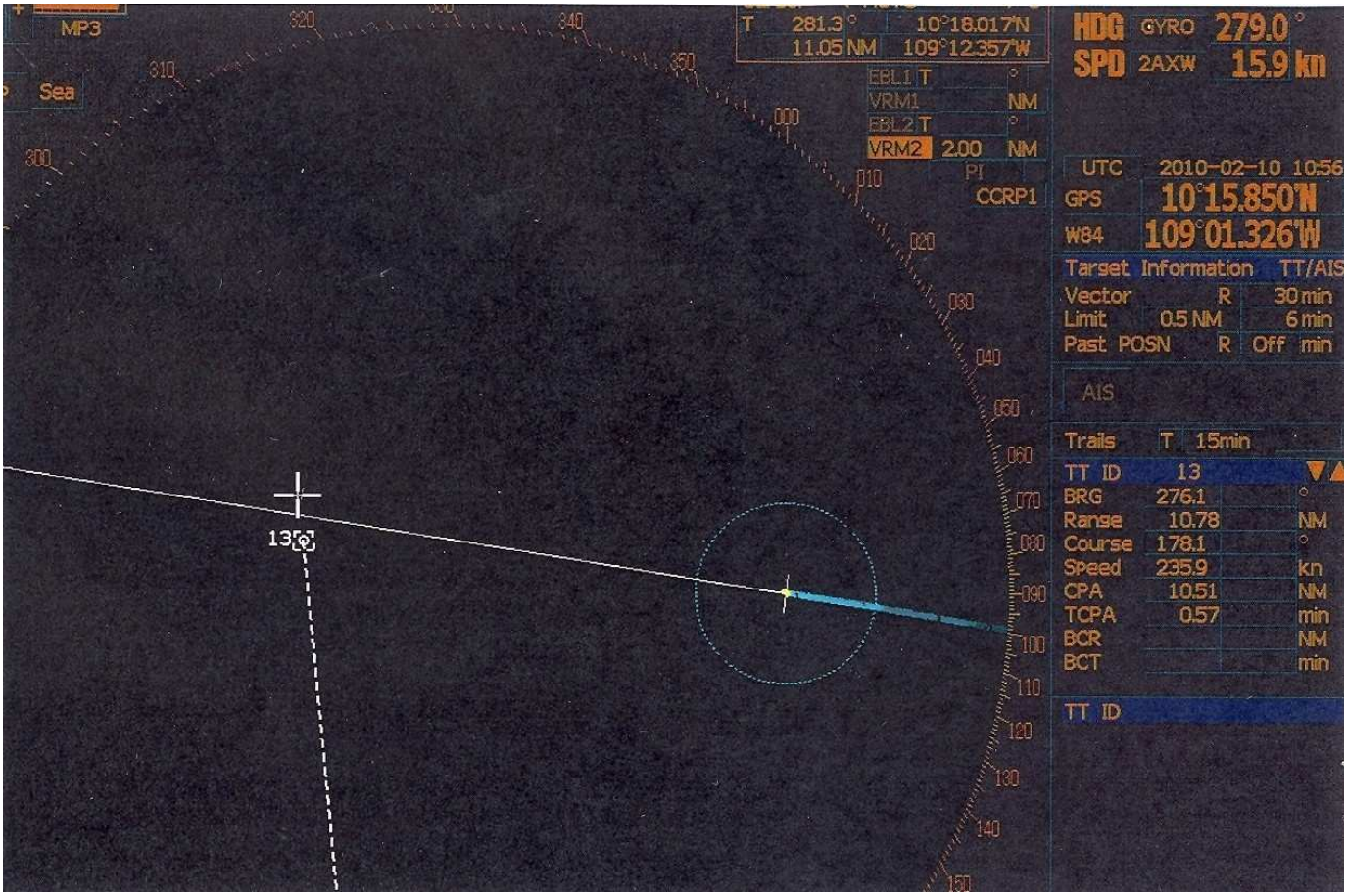
Weather conditions : wind north-easterly 15 kts, sky very cloudy, showers, good visibility.

From **0 am** to **4 am**, 2nd officer on watch, heading 280°, average SOG 17 kts (worked out from the fixes plotted on chart 4802). *SICHEM OSPREY* was at less than 0.1 mile in the south of the track planned on ECDIS. The starboard radar display was set on a 12 nautical miles range. The Variable Range Marker was set to 2 miles (VRM2).

At **3.55 am**, the first officer arrived on the bridge to take the watch over from the 2nd officer and went to the starboard radar display as usual.

At **3.56 am** (10.56 am at the UTC radar display clock), he saw a plotted radar echo at 11.05 miles (target TT1013). The 2nd officer told him it was presumably a cloud. Then the 1st Officer sat on a stool in the starboard fore corner of the bridge to smoke a cigarette and to drink a first coffee. Radar and ECDIS starboard displays were out of his field of view.

At **3.57 am**, echo TT1013 had been deselected by the 2nd officer before the stabilization of the ARPA computer (inconsistent speed of the target). He had though disabled the possibility of an alarm when the vessel would be in a very close position from the island.



At **4.00 am**, the 2nd officer had achieved his watch. He left the bridge soon after. The first officer was not concerned anyway by the radar nor by the position of the vessel on the ECDIS or on the paper chart. The speed displayed by the GPS was 16 kts.
The 1st officer talked to the lookout for a while and then get back to the starboard corner to drink another coffee.

At **4.12 am**, *SICHEM OSPREY* was still at more than 6 miles from Clipperton Island. At this range, the radar echo given by the island was very distinct. The smart functions of the radar were still not used.

At **4.29 am**, the radar display variable range marker (2 nautical miles) was tangential to the edge of the island.

At **4.36 am**, *SICHEM OSPREY* stranded without chock in the north-east of Clipperton atoll (10° 17',7 N – 109° 12',0W). The bottom was m ade of sand and coral. The first officer stopped the engine and called the captain.

At **7.30 am** (5.30 am Papeete local time), V.Ships UK maritime agent alerted Papeete MRCC.

At **9.00 am** (7.00 am Papeete local time), the *Haut-Commissaire de la République* (governor) in French Polynesia and the Maritime Area Commander were informed.

On **11 February**, an antipollution expert (from CEPPOL) and a salvage master (from Les Abeilles, Groupe Bourbon) had been appointed. A formal notice was given to the owner.

On **12 February**, a “LOF 2000” contract with SCOPIC clause was signed between V.Ships and Svitzer Salvage BV.

On **13 February**, a first tug arrived in the area. A second tug had been chartered.

On **15 February**, an unloading and refloating schedule had been set up and run by Svitzer. The operations control was given to French experts by the Maritime Area Commander.

From **20** to **27 February**, the refloating attempts failed.

On the **26 February**, the French Frigate *COURBET* arrived in the area for operational and logistical support.

From **2** to **6 March**, partial transhipment of the load to *M/T GLEN,* then transfer to *M/T SEATEAM JUPITER*. After that, the transhipment was completed directly from *SICHEM OSPREY* to *M/T SEATEAM JUPITER*, that would unload in South Korea. *SICHEM OSPREY* deballasting and refloating operations.

Load pumping operations took place without leak and without pollution. Material damages to *SICHEM OSPREY* seemed to be restricted to ballast tanks 1 starboard, 2 port and 2 starboard. She made her way on her own bound to Manzanillo (Mexico) where her hull will be inspected again by divers.

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, *BEA*mer investigators have listed the possible factors and tried to qualify them relatively to their characters :

- **certain, hypothetical ;**
- **causal or underlying ;**
- **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

Shortly before the accident patchy showers had driven the taking over OOW (4 am to 8 am watch) and the leaving OOW (0 am to 4 am watch) to misinterpret the radar echo of Clipperton island, although it was distinct enough not to be misleading.

These ordinary weather conditions are not an accident factor.

6.2 Material factors

At night, without any lighthouse or radio beacon, only the radar echo enables to clear Clipperton Island, speaking in the case of a navigator who would not have beforehand identified the island on the chart (paper or electronic).

Although a lighthouse beam or a Racon beacon would have probably drawn the attention of one of the watchmen, this lack of shore equipment that could be easily compensated by a convenient use of charts, radar, ECDIS and GPS equipments fitted on board, is not a potential accident factor.

On the day of the accident, one of the three geostationary WAAS (system to enhance GPS precision) satellites dedicated to Pacific ocean area was adrift. Nevertheless no positioning error or aberration between charts (WGS 84 standard) and GPS had been noticed by the vessels in the area for the refloating operation.

6.3 Human factor

The following Human factor analysis is focused on the officers' actions that have led to *SICHEM OSPREY* stranding. On the other hand, the actions undertaken by the same officers

team for the operations following the grounding (load pumping, deballasting and so on) had been led with professionalism.

The captain :

On the day of the accident, has been on board for only two weeks and had never sailed on this line; he did not know the other officers yet. For the navigation, he had totally left it to the 2nd officer (officer in charge of the navigation), although according to his statement he had checked the shaped courses. However, one can be doubtful about this affirmation as he was not able to say whether the option chosen was a rhumb-line or a great circle route.

The first officer :

Taking over OOW. During the first half an hour, he was more concerned by his « wake-up stage » than by the navigation, that one necessitating however, in this case, only a rapid information (offshore navigation in a low traffic area). The vessel stranded through at full speed 36 minutes after he had theoretically « taken over ».

The 2nd officer (navigation officer) :

Passing over OOW. Although he had shaped the course on the paper charts and set up the ECDIS, he had interpreted the radar echo of the island as being a shower. On chart 4811 are shaped an outward course (280°) « too close » t o Clipperton island in the north and a return course (100°) in the south of the island. A short t rack (146°) is linking the north track with the south one (see appendix C).

These two tracks are unexplainable in the frame of a scheduled voyage. They could have been shaped after the stranding.

Note that there are sizeable discrepancies between the fixes plotted on chart 4802 and those displayed on the radar (VDR) :

		Chart 4802		**Radar (VDR data)**		
	Aboard time	Latitude N - Longitude W		Latitude N - Longitude W		UTC
09 Feb 2010	18H00	09°47,0	106°12,5	09°46,88	106°10,95	01H00
	20H00	09°54,0	106°46,0	09°52,95	106°45,22	03H00
	22H00	10°00,0	107°18,0	09°58,75	107°19,76	05H00
10 Feb 2010	00H00	10°05,0	107°51,5	10°04,63	107°54,12	07H00
	02H00	10°13,0	108°27,0	10°10,41	108°28,44	07H00
	04H00	10°17,5	109°02,0	10°16,00	109°02,36	11H00

The transfer of watch 2nd officer – 1st officer do not seem to have been done according to « good practices » and ISM code requirements.

Anti-collision radar alarm thresholds were not set according to the captain's instructions (0.5 mile and 6 minutes instead of 2 miles and 20 minutes) ; these adjustments, set by the navigation officer, were not reappraised by any of the officers even by the captain.

The lookout : although he came from a merchant navy cadet school, his function during the watch was limited to the visual lookout. No radar alarm had drawn his attention before the stranding.

The major deficiencies of the captain and of the three OOW are the **causal factor** of the accident.

The captain, the first officer and the third officer had, de facto, validated the course shaped and the radar adjustments done by the navigation officer. This lack of cohesion between officers who do not practice « cross control » of the tasks in order to detect errors or omissions is an **underlying factor** strongly contributing to the accident.

6.4 Other factors

V.Ships, the vessel technical manager, relies on the skills of a V.Ships consulting « sister » company for the assessment of the crews proficiency. These assessments are aimed on the familiarization with the equipments and the training for emergency situations ; they allow to carry out specific trainings among which special items fundamental for the vessel handling : bridge resource management and voyage planning in particular. These trainings are given by experienced officers (see appendix B).

It seems that *SICHEM OSPREY* officers would not have been assessed before this distant trade voyage leading them from the south-east of the USA (the captain get aboard at Houston) to South Korea.

This lack of assessment and of training, chargeable to the vessel technical manager, could also be an **underlying factor** of the accident.

7 RECOMMENDATIONS

The *BEA*mer recommends :

To the vessel technical manager :

7.1 In the frame of the ISM code implementation, to systematically put into practice their assessment–training scheme to any of the crews on board the vessels that they technically manage.

To IMO :

7.2 To raise the minimum training level required to deliver STCW titles.

APPENDIX LIST

A. Enquiry decision

B. Vessel

C. Charts

Appendix A

Enquiry decision

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

Bureau d'enquêtes sur
les événements de mer

Paris, le 12 FEV. 2010
N/réf. : BEAmer

000005

BEA mer

DÉCISION

Le Ministre de l'Ecologie, de l'Energie, du Développement Durable et de la Mer ;

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 cu Bureau d'enquêtes sur les événements de mer ;

Vu le SITREP MAS 026/10 établi le 10 février 2010 par le MRCC Papeete ;

DECIDE

Article 1 : En application de l'article 14 de la loi sus-visée, une enquête technique est ouverte concernant l'échouement du navire chimiquier maltais *SICHEM OSPREY* survenu le 10 février 2010 sur l'atoll de Clipperton.

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.

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

Ministère de l'Écologie,
de l'Energie,
du Développement durable,
et de la Mer

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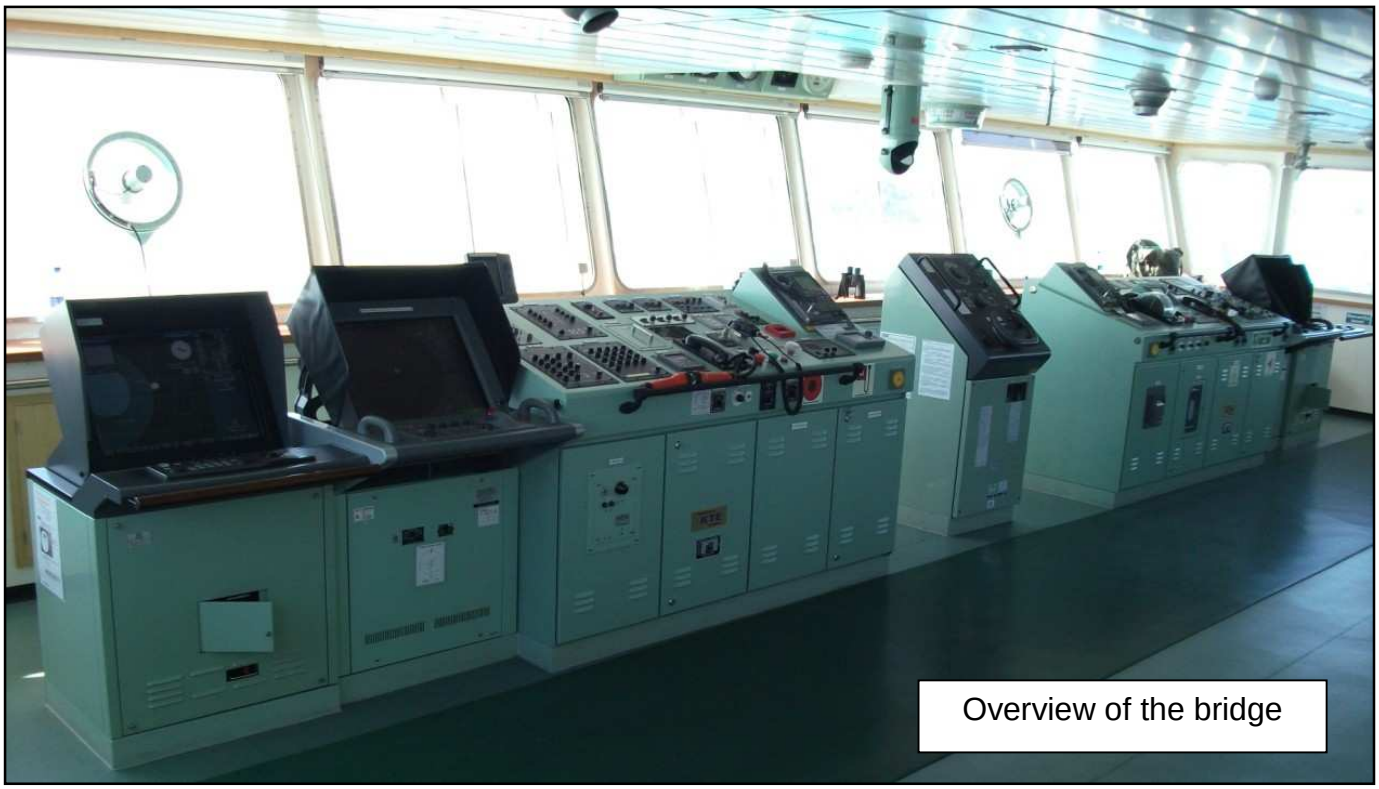
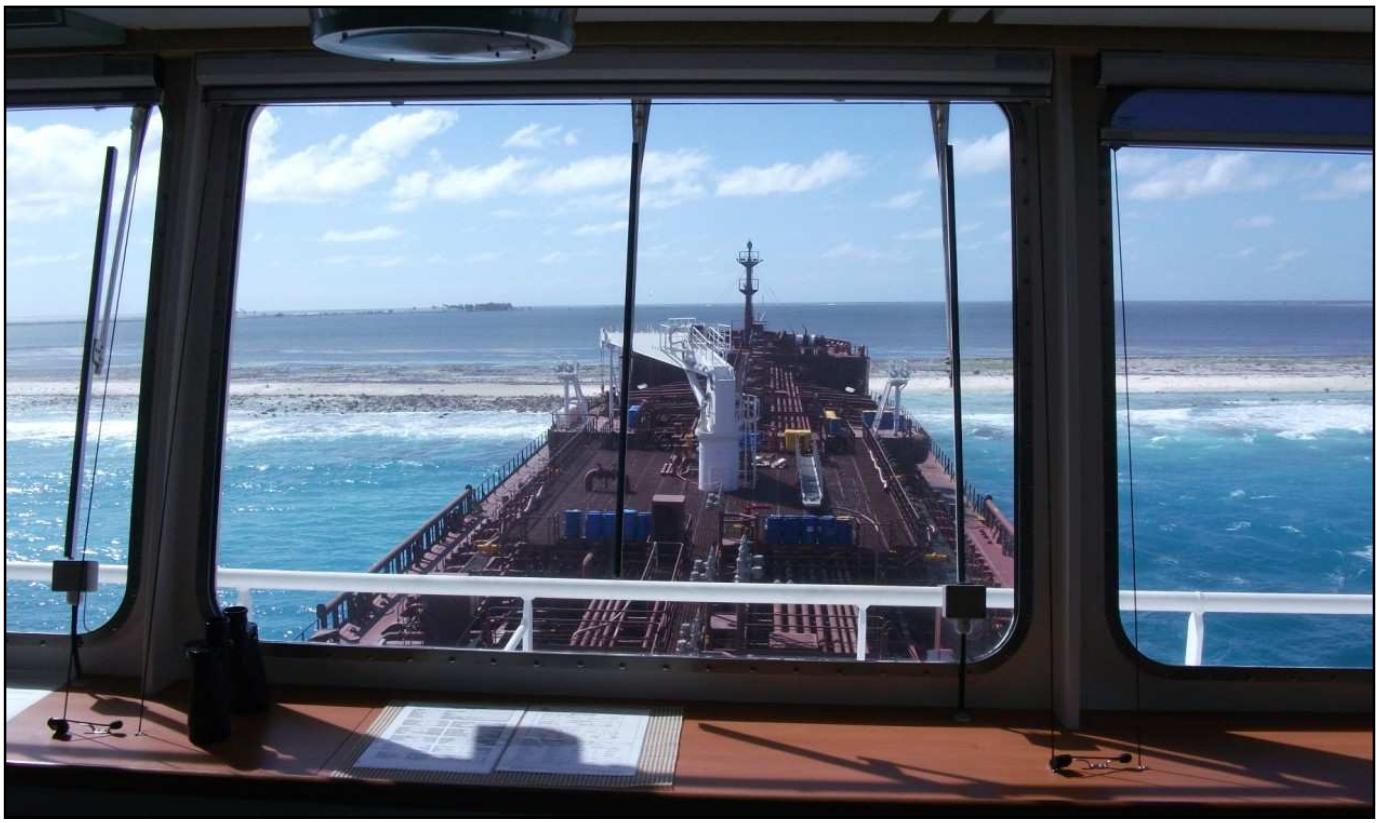
Appendix B

Vessel



Overview of the bridge

Radar and ECDIS starboard



View from the bridge of the ship aground

m/v SICHEM OSPREY

Voyage : 9

Rotation : Houston-Panama

CARGO PLAN

1 P — 100% = 1784,15 — 94,9% — Volume : 1693m³ — Weight : 1474mt — Mix Xylene UN 1307 Class3,2	1 S — 100% = 1782,45 — 94,9% — Volume : 1691m³ — Weight : 1472mt — Mix Xylene UN 1307 Class3,2
2 P — 100% = 2548,87 — 61,8% — Volume : 1574m³ — Weight : 1451mt — Crude soyabean oil N/A	2 S — 100% = 2531,57 — 94,9% — Volume : 2402m³ — Weight : 2091mt — Mix Xylene UN 1307 Class3,2
3 P — 100% = 2672,23 — 87,2% — Volume : 2330m³ — Weight : 2001mt — Tallow N/A	3 S — 100% = 2663,83 — 61,8% — Volume : 1645m³ — Weight : 1517mt — Crude soyabean oil N/A
4 P — 100% = 2676,3 — 87,2% — Volume : 2333m³ — Weight : 2004mt — Tallow N/A	4 S — 100% = 2663,9 — 87,2% — Volume : 2322m³ — Weight : 1995mt — Tallow N/A
5 P — 100% = 2672,80 — 61,8% — Volume : 1651m³ — Weight : 1522mt — Crude soyabean oil N/A	5 S — 100% = 2660,63 — 61,8% — Volume : 1643m³ — Weight : 1515mt — Crude soyabean oil N/A
6 P — 100% = 2542,36 — 94,9% — Volume : 2412m³ — Weight : 2100mt — Mix Xylene UN 1307 Class3,2	6 S — 100% = 2524,92 — 94,9% — Volume : 2396m³ — Weight : 2085mt — Mix Xylene UN 1307 Class3,2
Slop P — 100% = 781,67 — 94,9% — Volume : 742m³ — Weight : 646mt — Mix Xylene UN 1307 Class3,2	Slop S — 100% = 781,06 — 94,9% — Volume : 741m³ — Weight : 645mt — Mix Xylene UN 1307 Class3,2

Total : 25 575 m³ Total : 22 518 mt

Chief Officer of the m/v SICHEM OSPREY

Grade 1		Grade 2	
Name :	Tallow N/A	Name :	Crude soyabean oil N/A
VOL :	6 985 m³	VOL :	6 513 m³
WGT :	6 000 mt	WGT :	6 005 mt
DNS :	0,859	DNS :	0,922
L / Port :	Houston	L / Port :	Norfolk
D / Port :	TBC	D / Port :	TBC
Storage :	3p4p4s	Storage :	2p3s5p5s

Grade 3		Grade 4	
Name :	Mix Xylene UN 1307 Class3,2	Name :	
VOL :	12 077 m³	VOL :	
WGT :	10 513 mt	WGT :	
DNS :	0,8705	DNS :	
L / Port :	Baton Rouge	L / Port :	
D / Port :	TBC	D / Port .	
Storage :	1p1s2s6p 6sSLPSL S	Storage :	

Grade 5		Grade 6	
Name :		Name :	
VOL :		VOL :	
WGT :		WGT :	
DNS :		DNS :	
L / Port :		L / Port :	
D / Port :		D / Port :	
Storage :		Storage :	

Grade 7		Grade 8	
Name :		Name :	
VOL :		VOL :	
WGT :		WGT :	
DNS :		DNS :	
L / Port :		L / Port :	
D / Port :		D / Port :	
Storage :		Storage :	

	Cargo	Tanks	Quantity M3	Quantity mt	DNS
Grade 1	Tallow N/A	3p4p4s	6984,866	6000	0,859
Grade 2	Crude soyabean oil N/A	2p3s5p5s	6513,015	6005	0,922
Grade 3	Mix Xylene UN 1307 Class3,2	1p1s2s6p6sSL	12076,967	10513	0,8705
Grade 4			#DIV/0!		
Grade 5			#DIV/0!		
Grade 6			#DIV/0!		
Grade 7			#DIV/0!		
Grade 8			#DIV/0!		

Chose Tanks	98% vol of Chosen Tanks
	0,000m3

Flesh Points of cargoes:

1.Mix Xylene - 29 deg. C

2.Soyabean oil - 360 deg. C

3.Tallow - 265 deg. C

Figures area

		%	M3	mt
1P	Mix Xylene UN 1307 Class3,2	94,9%	1692,867m3	1473,641mt
1S	Mix Xylene UN 1307 Class3,2	94,9%	1691,254m3	1472,237mt
2P	Crude soyabean oil N/A	61,8%	1574,116m3	1451,335mt
2S	Mix Xylene UN 1307 Class3,2	94,9%	2402,047m3	2090,982mt
3P	Tallow N/A	87,2%	2329,530m3	2001,066mt
3S	Crude soyabean oil N/A	61,8%	1645,112m3	1516,793mt
4P	Tallow N/A	87,2%	2333,112m3	2004,144mt
4S	Tallow N/A	87,2%	2322,224m3	1994,791mt
5P	Crude soyabean oil N/A	61,8%	1650,652m3	1521,901mt
5S	Crude soyabean oil N/A	61,8%	1643,136m3	1514,971mt
6P	Mix Xylene UN 1307 Class3,2	94,9%	2412,285m3	2099,894mt
6S	Mix Xylene UN 1307 Class3,2	94,9%	2395,737m3	2085,489mt
SLP	Mix Xylene UN 1307 Class3,2	94,9%	741,677m3	645,630mt
SLS	Mix Xylene UN 1307 Class3,2	94,9%	741,099m3	645,126mt
		M3	mt	
Grade 1	Tallow N/A	6984,9m3	6000,0mt	
Grade 2	Crude soyabean oil N/A	6513,0m3	6005,0mt	
Grade 3	Mix Xylene UN 1307 Class3,2	12077,0m3	10513,0mt	
Grade 4				
Grade 5				
Grade 6				
Grade 7				
Grade 8				
	Total:	25574,8m3	22518,0mt	

SeaTec

Global Marine Services

Engineering | Repair Services | Condition Monitoring | Safety Management | Operational Safety | Marine

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ONBOARD TRAINING SERVICES

Today's ship owners, managers and operators are under constant pressure to demonstrate that the vessels, which they operate, are safe both in the material sense and with respect to the ability of the crew to operate them safely.

There is a growing demand for onboard training services to refresh crew knowledge and verify the safe operation through training, drills and exercises.

Our on board training services are designed to review familiarisation of equipment and assess the emergency preparedness of the crew. Where necessary on board training will consider:

- Allocation of duties and responsibilities
- Procedures and methods of communication
- Actions to be taken
- Understanding of safety information, symbols, signs and alarm signals
- Utilisation of on board training materials

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OVERVIEW OF ONBOARD TRAINING

An evaluation of the on board training needs for the vessel will undertaken in consultation with the Management Office and the Master. As part of this service a generic library of training material may be made available through SeaTec including:

- ISM Code
- STCW 95.
- Use of LSA.
- Use of Fire Fighting Equipment.
- Enclosed Space Entry.
- Pollution Prevention.
- OPA 90/Marpol Requirements.
- Risk Management.
- 3rd Part Inspection including Pre-Vetting.
- Resource Management.
- Self Audits.

ADDITIONAL TRAINING MATERIALS

SeaTec Training Superintendents have a wealth of experience on all ship types and where requested can offer additional training in the following areas:

- Bridge Team Management
- Passage Planning
- Ship specific safety issues
- Gas Detection equipment and calibration
- ISPS Awareness
- Accident Investigation

Onboard training is supported by drills and exercises including but limited to:

- Lifeboat Drill
- Fire Drill
- Enclosed Space Entry
- Rescue Drill
- Oil Spill Drill
- Search Drills
- Anti-Piracy Drills

Appendix C

Charts

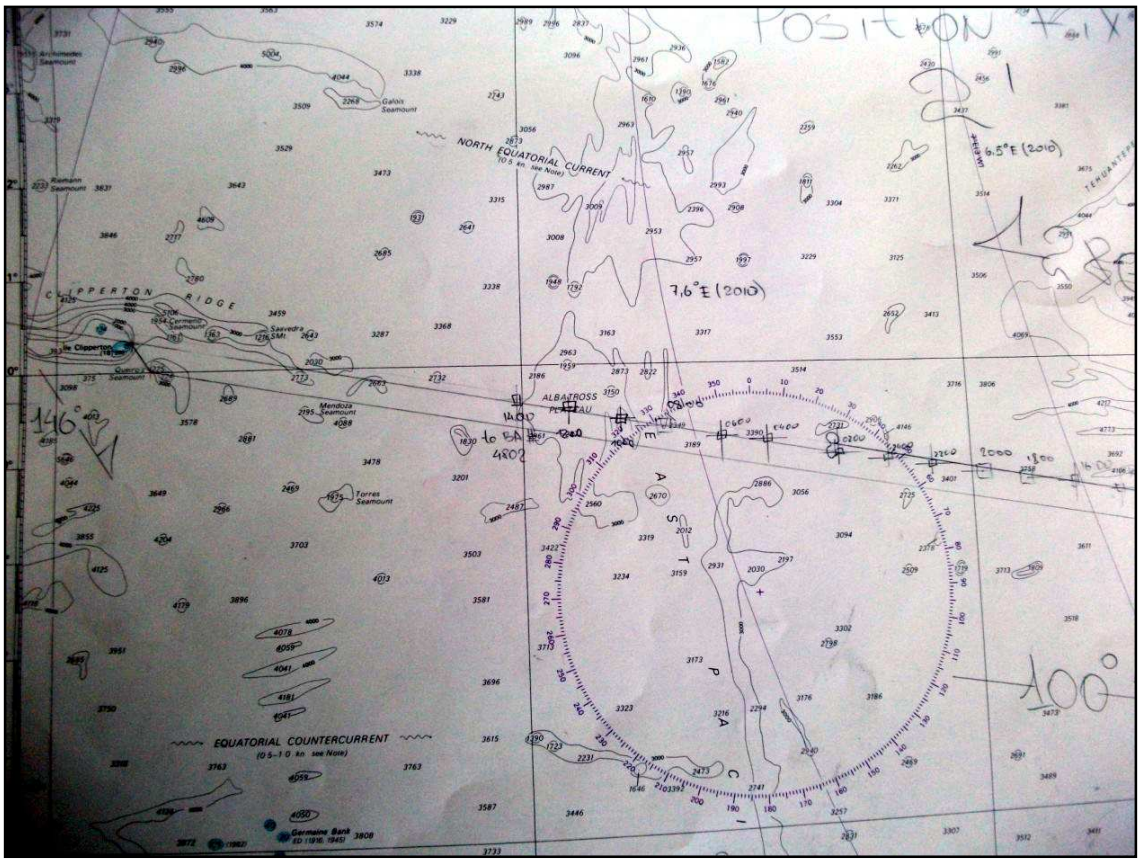
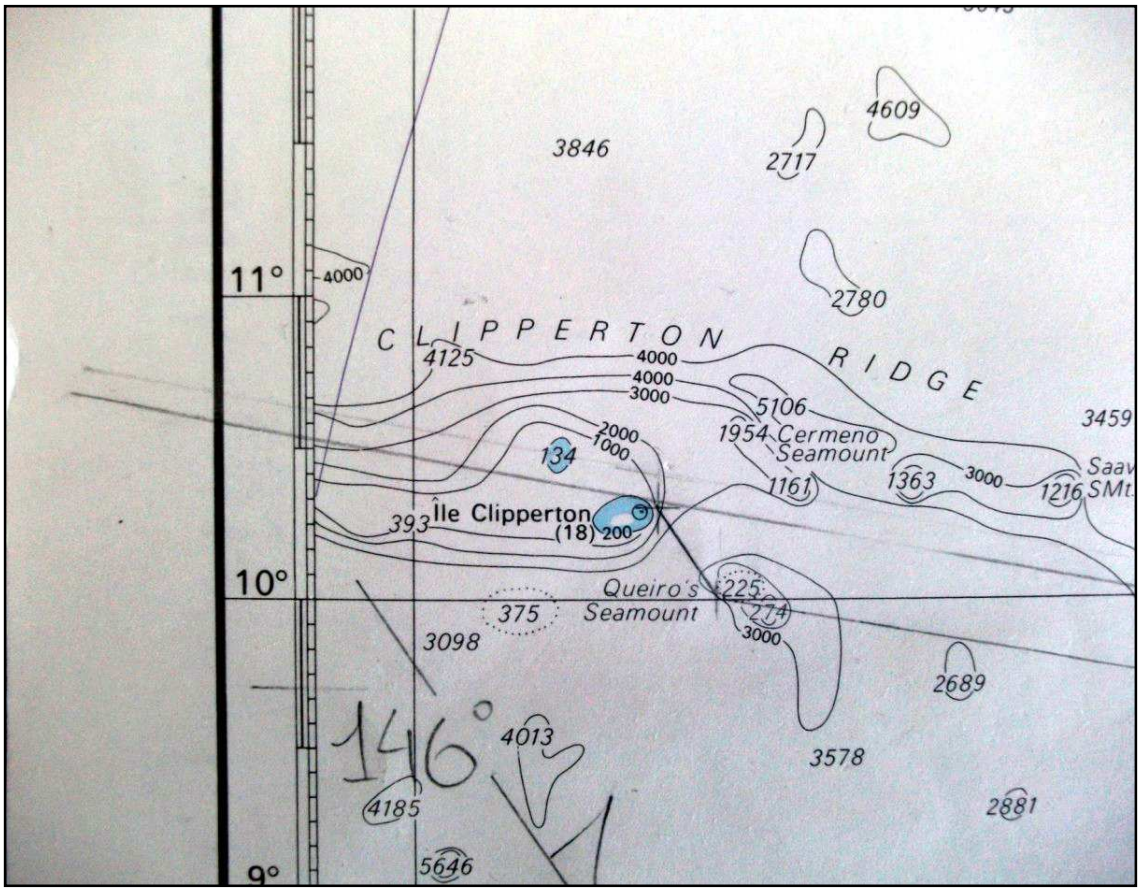


Chart UKHO 4811



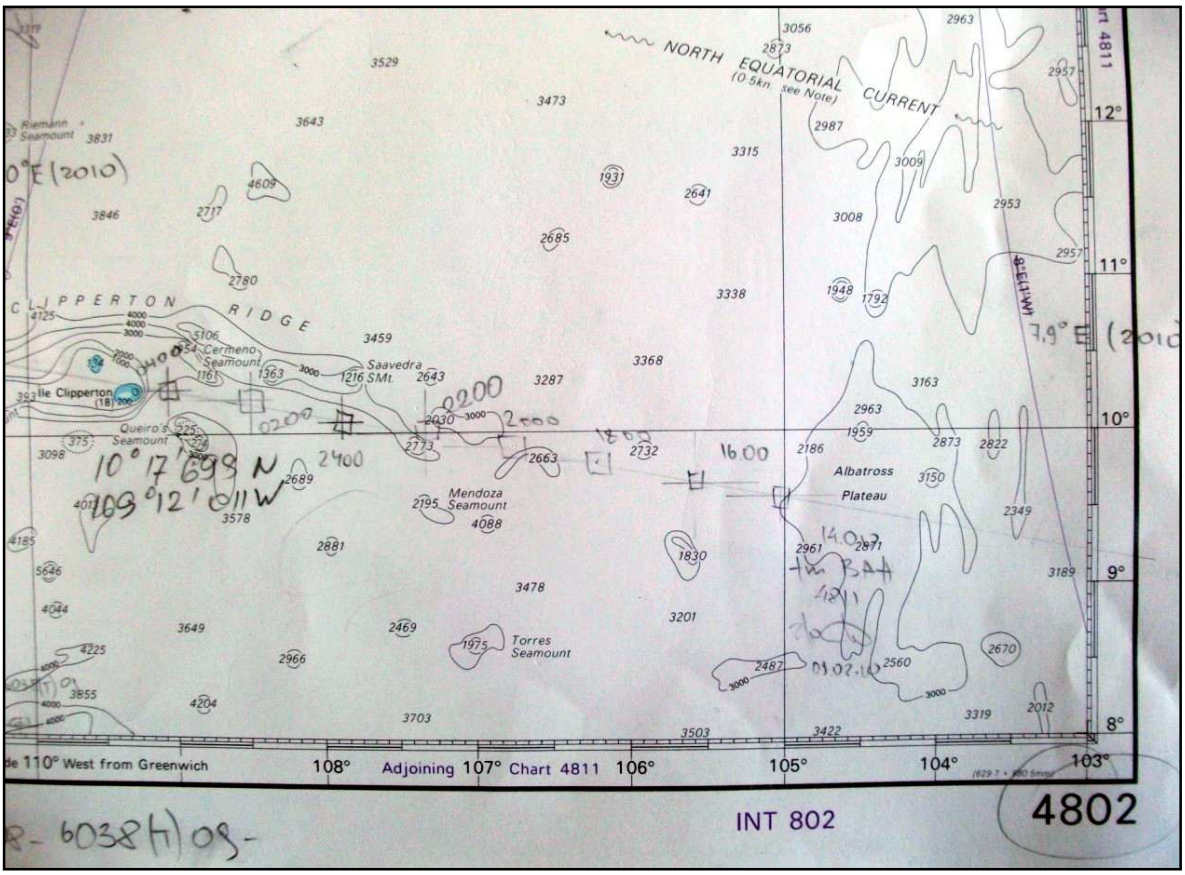


Chart UKHO 4802