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MONITORING IMPLEMENTATION OF THE HAZARDOUS AND NOXIOUS SUBSTANCES CONVENTION

Report on incidents involving HNS

Submitted by the United Kingdom

SUMMARY

Executive summary:	This document presents a paper on shipping incidents involving HNS cargoes.
Action to be taken:	Paragraph 7
Related documents:	LEG 85/5

1 At its eighty-fourth session, the Legal Committee recognised the difficulties associated with bringing the HNS Convention into force, and subsequently urged all delegations to participate in the Correspondence Group and to provide input into the work of the initiating States within this group. It was suggested that the HNS Correspondence Group should document the reasons why Governments should join the HNS regime.

2 Subsequently, the United Kingdom drafted a paper containing a brief overview of a small number of specific incidents involving HNS cargo primarily around the UK coastline (simply due to the more detailed data that the UK had access to). The paper also includes a list of shipping incidents involving HNS cargo since 1995. The list has been compiled from various databases, but is not exhaustive and is only an indication of the type of incidents that have taken place involving the carriage of HNS by sea.

3 The list of incidents referred to are not confined to any specific areas, although more have occurred, naturally, in the busier shipping routes. However, it does indicate that incidents are occurring, a fact noted most recently by the Chairman of the International Tanker Owners' Pollution Federation (ITOPF), as contained in the ITOPF Review 2002, (page 4):

> *'this year, as in the past, we have been involved in a number of incidents where the cargo on the ship was either a chemical or a substance other than oil…….Given the possible entry into force of the IMO HNS Convention in the next few years and the greater attention that this is likely to bring to chemical spill, ITOPF staff, with the support of the Board, are beginning to prepare for calls for assistance by identifying relevant data sources and service providers.'*

4 The HNS Convention was developed, and adopted by the IMO, in advance of widespread public pressure that would certainly follow a serious pollution, or catastrophic, incident involving the carriage of HNS by sea. The enclosed information annexed to this paper, and the reference by ITOPF on the increasing numbers of chemical incidents in which they are involved, highlights the clear risk that exists and the subsequent necessity for the implementation of the regime. With this in mind I refer to the first incident covered in the enclosed paper involving a collision between a cruise ship (the **Norwegian Dream**) and a container vessel (the **Ever Decent**) off the east coast of England in 1999. The incident resulted in substantial physical damage to both vessels, including a fire on board the **Ever Decent** whose cargo included cyanide and other hazardous and noxious substances. Whilst the incident, fortunately, did not result in a significant number of serious injuries, or fatalities, it does highlight the potential of a serious catastrophic HNS incident occurring.

5 Whilst there is no doubt that the HNS Convention is a complex instrument, such complexities should not prevent the entry into force of the regime whilst such risks, on whatever scale or nature, are present. Indeed, the list includes incidents involving the carriage of HNS by sea where fatalities have occurred.

6 The intention of the paper is simply to emphasise that incidents involving the carriage of HNS incidents by sea, are occurring on a global, and relatively frequent basis. The intention is not to provide a detailed account of each of the incidents that have been used as examples, but focuses on specifics of certain incidents, the substances involved and the clean up operations and preventative measures initiated in the responses.

Action requested of the Legal Committee.

7 The Legal Committee is invited to take note of, and consider, the information contained in the paper annexed to this document.

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ANNEX

INCIDENTS INVOLVING THE CARRIAGE OF HAZARDOUS AND NOXIOUS SUBSTANCES (HNS) BY SEA

Introduction

The aim of this paper is to show that shipping incidents involving HNS are occurring on a regular basis.

The first part of the paper consists of a description of some incidents which have occurred in recent years including, where details are available, the hazard involved, the emergency responses and clean-up operations.

The second part of the paper consists of a list of shipping incidents involving HNS which have occurred throughout the world. Some of the incidents had serious consequences, others passed by with little or no effect; all however, serve to remind of the importance of implementation of the HNS Convention on an international basis.

Recent incidents involving the carriage of HNS by sea

Collision between Ever Decent and Norwegian Dream

On 23 August 1999 the Panamanian registered container vessel *Ever Decent* (pictured right) with a crew of 25 was on passage to Zeebrugge. The cruise ship *Norwegian Dream* carrying 1750 passengers and 638 crew was on passage to Dover.

The vessels collided 20 miles north east of Margate, south east England; this area lies within the UK's counter pollution zone. The weather at the time was good with a slight sea and good visibility. Both vessels reported the collision to the Dover Coastguard. The *Norwegian Dream* lost 2 lifeboats and suffered substantial damage to her bow and bridge wing, but, fortunately, there was no ingress of water. The *Ever Decent* was severely damaged and listing 25 degrees to port. Search and rescue efforts comprising lifeboats, two rescue helicopters and a maritime patrol aircraft were immediately despatched to the scene. Other vessels in the vicinity offered assistance and were asked to attend the site.

The *Ever Decent* continued to list until eventually being stabilised at 40 degrees. It was reported that the vessel had lost some containers overboard and that others on deck were on fire. The *Ever Decent* confirmed that her cargo included all IMO classes except Class 1 (explosives) including hazardous and noxious substances covered by the HNS Convention. A plume of toxic smoke formed and it was confirmed that four containers in close proximity to the fire contained paint and paint hardeners and therefore posed a risk of explosion. As a result, a five mile Temporary Exclusion Zone was implemented (under the powers of intervention of the UK's Merchant Shipping legislation).

It was also confirmed that two containers of cyanide had been on board, which posed a significant toxic hazard. An Atlantic 404 UK MCA aircraft flew over the *Ever Decent* on an anti-pollution sweep and confirmed that the fire had spread down the port side of the vessel releasing more toxic smoke, as well as a sheen of oil on the water surface.

A Salvage Control Unit (SCU) was established by the UK's MCA. The main cause for concern was the content of the lost containers, particularly with the knowledge that cyanide had been on board. The risk of explosion decreased as the fire was brought under control and the amount of oil pollution was considered to be negligible. Fortunately, the missing containers were confirmed to be containing non-hazardous substances, and, air samples showed there was no presence of cyanide or phosgene in the air. Seven days after the collision, after a diving survey, further aerial surveillance and a technical report; it was confirmed that the vessel was fit to sail to Zeebrugge for repairs. The UK, through the response co-ordinated by the UK's MCA, incurred significant costs for these clean up and preventative measures.

Whilst very few people were injured in the incident, particularly given the scale, it was potentially, a catastrophic event involving the carriage of HNS that could have resulted in serious injuries or loss of life to a number of passengers/crew.

Major gasoline spill from the Bona Fulmar

On 18 January 1997, the combination carrier *Bona Fulmar* with a cargo of 60 000t gasoline was in collision with the chemical tanker *Teotal,* 19 miles northwest of Dunkirk (France). One of the *Bona Fulmar's* cargo tanks was ruptured, leaving a 4m by 3m hole from which 7000t gasoline escaped.

Although gasoline is non-persistent and did not present a serious pollution threat, there was a serious risk of explosion from the leaking vapours and this, combined with the quantity of gasoline on board the vessel, could have had disastrous consequences. Other vessels were warned to keep away from the vicinity due to the risk of fire and explosion.

Fortunately the gasoline did not ignite and vaporised quickly. Fumes were detected up to 200 miles away in the UK. A ferry three miles from the site was forced to alter its course into clean air and the vapours affected two divers inspecting the vessel. Divers carried out emergency repairs to the hull and the remaining fuel in the damaged tank was transferred to another vessel before the *Bona Fulmar* was escorted to Rotterdam (Netherlands).

The incident occurred in international waters, within the French Search And Rescue region, with rescue vessels from the UK, France and Belgium attending the site.

Nordfarer, with cargo of 28000t of jet fuel, in collision with the Hoegh Mistral

On 25 November 1997 the *Nordfarer* was in collision with the *Hoegh Mistral*, in the English Channel. The *Nordfarer* suffered extensive damage to her forecastle, pump room and engine room, and was holed in several places. Fortunately there was no pollution from the jet fuel carried as cargo although a small fire started in the engine room, which, if it had not been brought quickly under control by the ship's crew and halon smothering system could have posed a serious threat of explosion.

The vessel was towed to the Solent by the tug *Anglian Duke* where the extent of the damage was fully assessed. A surveillance aircraft was tasked to fly over the area to check for any pollution; fortunately none was found. A portable Inert Gas Generator (IGG) was taken to the vessel to re-inert the cargo tanks. After repairs were made and cargo removed from the damaged tanks, the vessel was allowed to proceed, escorted by the tug *Lady Hammond*, to Le Havre (France) for the cargo to be discharged.

Multitank Ascania

On 19 March 1999, fire broke out in the boiler room of the *Multitank Ascania* (pictured right) as she passed through the Pentland Firth, Scotland. The vessel's engine was stopped and attempts were made to try and extinguish the fire. However, the vessel began to drift in severe weather conditions, with wind blowing to gale force eight and rough seas.

The vessel carried 70 tonnes of heavy fuel oil and 20 tonnes of diesel oil. The vessel had a cargo of 1750 tonnes of vinyl acetate (classified as a dangerous chemical carried in bulk by the IBC Code and should not be exposed to excessive heat although no comprehensive risk assessment has been made).

The Pentland Coastguard in Scotland was notified and immediately co-ordinated a search and rescue effort consisting of an RAF helicopter, local lifeboats, a coastguard rescue helicopter, a harbour tug and a Coastguard Emergency Towing Vessel. All crew except the master were airlifted to safety.

The UK's MCA's Marine Pollution Control Unit (MPCU) were alerted due to the risk of pollution from the vessel's cargo and also the fuel oil and diesel which was onboard. An eight person chemical strike team was formed. The MCA's aerial contractor provided an aircraft to fly the team and specialist monitoring equipment to Scotland. A second aircraft was chartered to fly response equipment to the scene.

It was considered that the main hazard posed by the incident was a very significant risk of explosion due to the presence of vinyl acetate, and any ensuing pollution that would certainly have resulted. Chemical spill modelling was used to predict what areas would be at risk should the chemical be released into the atmosphere and the decision was taken to implement a 5km exclusion zone around the vessel. The local police force also considered it necessary to evacuate 600 local residents from their homes.

The master was able to release one anchor before being lifted to safety. Without this action the vessel could well have grounded and the incident ended in disaster. Thermal imaging from cameras onboard the Coastguard helicopter was also used to monitor the intensity of the heat and once it was considered safe for salvors to board the vessel, the vessel was towed to safety.

Non-contamination risk arising from persistent oils – the Sletreal

On 30 January 2000, *the Sletreal* was waiting to load its cargo of crude oil at Cardenas, Cuba, when there was an explosion on board, thought to be caused by crude oil vapours. The Liberian tanker broke in two and one part sank (pictured right). Three crew members were killed in the accident.

Although instances of pollution arising from crude oil would be covered under the IOPC Fund, non-contamination risks, such as in this case explosion, are provided for under the HNS Convention and demonstrates how the HNS Convention would provide recourse for claimants involved in such an incident arising from fire or explosion involving persistent oils. Residues from the previous carriage in bulk of certain hazardous and noxious substances are also covered under the HNS Convention.

Grounding of the Jessica

On 16 January 2001 *the Jessica* ran aground at San Cristobal in the Galapagos Islands (pictured right). The tanker had been carrying 240 000 gallons of fuel oil consisting of 160 000 gallons of Diesel Oil #2 (DO#2) and 80 000 gallons of intermediate fuel oil 120 (IFO120 or bunker fuel). Only the diesel fuel would be covered by the HNS Convention. In spite of efforts made to remove the cargo, 105,000 gallons of DO#2 and 75,000 gallons IFO120 leaked from the ship.

Weather and ocean currents quickly dispersed most of the diesel oil and bunker fuel. However, this incident demonstrates how even relatively low levels of pollution can have a considerable impact on the marine environment. A study of iguanas living on the nearby Santa Fe Island showed that by December 2001, 62% of the marine iguanas had died, compared to an expected mortality of 2 – 7%. Consequently, the Islands' National Park incurred considerable damage.

Sinking of Ievoli Sun

On 31 October 2001, the Italian registered chemical tanker *Ievoli Sun* sank 20 miles north of Alderney in the Channel Isles (pictured right). The crew of 14 had already been airlifted to safety when the vessel began taking on water during severe weather in the English Channel.

The vessel had been carrying 3998 tonnes of styrene; 996 tonnes of Isopropyl Alcohol (IPA) and 1027 tonnes of Methyl Ethyl Ketone (MEK); along with 170 tonnes of intermediate fuel oil, 45 tonnes of gas oil, and 16 tonnes of lubricants.

A pollution control response was co-ordinated by the French with assistance from the UK's MCA. Scientists from both countries agreed that the MEK and IPA posed no threat to the environment and would dissipate immediately on contact with water, however the presence of styrene did pose a threat to the environment and would require careful monitoring. Styrene, a known carcinogen, is classified as a dangerous chemical carried in bulk in the IBC Code and comes under the substances covered by the HNS Convention. The marine diesel oil and intermediate fuel oil onboard also posed a risk of pollution although the HNS Convention would only cover pollution arising from the marine diesel as pollution damage arising from the intermediate fuel oil comes under the IOPC fund.

Daily surveillance flights by both the UK and French authorities monitored the slicks arising from the vessel; France, Germany and the UK also deployed counter pollution vessels. The salvage operation, which was severely hampered by bad weather, involved the use of remote controlled specialist robotic vessels to penetrate both the outer and inner hulls before removing the chemicals.

Fortunately, there was very little reported pollution from the wreck but a lengthy salvage operation, hindered by bad weather, ensued. It was not until June 2001 that the underwater wreck was confirmed to be free of the chemicals and intermediate fuel oil.

Jolly Rubina

In the days immediately prior to submitting this report, a major incident took place off the coast of South Africa. On Tuesday 10 September, the *Jolly Rubina* was abandoned after a fire from the engine room began to spread to the rest of the ship. The ship then drifted 25 nautical miles until it became grounded on rocks close to the Saint Lucia Wetland Park, an area designated as a World Heritage Site. The ship was reported to be carrying 335 000 gallons heavy fuel oil and 80 000 gallons gasoline along with toxic chemicals. The immediate concern has been the spillage of fuel oil, although 70 containers, some containing phenol are reported to have been lost overboard. Phenol is a highly toxic chemical, the carriage of which is covered by the HNS Convention. This is a timely example of a disastrous incident involving a ship carrying hazardous and noxious substances.

List of global incidents involving vessels carrying HNS

The following list gives examples of some of the incidents involving ships carrying hazardous and noxious substances that have occurred around the globe, immediately prior to, and since the adoption of, the HNS Convention in 1996.

Date	Ship	Incident	Location	Hazard	Outcome (if known)
15/01/95	*San Antonio*	Chemical spill during cargo operations.	Melbourne, Australia.	Benzene	3000 litres spilled.
16/02/95	*Mormacstar*	Tanker grounded and holed.	Off Sandy Hook, New Jersey.	No 2 Fuel Oil	12 600 gallons fuel oil spilled from hole in tank.
18/02/95	*Stolt Spain*	Fire onboard tanker.	Outside Isle of Vaddo, Sweden.	Styrene monomer	32t styrene escaped after vessel hit object underwater, water in port polluted.
21/08/95	*African Evergreen*	Explosion onboard vessel.	1200km off Natal, Brazil.	Bottles of acetylene in hold.	Acetylene thought to be cause of explosion, at least one crew member killed and several injured.
13/09/95	*Sally Eurolink*	Trailer on ferry damaged.	English Channel.	Benzene chloride	Benzene chloride spilled onto the ferry's deck, passengers experienced breathing difficulties.
20/11/95	*Happy Fellow*	Collision with second vessel.	Le Havre, France.	Propane/butane vapours	Risk of explosion as vessel had not been gas freed since unloading its cargo.
19/02/96	*Katerina S*	Drums lost overboard.	English Channel.	Hydrochloric acid	21 drums lost overboard, some washed up on French beaches.
12/02/96	*Kira*	Tanker sank in rough weather.	Peloponnisos, Greece	7000t phosphoric acid.	Cargo lost.
17/10/96	*Formosa Eight*	Chemical tanker grounded.	Off Matsuyama, Japan.	32 000t acrylonitrile.	Extensive damage to port side of ship but no pollution.
17/11/96	*Sampet Hope*	Second vessel broke anchor and collided with the *Sampet Hope.*	Port Phillip Bay, Australia.	Kerosene-type solvent.	No pollution

08/01/97	*Onur K*	Sank in stormy weather.	135km off Cagliari, Sicily.	1500t zinc and lead concentrates.	All cargo lost.
24/01/97	*Konemu*	Tanker grounded on reef.	New Caledonia, South Pacific.	Gasoline	about 120 litres spilled causing 1000m2 oil slick. Divers plugged hole in hull to prevent further pollution.
07/05/97	*Ichiyo Maru No 21*	Collided with another vesel.	Off Oita Prefecture, Japan.	630 000 litres gasoline	50 000 litres spilled as a result of the collision
16/07/97	*Freja Nordic*	Engine room explosion & fire.	Brandar Khomeini, Iran.	9000t naphtha	Four crew killed, naphtha untouched.
01/10/97	*Allegra*	Collision with cargoship during fog.	Off Devon Coast, English Channel.	Palm oil	800-900t palm oil leaked following collision.
09/10/97	*Bow Panther*	Spillage from pinhole in tank.	Yokohama, Japan.	Xylene	Xylene spilled into port waters, oil booms set up to contain spill.
12/10/97	*Yusup K*	Tanker lost power and drifted in heavy seas.	Pentland Firth, UK.	9500t naphtha	Vessel drifted towards Scottish mainland before being towed to safety.
02/09/98	*Bahamas*	Leak in hull and tank.	Rio Grande, Brazil	12 000t sulphuric acid.	600t sulphuric acid pumped overboard to avoid explosion.
12/10/98	*Emerald Sky*	Tanker rammed jetty on arrival at terminal.	Hazira, India.	40 000t naphtha	Jetty decommissioned, ship dented, no pollution.
13/11/98	*Martina*	Vessel ran hard aground.	Koster Fjord, Denmark.	280t hydrochloric acid and other chemicals.	Chemicals were transhipped.
23/11/98	*Kriti Gold*	Fire onboard tanker.	Thessalonkia, Greece.	23 000t gasoline	Fire broke out spreading to a tug alongside. Four crew members from the tug were killed.
05/01/99	*Jessie Maersk*	Valve mis-operated prior to emptying of tank.	Off Gibraltar.	Ammonia	Discharged cloud of ammonia drifted over Gibraltar after valve mis-operated
09/05/99	*Bocaue*	Struck by another tanker.	Balanga, Bataan, Philipines.	Gasoline and oil	Thousands of litres of gasoline spilled, the spill was contained with chemicals.

06/03/99	*Simge*	Grounded on rocks after loading.	Off Selaata, Lebanon.	6000t sulphuric acid	Some cargo lightered, ship refloated.
25/03/99	*Qi Yun 881*	Collision with another vessel.	Off Hong Kong, China.	750t LPG	Tanker sank following damage to hull. Crew saved.
10/07/99	*CMA Djakarta*	Fire onboard.	Eastern Mediterranean Sea.	Fire in box of calcium hypochlorite.	Fire spread to 100 other boxes, crew abandoned ship.
26/08/99	*Seiho Maru No 2*	Collision with reefer ship.	Nr Mutsureshima, Japan.	3100m^3 gasoline	Vessel damaged, small amount of cargo lost.
09/11/99	*Young Chemi*	Sank in rough seas.	Off Pusan, South Korea.	Chloroform.	Some pollution reported & at least one crew member died.
28/03/00	*Martina*	Vessel sank after collision with containership & broke in two.	Off Hoganas, Sweden.	600t hydrochloric acid.	Five crew and cargo lost.
06/05/00	*Dalia S*	Vessel sank following acid spill.	Off Alexandria, Egypt.	162t nitric acid	Tank of acid over-turned corroding hull which led to ship sinking with cargo.
24/06/00	*Gulf Star*	Struck quay whilst berthing.	Port Louis, Mauritius.	13 000t jet fuel and motor gasoline.	Some gasoline spilt.
04/08/00	*Hikari II*	Collided with dredger.	Off Squance Bay, Singapore.	500t phenol	Approximately 230t phenol spilt. Swimming and fishing in the area was banned until the spill diluted naturally.
23/11/00	*Taisei Maru*	Collision with fishing vessel 10km offshore.	Kamaishi City , Japan.	4 939 000 litres of gasoline	230 litres reported spilled as a result of the collision.
31/12/00	*Castor*	Crack on main deck.	Off Nador, Morocco.	29 500t gasoline.	Tanker was prevented from entering port and cargo was lightered.
01/01/01	*Agamemnon*	Sank during loading operations.	Rayong, Thailand.	2000 tons of containerised ammonium nitrate	Cargo lost causing mass fish death in the area.

16/01/01	*Kapitan Rudnyev*	Struck wharf while docking.	Quebec, Canada.	Linear alkyl benzene	Some spilt in harbour.
21/01/01	*Happy Lady*	Ran aground.	off Shoeburyness, UK.	Butane	Ship refloated, no pollution.
15/02/01	*Kilgas Centurion*	Grounded on a sandy beach.	Yarmouth, UK.	**1000t propane**	The vessel was eventually refloated with no pollution from cargo or fuel.
20/03/01	*Balu*	Sank in heavy seas.	130 nm north of Ribadeoin (Bay of Biscay).	8000t sulphuric acid.	Cargo lost
25/03/01	*Tejo Chemist*	Grounded due to navigational error.	off Pori, Finland.	Sodium chlorate	Hull bottom sustained several cracks though no pollution occurred.
28/03/01	*Bahagia*	Struck by a chemical carrier whilst unloading.	Belawan, Indonesia.	Kerosene.	Spillage of about 1 tonne kerosene.
13/06/01	***Endah Lestari***	Ship began to list then capsized whilst under tow.	Tebrau Straits.	Phenol	Approx 630 tonnes of phenol spilled posing serious risk of pollution to the surrounding waters.
18/06/01	*Vasiliki*	Tanker grounded causing hull to crack.	Off Cape Maleas, Greece.	Benzene and gasoil.	Some cargo leaked but most dispersed. Booms were deployed and remaining cargo removed.
28/06/01	Panamanian registered chemship	Collision with a Taiwanese navy ship.	Kaoshiung, Taiwan.	3000t paraxylene	80t paraxylene spilled and floated, endangering personnel with noxious fumes.
26/07/01	*Nand Smiti*	Engine breakdown caused tanker to drift.	Arabian Sea, 90nm south of Karachi.	4700t naphtha	Tanker drifted towards the coast until the fault could be rectified.
30/08/01	*Jovanna*	Ran aground whilst entering Recife Port.	Brazil.	30 520t ammonium sulphate	Approx 600t seawater entered the forepeak tank, no pollution.
05/09/01	*Ikan Tanda*	Lost power & ran aground during severe storm.	off Cape Town	Sulphate in bags and potassium chloride.	Ship took on water, no pollution

07/09/01	*Formosa One*	Collision with second vessel.	Vung Tau, Vietnam.	Gas oil	615t spilled. Some reached beaches, non-persistent nature prevented major clean-up operation, though claims for alleged damages to tourism, fisheries, agriculture and the environment expected.
01/10/01	*AB Bilbao*	Explosion in hold of ship.	Off Margate, English Channel.	3300t ferrosilicone	Explosion thought to be the result of a build up of hydrogen in the hold. Potentially very hazardous exposure to moisture releases flammable and toxic gases.
09/10/01	*Dutch Aquamarine*	Collision with general cargo carrier *The Ash.*	English Channel.	4400 t acetic acid	*The Ash* sank with loss of Master. Chemical tanker was able to proceed with a damaged bow.
19/10/01	*Norma*	Tanker grounded on rocks whilst loading.	Parangua, Brazil.	22 000m^3 naphtha.	Hull damaged causing escape of up to 1800m^3 naphtha.
14/12/01	*Rosebank.*	Fire broke out in the paint store.	off the Farne Islands, UK.	1326 t of fertilizer, marine diesel and lubricating oil.	The crew was airlifted to safety while vessel continued to blaze and drift.
16/12/01	*The Dina*	Vessel sank.	Southwest coast of Wales.	2430t of Flurospar, 35t marine gas oil.	Cargo lost.
14/03/02	*Seven Ocean*	Ran aground.	En route from Antwerp to North Sea.	11 000t urea & ammonium sulphate	No pollution.
11/07/02	*Freja Asia*	Collision with containership.	Salalah, Oman.	Jet fuel	Outer hull holed after collision, no pollution.
17/07/02	*Nino*	Vessel ran aground in heavy seas.	Off East London, South Africa.	7700t cargo of gasoline and gasoil.	Cargo transferred to centre to tanks to minimise pollution risk.
13/09/02	*Ninqingyou No 4*	Fire onboard following collision.	Guangdong, China.	950t oil.	Oil ignited after vessel hit rock, 8 crew members received severe burns.