

U O W

MARPOL Annex 1 Case Studies

China-ASEAN Academy on Ocean Law and Governance
 1st Special Program of Maritime Law Enforcement

National Institute for South China Sea Studies (NISS)
 China-Southeast Asia Research Center on the South China Seas (CSARC)
 Australian National Centre for Ocean Resources and Security (ANCORS)

20-26 October 2019, Haikou, China

Anthony Morrison, PhD (amorrison@uow.edu.au)
 Research Fellow, Australian National Centre for Ocean Resources and Security (ANCORS)



Torrey Canyon

- a supertanker capable of carrying a cargo of 120,000 tons of crude oil, which was shipwrecked off the western coast of Cornwall, England in March 1967
- On 18 March 1967, owing to a navigational error, the *Torrey Canyon* struck a reef between the Cornish mainland and the Scilly Isles.



ANCORS UOW 

Argo Merchant

- In December 1976, *Argo Merchant* (Liberian owned and registered) loaded 26,000 tonnes of fuel oil left Puerto La Cruz, Venezuela, sailing for Boston
- 14 total shipping casualties, including multiple engine failures, two groundings, and a collision.
- In 1975, Bureau Veritas gave the ship its highest rating.
- ship carried two unqualified crew as helmsmen, a broken gyrocompass, inadequate charts, and an inaccurate radio direction finder.
- On 15 December in high winds and 3 m seas, the tanker and more than 24 nm off her intended course.
- On 21 December 1976, *Argo Merchant* broke apart and emptied its entire cargo of fuel oil.



ANCORS UOW 

Amoco Cadiz

- AMOCO CADIZ ran aground off the coast of Brittany on 16th March 1978 following a steering gear failure.
- Over a period of two weeks the entire cargo of 223,000 tonnes of light Iranian and Arabian crude oil and 4,000 tonnes of bunker fuel was released into heavy seas.
- Liberian flag and ultimately owned by Amoco Transport. Amoco Tankers took delivery of the AMOCO CADIZ on May 11, 1974.



ANCORS UOW

- The ABS certified the ship and its steering gear as being in compliance with the ABS's Rules.
- After delivery, the ABS periodically conducted inspections of the AMOCO CADIZ to determine if it still was in seaworthy condition. Three times in June 1975, April 1976, and May 1977, the ABS inspected the steering gear and pronounced it in working order.
- ABS also certified that the AMOCO CADIZ was properly designed and constructed.
- Every year the ABS re-certified the AMOCO CADIZ as seaworthy.
- The Court found Amoco's (specifically, AIOC's) negligence in falling reasonably to perform its obligations
 - to repair and maintain the steering gear,
 - properly train its crew,
 - provide the vessel with a redundant steering system or other means to steer the vessel in the event of a complete failure of the hydraulic system, and
 - fulfil its duty as the party who supervised and approved the design to ensure that the design and construction properly were carried out.

ANCORS UOW

Exxon Valdez

- Exxon Valdez departed from the Trans-Alaska Pipeline terminal at 9:12 pm March 23, 1989.
- The pilot was in control of the wheelhouse.
- After passing through Valdez Narrows, Captain Hazelwood took over control.
- Exxon Valdez encountered icebergs in the shipping lanes and the Captain ordered the Helmsman to take the ship out of the shipping lanes to go around the icebergs.
- He then handed over control to the Third Mate with precise instructions to turn back into the shipping lanes when the tanker reached a certain point.



ANCORS UOW

- The Helmsman failed to make the turn back into the shipping lanes and the ship ran aground on Bligh Reef at 12:04 am March 24, 1989. Captain Hazelwood was in his quarters
- Exxon Shipping Company failed to supervise the master and provide a rested and sufficient crew for *Exxon Valdez*. The 1989 tanker crew was half the size of the 1977 crew, worked 12–14 hour shifts, plus overtime. The crew was rushing to leave Valdez with a load of oil. The third mate failed to properly manoeuvre the vessel, possibly due to fatigue or excessive workload.
- Exxon Shipping Company failed to properly maintain the Raytheon Collision Avoidance System (RAYCAS) radar
- The U.S. Coast Guard failed to provide an effective vessel traffic system.
- The oil industry promised, but never installed, state-of-the-art iceberg monitoring equipment.
- *Exxon Valdez* was sailing outside the normal sea lane to avoid small icebergs thought to be in the area.
- Coast Guard tanker inspections in Valdez were not done, and the number of staff was reduced.

ANCORS UOW

Kirki

- The 97,000 tonne Greek flag tanker *Kirki* entered the Australian Search and Rescue area on 11 July 1991.
- The ship, operated by a Greek crew of 37, was on charter to BP Australia Ltd and was carrying a full cargo of 82,650 tonnes of Murban light crude.
- The *Kirki* was owned by Kirki Shipping Corporation (Greek) and managed by Mayamar Marine Enterprises of Liberia. The *Kirki* had been built in Spain in 1969.



ANCORS UOW

- On 20 July it was found that the forepeak ballast tank had filled with sea water. Efforts to pump out the tank were unsuccessful and serious structural damage occurred to the ship's forward hull section.
- On 21 July the damaged bow section broke off causing the collision bulkhead to fracture and expose No.1 cargo tanks to the sea. Cargo oil was spilled and subsequently fire broke out from the bow.

ANCORS UOW

- The subsequent “Ships of Shame” Report found:
 - Kirki was nicely painted whilst her tanks were horribly corroded and rust was camouflaged with canvas.
 - Kirki was in class with Germanischer Lloyd, an IACS member, and had been regularly inspected.
 - the tanker suffered a major structural failure because of corrosion which was undetected by all parties including the classification society, the ship’s managers and the charterers.
 - the wide variance in the quality of classification societies that allowed irresponsible tanker owners to cut corners with respect to investments in safety.
 - the continued depression in the market place also had resulted in considerable pressure by the shipowner on the master. The Captain was reduced to “merely the driver of a ship, rather than its master.”

ANCORS 

Aegean Sea

- Dec. 3, 1992, a double-bottom combined carrier under the Greek flag, Aegean Sea (114,000 dwt), ran aground while approaching the port of La Coruna, in northwestern Spain.
- The owner, London Greek company Coulouthros Shipping Agency
- ordered the vessel to go to La Coruna where she arrived on Dec. 1 and waited two days for a berth before she was ordered to proceed.



ANCORS 

- Despite the bad weather, the Greek master, Captain Stavridis, attempted to manoeuvre the tanker into the entrance channel at a point, later found to be dangerously close to the shore. The vessel ran aground, broke in two and exploded.
- Most of the cargo of some 80,000 tons was either consumed by the fire or dispersed into the sea. Only 6,500 tons that remained onboard were successfully removed.
- In 1992, criminal proceedings had been initiated against the master and the pilot.
- The Court held that Captain Stavridis had been negligent when he decided to bring the ship into the port in extremely bad weather with poor visibility. He was held liable together with the pilot who had ordered the master to enter port at 2 a.m. in spite of the heavy weather and knowing that the weather would further deteriorate.
- Contrary to the regulations, the pilot did not meet the ship at the designated boarding station and did not board the ship until she had entered into the port area.

ANCORS 

Sea Empress

- 15 February, 1996 the Sea Empress, a single hull oil tanker, began to enter the mouth of the Cleddau Estuary on her way to Milford Haven in Pembrokeshire.
- Sailing against the outgoing tide, she hit rocks in the middle of the channel, holing her below the waterline. The ship's cargo of 130,000 tonnes of crude North Sea oil started to spill into the sea.
- During the following seven days salvage teams battled the elements as they tried to bring the vessel under control, but 72,000 tonnes of light crude oil escaped. 120 miles of Welsh coastline were contaminated and the total cost of the clean-up operation was put at £60m.



ANCORS UOW

- Milford Haven Port Authority was originally handed a record £4m fine after a court heard how a navigational error made by one of its pilots played a part in the accident.
- The grounded tanker had been in very good technical condition. But the first mate did not speak English, and communications between ship and shore proved difficult. The port's radar installations had been out of order for some time. A pilot had been on board at the time of the accident, but according to reports available, he arrived just 15 minutes before the tanker grounded. He had failed to follow the leading lights, and it took 12 hours from when the pilot reported that he had lost control with the steering until any action was taken by the authorities ashore.
- The incident proved the old truth that despite a vessel being in first-class technical condition, safety depends on the quality and professionalism of the other actors on sea or shore.
- Also, in this case, the communication between the ship and the port was not good.

ANCORS UOW

Braer

- 4 January 1993, while sailing in a heavy storm on the shortest but most dangerous route from Norway to Canada, the Liberian oil tanker Braer suffered engine failure due to the entrance of sea water in her bunkers.
- lack of a high sea tug in the area meant that the ship could not be towed. She ran aground west of Sumburgh Head, on the southern tip of the Shetlands at 11:19 am. The damage to the tanker led to the release of her cargo of crude oil.



ANCORS UOW

- Adverse weather conditions rendered response operations at sea impossible and limited the onshore operations. The remaining oil therefore leaked from the vessel and was naturally by wave action.
- A cause so apparently minor: broken vents of a fuel tank and the subsequent entry of salt water in the fuel tanks.
- The absence of a tugboat height of Maritime Authority and the delay in finding a suitable tug towing operation delayed the actions taken.

ANCORS UOW

Erika

- Greek owner/Maltese flag
- Carrying 30,000 tonnes of heavy fuel oil
- Developed structural problem in Bay of Biscay
- Refused refuge in France
- Broke in 2 and sank quickly spilling 20,000 tonnes of oil and polluting 400km of coast
- Owner, manager, charterer and Classification Society fined



ANCORS UOW

- 25 year old ship
- 8 owners
- 4 classifications societies (last RINA from 1998)
- Report by RINA in October 1998 stated “ no defects affecting integrity of hull or the structure, no outstanding recommendations affecting class and material wastage was within class requirements”
- Report in October 1999 disclosed no defects except apparent thinning of longitudinal deck structures close to ballast tanks
- On December 12 1999 it broke in two and sank

ANCORS UOW

- At time of sinking all class and statutory certificates were valid
- Between 1991 and 1999 it was inspected 18 times by flag State control and port State control inspectors
- In summer 1998 substantial repairs under supervision of RINA
- Inspected 5 times between repairs and sinking
- Four of 7 sisterships experienced severe structural defects from late 1980's and 1991-2
- And yet it sank in 24 hours.

ANCORS UOW

Prestige

- Bahamas Flag/Liberian owner carrying 77,000 tonnes of heavy fuel oil
- Structural damage off Spain
- Spain refused refuge and ordered salvors to tow ship away from the coast
- Ship broke up and sank 170 miles off coast causing major oil spill which polluted 800 kilometres of Spanish coast
- Clean up costs estimated 3 billion Eu



ANCORS UOW

- 26 years old
- American Bureau of Shipping (ABS) built and maintained to ABS class
- After fifth special survey in April 2001, substantial repairs done
- Annual survey in May 2002 required minor repairs
- Port State Control Inspections had revealed no deficiencies and there had been no detentions

ANCORS UOW

Tasman Spirit

- A Greek registered Maltese owned oil tanker, Tasman Spirit ran aground near Karachi, Pakistan.
- The ship was en route to Karachi with 67,535 tons of light crude oil for delivery in Karachi.
- The single-hulled tanker had a pilot on board and was heading into port during the ebb tide. While rounding the bend to get to the inner channel, the vessel got too close to the starboard edge of the channel where it grounded onto a shoal. The tanker was hard aground in the channel and was unable to refloat itself.



ANCORS

UOW

- Several attempts to refloat the Tasman Spirit by tugs had failed.
- For two weeks the Tasman Spirit remained aground when cracks appeared in the hull on August 13.
- Lightering operations had been able to pump out some 20,000 tons of oil from one of the tanks before weather conditions halted operations.
- However, one of the other tanks on the Tasman Spirit broke open releasing some 12,000 tons of oil.
- The tanker continued to break apart and broke-in-two.

ANCORS

UOW

Sanchi

- The Sanchi tanker was carrying 136,000 tonnes of oil from Iran to South Korea when it collided with the Hong Kong-flagged cargo ship CF Crystal, 160 nautical miles off the coast of Shanghai, China.
- The collision on January 6, 2018 caused a serious fire, and the oil tanker eventually sank eight days later. All 30 Iranian and two Bangladeshi seafarers died in the accident. The other vessel, CF Crystal was damaged at a comparatively minor scale and all of its 21 Chinese crew were rescued.



ANCORS

UOW

• The conclusion of the enquiry held in May 2018 was that both ships failed to comply with the ColRegs requiring keeping a proper lookout and taking appropriate action to avoid a collision

ANCORS UOW

CONCLUSIONS

- In many cases spills occur because the ships are old:
 - Old ships carry worst product eg Erika and Prestige
 - Old ships tend to have had repairs over life thereby casing weakening of the structure eg Erika
 - Reliance on flag state and port state inspections
- At least up to 1990s there was failure of flag states, port states and classification societies to properly perform their role – Erika and Prestige
- Well maintained ships can still cause problems because of human error eg Torrey Canyon, Sea Empress, Tasman Spirit, Sanchi
 - Bad seamanship – Exxon Valdez, Sanchi
 - Improper training – Sea Empress (language), Argo Merchant
 - Failure to maintain navigation equipment – Argo Merchant, Exxon Valdez
- Sometimes improper decisions are made based on making a profit eg Amoco Cadiz, Kirki

ANCORS UOW
