CHAPTER IX

ANALYSES OF THE LOSSES OF CARGO, PARTICULARLY CRUDE OIL CARGOES, THROUGH THEFT, FIRE AND FRAUD

Oil as a target for major fraud has a number of attractions. As a strategic commodity, nations facing an embargo are unlikely to be too concerned as to its origin. More so, they are unlikely to release information to investigators in this respect. Further, once crude oil is mixed, it becomes extremely difficult to determine the country of origin. Tracing and identifying a particular consignment can, therefore, pose considerable problems. Moreover, the difficulties inherent to the accurate measurement of crude oil in transit offer further opportunities and advantages to the fraudulent operators.

Losses of cargo within the oil transportation industry can be categorised into two groups, namely;

a) major losses involving the misappropriation of entire cargoes; and

b) minor losses involving the abstraction or other misappropriation of a small percentage of a particular cargo.

Losses within the first category, though stupendous in financial terms, are very much less frequent than those
occurring within the second category.

The scale of most aspects of the tanker business is significantly greater as compared with that of other sections of the shipping industry. The value of any one cargo is such that a 'one-off' maritime fraud becomes of great attraction to the professional fraudster or the loss-making unscrupulous operator alike.

Although the oil trade is dominated by a relatively few large oil companies, there are a considerable number of smaller oil traders, most of whom operate behind name-plate companies registered in flag of convenience countries. It is often these companies which contribute to the possibilities of fraud. One of the largest ever oil transportation frauds involved perpetrators who included a comparatively insignificant oil trader and his partners, none of whom had any great experience in the oil trade.

An additional factor here is the fact that title to the cargo often changes hands many times between loading and delivery, given the demand for 'spot market' and sanctions busting through intermediaries. There is also little regulation and the strategic nature of the cargo itself precludes detailed documentation.
It is therefore pertinent here to analyse such losses through theft and fraud by reference to actual cases instead of any discussion of the theoretical aspects.

The loss of the supertanker Salem is well documented and has been examined in details in a preceding chapter, hence any further reference to that case may be superfluous in the present analysis.

Complications can arise in cases where the cargoes are misappropriated under the cover of a commercial dispute as in a case where a tanker was chartered by an oil trader, who entered into a contract with the oil ministry of an OPEC nation to sub-charter the vessel to transport their oil between two coastal ports. The contract called for the initial performance of three voyages. During the performance of the first voyage, the oil trader engineered a dispute with the cargo owner concerning the terms of the contract for future voyages.

The vessel was instructed by the trader to discharge the oil into the tank farms at a port in another country. The vessel's owner was told that the oil trader would thus be able to exercise his lien in the cargo. The shipowner was obviously happy and obliged as his ship would not be involved
in the dispute and would be free for trading. However, instead of establishing a lien, the oil trader sold the cargo to a genuine buyer on the basis of the storage warrant received on discharge.

The original owners of the cargo were unable to recover the oil and had recourse only against the trader, who was registered in a flag of convenience State and had no identifiable assets which could be seized.

A novel type of fraud involves the use of cargo as bunkers. The illicit transfer of low flashpoint crude oil from cargo tanks for burning as ship's bunkers has been causing considerable concern to the traders as well as to the various governmental, non-governmental as well as international bodies for quite some time.

The systematic theft by tanker operators of small percentages of cargo oil are facilitated by the inherent difficulties in the accurate measurement of large quantities of crude oil. The bill of lading figure for oil loaded on board is usually taken from calculations based on the shore terminal figures usually derived from shore tank ullages or pipelines meter readings. The cargo is again measured on discharge. It is often the case that ship and shore loading figures will differ, and it is almost invariably the case that loading and
discharge figures will show some variation.

Such discrepancies do occur and these are not surprising considering the fact that the ships' tanks are of an irregular shape, which makes calibration difficult. Further, the vessel is not always on an even trim, requiring the use of tables to correct the ullages. Added to this is the problem of accurately calculating the average temperature for the contents of individual tanks, and the fact that the movement of the ship makes the taking of accurate ullage readings a difficult task. Additionally, losses do take place through evaporation and other genuine causes, which result in a lesser quantity of cargo being discharged than was loaded.

The combination of these factors is such that transit losses of up to one half per cent of a total cargo have become accepted within the oil transportation industry. However, these factors also work very much to the advantage of the unscrupulous tanker operator wishing to reduce his operating costs by burning stolen cargo oil as fuel. The investigations carried out by the Liberian Bureau of Maritime Affairs during the latter part of 1982 brought to world attention such illegal and unsafe operational practice.

The hearings of the Liberian Bureau related to a number of vessels, under the same apparent management
all trading under the Liberian flag. The investigations arose after allegations of the vessels being operated in an unsafe manner, specifically that cargo oil was being transferred to bunker tanks.

The initial enquiry, held in October 1982, was held to determine whether or not registration should be withdrawn in respect of six vessels reported against. The verbal testimony at this hearing and most of the documentary evidence, related however to two of these vessels viz. M.T. Ypapanti and M.T. Taxiarhis.

M.T. Ypapanti arrived off the Delaware River, USA, on May 16, 1982, laden with a cargo of crude oil. The vessel was denied entry into a US port at this time on account of its failure to comply with the United States Port and Tanker Safety Act. On account of the failure to obtain entry permission, the vessel remained at anchor off the Delaware River for about 36 days during which many difficulties arose with the crew. On the basis of allegations made by some of the crew, the Marine Safety Department of the Bureau of Maritime Affairs ordered a survey of the vessel. She eventually discharged her cargo at Bonaire, Netherlands Antilles, between July 10 and 12, when traces of low flash point oil were found in the ship's bunker tanks. After the completion of the discharge, the vessel proceeded to Aruba, where she was inspected
by a Liberain Nautical Inspector and a surveyor of Det Norske Veritas, the ship's classification society. Samples taken from the ship's bunker tanks disclosed the presence of low flash point oil.

As a result of these surveys, the Ypapanti was detained at Aruba, and all her official documents and certificates withdrawn. After the bunker tanks were cleaned of the contaminated oil, the vessel was released and allowed to resume trading on August 13, 1982.

The Bureau of Maritime Affairs first became concerned with the activities of M.T. Taxiarhis sometime in August 1982, where reports were received that the vessel had been denied entry to Malaga, Spain, following allegations that her bunker tanks contained low flash point oil. She was allowed subsequently to enter port under controlled conditions and the bunker tanks were sampled. The bunker analysis revealed traces of very low flash point oil. On August 3, Lloyd's Register suspended the vessel's classification status and on the following day her Liberian Registration was also suspended. The vessel was detained on entering the port of Genoa on August 12, and remained so till August 17, when she was released and permitted to resume trading after cleaning and gas-freeing of the bunker system. A large amount of documentary evidence was adduced at the hearing mostly relating
to the surveys carried out. There was much evidence in these documents indicating that sampling of bunker tanks had shown a low flash point oil content. In addition to these, there were a number of survey reports from various sources alleging transfer of cargo oil into bunker tanks. There was evidence in both vessels, that there had been some form of connection between the cargo piping system and the bunker piping system. There were admissions also by the employees of the shipowner that transfer of cargo oil had been made into the bunker tanks.

As a general rule, the classification societies stipulate that no fuel oil shall be carried which has a flash point of less than 60 degrees Celsius. The Safety of Life at Sea Convention, 1974 (SOLAS) provides that no oil having a flash point of less than 60 degrees Celsius shall be used except for emergency generator fuel which may have a flash point of not less than 43 degrees Celsius. In both Ypapanti and Taxiarhis sampling had detected oil in the bunker having a flash point of under 10 degrees Celsius, and in some cases, zero and even lower flash points were recorded.

The Hearing Officer's report indicated that the operators of both the vessels introduced crude oil into the bunker tanks. The report concludes as under:-
'There cannot be any doubt that both these vessels had been operating under very dangerous conditions for some considerable time, constituting a hazard both at sea and in port.

It is unlikely that contamination of the bunker fuel tanks by cargo oil could have occurred accidentally. Both vessels were structurally sound and the separation arrangements, cofferdams, etc. between cargo and oil tanks were efficient.

In my opinion, crude oil was being introduced into bunker fuel tanks on a regular basis at the instigation of the operators of the ships, or at least with their constructive knowledge and consent'.

Amongst the vessels named in this hearing was the motor tanker Haralabos. On November 26, 1982, there was an explosion in the engine room control room followed by a fire and a series of further explosions when she was at the Egyptian Oil Corporation terminal at Ras Gharib. The vessel was declared a constructive total loss on December 1, and abandoned to the Egyptian authorities. The Liberian Bureau conducted a formal investigation into the loss, on the basis of which a hearing was held on May 17, 1983. After examining the evidence relating to the loss, this hearing con-
eluded that the vessel had been operated in an unsafe manner. There was positive evidence to show that the flash point of the fuel oil stored in the port and starboard wing bunker tanks was no higher than 4 degrees Celsius.

The introduction of oil of such a low flash point into the engine room spaces released sufficient hydrocarbon gas to form an inflammable mixture, which was in turn ignited by a spark from the electrical switchboard. As a result of this hearing, the operators of the vessel, Magellan Incorporated of Piraeus, Greece, and its affiliates at any locations, were banned from future ownership of vessels under the Liberian flag.

Subsequent to these findings, the Government of Liberia submitted a note on the use of low flashpoint cargo as fuel to the Maritime Safety Committee of the International Maritime Organisation¹. Liberia's submission in this respect was:

'.... the practice described .... is more widespread than may be presently apparent and is a serious source

¹. MSC 48/23/1 dated 15.2.1983
of danger to ships and personnel both at sea and in port and also to port installations which service tankers.

Liberia does not suggest that tanker operators in general are guilty of these practices but based upon known facts Liberia feels that there is a case for strengthening of survey requirements to include a positive examination of cargo and bunker piping systems for evidence of unauthorised connections. Liberia also feels that port States could introduce random sampling of bunker tanks as a deterrent.¹

This was further delved into by the International Chamber of Shipping (ICS) in their submission of Tanker Casualty Report number 32 to the Maritime Safety Committee. The ICS stated that,

'The irregular and dangerous practice of transferring cargo to bunker systems is not believed to be widespread. However, accidental contamination of fuel oil can occur and ships' personnel should be alert to such a possibility and take the necessary precau-

¹ Ibid, paras. 3 and 4.
tions. A risk could arise, for example, where fuel oil bunker tanks are adjacent to cargo tanks and where, because of a bulkhead leak, volatile cargo contaminates the fuel oil.

Tanker Casualty Report number 10 in fact reported on an incident at a repair yard when an explosion occurred in a ship's engine room killing 10 workmen and injuring another 28. Investigations revealed that crude oil had leaked from a cargo tank into an adjacent bunker tank where it floated on top of the heavier fuel oil. The crude oil had then been transferred together with the fuel oil into a heavy oil day tank and subsequently into a double bottom tank. Hydrocarbon vapours had escaped into the engine room where they were ignited by an oxy-acetylene torch being used for repair work. The flashpoint of the oil remaining in the double bottom tank after the explosion was found to be 4 degrees Celsius'.

The Maritime Safety Committee drafted and issued a circular on the basis of this submission. The circular No. MSC/Circ. 347 dated 22.6.1983 emphasised the dangers of the use of low flashpoint cargo as fuel. The purpose of this circular was to warn member-governments of the possibility of either deliberate or accidental contamination of bunkers
by crude oil cargo. It urged the examination of cargo and bunker piping systems, and also the carrying out of routine checks on the flammability of bunker spaces while the Committee agreed that random sampling of bunker tanks would act as a deterrent against the deliberate use of crude oil cargo to supplement fuel, it felt that this would be difficult to implement. It, therefore, urged member-governments to require the testing of bunker samples in keeping with SOLAS control procedures, in cases where there are clear grounds to believe that a ship is using crude oil cargo as fuel.

The case of the Octonia Sun will show what can be achieved by such examinations.

In the mid-1982, the Cities Services Corporation of the United States contracted to purchase a cargo of desulphurised vacuum gas oil from Venezuela. The cargo was to be discharged at the City Services Terminal at Lake Charles. The contract was under c.i.f. terms and the shippers nominated the Octonia Sun as the carrying vessel. As City Services were purchasing the cargo based on the bill of lading figures, they took to carry out complete inspections at both the load and discharge ports.

Before loading, the vessel's tanks were inspected and found to contain no measureable on board quantity. All
non-designated cargo spaces including bunker and ballast tanks were examined before and after loading and were found to be in order. However after loading, examination of the bill of lading quantity showed it to be in excess of the ship's volume. This led to a protest by both the surveyor and the vessel's master to the supplier. It was felt that the ship/shore discrepancy may have been due to a possible shore measurement error, or an accidental diversion of cargo within the terminal due to a slack line or partially opened valve.

The vessel arrived at Lake Charles in July 1982, and was met by the same surveyor who had conducted the inspection at the port of loading. A check of the arrival ullages showed a transit loss of 112 barrels, representing 0.04 per cent of the cargo quantity of 39,000 tons. After discharge and prior to sailing, the shore receipt tanks were gauged. This check revealed an apparent shortage of some 4,500 barrels, valued at approximately 125,000 US dollars. The same surveyor went back on board to re-measure cargo, ballast and bunker tanks.

A total of 454 barrels of oil was located by blowing the vessel's cargo lines back into the centre tank. Further, an examination of the oil in the starboard deep tank showed it to be light in colour and quite unlike fuel oil, which this
tank supposedly contained. The survey of the bunker continued, and when the starboard was gauged, a sounding of one inch was obtained showing it to be virtually empty. Incidentally this was the same sounding that had been obtained after loading and before discharge. As the vessel's trim had changed considerably, this sounding would normally have been expected to change. A visual examination of the tank showed that it contained 24 feet of oil that appeared to be the same oil as the cargo.

The bunker line was traced down the deck, and a direct connection was found between the bunker line and the stern cargo discharge line on the port side of the poop deck. A sample of the oil was taken from the starboard deep tank and submitted for analysis, which indicated that it was very similar to desulphurised vacuum gas oil. The quantity of oil was determined to be 1,704 barrels. The vessel was re-boarded and a letter of protest issued to the master.

The City Services had now two options before them. As the purchase contract was on c.i.f. terms with a payment date of 30 days after issue of the bill of lading, they could deduct the amount of the loss from the supplier's invoice, and thus pass responsibility for recovery to them. City Services, however, undertook to pursue the second option, and initiated action against the vessel themselves. Samples were taken
from all the vessel's bunker tanks and submitted for analysis. The amount of shortage was finally calculated to be 3,494 standard volume barrels, equivalent to 1.252 per cent of the loaded bill of lading quantity.

Proceedings were next initiated for the arrest of the vessel. As additional security, City Services filed suit in the U.S. District Court naming both the supplier and vessel as defendants. A bond was secured for the entire value of the loss, and the vessel released.

Copies of the formal inspection reports in respect of the load and discharge surveys were forwarded to the Federal Bureau of Investigation (FBI) of the United States for investigation at their end.

The laboratory examination of the bunker samples revealed interesting results. The sample from the starboard deep bunker tank proved to be the same as a sample of the cargo. The remaining bunker tanks contained oil with a basic similarity with the cargo, but which appeared to be a mixture of this and other cargoes. None of the samples tested were found to be fuel oil.

While this testing programme was in process, the
vessel's Protection and Indemnity Club began an investigation of its own. The vessel was met at a subsequent discharge port and inspected. An additional inspection at a further load port revealed that the bunker sounding pipe had been closed off with a rag prior to loading.

Following an abortive meeting with lawyers representing the vessel, City Services proceeded with the preparation of the claim for legal action. Before a court date was obtained, however, the owner of the vessel came forward and agreed to pay the full value of the loss.

However, the matter did not end there. On February 16, 1984, a Federal Grand Jury sitting in Louisiana indicted the former master of the vessel, Captain Spirodon Magoulas, on a charge of stealing the shortlanded cargo. The trial opened on May 21, 1984, with Captain Magoulas entering a Not Guilty plea. After five days of evidence, the jury returned a unanimous verdict of guilty. In all, some twenty witnesses were called, including the vessel's chief officer, who testified that this was only one in a continuing series of similar thefts of quantities up to 700 tons from any one cargo.

Much of what can be done to counter the theft of small percentages of cargoes being carried is exemplified
by the actions taken in the case of Octonia Sun discussed above, particularly where such stolen cargo is being used as ship's bunkers. In any instance where an unacceptable shortage is recorded on discharge, prompt and comprehensive surveying, particularly of non-designated cargo spaces, is called for. The Octonia Sun highlights the fact that surveys should go beyond the sounding of bunker tanks. The case illustrated below will show the length to which some vessel operators will go in order to conceal stolen cargo.

A tanker carrying approximately 100,000 tons of crude oil from West Africa to a United States port short-landed a total of 10,000 barrels. The cargo owners instituted legal action against the vessel in the United States and succeeded in obtaining and enforcing an order for the examination and inspection of the vessel at its next port of call in West Germany. Surveyors appointed by the court boarded the vessel. An initial inspection of the bunker tanks and non-designated cargo spaces showed nothing amiss. The surveyors were, however, able to measure the bunker tanks and discovered that their capacity was substantially less than that shown on the vessel's documents.

Further physical examination of the bunker tanks revealed the existence of a separate tank welded into the forward bunker tank, with a pipeline system to the number one centre cargo tank and to the forward bunker tank. Through
this pipeline system, the vessel was able to;

a) shift cargo into this separate tank;
b) shift cargo through this separate tank into the forward bunker tank;
c) pump cargo from this tank to the aft bunker tanks by use of a transfer pump.

Valve rods for the control of this tank were found on the main deck, terminating not in hand wheels, but in an apparatus which appeared to be a sounding pipe. After screwing off the 'sounding pipe lock', a square spindle was found which could be fitted with a removable handle. This handle was discovered in the forward space under the forecastle.

In the prevention of major theft and fraud, the bill of lading becomes an important control mechanism. Fraud can often take place by the forgery or falsification of the bill of lading. Additionally, should a negotiable bill of lading pass into the hands of a person other than the original buyer or seller, and that third party sells the bill of lading to a new buyer, then this fourth person takes good title to the goods provided he is unaware of the underlying events, even if they involve fraud. The original buyer and seller, however, do have remedies. They can sue the party who takes the bill of lading by fraud, provided they can locate him or his assets.
Shipowners are also concerned that they deliver the goods to the correct party, as they become liable if the goods are delivered wrongly. Misplaced title has become a significant problem in the movement of bulk oil, where cargoes are traded many times during the course of a voyage, with subsequent delays in the amendment and transmission of the bill of lading. On account of the delays at the discharge port whilst waiting for the arrival of the bill of lading, shipowners have been forced to accept the consignee's letter of guarantee for the discharge of the cargo to him. With this letter, the person claiming the cargo guarantees that he is the true buyer, even if he cannot prove it by presenting a bill of lading. He also assures that he will indemnify the shipowner against all losses should another party subsequently come forward with the bill of lading. Where the cargo is being fraudulently received such a letter of indemnity offers little protection to the shipowner who discharges a cargo to a party other than the true owner.

Three different approaches have been made to this problem of misplaced or fraudulently obtained title. The first is the Seadocs Registry, sponsored by the Chase Manhattan Bank and INTERTANKO, the Oslo based Independent Tanker Owners Association. It is concerned primarily with the problems of changes in bulk oil cargo ownership. The second is that developed by some of the liner companies, particularly Atlantic Container Lines, aimed at reducing paperwork and
processing time through the extensive use of computers. The third is that of CARDIS, the Cargo Data Interchange System, sponsored by the National Committee on International Trade Documentation.

CARDIS is an attempt to overcome all the existing documentation problems by developing standard documents and procedures which can be easily and rapidly processed by computer. Under this system, any party involved in a shipment can instantly produce documents where required. The information is moved electronically, and paperwork is considerably reduced. However, the major hurdle of such a system is in gaining the acceptance of all participants in using standardised documents and processing, without having to alter existing national and international shipping law.

Systems such as Atlantic Container Line Datalading use non-negotiable waybills in place of the bill of lading. In many cases, negotiability is an unnecessary feature, although the right to demand a negotiable bill of lading is set out under International Law. Like CARDIS, thedatalading system uses a computer to process the paper flow. One possible difficulty with this system is that banks may not find the waybill sufficient security.

The Seadocs solution utilises an electronic registry
or clearing house for documents. With this system, companies continue to use their existing documents and procedures. Instead of allowing the documents to circulate, they are sent to a central registry, where changes in ownership are accomplished by tested messages, similar to those banks already use to transfer money. The registry would specify the last buyer on record, and would authorise delivery. By holding the original bill of lading and physically endorsing it, the registry requires no change to the existing law. Additionally, retaining negotiability allows banks to maintain their security interests. Although the Seadocs Registry does not undertake to prevent fraud, there is no doubt that the greater control of the bill of lading provided by the system will do much to reduce major fraud in the wrongful delivery of oil cargoes.

Coming closely on the heels of the fraud by theft of the cargo oil, is the fraud caused by fire. The casualty returns published by the Liverpool Underwriters Association in February, 1983 portrayed a startling increase in the number of ship losses caused by fire and explosion during 1982: 46 per cent by tonnage; 30.5 per cent by number of vessels. This marked incidence of maritime casualties caused by fire, at the present time when the shipping market has been almost crippled by recession without any visible signs of recovery, does little to allay deep suspicions in the maritime industry that a significant number of these casualties were caused deliberately.
Although there are many ways in which the deliberate destruction of a vessel can be brought about, arson -- the destruction or damaging of property through fire -- has come more and more into vogue as a means with which to scuttle a vessel for reasons that are easy to understand viz:

a) fire is an insured peril and any loss arising therefrom will generally give rise to a claim on underwriters;
b) 'accidental' fires are easy to contrive and can be effective with minimal risk and crew involvement;
c) fires started in certain parts of a vessel, particularly the engine room and accommodation areas, frequently result in a vessel becoming a constructive total loss; and,
d) it is generally thought to be extremely difficult to prove that a fire was started deliberately.

Fires can break out on board a vessel in a number of different ways. Particular cargoes have their own hazards and this may be aggravated by lack of ventilation. Tankers, by the nature of what they are carrying, are particularly vulnerable to fire and it is well known that the greatest hazards tend to arise not when the tanks are full of oil but when they are empty or almost empty with the tanks being full of a highly inflammable mixture of oil vapour and air. For
this reason, stringent safety precautions are prescribed both during and after discharge.

Engine rooms fires can arise out of a variety of different reasons, electrical short circuits, flashbacks from boilers, crankcase explosions, oil vapour from cracked pipes coming into contact with sparks from a generator commutator, or oil spontaneously igniting upon contact with excessive temperatures such as can be found on superheated steam pipes and diesel exhausts. In addition, oil in drip trays which by itself will not readily ignite may do so if provided with a wick in the form of cotton waste or rags which in turn are ignited. Moreover, the presence of considerable quantities of oil in the engine room, which in itself comprises one single undivided compartment mean that once oil fire starts it is likely to spread very rapidly. Once a fire has got under way, the thick black smoke produced by it can quickly engulf the engine room and make fire fighting a difficult and dangerous task.

The investigative process relating to causation of fires on vessels is essentially a two-fold process and involves the collection and assimilation of both technical and factual information. The role of the 'fire expert' is of particular importance in examining the technical evidence and he will normally travel to the scene of the fire as soon as possible.
in order to sift through whatever clues remain in order to
determine what caused the ignition of the fire, which is hardly
an easy task.

Insurance underwriters customarily instruct lawyers, 
loss adjusters and investigators to enquire into the factual 
circumstances surrounding the casualty and obtain the all 
important crew statements. However, by assimilating both 
technical and factual information an attempt can be made 
to reconstruct the picture prior to the outbreak of fire and 
ascertain whether the same was deliberate or not.

A deliberate fire can take the form of barratry, 
declared as 'a mischievous act by master and crew to the pre­
judice of the owner'. Even though an owner may stand to 
gain financially from the effects of a 'mischievous act', such 
an act can still nevertheless amount in law to barratry. Al­
ternatively, a deliberate fire may be the result of a conscious 
conspiracy between the owner and others, with the intention 
of defrauding the vessel's hull underwriters.

The existence of certain factors will very often alert 
a fire investigator to the possibility of arson, and sow doubt 
in his mind as to the accidental nature of the casualty. Study 
of the cases show that suspicious fires occur when the vessel
is close to shore or in or near to busy shipping lanes, where the chances of crew members being able to reach the shore or the safety of passing vessels are statistically high. The time of the outbreak of fire may also give rise to suspicions. This is particularly so when a fire breaks out in the engine room during the 4 - 8 a.m. watch, when usually a junior engineer and perhaps an oiler is on duty. It is surprising, according to fire experts, how often junior engineers feature as arsonists.

Another factor which arouses the suspicions of fire investigators is a crew change affecting some or all of the engine room and other personnel not long before the outbreak of a fire. The existence of such a 'scuttle crew' is well known and in fact the IMB maintains a database of information on individuals who have been serving on vessels thought to have been scuttled.

Sometimes, though not frequently, an inaccessible location will also be chosen by those seeking to bring about the deliberate destruction of a vessel in order to impede and obscure the investigations. There are cases of fires breaking out on vessels which were trading in some remote and barely accessible parts of the world. War zones offer further alternatives to the would-be scuttlers in search of a remote and perilous region within which to perpetrate their crime.
Factual evidence obtained from crew members on board the vessel at the time of the outbreak of fire plays an important part in any analysis of the causation of a fire. Inconsistencies emerging in the evidence given will give the fire investigator sufficient material to probe and weigh up. Sometimes evidence will only come to light months or even years later, such as in a case where an arsonist who acted on his owners' instructions, subsequently, as a result of a grudge against them or to set his conscience at rest, testifies against them.

While explosions frequently result from the outbreak of fire on board a vessel, particularly when that vessel is a tanker, the use of explosives as a means of destroying a vessel is generally uncommon. There have also been a number of cases of tankers exploding and being engulfed by fire as a result of crude oil cargoes being deliberately siphoned off into the vessel's bunker tanks and used as fuel, and this has been partly analysed at the beginning of this chapter.

Investigations into the causation of fires on board vessels and in particular the determination of where the seat of the fire or fires were, are often complicated by the additional hazards that fires in themselves can generate, viz, explosions and flooding. Both these factors add to the difficulties faced by the fire investigator.
Sometimes a deliberate fire is set in order to provide a diversion. At an inquiry made by the Liberian Maritime Bureau into the flooding and fire incident on the Acidir II, counsel for the Liberian authorities referred to a clumsy and unsuccessful, but deliberate, attempt to sink the vessel in the first deep water that she encountered. It was beyond belief that the officer on watch at the time should abandon the engine room and run from that sort of limited fire, which was intended to create a diversion at the material time of the flooding of the vessel, and was intended to keep those who were not a part of the plan to sink the vessel out of the engine room until it had flooded.

The legal aspects involved in dealing with such incidents are being discussed in brief.

In order to claim under a policy of marine insurance, the assured must establish on the balance of probabilities fortuitous loss proximately caused by the peril or perils insured against. Fire is an insured peril and where it is put forward as the proximate cause of the loss of a vessel, underwriters will give detailed consideration to the question of 'fortuity'.

Section 55 (2) (a) of the Marine Insurance Act, 1906 of the United Kingdom states that:
'The insurer is not liable for any loss attributable to the wilful misconduct of the assured, but unless the policy otherwise provides, he is liable for any loss proximately caused by a peril insured against, even though the loss would not have happened but for the misconduct or negligence of the master or crew.'

Wilful misconduct is often referred to as scuttling with the connivance of the assured.

When weighing up the possible connivance of the assured at scuttling, consideration is given not only to the circumstances of the actual loss of the vessel and the nature of the casualty but also to the communications passing between the master, crew and owner, and the motives of the master or owner, or both, be they profit, over-insurance or need for money.

The onus of proof of scuttling with the connivance of the assured is on insurers. Since this amounts to fraud, the courts are reluctant to make such a finding except on very clear evidence. However, if the court is not satisfied that the assured has proved a fortuitous loss as a result of an insured peril his claim will fail on that ground. The burden of doing this rests with the assured, who may thus have the
task of trying to prove a negative one in that he did not connive at the loss.

Concerted efforts are being made to combat the incidence of suspicious maritime casualties caused by fire. Automatic fire detection and control systems, where installed, impede the activities of a would-be arsonist, as it would be necessary for him to render it inoperative before starting a fire. This in turn will naturally arouse the suspicions of the fire investigator.

Detailed investigations into the causation of fires undoubtedly have a deterrent effect and fire investigators have been aided by the development of new forensic and photographic techniques over the years. Once the entire 'background' drama of a suspicious fire is exposed, shippers would by themselves adopt preventive measures for the recurrence of such acts. Moreover, successful investigations will demoralise the potential arsonist.

More important than all this is the urgent need for greater action and resolve by law enforcement agencies throughout the world in co-ordinating their activities and relentlessly prosecuting the perpetrators of this insidious maritime crime. May be this can call for a new set of statutes to deal with such crimes.