

Comparisons and toggles

Maritime casualty investigation

Some similarities and disparities in the public inquiries into the losses of the MV Derbyshire and FV Gaul are given below. The possibilities that important evidence was withheld and misleading evidence given during the Gaul RFI, are also discussed.



Image Crown Copyright

Trawler Gaul

**Oil bulk ore carrier
(OBO) Derbyshire**



Image Crown Copyright

Similarities

The Derbyshire and Gaul disasters share many similarities. Both vessels were lost without trace with all hands in severe weather and subsequent governmental investigations into the causes of their loss initially concluded that the vessels 'had been overwhelmed by the forces of nature'. The families in both tragedies did not accept these verdicts and industry experts were also concerned as the vessels were deemed to have been well found and had been designed to survive in all weather and sea conditions (the Derbyshire was 4½ years old and the Gaul was 1½ years old at the time of their loss and both vessels were Classed +100A1 with Lloyds).

After years of official prevarication and inaction by successive UK governments, the wrecks of both the OBO Derbyshire and Trawler Gaul were located in 1994 and 1997 respectively; their discovery followed a sustained campaign for action by the families of those lost and were the result of underwater surveys carried out by third parties.

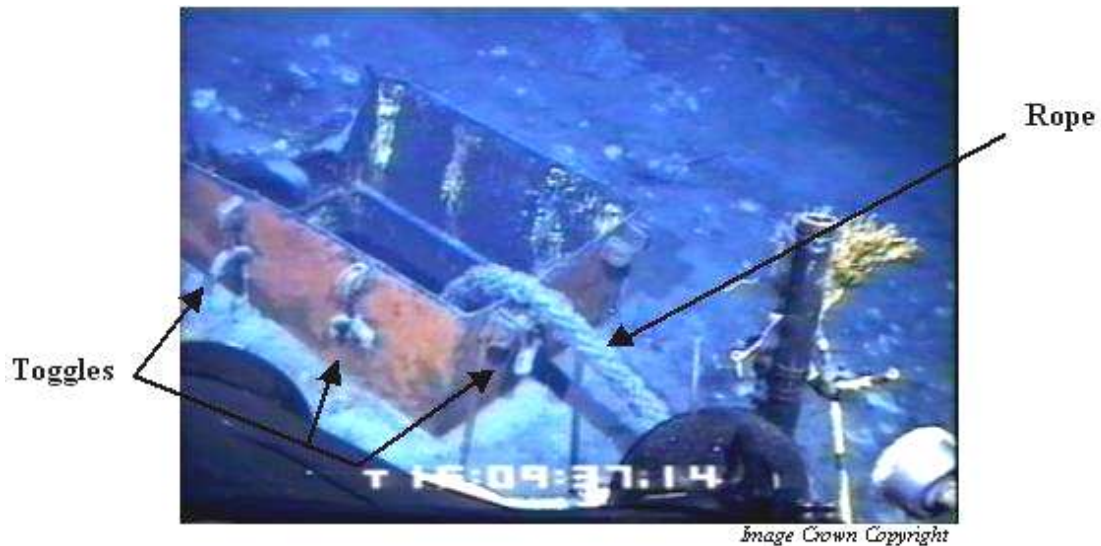
Following their discovery, the Government commissioned detailed underwater surveys of the wrecks of both vessels and, after analysis of the information that had thus been revealed, it was concluded that the causal factor for the loss in both cases

was that seawater had been able to penetrate their hulls as a result of relatively small breaches in their external weathertight boundaries.

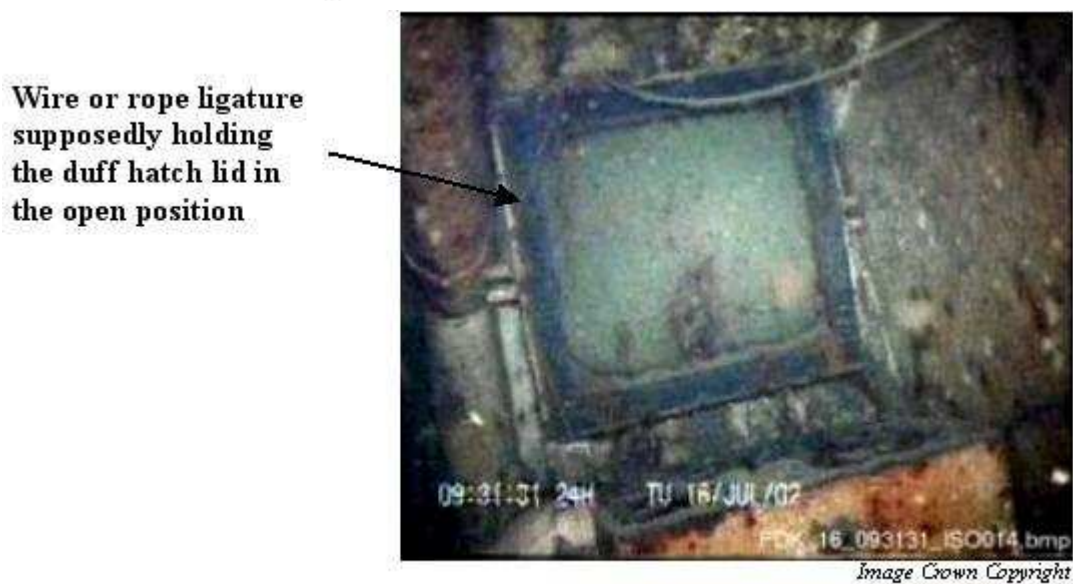
In the Derbyshire's case, undetected seawater ingress at the fore end of the vessel was deemed to have led to progressive flooding and structural collapse of the hatch covers and watertight bulkheads, followed by rapid sinking.

In the Gaul case, undetected seawater ingress into the factory space through two waste disposal openings in the side of the ship was deemed to have brought about capsizing of the vessel, followed by further flooding and its rapid loss.

The teams of experts assigned to each of the investigations argued that unsecured weathertight hatch lids were the root cause of both tragedies. They further argued that a rope emerging from the Bosun's store hatch opening on the Derbyshire and a ligature or rope holding back the duff chute's inner lid on the Gaul provided important proof of crew negligence. (A brief chronology and a number of further similarities are recorded in appendix 1)



Derbyshire - unsecured hatch to the Bosun's store



Gaul - unsecured inner cover to the Duff chute

Disparities

While the similarities in these cases are obvious there are significant procedural differences in the conduct of each of these two formal investigations.

The Derbyshire Assessor's report (which was produced following the two underwater surveys of the wreck) was placed in the public domain and subjected to detailed technical and legal scrutiny for almost two years prior to the commencement of the 2000 Derbyshire RFI Court hearings. The Judge also appointed two independent technical experts to advise him during the course of the formal proceedings.

In the Gaul case, the information gleaned from the 2002 underwater surveys was not placed within the public domain until after the 2004 court hearings had commenced. The conclusions that were drawn by the Gaul RFI experts, the Assessors and Mr Justice Steel were formally presented *and set in stone* in their final report on 17 December 2004.

Having been subject to detailed scrutiny and openly challenged during the 2000 Derbyshire RFI, the Assessors' views and conclusions, that an open hatch had initiated the tragedy and that the crew had been responsible for this, were eventually rejected. The ultimate findings of the Court were considered by all parties to be both robust and fair.

During the 2004 Gaul RFI, the Court readily accepted the experts' conclusions that two open hatches had initiated the tragedy and that the crew had been responsible for this error. However, a critical examination of the available evidence and of the expert analysis today reveals that the findings of the court are neither robust nor fair.

The Derbyshire case clearly showed that an unquestioning acceptance of the views of a limited number of technical experts was unsatisfactory and that a balanced forensic analysis of the information collected from the underwater surveys was critical to the outcome of the investigation.



Image Crown Copyright

A model of the weathertight hatch cover for the Bosun's store on the Derbyshire, this was constructed to assist the court with their deliberations during the 2000 Formal Investigation



Typical securing arrangements for a weathertight hatch lid are shown above - a forked lug and a securing toggle consisting of a swing bolt and butterfly nut

The Derbyshire

The rope seen emerging from the bosun's hatch opening and the disposition, position and condition of the hatch toggles was deemed by the Derbyshire's expert Assessors to provide firm evidence that the crew had neglected to secure the hatch lid prior to the storm in which she foundered.



Image Crown Copyright

Extracts from the Report of the Re-opened Formal Investigation into the loss of the MV Derbyshire:

“.....the disturbing aspect of this [Assessors]Report was that the main reason for entry of seawater into the bosun's store in the first place was found to be the failure of the crew to secure the lid to the hatch on the foredeck. This conclusion clearly involved the imputation of serious negligence against the officers and crew”

“.....The toggles assumed considerable importance by reason of the conclusion arrived at by the Assessors in their Report that the lid had not been properly secured.”

However, further evidence relating to shipboard practices on sister vessels and information relating to the behaviour of the toggles at sea was presented during the course of the court hearings and this revealed that:

“.....there was strong evidence that such hatches on the DERBYSHIRE and some of her sister ships suffered from a design defect in as much as the toggles tended to loosen and ride down their shanks with the working of the vessel in the seaway.”

Ultimately, the court reached their final conclusions:

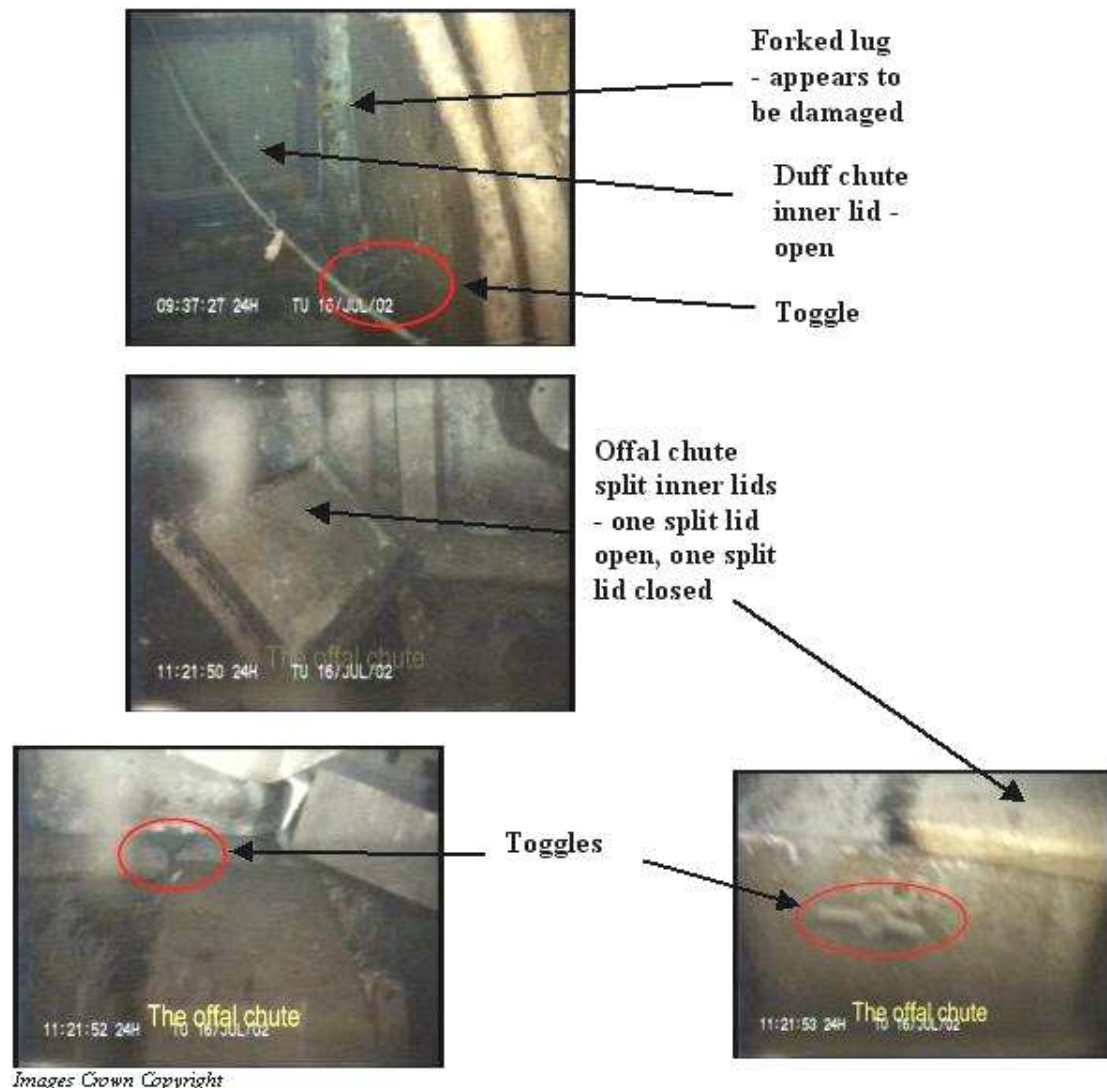
“.....This Report rejects the Assessors' conclusion that the crew had left the hatch lid inadequately secured prior to the DERBYSHIRE entering the typhoon.”

And:

“.....that the initiating cause of the loss was the destruction of some or all of the ventilators and air pipes located on the foredeck”..... Water was thereby able to enter the bosun's store, machinery spaces and probably the ballast tank in substantial quantities”

The Gaul

Going back to the Gaul case, in which flooding through the duff and offal chute openings was deemed to have led to her loss, and looking at the underwater images, anyone can see that the inner lids to both chutes were found open on the wreck and observe the disposition, condition and orientation of the chute lids securing toggles



A new simple analysis of the factual evidence from these wreck site images has now been carried out and this indicates to us that the inner lids to both the duff and offal chute openings were initially **closed**.

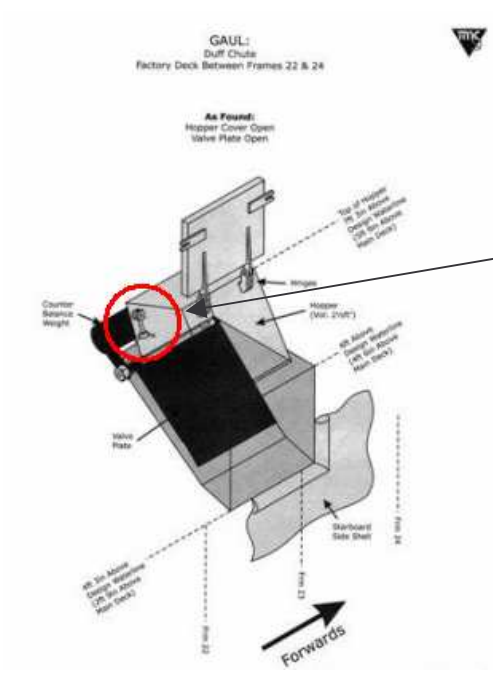
An intention to mislead?

When the experts gave their evidence during the course of the Gaul RFI, the questions they were asked and the answers that they gave, proceeded in such a way that detailed information on the securing arrangements for the duff and offal chutes' inner covers did not emerge. The experts were never asked to comment on the fact that the strongback bar for the offal chute covers was missing, nor were they asked for their views on the orientation of the securing toggles for both openings (these were found

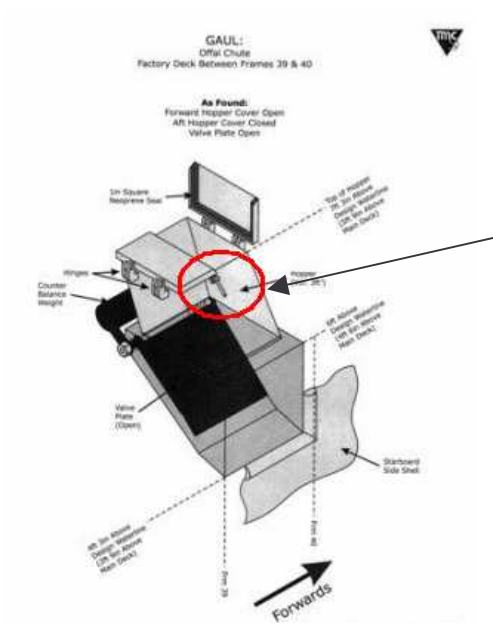
in unusual positions) neither were they asked to examine the possibility that the covers had already been closed prior to the onset of the storm nor to comment on their strength, which by the way was inadequate.

The expert team were instead pro-active in disseminating, what may be viewed as, misinformation, by producing a number of drawings for the court which were meant to provide details of the duff and offal chutes ‘as found’ at the time of the underwater survey:

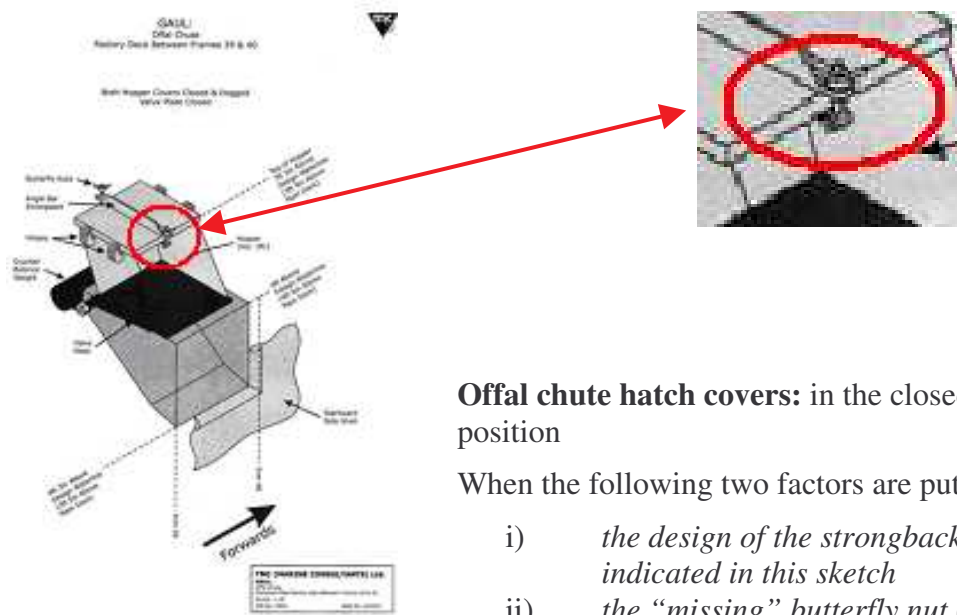
Sketches by the experts:



Duff chute: the toggle in this ‘as found’ drawing is shown to be at repose when in fact the image from the previous page has indicated that it was actually sitting at an angle of 105° to its normal position of repose (vertical)



Offal chute: The toggle in this ‘as found’ drawing is shown to be at repose, and the butterfly nut is missing, the image shown on the previous page has however, indicated that the toggle (as found) was in fact in an upright vertical position with its butterfly nut fitted in place



Offal chute hatch covers: in the closed and secured position

When the following two factors are put together:

- i) *the design of the strongback bar end, as indicated in this sketch*
- ii) *the “missing” butterfly nut (as indicated in the experts “as found” sketch on the preceding page)*

Had this been correct this would have provided credible evidence of crew error.

However, the strongback bar was not arranged in this way and the butterfly nut was still attached to the toggle bolt

Although clearly misleading, these drawings now form part of the public records for the Gaul case.

Appendix 1

The MV Derbyshire and FV Gaul tragedies and the investigations into their loss **- Some similarities**

The two casualty investigations went through a number of distinct phases:

Derbyshire

- Conclusions of the initial Formal Investigation in 1987 – The vessel was overwhelmed by the forces of nature
- Discovery of the wreck in 1994 in a survey funded by the ITF- detailed underwater surveys carried out by the government's investigators in 1997 and 1998
- Conclusions put forward in the Assessors report in 1998 - Structural failure and sinking caused by hatch cover collapse and progressive flooding, with the initiating event being water ingress through the unsecured Bosun's hatch cover at the fore end of the vessel (left open by the crew)
- Conclusions of the Re-opened formal investigation in 2000 - Structural failure and sinking following hatch cover collapse and progressive flooding with the initiating event being the failure of fore end ventilators and fittings which allowed seawater ingress .

Gaul

- Conclusions of the initial Formal Investigation in 1974 – The vessel was overwhelmed by a succession of heavy seas
- Discovery of the wreck in 1997 in a survey funded by an independent television company - detailed underwater surveys carried out by the government's investigators in 1998 and 2002
- Conclusions put forward in the MAIB report in 1999 - Capsize due to large waves with subsequent flooding through open hatches and doors (left open and unsecured by the crew)
- Conclusions of the Re-opened formal investigation in 2004 - Flooding through open duff and offal waste discharge openings in the vessel's side (left open and unsecured by the crew) leading to capsize, flooding through open doors and hatches and the sinking of the vessel

A number of personnel in both the legal and expert teams were common to both the Derbyshire and Gaul formal investigations.