|  |  |  |
| --- | --- | --- |
|  | | |
| H&M Survey Report | |
| MV “VESSEL NAME” | |
| **INSERT PICTURE OF VESSEL / DAMAGE** | |
| **Occurrence:**  **Date/year - Fire in the engine room** | **NHC Claim Reference: xxxxxx/20xx/H&M** |
| **Our Reference.: xxxxxxxxx** |

**contents**

1 INTRODUCTION / SCOPE OF WORK 3

2 Occurrence 4

3 Attending representatives 4

4 VESSEL’S PARTICULARS 5

5 VESSEL’S MOVEMENTS & events 5

6 AVAILABLE INFORMATION 6

7 BRIEF TECHNICAL DESCRIPTION 7

8 BACKGROUND 7

9 DAMAGE DESCRIPTION 8

10 REPAIRS 9

11 OTHER MATTERS OF RELEVANCE 10

12 Cause CONSIDERATION 10

13 Repair Cost 12

14 DRY DOCKING AND TIME FOR REPAIRS 13

15 TEMPORARY REPAIRS 14

16 EXTRA EXPENSES INCURRED TO REDUCE DELAY 14

17 GENERAL EXPENSES 15

18 WORK NOT CONCERNING AVERAGE 15

19 SUMMARY OF TIME FOR REPAIRS 15

20 SUMMARY OF COST 16

*Preface:*

*This is an example of an H&M survey report, in which guidelines/instructions regarding the content have been inserted (blue, italic letters) for each section of the report. “Clean” report examples (pdf-format) are posted on our web site (*[*www.norclub.com*](http://www.norclub.com)*), together with templates in Word-format. The templates contain the headlines and standard (required) wording where applicable.*

*The guidelines/instructions are in general related to the formal/final survey report, however, may be used for preliminary report as well, as far as the sections are applicable. Our intention is to prepare for the same reporting structure, regardless if the report is preliminary or formal/final.*

*The Example Report has been prepared based on a real case but has been made anonymous and edited for improved instruction/guidance purposes.*

*The receivers of a survey report are the claims handler, the owners, the adjuster and the co-insurers. The content in the report is of most importance to the receiver and the content of the final survey report should reflect the information that is to be provided in all sections of this report. The surveyor may issue the report using their own company layout.*

*For preliminary reports, only sections 1 – 13 are applicable. Typical examples for differences between preliminary and final reports are shown in section 13.*

# INTRODUCTION / SCOPE OF WORK

*This is the formal information of the appointment.*

*Note that it is sufficient to state as below – ………..on [date, month, year] and subsequent days……..*

At the request of Norwegian Hull Club Bergen, Norway, being the Leading Hull & Machinery Underwriters of the above mentioned vessel, the undersigned has on [*date, month, year*] and subsequent days surveyed [*Vessel Name*] whilst lying at the premises of [*Name, Place*].

*If survey was carried out at more than one location, this must be stated. For instance: ……the above named vessel, first whilst lying at…………., thereafter whilst lying at …………………*

# Occurrence

*Below is the standard text and lay-out to describe the reason for / purpose of the survey, as well as the formal presentation of the occurrence. (If more than one occurrence is applicable, special instructions/guidelines will be given).*

*It is of importance to keep the naming of the occurrence short and accurate, as this will form the headline in all our files and correspondence.*

*As illustrated below for this case: Fire in Engine Room.*

*The condition (laden/ballast/scheduled) and voyage or location is important information for the claims handler/adjuster.*

Survey was held in order to ascertain the nature and extent of damage sustained on the following occasion:

|  |  |
| --- | --- |
| **Occurrence No. 1** |  |
|  |  |
| **Date, month, year** | **On laden (or ballast) voyage from Port A to Port B.**  **Fire in the engine room.** |

# Attending representatives

*Examples of typical attending representatives are listed below. The number of persons may vary from case to case, depending of the size, complexity and duration of the case, but “key representatives”, relevant for the occurrence and/or repairs are to be listed. The list may also be extended as necessary from the first preliminary report and onwards. It may be beneficial for the reader to make a list for each attendance.*

The following persons were present during the survey / meetings:

|  |  |  |
| --- | --- | --- |
| ***Name*** | ***Company*** | ***Function*** |
| Name | Company | Vessel Manager |
| Name | Company | Chief Engineer |
| Name | Class | Class surveyor |
| Name | Company | Senior Service Engineer |
| Further name(s) | Further companies | Further |

# VESSEL’S PARTICULARS

*The below listing is what NHC require of ships particulars. Further information may be available in our files or easily obtained from the internet. Special instruction will be given if further particulars are required. A copy of the Ships Particular hand-out may be obtained on board, however, it is not necessary to enclose to this report (ref section 6 below).*

|  |  |  |
| --- | --- | --- |
| IMO Number | : | 123456 |
| Type | : | Ro-ro vessel |
| GT / DWT | : | xx.xxx / xx.xxx |
| Flag / Home port | : | Name / Port |
| Built | : | Shipyard / Country / Year |
| Owners | : | Name |
| Managers | : | Name |
| Class / Notation | : | DNV / 1A1 ICE-C SF COMF-V(3)C(3) |
|  |  |  |
| Certificates |  | All certificates valid at time of occurrence |
| DOC details | : | Issued xx March 20xx, valid till yy February 20yy |
| ISM SMC details | : | Issued xx March 20xx, valid till yy February 20yy |
| Casualty ISM reported? | : | Yes |
| Prior related ISM reports? | : | Yes |

# VESSEL’S MOVEMENTS & events

*In this section, the main events shall be listed in chronological sequence.  
The purpose is to give the reader(s) a quick and brief overview of the involved timeframe for the case.*

*In the table below are examples of typical main events.*

|  |  |
| --- | --- |
| ***Event*** | ***Date*** |
| Fire occurred. | Date, Year |
| Fire extinguished. | Date, Year |
| Vessel arrived at *Arriving Port*. | Date, Year |
| Inspection and commencement of repair. | Date, Year |
| Shifting to a nearby shipyard commenced by using harbor tugs. | Date, Year |
| The vessel arrived at the shipyard. | Date, Year |
| The vessel dry docked. | Date, Year |
| The vessel undocked. | Date, Year |
| Sea trials after repair. | Date, Year |
| Repairs completed. | Date, Year |
| The vessel sailed. | Date, Year |

# AVAILABLE INFORMATION

*Below are examples of typical information/documentation that the surveyor may collect.*

*However, due to the fact that the survey report in the end will form an integrated part of the formal adjustment, it is important to limit the enclosures to avoid overwhelming extensive documentation. NHC encourages the surveyor to consider limitation of enclosures to a necessary, relevant minimum.*

*Typical relevant documentation is listed below.*

*Documentation which is not enclosed may be forwarded to NHC on request.*

|  |  |
| --- | --- |
| ***Document*** | ***Enclosed / Available*** |
| *General Information:* |  |
| Ship particulars | Available on request |
| DOC | Available on request |
| SMC | Available on request |
|  |  |
| *Log books:* |  |
| Copy of bridge log book | Relevant pages enclosed |
| Copy of engine log book | Relevant pages enclosed |
|  |  |
| *Incident reports:* |  |
| Master’s initial report | Enclosed |
| Master’s statement of facts | Enclosed |
| Class report and recommendation for repairs | Enclosed |
| Owner’s Incident Report | Enclosed |
|  |  |
| *Repair planning and execution of repairs:* |  |
| Repair Plan | Available on request |
| Repair offer from Cable Renewal Company | Available on request |
| Quotation from Cleaning Company | Available on request |
| Quoted unit prices from Electric Motor Overhaul Company | Available on request |
|  |  |
| *Final technical reports:* |  |
| Damage Control Company’s report of chloride spread and extent | Available on request |
| Class report after completion of repairs | Available on request |
| Final report from Cable Renewal Company | Available on request |

# BRIEF TECHNICAL DESCRIPTION

*Include a short description of the vessel and / or the relevant equipment for the present casualty. The following is an example of relevant background information related to the below case with fire in the engine room.*

The vessel is a Ro-Ro ferry of xx xxx gross tons, built in 1985. The two main engines are of make MAN B&W, type 8L45GB, two stroke diesel engine with 8 cylinders in line, rated to   
16 965 bhp. Each cylinder has a separate fuel pump. The engines are normally running on heavy fuel oil.

Hi-Fog water mist extinguishing system is fitted in the engine room and in the machinery spaces.

# BACKGROUND

*Describe the background for the casualty event prior your attendance. Some surveyors prefer to call this “Narrative”.*

*The extent of information in this section will wary from case to case, also depending on how much information the surveyor manages to collect. It is important to keep this section “short & sweet”, with necessary relevant information. All information here has been provided / obtained from a third party, by reports and / or verbal information. The presentation of the information should reflect that fact.*

*For the preliminary survey report, it is more important to issue a report as soon as possible than waiting for substantial information. Such information can be included in the next preliminary report.*

*The surveyor may collect a huge amount of information / documentation related to this section, which may be listed in section 6, but not necessarily enclosed to the report.*

On the above date, at 15:34:30 hrs, whilst the vessel was approaching the entrance to   
[*Arrival Port*], the fire alarm was activated in the engine room. Concurrently an oil squirt from the top of the No. 1 main engine was observed on the video monitor in the engine control room. Reportedly, the oil splashed into the ceiling plates of the deck above.

Within the next 50 seconds the following sequence of events has been reported:

* 15:34:40 hrs. The bridge was contacted and the No. 1 main engine was requested to be stopped.
* 15:34:45 hrs. Two engineers entered the engine room. They discovered a fire was starting and tried to extinguish with local fire extinguishers.
* 15:34:51 hrs. The No. 1 main engine was stopped.
* 15:34:55 hrs. The 2nd engineer arrived in the engine room, but was met by an explosive fire development.
* Bridge was notified that a fire was at stake.
* 15:35:10 hrs. The fixed Hi-Fog fire extinguishing plant for No. 1 main engine was released from a panel in the engine control room.
* 15:35:30 hrs. No. 3 fire team (engine room team) commenced dressing up. Chief Engineer arrived in the engine control room.

At 15:38 hrs, the fuel to the No. 1 main engine was shut off by activating the quick closing valves.

Three fire teams, including one cooling team were now ready and the engine room team entered into the engine room and reported that the fire had been extinguished. Further checking was carried out to confirm that the fire would not re-ignite before the engine room was eventually ventilated.

In the meantime the Owners had been informed at 15:46 hrs. and the No. 2 main engine had been stopped at 15:50 hrs. after the anchor had been dropped.

After thorough checking of the fire area it was decided that the vessel could sail to port by using the No. 2 main engine and she resumed her voyage towards [*Arrival Port*], where she arrived at 17:30 hrs.

# DAMAGE DESCRIPTION

*Describe the nature and extent of damage. The use of relevant photos, drawings, illustrations and/or sketches in the report is preferred, however to be limited in order to give a reasonable understanding of the situation. Other supporting pictures should be presented in a separate photo album, or just be available on request.*

*This is the section where the surveyor presents what has been seen / observed / measured etc.*

*It is of vital importance that this section only contents factual information.*

*Also note – if you mention any values – we need information about the relation of the values - recommended limit(s) etc. For example; if crank pin hardness has been measured to be 650 HB, then the maximum recommended (by maker or class) hardness must be informed.*

*The following is an example of a typical damage description. The purpose must be to give the reader a reasonable overview – without going too much in technical details. It can be used as guidance that the description must reflect the cost of the repair.*

Upon survey at [*Arrival Port*] and at the shipyard we noted damages as follows:

* The No. 1 main engine and the adjacent areas, including equipment in way, were covered with a layer of fuel oil.
* The ceiling and bulkhead structures adjacent to No. 1 main engine, including pipes, cables, the engine room crane above No. 1 main engine, lighting armatures, fire detectors, video surveillance cameras, electric equipment, etc. were covered with soot and variously melted, discoloured and deformed.
* Water leaks were noted from cooling water piping on the engine.
* The instrumentation on the No. 1 main engine was variously melted, discoloured, covered by soot and deformed, involving sensors, wiring, and control/monitoring system.
* Electric cables in the area around No. 1 main engine were melted, discoloured, covered by soot and deformed.
* From the specialist company, Messrs. Cleaning Company it was reported that except for the areas close to the fire, the chloride measurements in the engine room revealed relative low concentrations.

|  |
| --- |
| **Insert relevant photo** |
| Photo 1: [*Text*] |

|  |  |
| --- | --- |
| **Insert relevant photo** | **Insert relevant photo** |
| Photo 2: [*Text*] | Photo 3: [*Text*] |

# REPAIRS

*The listed repairs must be in accordance with findings listed in section 9, preferably presented as a logic consequence of the listed damages.*

*The purpose is to give the reader a reasonable overview of the necessary damage repairs, without going too much in technical details. The presentation in this section shall form the basis of the surveyor’s acceptance of the repair cost in section 13.*

*Preliminary reports written during repairs may very well be more comprehensive than the formal/final survey report.*

The permanent repairs were carried out by Ship Yard Ltd. with Cleaning Company Ltd., Cable Renewal Company, MAN B&W, ABB and Kongsberg Maritime as subcontractors and included as follows:

* Thorough cleaning of all affected surfaces, machinery, equipment etc. for oil, soot and chlorides as applicable.
* Renewal of, in total 3300 meters of electric cables of various sizes and types, including cable trays as necessary.
* Dismounting, cleaning and control of all affected piping, valves, pumps etc. fitted to the engine.
* Removing the cylinder covers of cylinders nos. 2, 3, 4 and 5 for inspection. The inspection result revealed that the engine was not internally affected by the fire, and no further opening of the engine was required.
* Check of both turbochargers of No. 1 and 2 main engines. The air filter mats of the silencers of all (4) turbochargers were contaminated with fuel oil mist to such an extent that satisfactory cleaning was not possible, and consequently the silencers had to be renewed.
* Renewal of the automation system fitted to the engine (sensors, wiring, control- and monitoring system).
* Renewal of the emergency engine telegraphs system. This system was only partly damaged, however, as the manufacturer did not exist anymore, spare parts were not available and therefore the entire system had to be renewed.
* Cleaning and overhaul/renewal as necessary of various electric and mechanical equipment/components.

The repair involved dry docking for cropping an access hole for transport of debris out of the engine room and for transport of equipment/parts out and in.

On completion of the individual repairs, testing was carried out by the relevant contractors as necessary and required, and a thorough system test, including sea trials, was carried out according to the Class’ requirement prior putting the vessel into service on “*Date 20xx”*.

Completion work of flushing/washing and painting of affected areas in the engine room continued without affecting the vessel’s sailing schedule until about mid of “*Date” 20xx*”

# OTHER MATTERS OF RELEVANCE

*This is a section where the surveyor may elaborate on relevant matters that do not fit naturally into the damage and repair sections above, however, which the surveyor considers important.*

*Typical example:*

The Owners used the opportunity to commence Class’ special survey during the dry docking of the vessel.

# Cause CONSIDERATION

*The cause consideration is one of the most important issues in a survey report, as it will form the basis for the adjuster’s considerations in relation to the policy conditions. It is of outmost importance that the surveyor states his opinion regarding the cause – based on all his/her observations, investigations and collected documentation.*

*Sometimes it is easy to conclude the cause – for instance, if the vessel has been involved in a grounding incident, the cause of the bottom damages and/or rudder/propeller damages is – the grounding incident. In other cases were for instance if corrosion / wear and tear / lack of maintenance is relevant to the cause of damage this must be specifically commented.*

*Normally it is not possible to conclude the cause of damage in the initial phase of the case– typical for fire and engine damages. Sometimes specialists are involved and their investigation may take some time.*

*Here is an example of a suitable text in the preliminary report for the case in this example report:*

At this early stage in the process, it is difficult to draw unambiguous conclusions about the cause of damage. However, preliminary investigation indicates that the fire may be related to a sudden oil leak from the top of the No. 4 cylinder fuel pump of No. 1 main engine. We will revert with further information as soon as further investigation has been carried out.

*Below is the cause consideration for the same occurrence, but as it should be presented in the final report. Note that the cause considerations should be presented in two sections:*

*1. Discussions and*

*2. Conclusion.*

*The below is from the actual case, after various considerations and investigation, including metallurgic investigation:*

## Discussion

During inspections in the fire affected engine room, we could see clear indications that there had been an oil squirt from the top of the No. 1 main engine that hit the underside of the deck above (the ceiling).

Further investigation revealed that the source of the escaped oil was at the top cover of the fuel pump of the No. 4 cylinder, in which one nut was missing due to a fractured stud bolt, which left a hole into the high-pressure section of the pump.

The fractured bolt and the disappeared nut allowed the high-pressure oil to escape upwards and splash over the engine and the adjacent areas.

It was reported that last time when work was performed, which involved the fuel pump, was during a yard stay at Messrs. *Machinery Shipyard* in the period from *xx* to *yy* *January 20xx*.   
The contractor states that the relevant nut was not touched at that occasion.

The stud bolt was sent to Det Norske Veritas AS, Section for Materials Technology for investigation of the cause of breakage.

The conclusion of the investigation is that the bolt had fractured as a result of fatigue, with the initiation area in the second thread root from the top, which is indicating that the bolt and nut may have been subject to an assembly irregularity.

As the investigation report does not state anything about the time frame of the fatigue, it is not possible to conclude about when a potential assembly irregularity may have taken place.

## Conclusion

In our opinion the cause of the fire is related to a sudden oil leak from the top of the No. 4 cylinder fuel pump of No. 1 main engine, which allowed fuel oil to escape and spray over hot surfaces and consequently ignite.

Further it is our opinion that the root cause of the leakage is the mentioned stud bolt, which had been exposed to improper tightening, consequent development of fatigue, which eventually led to fracture.

The cause investigation has not succeeded to reveal unambiguously when or by whom improper tightening was carried out.

# Repair Cost

*A: Preliminary Report*

*It is of outmost importance that the surveyor, from day one, has focus on both cost and duration of repairs. Even though we know how difficult it may be to come up with early estimates, we will emphasise that the information in this section is the core information for our business. A good surveyor will always give some information about repair cost and time. Preferably, and if possible, such estimates should be made in close cooperation with the superintendent in order to avoid different amounts in circulation.*

*For example:*

The permanent repair will be carried out whilst dry docked at *Messrs*. *Repair Yard*, who presented the most favourable repair offer, based on both cost and time.

The main subcontractors are as follows:

* Cleaning – Messrs. Cleaning Company.
* Electric repair / Cable renewal – Messrs Cable Renewal Company.
* Engine repair - Engine maker, MAN B&W.
* Turbo chargers - Messrs ABB AS.
* Engine control and monitoring system - Kongsberg Maritime AS.

Based on the repair specification and the repair offer from the yard, as well as budget prices from the mentioned subcontractors, an updated estimate of the repair cost is at the level of   
USD 2,5 million.

Based on various discussions between the owners, the yard and the main contractors a repair plan has been made with scheduled completion of repairs on February 22nd 20xx.

*B: Formal / Final Survey Report*

*The difference between the formal survey report and the final survey report is the surveyor’s consideration and acceptance of the cost considered relevant to the repairs. NHC prefers to have owner’s claim presented in a special format called “Owners Statement of Claim”. That is a quite comprehensive excel sheet that owners, the surveyor and the adjuster use and it forms an enclosure to the adjustment.*

*For smaller cases with few invoices the repair cost may be presented in full under section 13 or, as illustrated in this example, in a separate excel sheet that is prepared by the surveyor. Only the end figures (total sums) are presented here in section 13.*

*The excel sheet will form an integrated part of the final survey report and therefore also the final adjustment.*

*Please note that unless otherwise has been specifically instructed, the surveyor shall present the approved cost in the currencies as invoiced.*

*Regardless of how the repair costs are presented, it is of outmost importance that the surveyor presents the invoices in such a way that it is quite clear which work, service or supply they represent. Further the surveyor must clearly state his opinion whether each item is related to the average repair, general expenses or other types or work not part of the repair scope for the actual occurrence (for instance Owners’ work). The surveyor’s opinion regarding this is stated by the placing of the figures in columns as shown in the spreadsheet, but may have to be explained / substantiated if there should be any doubt to which category it belongs.*

*Below is an example of standard text and listing of total sums from the Repair Cost Account:*

The above damages have been permanently repaired, and the full specification of the work and the cost listed in the Owners’ general claims account are presented in the enclosed Repair Cost Account, which forms an integrated part of this Final Survey Report.

The summary of the repair cost, based on the repair scope as described in section 10 above – but excluding general expenses is as follows:

USD 2 735 468

# DRY DOCKING AND TIME FOR REPAIRS

*If the damage repairs require the vessel to be dry-docked, the duration of damage repairs in dry dock and the total time in dry dock shall be stated.*

The vessel was in dry dock for a total of 11 days.

If carried out separately the repair work would have required a total of 45 days,   
including 11 days in dry dock to be completed.

# TEMPORARY REPAIRS

*On some occasions it may be necessary, or economically sensible to conduct temporary repairs, and defer final repairs. This must be stated in this section.*

*The final survey report shall include the cost and duration of the temporary repairs.*

The repair account includes USD 38 500 for temporary repairs to the engine room crane above the No. 1 main engine (ref. item xx in the Repair Cost Account), which required   
2 days to be completed.

Temporary repairs were carried out to save time as it was impossible to carry out permanent repairs to the No. 1 main engine without the crane in working condition and waiting for permanent repair of the crane would have detained the vessel a further   
1 – 2 weeks.

*Option:*

*If no temporary repairs were involved, this should be confirmed in the report as follows:*

No particular temporary repairs were carried out at this occasion.

*If applicable, the cost and time for removal of temporary repairs must be stated.*

*Example:*

The repair account includes USD xx xxx for removal of temporary repairs.

This work required x days/hours.

*Option:*

No particular cost was involved for removal of temporary repairs.

# EXTRA EXPENSES INCURRED TO REDUCE DELAY

*The surveyor must in his final report consider if any extra expenses, overtime, bonus etc. that has been granted and to what extent this has reduced the duration of repairs.*

In connection with this occurrence, extra expenses have been incurred by working   
overtime for an amount of USD 20 250.

By incurring extra expenses, 3 days in dry dock have been saved and the total repair time has been reduced by 3 days.

# GENERAL EXPENSES

*General expenses are subject to apportion.*

*The surveyor shall separate the general expenses from the repair cost.*

*If the surveyor is in doubt what is considered to be general expenses, he may contact the claims handler for guidance.*

General Expenses have been listed in detail in the enclosed Repair Cost Column with the amount of:

USD 173 664

# WORK NOT CONCERNING AVERAGE

*Work considered by the surveyor not to be related to the occurrence shall be presented in this chapter. A brief overview will normally be sufficient. The duration of this work, if carried out separately, must be specifically stated – including possible time in dry dock.*

Concurrently with the average repairs, maintenance work was carried out at the yard to an amount of:

USD 396 978

The work included as follows:

* Scheduled dry docking
* Commencement of Special Survey
* Aux engines overhaul
* Renewal of 8 tons of bottom plating
* Repair of Electric system

If carried out separately the above work would have required a total of 17 days,   
including 9 days in dry dock to be completed.

# SUMMARY OF TIME FOR REPAIRS

*Total time for repairs at the yard (place for repairs) must be stated by the surveyor, as well as a summary of the duration of each activity, if carried out separately.*

The total time for repair at [*Place*] from Month Day 20xx till Month Day 20xx – 45 days.

If carried out separately the work involved would have required the following time:

|  |  |  |  |
| --- | --- | --- | --- |
|  | In dry dock | Afloat | Total |
| Occurrence No. 1 | 11 days | 34 days | 45 days |
| Work not concerning average | 09 days | 08 days | 17 days |

# SUMMARY OF COST

*In this chapter the surveyor summarize the breakdown of cost. This should be separated in cost related to the occurrence, general expenses and work not concerning average. The cost must be presented in the currencies as invoiced.*

|  |  |  |
| --- | --- | --- |
| Repair Cost – Occurrence No. 1 | USD | 2 735 468,00 |
| General Expenses | USD | 173 664,00 |
| Sum | USD | 2 909 132,00 |
| Work Not Concerning Average | USD | 396 378,00 |
| Total Amount of Owners’ General Account | USD | 3 305 510,00 |

Subject to the rights of the Underwriters according to  
the relevant insurance conditions and policy.

Place, day, month, year

|  |
| --- |
| Yours faithfully |
| For *[Name of the survey company]*  *Signature*  H&M Surveyor  [*name of surveyor]*  *Please include your written name in addition to the signature* |