THE COMMONWEALTH OF THE BAHAMAS

M.v. Solent Star

IMO Number: 9206061

Official Number: 7001144

Report of the marine safety investigation into a fatality on a Refrigerated Cargo vessel on 1 May 2018

The Bahamas conducts marine safety or other investigations on ships flying the flag of the Commonwealth of the Bahamas in accordance with the obligations set forth in International Conventions to which The Bahamas is a Party. In accordance with the IMO Casualty Investigation Code, mandated by the International Convention for the Safety of Life at Sea (SOLAS) Regulation XI-1/6, investigations have the objective of preventing marine casualties and marine incidents in the future and do not seek to apportion blame or determine liability.

It should be noted that the Bahamas Merchant Shipping Act, Para 170 (2) requires officers of a ship involved in an accident to answer an Inspector's questions fully and truly. If the contents of a report were subsequently submitted as evidence in court proceedings relating to an accident this could offend the principle that a person cannot be required to give evidence against themselves. The Bahamas Maritime Authority makes this report available to any interested individuals, organizations, agencies or States on the strict understanding that it will not be used as evidence in any legal proceedings anywhere in the world. You must re-use it accurately and not in a misleading context. Any material used must contain the title of the source publication and where we have identified any third-party copyright material you will need to obtain permission from the copyright holders concerned.

Date of Issue: 06 March 2019
Bahamas Maritime Authority
120 Old Broad Street
LONDON
EC2N 1AR
United Kingdom

CONTENTS

List of Appendices:

1 GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AB	Able Body Seaman
BMA	Bahamas Maritime Authority
CCTV	Closed-Circuit Television
ISM	International Safety Management
No.	Number
OS	Ordinary Seaman
PMS	Planned Maintenance System
SWL	Safe Working Load
VDR	Voyage Data Recorder
VHF	Very High Frequency
UTC	Universal Time Coordinated

All times noted in the report are given in the style of the standard 24-hour clock without additional annotation and as local time in Davao City, the Philippines, which was UTC +8.

2 SUMMARY

2.1 This investigation has been carried out in accordance with the International Maritime Organisation's Casualty Investigation Code (Resolution MSC.255(84)), as required by Regulation IX-1/6 of the International Convention on the Safety of Life at Sea, for the purpose of identifying any safety improvements which may need to be made to prevent such incidents in the future.

2.2 On 27 April 2018, at 1320 hours while the vessel was in Nagoya conducting discharging operation, the main pump motor of crane no. 1 failed to operate due to a short circuit.

2.3 The crane was at 45-degree port position at the time of failure. The crane was manually turned and secured to a seagoing stowage position in accordance with the safety management system and at 2143 hours the vessel departed Nagoya making way towards Davao port.

2.4 Before reaching Davao, it was decided to move the crane to make the vessel ready for discharging operation using a shore crane in Davao port. On 01 May 2018 the Master approved the decision to swing crane no. 1 manually.

2.5 Initially it was decided to move the crane by fastening the hook of crane no. 2 on to the jib of crane no.1 to take it out from the jib support and manually slew it using mooring ropes and secure it using the chain blocks to allow for discharge of the cargo at the discharge port. However, the attempt to lift the jib of crane no. 1 was unsuccessful with this method due to the limitation imposed by the safe working load (SWL) of crane no.2.

2.6 The Master authorised to cut the jib support plate of crane no.1, using the gas cutting operation and move the crane towards the intended resting position. Subsequently, the Fitter was tasked to cut the jib support plate of crane no. 1 and the Bosun was tasked to operate crane no. 2 from inside the crane cabin.

2.7 Various unsuccessful attempts were made using mooring ropes and by swinging crane no. 2 to Starboard and port direction to release the crane no. 1 from its position.

2.8 At 1717 hours, the Chief Officer gave command to Bosun to operate[1] the crane. The Bosun hoisted the crane.

2.9 The movement of the crane led to the jib moving from the jib support towards the centre line of the vessel and towards the Fitter. The movement of the crane jib resulted in the Fitter to be struck between the jibs of crane no. 1 and crane no. 2. The impact led to Fitter's instantaneous death.

[1] The communication between the Master and personnel on deck was reviewed using the VDR recording. However, due to the limitations of VDR recording quality and external noises over VHF radio, the exact command given by Chief Officer to operate the crane could not be determined.

3 DETAILS OF INVOLVED VESSEL(s) AND OTHER MATTERS

3.1 Details of vessel

3.1.1 Solent Star is a Refrigerated Cargo vessel built in Kagawa, Japan in 2001. At the time of incident, the vessel was owned by SSI Shipowning I Inc. and technically managed by SIEM Ship Management.

3.1.2 The vessel had the following principal particulars:

Call sign	C6DU3
IMO number	9206061
MMSI number	311 000 784
Built	2001
Length overall	150 metres
Breadth	23 metres
Moulded Depth	13.3 metres
Propulsion power	12639 kW
Main engine type	Mitsui-Man B&W 8S50MC-C / 17
Gross registered tonnage	10804 tonnes
Net registered tonnage	5320 tonnes
Type	Refrigerated Cargo

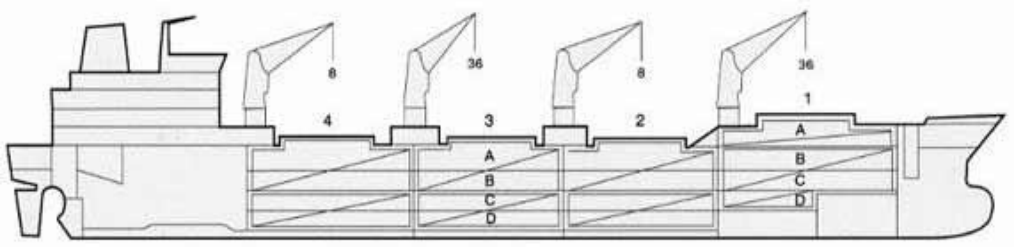


Figure 1: Solent Star cargo compartments and hatches

3.1.3 Total area of all cargo compartments is 506228 cubic feet. Maximum reefer container capacity is 90 units at 25 tonnes gross[2].

	1		2		3		4	
A	42197	462.9	42699	472.1	42515	470.3	44617	496.7
B	25861	285.6	35071	423.6	38931	467.0	38323	461.0
C	15630	183.7	30025	373.5	37271	465.6	31416	391.2
D			22351	273.2	34043	409.3	25278	308.6
Totals	83688	932.2	130146	1542.4	152760	1812.2	139634	1657.5

Table 1: Cubic feet / square metres per compartment

	1	2	3	4
A	357	371	377	398
B	211	332	378	365
C	130	287	368	306
D		207	322	235
Totals	698	1197	1445	1304

Table 2: Approximate ISO pallets per compartment

3.1.4 The vessel's trade route is generally between the Port of Davao, Philippines, Kawasaki, Japan and Port of Nagoya, Japan.

3.1.5 The vessel is fitted with a total of 4 cranes, 2 with safe working load of 8 metric tonnes and 2 with safe working load of 40 metric tonnes.

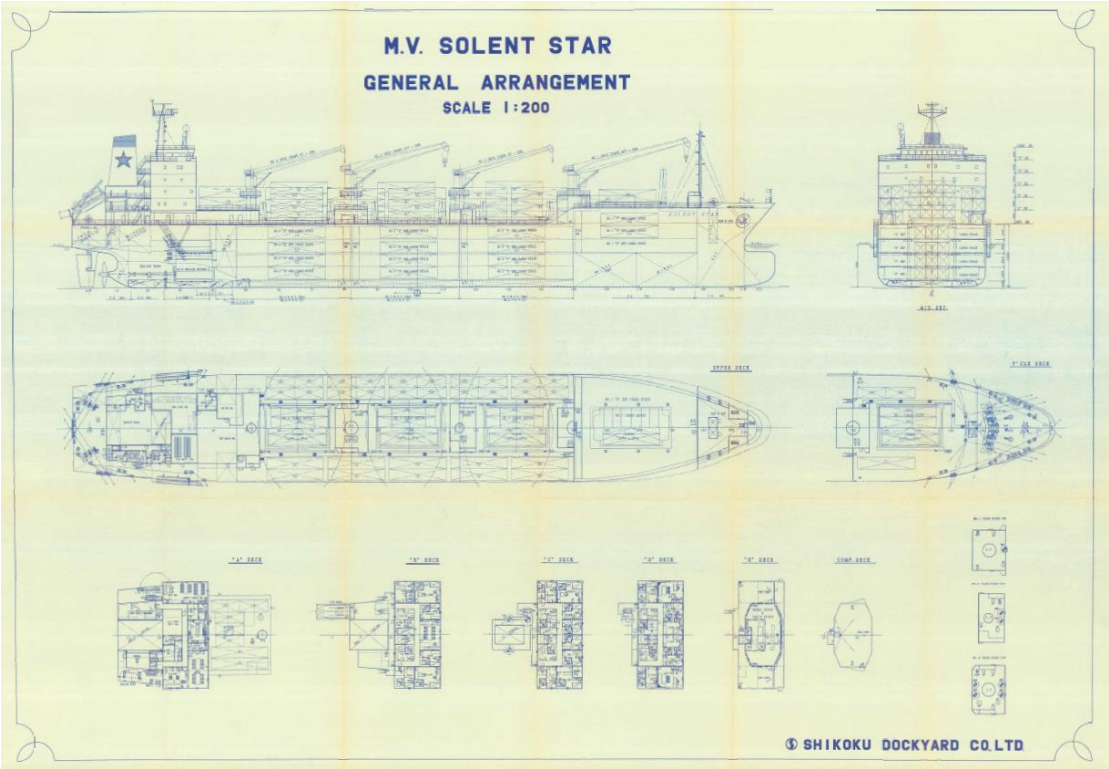


Figure 2: Solent Star general arrangement plan

[2] Maximum container load for a particular voyage is subject to stability, stack weight limitations, visibility from bridge and Master's approval.

3.2 Vessel Certification

3.2.1 At the time of the incident, Solent Star was under provisional registration with the Bahamas Maritime Authority (BMA) since 20 February 2018. The vessel is classed with Nippon Kaiji Kyokai Classification Society. The vessel complied with all statutory and international requirements and certification.

3.2.2 The vessel was registered under the Liberian flag with port of registry as Monrovia, prior to registering with the Bahamas Maritime Authority (BMA).

3.2.3 The vessel completed a Bahamas Maritime Authority Pre-Registration Inspection by an Approved Nautical Inspector at the Port of Davao, Philippines on 19 February 2018. The vessel's general condition was described as good with one deficiency noted concerning the Classification Society's records which were not as per the BMA inspection and survey record.

3.2.4 The vessel had a Port State Control Inspection at the Port of Davao on 02 May 2018 with no deficiencies identified.

3.3 Details of Crew

3.3.1 At the time of the incident the vessel had 21 crew members onboard. The following nationalities were contracted onboard as of 01 May 2018: 2 Latvian, 3 Russians and 16 Ukrainians. The vessel's Minimum Safe Manning Document (MSMD) was issued by the Commonwealth of the Bahamas on 20 February 2018 and remains valid.

3.3.2 The deceased Fitter was 48 years old Ukrainian national. The Fitter was appointed by SIEM ship management as agent to SIEM Shipping UK Limited. The Fitter held the certificate of proficiency for Ship's Welder issued on 23 July 2014 by the Harbour Master of Seaport of Odessa O Antonov.

***

4 NARRATIVE OF EVENTS

4.1 On 27 April 2018, at 1320 hours while the vessel was in Nagoya conducting discharging operations, the main pump motor of crane no. 1 was burnt due to short circuiting.

4.2 The crane was at an angle of 45-degrees to port when the motor failed. (refer to figure 3)

Figure 3: Position of crane after the motor was burnt

4.2 The loading operation was completed using the shore crane, as there was no spare motor available onboard to replace the faulty motor of crane no. 1.

Figure 4: Shore crane used for cargo operation

4.3 Crane no. 1 was rotated manually to move the jib above the seagoing stowage position. The hydraulic oil was then released from the luffing rams and the jib descended under its own weight into the jib support, where the jib should be positioned when the vessel is at sea. Subsequently the jib was secured.

4.4 On 27 April 2018, at 2143 hours the vessel left Nagoya making way towards Davao port.

4.5 On 1 May 2018, while the vessel was underway, the Master authorised crane no.1 to be manually swung out to be able to discharge the containers by shore crane in the next port.

4.6 It was decided to move the crane by fastening the hook of crane no. 2 (SWL of 8 Tonnes) on to the jib of crane no.1 (weighed approximately 16 Tonnes) in order to lift the jib of crane no.1 from the jib support and manually slew it using mooring ropes and secure it using a chain block.

4.7 The risk assessment for 'Crane no. 1 emergency turn' was conducted for this work activity at 1257 hours (Refer to Appendix I). Crane no. 2 was heaved to a vertical position of maximum height and the hook was secured around the jib of crane no. 1 to move it from the resting position and commence the lifting operation so as to slew it. However, the attempt to lift the jib failed with this method due to the weight differential between the two cranes.

4.8 To move the crane no. 1 jib, the Master authorised to cut the jib support plate of crane no. 1. The side to cut was chosen towards the intended direction of the crane to be moved. Subsequently, the Fitter was tasked to cut the jib support plate of crane no. 1 by gas cutting the plate diagonally. The Bosun was tasked to operate the crane no. 2 and was inside the crane cabin, while the AB was assisting the Fitter on the crane platform.

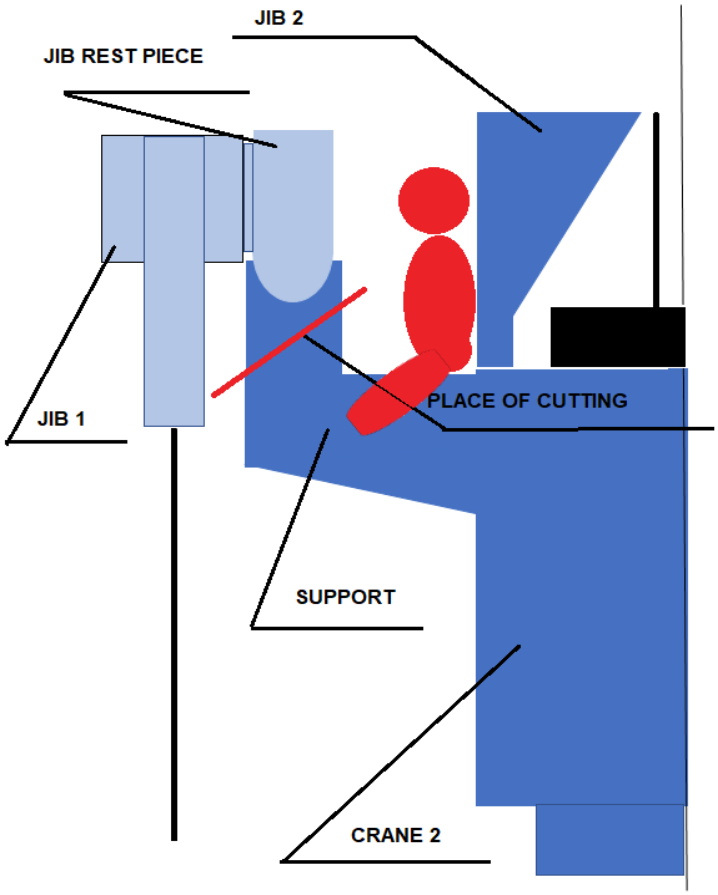


Figure 5: Location of the fitter

4.9 The risk assessments for following jobs were conducted and signed by all crew involved in the task. (Refer to Appendix I)

Name of the task or work activity	Time of risk assessment
Crane no. 1 emergency turn	1341 hours
Cutting support crane no. 1	1356 hours

Table 3: Risk assessments and timings

4.10 At 1300 hours and 1400 hours, the permit to work for work aloft/over side and hot work were prepared. (Refer to Appendix II)

4.11 At 1702 hours, 1704 hours and 1708 hours attempts were made to move crane no. 1 using the mooring ropes tied to the jib of the crane, using the winch.

4.12 At 1709 hours the Chief Officer instructed to lower the wire of crane no. 2. On lowering the wire, he observed that there was some movement in crane no. 1.

4.13 At 1710 attempt was made to use crane no. 2 to swing the crane to port and starboard direction, to free crane no. 1 from its position.

4.14 Few moments later Chief Officer instructed the Bosun to stop moving the crane and to lift up the jib.

4.15 At 1712 hours the Chief Officer instructed the Bosun to not do anything with the crane.

4.16 At 1717 hours shortly after the gas cutting operation was complete, the Chief Officer instructed the Bosun to operate[1] the crane. The Bosun hoisted the crane no. 2.

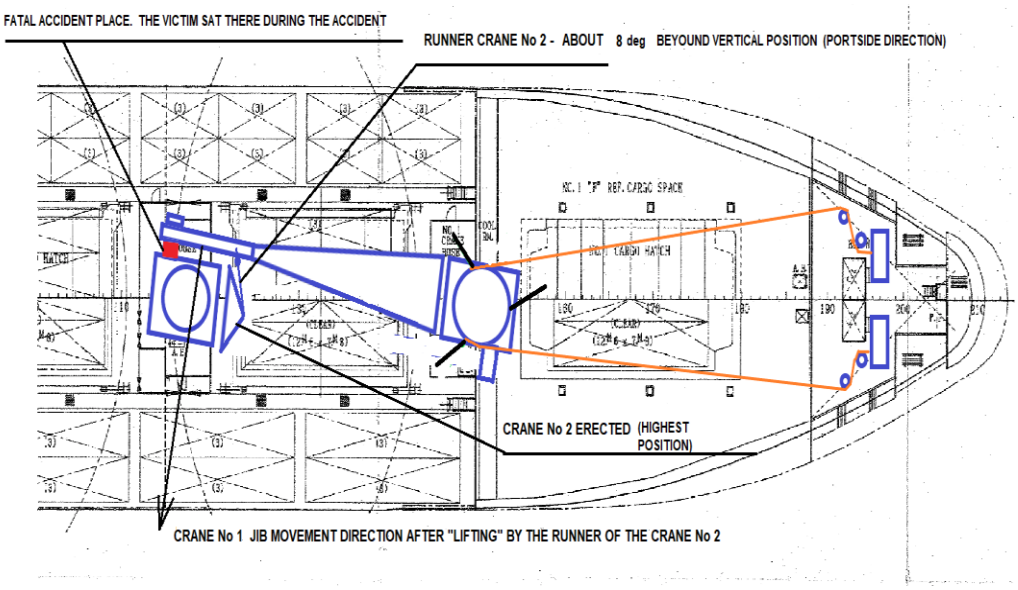


Figure 6: Illustration of the cranes position and Fitter's location

4.17 The hoisting of the crane developed some movement and since the jib support plate had already been cut, the jib moved off the jib support and the Fitter was

struck by crane no. 1 between the two structures of crane no. 1 and crane no. 2. The impact led to Fitter's instantaneous death.

***

5 ANALYSIS AND DISCUSSION

5.1 External factors

5.1.1 The crane was at 45-degree port position at the time of failure. The crane was manually turned and secured in a seagoing stowage position in accordance with the safety management system. However, to prepare the vessel for the next port and to facilitate a shore crane to be used for cargo operation, it was decided to move the jib of crane no. 1 manually and in doing so it was decided to gas cut the jib support plate.

5.1.2 The jib of crane no.1 prevented the discharge of cargo at the Port of Davao while the jib remained in its seagoing stowage position. The vessel's scheduled departure from Davao prevented sufficient time to find an alternative solution to discharge the cargo without moving the jib of crane no.1 with crane no.2.

5.2 Motor fault

5.2.1 The motor of the main pump of the crane no. 1 was burnt out due to a short circuit which occurred while discharging hold no. 1 at the of port of Nagoya on 27 April 2018 at 1320 hours.

5.2.2 The crane was at a 45-degree angle to port at the time the motor failed (refer to figure 3).

5.2.3 The crane was rotated manually to move the jib above the seagoing stowage position. The hydraulic oil was then released from the luffing rams and the jib descended under its own weight into the jib support, where the jib is located when the vessel is at sea. Subsequently the jib was secured. At the time of the incident, the crew were attempting to lift the jib from its seagoing stowage position.

5.2.4 The spare motor for the crane was not available on board and a requisition was raised for the new electric motor on 27 April 2018 and the requisition for rewinding and overhaul of the electric motor on 30 April 2018.

5.3 Crane and Motor Maintenance History

5.3.1 The total running hours of crane no. 1 in 2018 (up until April 2018) was 335 hours and 20 minutes.

5.3.2 The motor greasing and megger test[3] on the motor was conducted as per the vessel's planned maintenance system (PMS) schedule on 07 February 2018 and 09 March 2018 respectively.

[3] Megger Test is a measuring instrument used for the measurement of insulation resistance of an electrical system.

5.3.3 The Master was on board the vessel in 2010 when a similar work activity was conducted on crane no. 3, where the crane was moved using the opposite crane followed by manually slewing the inoperable crane clear of the seagoing stowage position. Also, the crane support cutting operation was conducted as part of scheduled maintenance and the Master was on board during that operation as well.

5.3.4 Based on experience, the Master anticipated that it will be a similar operation as previously undertaken on crane no. 3 and authorised the work activity to manually slew crane no. 1.

5.3.5 The vessel was taken over by SIEM ship management in June 2012. No crane records or any evidence was found in relation to the previous work activity undertaken in 2010, as that was before the date when the vessel came under present management.

5.4 Risk assessment

5.4.1 The risk assessment for emergency turning (refer to Appendix I) of the crane was conducted and signed by all involved, including the Master, Chief Officer, Chief Engineer, Bosun, ABs and OS.

5.4.2 An attempt to move the jib manually failed, potentially due to the fact that the safe working load of crane no.2 was half that of the weight of the jib of crane no.1. The Master authorised to cut a portion of the jib support plate by gas cutting in order to move crane no.1 from the seagoing securing position to a position which would facilitate the discharge of cargo.

5.4.3 The risk assessments for emergency turning and cutting the support for crane no. 1 was completed and signed by Master, Chief Officer, Bosun and the Fitter (refer to Appendix I). The permit to work for working aloft/over the side and hot work were prepared and signed by all personnel involved. (refer to Appendix II). The Chief Engineer did not participate in the risk assessment but was involved in the work activity.

5.4.4 As per the risk assessment conducted for emergency turning of crane, the Chief Officer was the supervisor for the work activity. However, from the evidence it is not clear who was supervising the work activity.

5.4.5 During the course of the work activity, the Bosun and Fitter did not have a direct line of sight with each other and the Bosun was relying on the communication from the Chief Officer for instructions regarding the movement and operation of crane no. 2. The risk assessment and permit to work conducted for the work activity had not identified hazards related to ineffective communication or motion of the heavy object (crane jib).

5.4.6 The hook of crane no. 2 (SWL 8 tonnes) was used to fasten around the jib of crane no. 1 which weighed approximately 16 tonnes. The risk assessment did not identify any hazard or potential risk associated with this or any hazards related to the crane operation.

5.4.7 The permit to work for work aloft/over the side and hot work was completed before the work activity was initiated. However, no hazards were identified specific to the work activity which involved a combination of identifiable hazards relating to the Fitter working in between the two structures of crane no. 1 and crane no. 2.

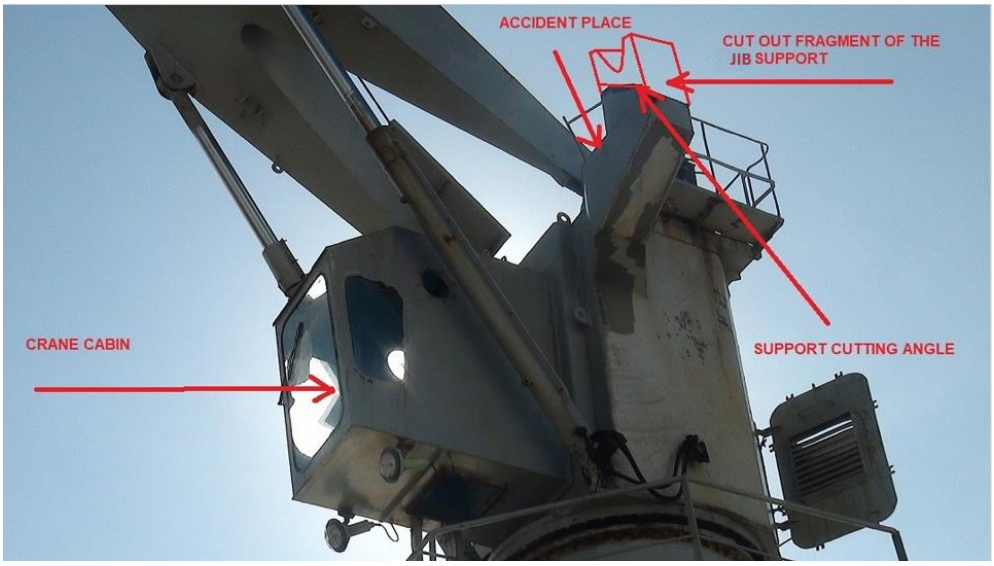


Figure 5: Illustration of the crane cabin and accident place

5.4.8 The International Management Code for the safe operation of ships and for pollution prevention (International Safety Management (ISM) Code) section 1.2.2.2 requires '*Safety-management objectives of the Company should, inter alia; assess all identified risks to its ships, personnel and the environment and establish appropriate safeguards.'* The risk assessment and permit to work are the tools to identify the hazards and risks to establish appropriate safeguards to eliminate or reduce the potential risk involved in an activity. The risk assessment was conducted for emergency turning and cutting the support of crane no. 1, additionally the permit to work for aloft/over the side and hot work were prepared as per the Company's procedure. However, considering the complexity of the work activity involving multiple simultaneous operations such as gas cutting (hot work), working aloft and crane operation, makes the work activity a potentially high-risk activity and hence requiring a risk assessment and/or permit to work specific to the work activity.

5.4.9 The task-specific hazards were not effectively identified while conducting the risk assessment or the permit to work. Had there been an effective identification of hazard involving the operation of cranes, this marine casualty could have potentially been avoided.

5.5 Scope and planning of work activity

5.5.1 At the time of incident the Master was on the bridge and the Chief Officer, Chief Engineer, AB, Bosun and Fitter were on deck. The communication between the bridge and personnel on deck was achieved using handheld VHF

radios. The VDR was able to record communications passed between these positions on the VHF radios.

5.5.2 Various unsuccessful attempts were made to move crane no. 1 from its position using mooring ropes and by swinging crane no. 2. From the VDR review it was found that the Chief Officer instructed to move the crane no. 1 using mooring ropes and winch power. After the attempt to move the crane using the ropes failed, the Master communicated to swing the crane no. 2 to port and then to starboard to attempt to free the crane no.1 from its position. Further, the Chief Engineer suggested to secure the strops to the centre of the jib of crane no. 1.

5.5.3 The ad hoc and reactive approach taken to conduct the work activity indicates a lack of planning and discussion of the scope of work activity among the involved personnel, prior to starting the work activity.

5.6 Weather

5.6.1 The weather was calm at the time of the incident. Therefore, the weather or any other unexpected movement of the ship was not a contributory cause of the incident.

Figure 7: Weather report screenshot

5.7 Fatigue

5.7.1 From the records of the hours of rest provided to the investigator it was concluded that the Master, Chief Officer, Chief Engineer, Bosun and AB were in compliance with the statutory hours of rest requirements[4].

5.7.2 There was no record produced for the Fitter's hours of rest or overtime.

[4] Required by the International Convention of Standards of Training, Certification and Watchkeeping for Seafarers. 1978 as amended (STCW) and the Maritime Labour Convention, 2006 (MLC 2006)

5.7.3 It was determined during the course of the investigation that the Fitter was on fixed hours contract and no overtime record was maintained for his time onboard.

5.7.4 From the interviews it was evident that the Fitter was not overworked on that day and it was considered to be a normal work day for him.

***

6 CONCLUSIONS

6.1 The motor of the main pump of crane no. 1 was burnt out due to a short circuit while discharging cargo from hold no. 1 in the port of Nagoya, resulting in the crane resting at a 45-degree position to port. Subsequently, the crane was manually secured in the seagoing stowage position.

6.2 The Master had previous experience of a similar work activity. That experience consisted of both manual slewing of a crane and cutting of the jib support plate. On this occasion, the lifting of the jib of crane no.1 was unsuccessful and resulted in the requirement to cut the jib support plate in order to manually slew the jib so as to achieve the timely discharge of cargo. It was not determined during the course of the investigation whether the previous work activity undertaken was considered during the preparation of hazard identification and risk assessment.

6.3 The Fitter was tasked to cut the jib support plate which held the jib securely in place while the Bosun operated crane no. 2. Due to the weight differential between crane no.1 and crane no.2, crane no.2 was unable to lift crane no.1, resulting in the need to gas cut the jib support plate to allow the jib of crane no.1 to move, with the aid of mooring ropes and secure it using a chain block, to port and clear of the cargo hold to facilitate cargo discharge.

6.4 Shortly after completing the gas cutting operation the Fitter was struck by crane no. 1 between the two structures of crane no.1 and crane no.2. The impact led to the Fitter's instantaneous death.

6.5 The risk assessment and permit to work conducted for the work activity was not effective. Considering that it involved multiple simultaneous operations such as gas cutting (hot work), working aloft and crane operation, the risk assessment and permit to work did not capture the task specific hazards to mitigate the risk involved with the work activity. Had there been an effective work activity planning and identification of hazard involving the operation of cranes, this incident could have been avoided.

6.6 No alternative solution for moving crane no.1 was considered by the Master or crew involved in the risk assessment process. The alternative solutions could have relied on external parties despite the potential impact on the discharge of cargo and subsequent vessel schedule on leaving the Port of Davao.

***

7 RECOMMENDATIONS

Recommendation for the operator:

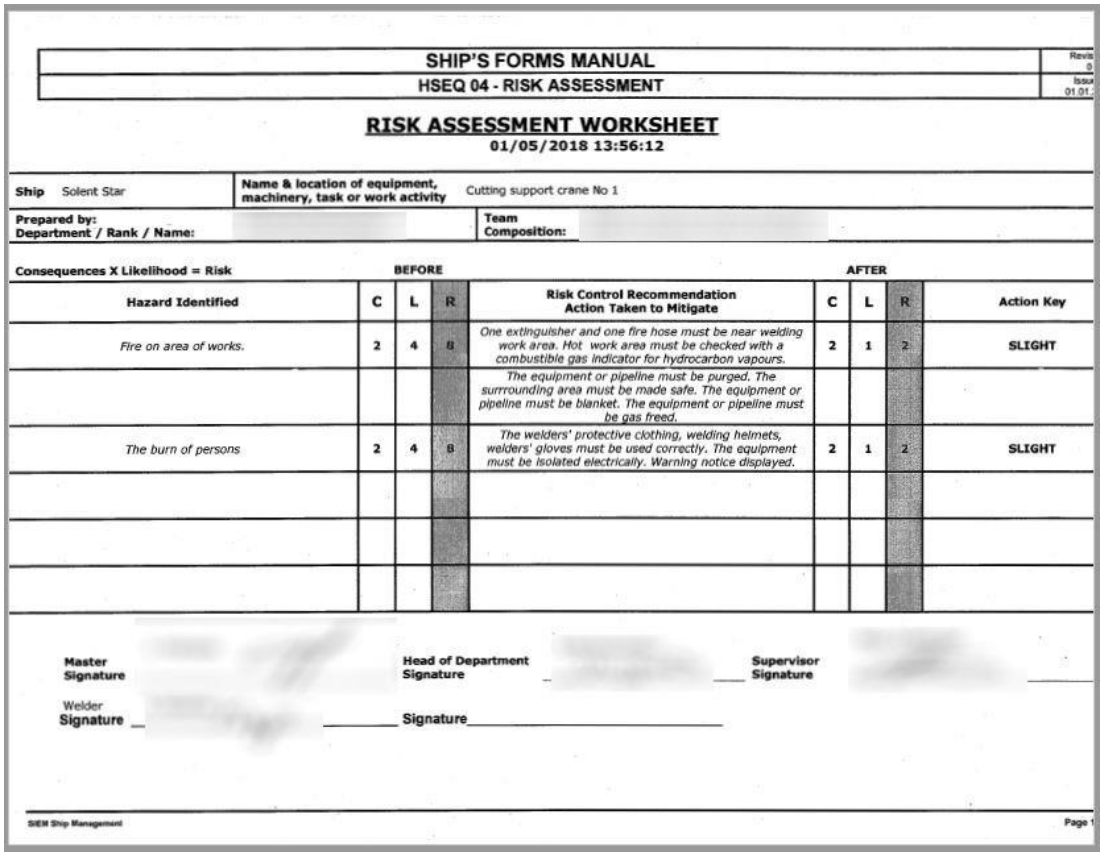
7.1 The operator should consider reviewing the risk assessment and permit to work procedures to effectively identify the hazards involved in the specific work activity.

7.2 The operator should consider providing guidance or tools onboard to improve work activity planning and for assessing the hazards for complex work activities which involve more than one high-risk operation.

7.3 It is recommended to review working aloft and crane operating procedures to ensure the method of communication is agreed to ensure full understanding and adherence by all crew involved in a work activity prior to the commencement of the operation.

***

Appendix I: Risk Assessment



SHIP'S FORMS MANUAL
HSEQ 04 - RISK ASSESSMENT

RISK ASSESSMENT WORKSHEET
01/05/2018 13:56:12

Ship Solent Star	**Name & location of equipment, machinery, task or work activity** Cutting support crane No 1
Prepared by: Department / Rank / Name:	**Team Composition:**

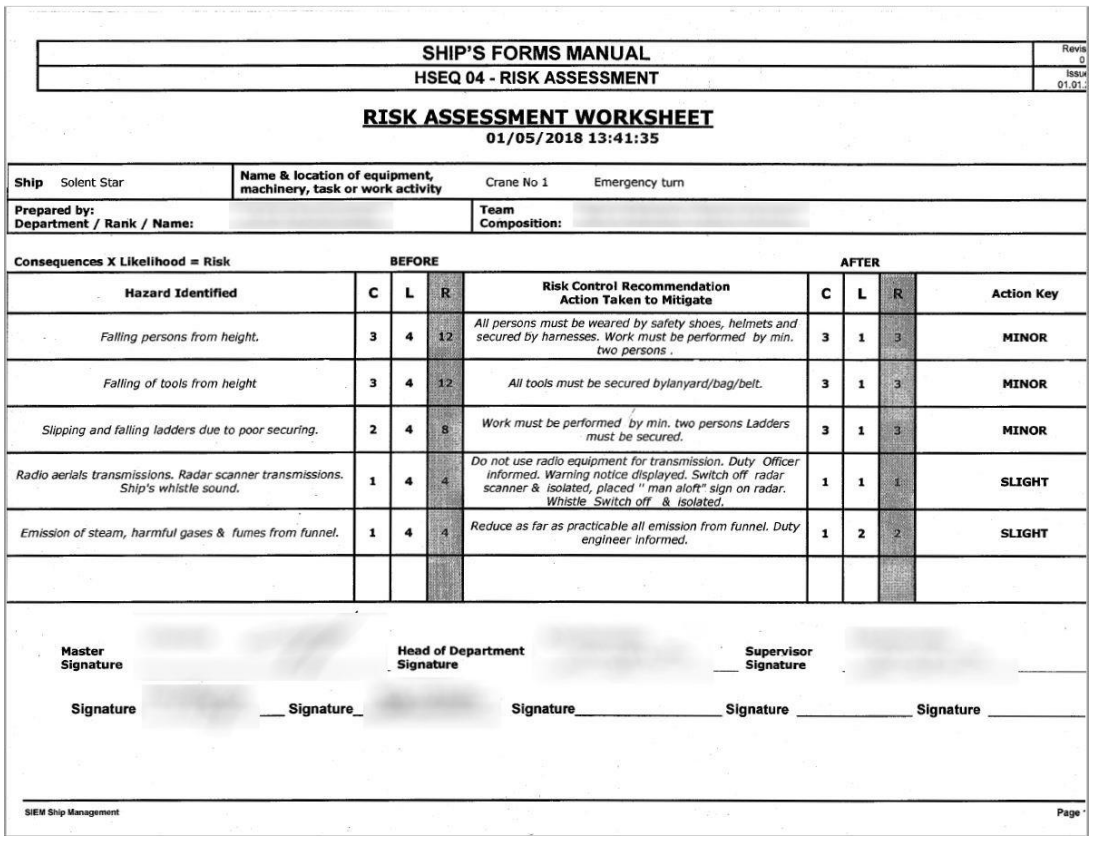
Consequences X Likelihood = Risk

	BEFORE				AFTER			
Hazard Identified	**C**	**L**	**R**	**Risk Control Recommendation Action Taken to Mitigate**	**C**	**L**	**R**	**Action Key**
Fire on area of works.	2	4	8	*One extinguisher and one fire hose must be near welding work area. Hot work area must be checked with a combustible gas indicator for hydrocarbon vapours.*	2	1	2	**SLIGHT**
				The equipment or pipeline must be purged. The surrrounding area must be made safe. The equipment or pipeline must be blanket. The equipment or pipeline must be gas freed.				
The burn of persons	2	4	8	*The welders' protective clothing, welding helmets, welders' gloves must be used correctly. The equipment must be isolated electrically. Warning notice displayed.*	2	1	2	**SLIGHT**

Master Signature **Head of Department Signature** **Supervisor Signature**

Welder **Signature** **Signature**

SIEM Ship Management Page 1



SHIP'S FORMS MANUAL
HSEQ 04 - RISK ASSESSMENT

RISK ASSESSMENT WORKSHEET
01/05/2018 13:41:35

Ship Solent Star	**Name & location of equipment, machinery, task or work activity**	Crane No 1	Emergency turn
Prepared by: Department / Rank / Name:		**Team Composition:**	

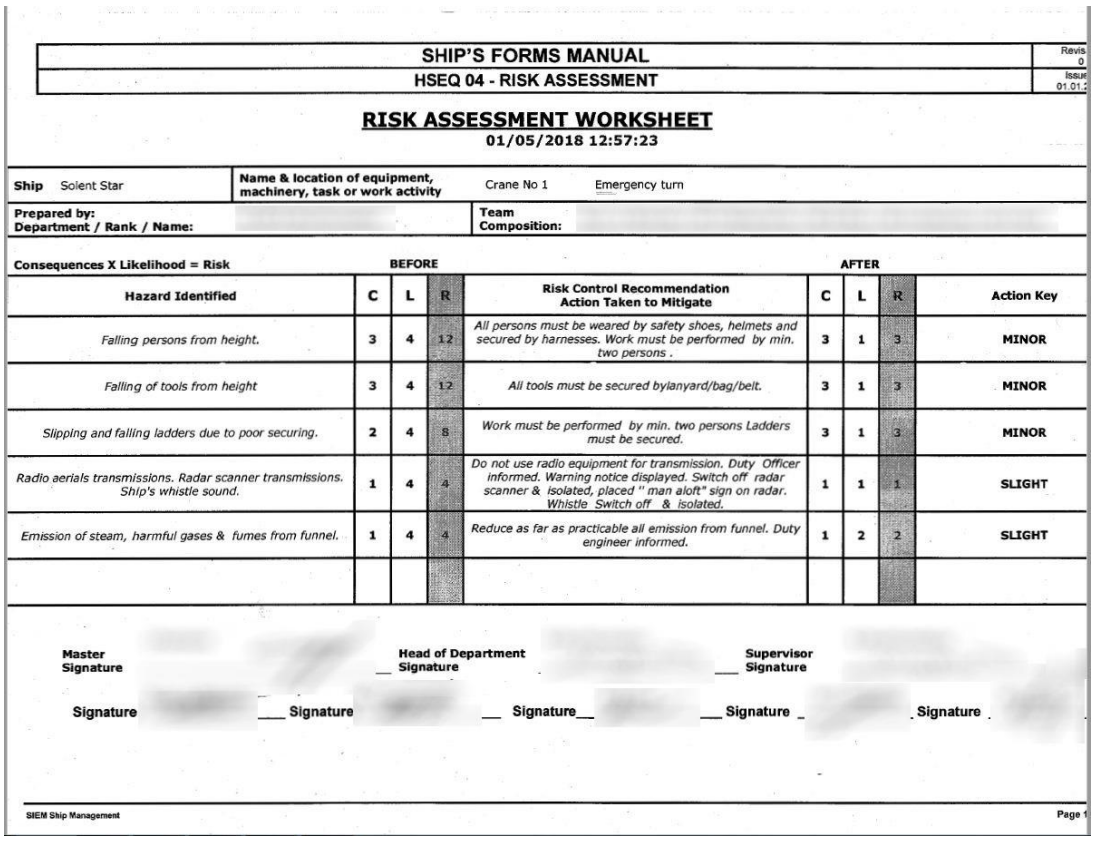
Consequences X Likelihood = Risk

Hazard Identified	BEFORE C	L	R	Risk Control Recommendation Action Taken to Mitigate	AFTER C	L	R	Action Key
Falling persons from height.	3	4	12	*All persons must be weared by safety shoes, helmets and secured by harnesses. Work must be performed by min. two persons .*	3	1	3	MINOR
Falling of tools from height	3	4	12	*All tools must be secured bylanyard/bag/belt.*	3	1	3	MINOR
Slipping and falling ladders due to poor securing.	2	4	8	*Work must be performed by min. two persons Ladders must be secured.*	3	1	3	MINOR
Radio aerials transmissions. Radar scanner transmissions. Ship's whistle sound.	1	4	4	*Do not use radio equipment for transmission. Duty Officer informed. Warning notice displayed. Switch off radar scanner & isolated, placed " man aloft" sign on radar. Whistle Switch off & isolated.*	1	1	1	SLIGHT
Emission of steam, harmful gases & fumes from funnel.	1	4	4	*Reduce as far as practicable all emission from funnel. Duty engineer informed.*	1	2	2	SLIGHT

Master Signature **Head of Department Signature** **Supervisor Signature**

Signature **Signature** **Signature** **Signature** **Signature**

SIEM Ship Management Page



SHIP'S FORMS MANUAL
HSEQ 04 - RISK ASSESSMENT

RISK ASSESSMENT WORKSHEET
01/05/2018 12:57:23

Ship Solent Star	**Name & location of equipment, machinery, task or work activity**	Crane No 1	Emergency turn
Prepared by: Department / Rank / Name:		**Team Composition:**	

Consequences X Likelihood = Risk

Hazard Identified	BEFORE C	L	R	Risk Control Recommendation Action Taken to Mitigate	AFTER C	L	R	Action Key
Falling persons from height.	3	4	12	*All persons must be weared by safety shoes, helmets and secured by harnesses. Work must be performed by min. two persons .*	3	1	3	MINOR
Falling of tools from height	3	4	12	*All tools must be secured bylanyard/bag/belt.*	3	1	3	MINOR
Slipping and falling ladders due to poor securing.	2	4	8	*Work must be performed by min. two persons Ladders must be secured.*	3	1	3	MINOR
Radio aerials transmissions. Radar scanner transmissions. Ship's whistle sound.	1	4	4	*Do not use radio equipment for transmission. Duty Officer informed. Warning notice displayed. Switch off radar scanner & isolated, placed " man aloft" sign on radar. Whistle Switch off & isolated.*	1	1	1	SLIGHT
Emission of steam, harmful gases & fumes from funnel.	1	4	4	*Reduce as far as practicable all emission from funnel. Duty engineer informed.*	1	2	2	SLIGHT

Master Signature **Head of Department Signature** **Supervisor Signature**

Signature **Signature** **Signature** **Signature** **Signature**

SIEM Ship Management Page 1

Appendix II: Permit to Work

HSEQ 06 - Hot Work Permit Revision: 0 Issued: 01.01.2017

Vessel: SOLENT STAR Issued Date / Time: 01.05.2018 14:00

Cut support for crane No 1

Work To Be Done: Validity Date / Time: 01.05.2018 18:00

Location of Work: Crane No 2 Authorising Officer: [redacted]

Personnel involved: [redacted]

General The Permit should contain a clear indication as to its maximum period of validity, which in any event should not exceed a normal working day.
Description of hot work to include type of equipment to be used
This document applies to all hot works involving high temperatures, open flame, arc or continuous source of sparks, etc. This type of work includes but is not limited to welding, burning and grinding.
Tests for combustible gas should be carried out immediately before commencement of work and at frequent intervals as long as the work is in progress.

Section 1 Hot Work

		Yes	No
1.	Was the Risk Assessment carried out?	✓	
2.	Has the hot work area been checked with a combustible gas indicator for hydrocarbon vapours? Reading: LEL ___ % (max 1%)		✓
3.	Has the surrounding are been made safe?	✓	
4.	Has the equipment or pipeline been gas freed?	✓	
5.	Has the equipment or pipeline been blanked?	✓	
6.	Is the equipment or pipeline free of liquid?	✓	
7.	Is the equipment isolated electrically? Warning notice displayed?	✓	
8.	Is additional fire protection available?	✓	
9.	Special conditions / precautions:		

If any of the above check is marked 'No', state why:
work on open deck

Section 2 Certificate of Checks

1. I am satisfied that all precautions have been taken and that safety arrangement will be maintained for the duration of the work

Person carrying out the work (Name / Signature) [redacted]
Authorising Officer (Name / Signature)

Section 3 Completion

1. The work has been completed and all persons under my supervision, materials and equipment have been withdrawn. Fire watch shall be maintained for at least four hours after completion hot work.

Person carrying out the work (Name / Signature) [redacted]
Authorising Officer (Name / Signature)

2. All disabled equipment (i.e. heat sensors) restores to working condition Date: 01.05.2018 Time: 18:00
Authorising Officer (Name / Signature) [redacted]

HSEQ 08 – Work Aloft / Over Side Permit Revision:0 Issued: 01.01.2017

Vessel: SOLENT STAR Issued Date / Time: 1-May-18 14:00

Work To Be Done: Emergency turn of Cargo crane No 1 Validity Date / Time: 1-May-18 18:00
Location of Work Ship's crane No 1 Authorising Officer:
Personnel involved:
Personnel involved:

General The Permit should contain a clear indication as to its maximum period of validity, which in any event should not exceed a normal working day.

WORK OVERSIDE IS NOT PERMITTED WHILE VESSEL IS UNDERWAY

Section 1 Work Aloft / Overside Preparation

		Yes	No
1.	Has the work been divided into individual tasks and assessed to identify risks?	✓	
2.	Have any unacceptable risks been identified?	✓	
3.	Has Duty Officer and/or Duty Engineer been informed?	✓	
4.	Has equipment been isolated as required (radar scanner, whistle, etc) and DANGER TAG posted?	✓	
5.	All equipment involved in the work in good condition?	✓	
6.	Is lifebuoy and lifeline ready (work overside)		✓
7.	Is illumination of space sufficient for safe working?	✓	
8.	Is proper PPE worn, including lifejacket (work overside)?	✓	
9.	Is safety harness line attached to a strong point?	✓	
10.	Has a copy of this Work Permit been posted at the work place?	✓	

If any of the above check is marked 'No', state why:
work not overside

Section 2 Certificate of Checks

1. I am satisfied that all precautions have been taken and that safety arrangement will be maintained for the duration of the work.

Person carrying out the work (Name / Signature)
Person carrying out the work (Name / Signature)
Person carrying out the work (Name / Signature)
Authorising Officer (Name / Signature)

Section 3 Completion

1. The work has been completed and all persons under my supervision, materials and equipment have been withdrawn. Fire watch shall be maintained for at least four hours after completion hot work (if any). ✓

Person carrying out the work (Name / Signature)
Person carrying out the work (Name / Signature)
Person carrying out the work (Name / Signature)
Authorising Officer (Name / Signature)

HSEQ 08 – Work Aloft / Over Side Permit Revision:0 Issued: 01.01.2017

Vessel: SOLENT STAR Issued Date / Time: 1-May-18 13:00

Work To Be Done: Emergency turn of Cargo crane No 1 Validity Date / Time: 1-May-18 18:00

Location of Work: Ship's crane No 1 Authorising Officer: [redacted]

Personnel involved: [redacted]

Personnel involved:

General The Permit should contain a clear indication as to its maximum period of validity, which in any event should not exceed a normal working day.

WORK OVERSIDE IS NOT PERMITTED WHILE VESSEL IS UNDERWAY

Section 1 Work Aloft / Overside Preparation

		Yes	No
1.	Has the work been divided into individual tasks and assessed to identify risks?	✓	
2.	Have any unacceptable risks been identified?	✓	
3.	Has Duty Officer and/or Duty Engineer been informed?	✓	
4.	Has equipment been isolated as required (radar scanner, whistle, etc) and DANGER TAG posted?	✓	
5.	All equipment involved in the work in good condition?	✓	
6.	Is lifebuoy and lifeline ready (work overside)		✓
7.	Is illumination of space sufficient for safe working?	✓	
8.	Is proper PPE worn, including lifejacket (work overside)?	✓	
9.	Is safety harness line attached to a strong point?	✓	
10.	Has a copy of this Work Permit been posted at the work place?	✓	

If any of the above check is marked 'No', state why:
Work not overside

Section 2 Certificate of Checks

1. I am satisfied that all precautions have been taken and that safety arrangement will be maintained for the duration of the work

Person carrying out the work (Name / Signature) [redacted]
Person carrying out the work (Name / Signature)
Person carrying out the work (Name / Signature)
Authorising Officer (Name / Signature)

Section 3 Completion

1. The work has been completed and all persons under my supervision, materials and equipment have been withdrawn. Fire watch shall be maintained for at least four hours after completion hot work (if any).

Person carrying out the work (Name / Signature) [redacted]
Person carrying out the work (Name / Signature)
Person carrying out the work (Name / Signature)
Authorising Officer (Name / Signature)