



Report of investigation
into the fatal accident of
a repairer onboard dumb
lighter
“Smart Hill No.1”
at Yau Ma Tei Anchorage
on 18 May 2007



Purpose of Investigation

The purpose of this investigation conducted by the Marine Accident Investigation and Shipping Security Policy Branch (MAISSPB) of Marine Department is to determine the circumstances and the causes of the incident with the aim of improving the safety of life at sea and avoiding similar incident in future.

The conclusions drawn in this report aim to identify the different factors contributing to the incident. They are not intended to apportion blame or liability towards any particular organization or individual except so far as necessary to achieve the said purpose.

The MAISSPB has no involvement in any prosecution or disciplinary action that may be taken by the Marine Department resulting from this incident.

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1. Summary

- 1.1 An industrial accident happened onboard the Hong Kong licensed dumb lighter "*Smart Hill No.1*" at Yau Ma Tei Anchorage on 18 May 2007. While two repairers were taking measurements of a steel pin on the top of the anchor block of a derrick crane, one of them lost his balance and fell down to the bottom of the cargo hold and sustained fatal injuries.
- 1.2 The investigation revealed that the accident was caused by the failure to observe the safe working practices of wearing safety harness while working aloft.

2. Description of the Vessel

2.1 "Smart Hill No.1" (hereinafter referred as "SHI"), is a locally licensed single-hold dumb steel lighter. It usually engages in transporting containers in Hong Kong waters.

2.2 Particulars of the Vessel

Name of the Vessel	:	"Smart Hill No.1", previous name "Da Wei No.49"
Certificate of Ownership No.:		B21886V
Type of Ship	:	Class II, Dumb Lighter
Year of Built	:	2004
Built At	:	Zhuhai Shipbuilding Industry Company
Owner	:	Speed Rich Logistics Limited
Length	:	49.93 metres
Breadth	:	24.69 metres
Depth	:	5.79 metres
Gross Tonnage	:	2,887.70
Net Tonnage	:	2,021.40
Engine Power	:	N.A.



Fig. 1: Dumb Lighter "Smart Hill No.1"

2.3 Description of the derrick crane and anchor block of slewing guy

a) *SHI* is fitted with a derrick crane of safe working load ranging from 50 to 70 tons to facilitate cargo handling operations. The derrick “A”-mast is located at forward part of *SHI*. The anchor block of slewing guy of the derrick crane is located at the forward starboard side of the cargo hold.

b) Particulars of derrick crane

Maker	:	Zhuhai Shipbuilding Industry Company
Crane type	:	Typically local “A”-mast derrick type
Safe working load	:	50 tons at top hoist and 70 tons at second hoist
Length of derrick boom	:	45 metres
Height of derrick mast above deck	:	34.4 metres

c) Particulars of anchor block of slewing guy

Height above deck	:	5.5 metres
Height above bottom of cargo hold	:	10.2 metres
Base size on deck	:	2.34 metres x 2.44 metres
Size on top	:	1.02 metres x 1.02 metres
Foothold area at each side of swivel on top	:	0.37 square metre (0.36 metre x 1.02 metres)
Size of swivel pin on top	:	300 mm length x 100 mm diameter
Size of fixed end piece of slewing guy	:	6x25 IWRC steel core wire of diameter 52 mm and of length 25.9 metres

Anchor
block



Fig. 2: Anchor Block of Slewing Guy on "Smart Hill No.1"

Angled
steel bar

Fixed end piece of slewing guy

Swivel
pin

Swivel block



Fig. 3: Top of Anchor Block of Slewing Guy on "Smart Hill No.1"

3. Sources of Evidence

- a) Person in charge of dumb lighter *SHI*
- b) The Foreman and workers of King Field Shipyard Limited
- c) Weather report from the Hong Kong Observatory
- d) Autopsy report of the deceased

4. Outline of Events

- 4.1 On the morning of 18 May 2007, *SHI* was anchored at Yau Ma Tei Anchorage. There was no cargo onboard the lighter.
- 4.2 At about 1030 hours, the person in charge of *SHI* and two lightermen were carrying out maintenance work on the derrick crane of *SHI* by replacing the fixed end piece wire rope of the slewing guy of derrick crane with a new one. The person in charge found that there was excessive wear of the swivel pin at the anchor block of the slewing guy. He called the King Field Shipyard Limited (hereinafter referred as “*Shipyard*”) to make a new replacement pin.
- 4.3 At about 1310 hours, a transportation launch carried with a ship-repairing team consisted of a Foreman and four workers from the *Shipyard* came alongside the port side of *SHI*. The Foreman and one of the workers went onboard *SHI*.
- 4.4 The Foreman and the Worker met the person in charge of *SHI* and had a brief discussion with him on the physical condition of the swivel pin of the anchor block of the slewing guy.
- 4.5 After the discussion, the Foreman climbed up to the top of the anchor block to pre-assess the condition of the swivel pin. Then he came down on deck to pick up some measuring tools and climbed up to the top of the anchor block again with the Worker.
- 4.6 At about 1320 hours, the Foreman was squatting on the top of the anchor block at the outboard side taking measurements of the swivel pin while the Worker was standing on the top at the inboard side. During measurements, the Worker suddenly lost his balance and fell down 10 metres to the bottom of cargo hold of *SHI* resulting in multiple injuries (see Fig.4).
- 4.7 The person in charge of *SHI* and two lightermen while working at aft deck heard the Foreman’s shouting of the accident. The workers of the ship-repairing team on board the transportation launch also heard the Foreman’s shouting of the accident. They all went to the anchor block immediately and found the Worker lying at the bottom of the cargo hold. The person in charge of *SHI* called Police for help.
- 4.8 The rescue team soon arrived and the injured Worker was sent to hospital for medical treatment but later in the day he was certified dead in the hospital.

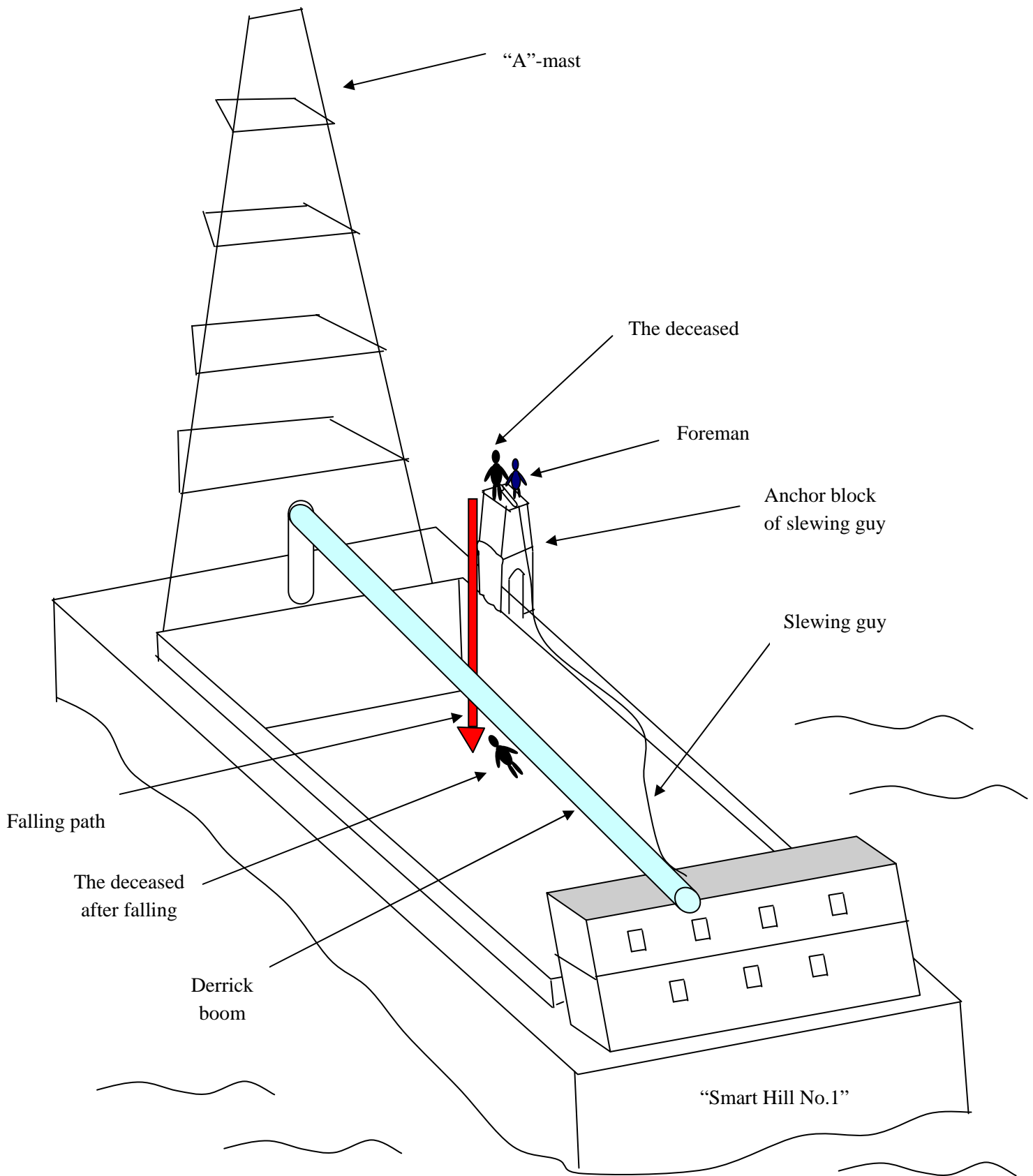


Fig. 4: The Deceased Fell from Anchor Block at the Time of Accident on "Smart Hill No.1"

5. Analysis of Evidence

Working experience & training

- 5.1 The Foreman had more than 10 years experience in maintenance and repair of dumb lighters including the derrick cranes. He had completed the Works Supervisor Safety Training Course as required under the Merchant Shipping (Local Vessels) (Works) Regulation.
- 5.2 The deceased was once a seaman. As a fitter he had more than 10 years experience in maintenance and repair of dumb lighters including the derrick cranes. Several years ago the deceased had attended a safety course in Vocational Training Council. The deceased and the Foreman had worked together for the *Shipyards* for 5 years.
- 5.3 Both the Foreman and the deceased are considered to have adequate experience and training for the task carried out at the time of accident.

The anchor block

- 5.4 The anchor block is located at the forward starboard side of the cargo hold. It is fabricated with steel and provides a secured anchorage for the slewing guy of the derrick crane.
- 5.5 The height of anchor block is 5.5 metres above deck. At the forward side of the block, steel rungs are fitted to provide a safe access to the top of the block from deck (see Fig.5).
- 5.6 A swivel block is mounted centrally on the top of the anchor block (see Fig.3). The swivel is connected to the derrick boom by means of a wire rope sling (i.e., the fixed end piece of slewing guy). The unobstructed flat area on top of anchor block at each side of the swivel providing foothold for workers is about 0.37 square metre (i.e., 0.36 metre x 1.02 metres). Oily lubricant residues could be found on those foothold surfaces that made the surfaces slippery.
- 5.7 There is no railings erected at the top of the anchor block to prevent fall of persons.
- 5.8 At the outboard side on the top of the anchor block, there is a vertically mounted angled steel bar with two steel shackles fitted at the top end of the bar. The shackles could be used as an anchor point for safety harness.



Fig. 5: Forward Side of Anchor Block of Slewing Guy on "Smart Hill No.1"

Personal protective equipment and working at height

- 5.9 The Foreman and the deceased had worn safety shoes at work. However, they did not wear any safety belt/harness while working on the top of the anchor block. The safety belts were kept onboard the transportation launch which was alongside *SHI*.
- 5.10 Paragraph 10.1.1 of Code of Practice on Using Protective Clothing and Equipment for Works on Local Vessels which published by Hong Kong Marine Department in January 2007 states that, "All persons employed who are working at height (aloft), outboard, below decks or in any other area where there is a reasonably foreseeable risk of falling more than two metres, should wear a safety harness attached to a lifeline as far as reasonably practicable."
- 5.11 Paragraph (e) under sub-heading "10. Working Aloft" in page 54 of the Shipbuilding and Ship-Repairing Safety Guide states, "A safety harness, which is to be suitably anchored

while in use, should be worn when working aloft.”.

- 5.12 There was foreseeable risk for the deceased and Foreman of falling more than 10 metres to the bottom of the cargo hold when working on top of the anchor block. Hence to prevent fall of persons, the use of safety harness would be necessary.

Fatigue

- 5.13 On the day before the occurrence of the accident, the deceased finished work at 1800 hours. There is no evidence showing that the deceased had suffered from fatigue.

The environment

- 5.14 At the time of accident there was moderate breeze, hence there should be small waves at the Yau Ma Tei Anchorage. As affected by the waves, the *SHI* at light ship conditions would be swaying. Though the two repairers had worn safety shoes, the swaying motion of *SHI* might cause them to lose their balance.
- 5.15 Since the deceased was standing on the top of the block near the edge due to the small foothold area of the workplace, once he slipped and lost of balance, his centre of gravity would easily be out of the anchor block and hence falling occurred.
- 5.16 The foreman was squatting when taking measurements, his centre of gravity was much lower than the deceased who was standing. Hence the risk of falling for the foreman at that moment was relatively low.

Autopsy report

- 5.17 According to the autopsy report of the deceased furnished by the Department of Health, the cause of death was multiple injuries which are typical due to a fall from height.

6. Conclusions

- 6.1 An industrial accident happened onboard the Hong Kong licensed dumb lighter “*Smart Hill No.1*” on 18 May 2007. While two repairers were taking measurements of a steel pin on the top of the anchor block of a derrick crane, one of them lost his balance and fell down to the bottom of the cargo hold and sustained fatal injuries.
- 6.2 The investigation revealed that the accident was caused by the failure to observe the safe working practices of wearing safety harness while working aloft and consequently the deceased fell down into the cargo hold. The safe working practices are recommended by the Shipbuilding and Ship-Repairing Safety Guide and the Code of Practice on Using Protective Clothing and Equipment for Works on Local Vessels.

7. Recommendations

- 7.1 A copy of this report should be sent to the concerned parties such as the *Shipyard* and the person in charge of the dumb lighter, advising them the findings of this accident.
- 7.2 A Marine Department Notice should be issued to promulgate the lessons learnt from the fatal accident, drawing the industry's attention on the recommendations stipulated in the Code of Practice on Using Protective Clothing and Equipment for Works on Local Vessels and the Shipbuilding and Ship-Repairing Safety Guide.

8. Submissions

8.1 In the event that the conduct of any person or organization is criticized in a casualty investigation report, it is the policy of the Hong Kong Marine Department that a copy of the draft report is given to that person or organization so that they have the opportunity to rebut the criticism or offer evidence not previously available to the investigating officer.

8.2 The draft report (without conclusions and recommendations) was forwarded to the followings:

Speed Rich Logistics Limited

The person in charge of dumb lighter "*Smart Hill No.1*"

King Field Shipyard Limited

The Foreman of King Field Shipyard Limited

8.3 No submission was received from any of the above-mentioned parties.