

Hyundai Lifeboat Investigation Report



- Boat type : HDL 71CTA

JULY 16, 2013

HYUNDAI
HYUNDAI LIFEBOATS CO., LTD.

1. BACKGROUND



[Figure 1]



[Figure 2]

On July 6, 2013, HYUNDAI LIFEBOATS CO., LTD. (Herein "HYUNDAI") received notice from Samsung Heavy Industry (Herein "SHI") that [REDACTED] lifeboat had an accident during ship drill. HYUNDAI received various pictures & documents and simple findings in this accident are as below.

- 1) [REDACTED] the vessel conducted abandon ship drill and lifeboat was lowered in the choppy water.
- 2) AFT davit link was detached from the hook, but the hook was not released. [Figure 1]
- 3) The captain decided to lift up the lifeboat by only FWD hook as nobody was in the lifeboat. [Figure 2]

* Remark

- Davit link : Provided by davit manufacturer
- Lifeboat including release mechanism : Provided by HYUNDAI LIFEBOATS

2. EXAMINATION

HYUNDAI conducted some tests to check how this accident happened and determine the root cause.

1) PREPERATION

a) TALON II 4.0



b) CRANE

c) DAVIT RINK



Thickness 24.1mm



Inside diameter 68.6mm

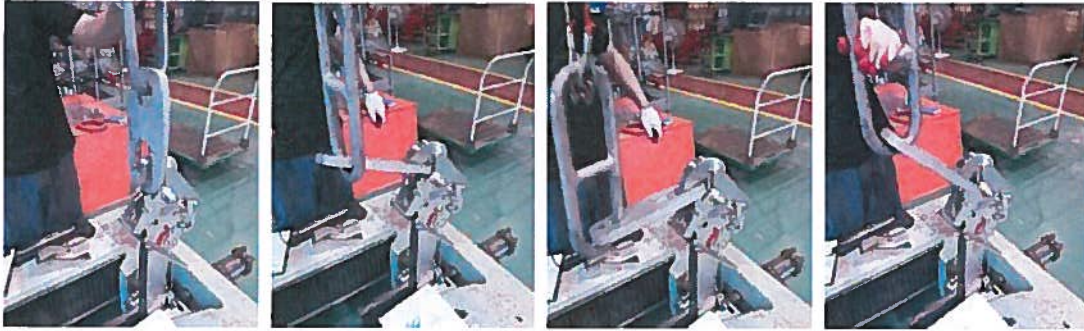
d) HDL71 TYPE LIFEBOAT

2) TEST

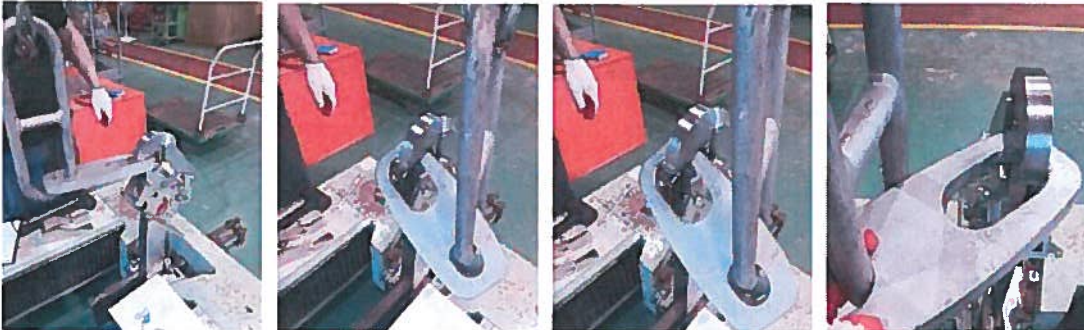
a), b) and c) test was conducted to check various motions when the lifeboat is lowered into the water. d) test was conducted to check Capt. [redacted] opinion – "the sudden impact caused the self lock jumped into unlock position."

e) test was conducted to check if the davit link can be detached when it is in abnormal position.

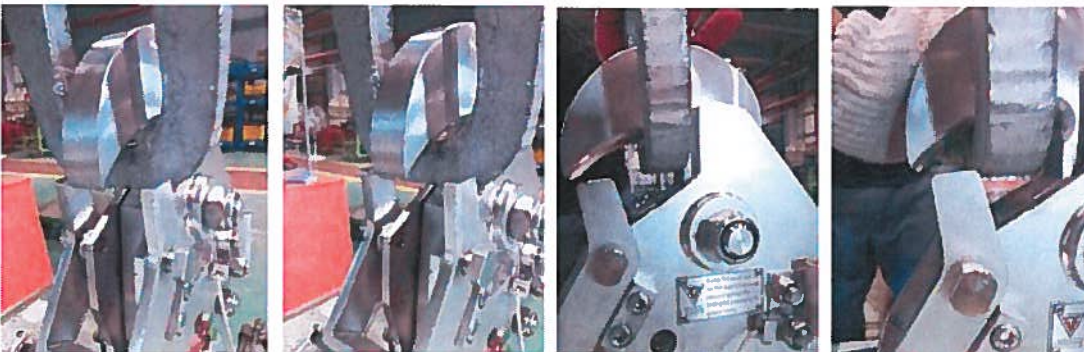
a) Repetitive UP & DOWN motion of davit link using crane : The self locker was not opened.



b) Checking a rotary motion of davit link using crane : The self locker was not opened.



c) Checking the possibility of release under the on-load condition : The self locker was not opened.

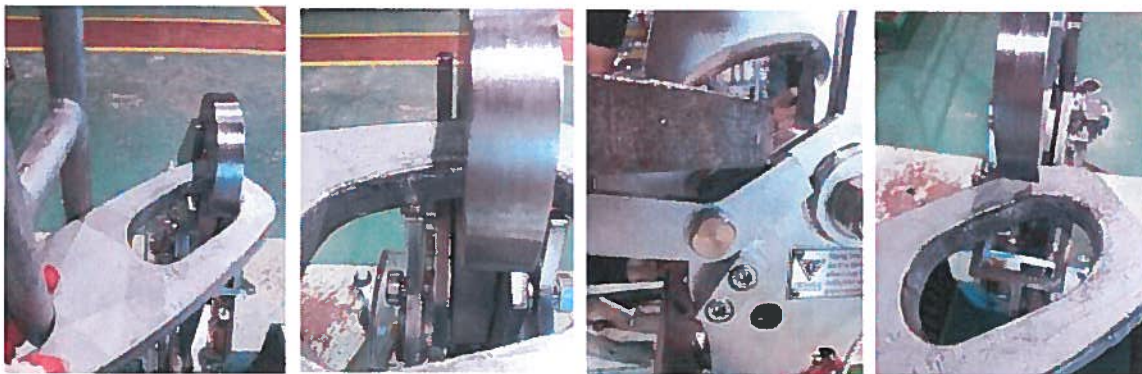


- d) Checking the 'self locker' if it is opened by impact to the water surface : The self locker was not moved.

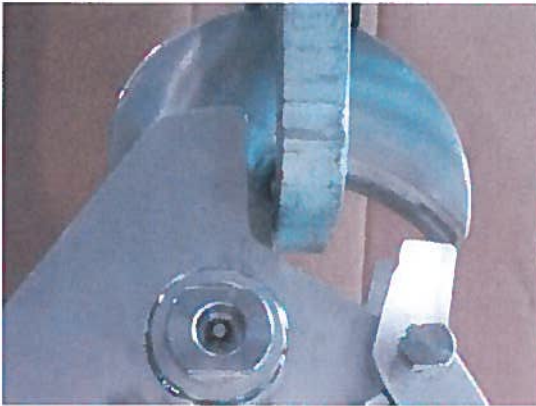


** Test condition: The lifeboat was above the water and released. (On-load release)*

- e) We made the davit link is in abnormal position and applied a) and b) motion to the link : The link was detached as below :



3. CAUSES



[Figure 3] Normal condition of link



[Figure 4] Abnormal condition of link

- 1) When the lifeboat was lowered into the water with normal condition of link as [Figure 3], the davit wire was loosen and it caused the davit link was in abnormal position as [Figure 4].
- 2) The davit link of this abnormal position pushed the self locker and subsequently repetitive UP & DOWN motion by waves to the davit link made the self locker to be opened. Finally, the davit link was detached through the gap between hook and opened self locker.

* **THE POINT AT ISSUE**

Actually, the link used  was rectangular type and this type's link can push the self locker.

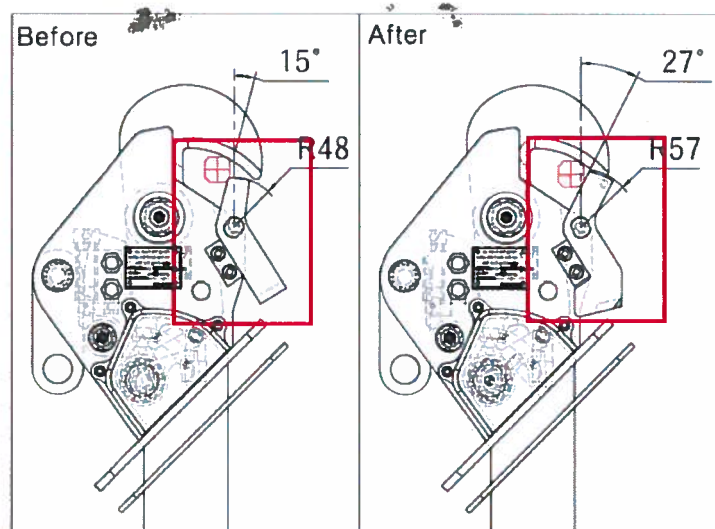
4. CONCLUSION

- 1) Davit link cannot be detached under the on-load condition, however, if the lifeboat is in off-load condition (when the lifeboat is lowered into the water), self locker can be opened by pushing of davit link so that the self locker design will be improved to prevent this matter.
- 2) Hyundai thinks it is impossible the self lock is opened by wave impact but, it is because the davit link is in abnormal position.
- 3) During the test with improved self locker by Hyundai, the self locker was not opened by davit link of this abnormal position.

5. IMPROVEMENT

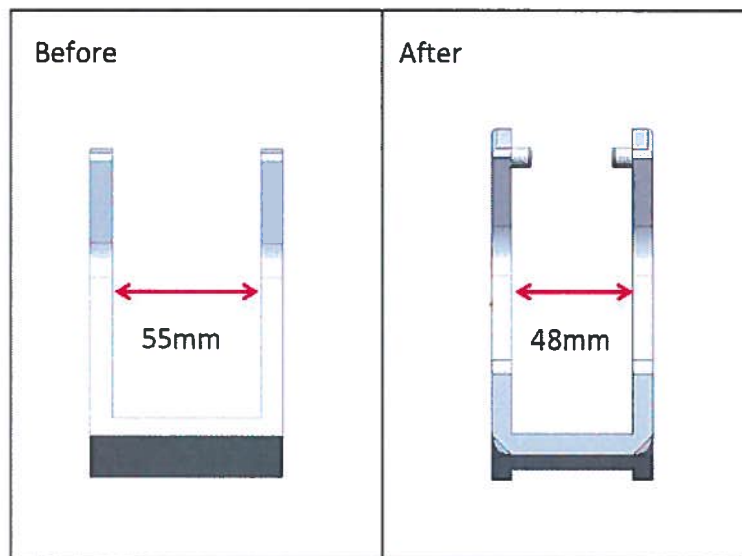
To prevent the reoccurrence of this accident even if other types of links are used, the self locker will be improved as below.

- 1) The length of self locker will be increased to prevent the self locker from opening by pushing of davit link as [Figure 5]. (48mm → 57mm)
- 2) The bending angle of self locker will be changed not to be rotated easily as [Figure 5]. (15° → 27°)



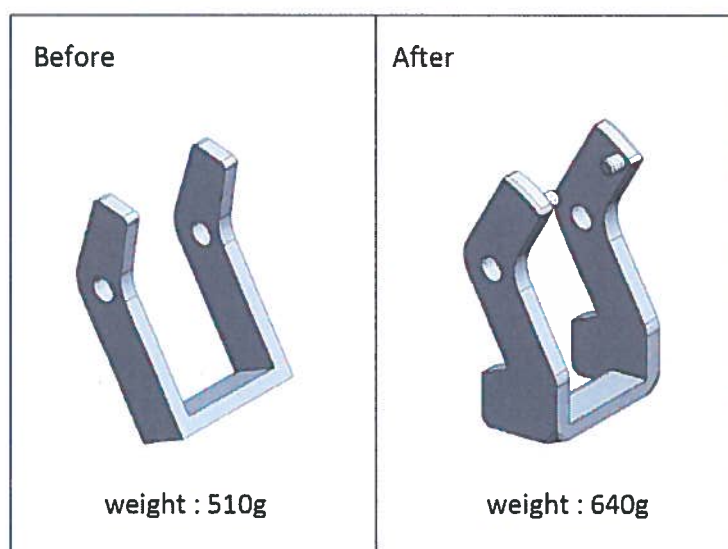
[Figure 5] Design changes

- 3) We will reduce the width of the self locker to minimize the interference between the self locker and davit link as [Figure 6]. (55mm → 48mm)



[Figure 6] Reduce the width

- 4) Weight will be increased on the bottom of the self locker to prevent opening by impact as [Figure 7]. (510g → 640g)



[Figure 7] Weight increase

- 5) The test was carried out with improved self locker for verification. : Any problem was not found.

6. COUNTERMEASURES

1) Replacement service will be provided to customers.

: Once the new design of self locker is approved by LR, replacement service will be progressed right away.

2) Improved self locker will be applied to all existing release hooks.

3) CUSTOMER NOTICE will be forwarded to customers.

Customer notice will include;

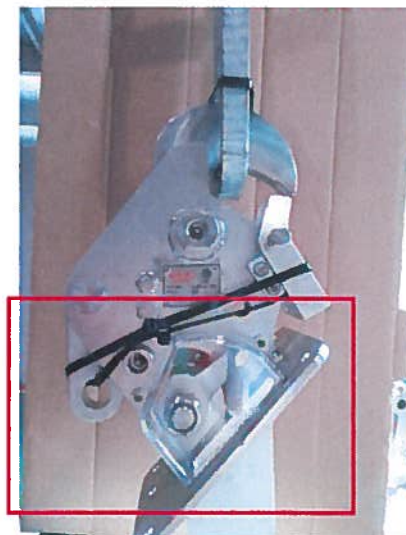
- Service guarantee, explanation of accident and temporary measures before replacement.

4) Temporary measures before replacement.

a) During davit test, the lifeboat should not be lowered into the water.

(Just stop the lifeboat above the water)

b) Self locker should be fixed temporarily using cable ties to make the davit link is not detached. [Figure 8] We will include the installation procedure in the customer notice.

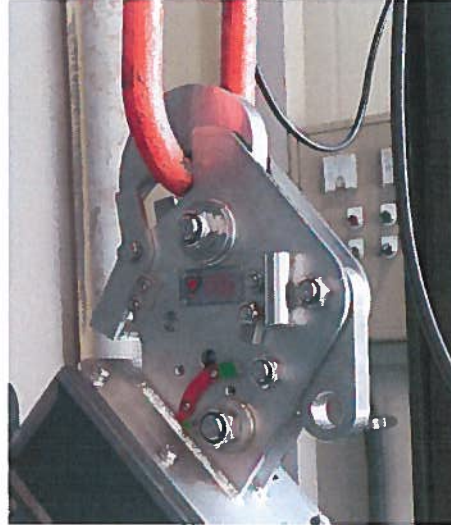


[Figure 8] Temporary measure

7. RECOMMENDATION



[Figure 9] Rectangular type davit link



[Figure 10] Ring type davit link

Once we change the design of self locker, davit link cannot be detached regardless of link type. However, we recommend the ring type of davit link.

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