



**Report on the Investigation of the Collision  
between  
Harvest and Jin Hai Kun  
on 19 June 2006**

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## Contents

Glossary of Abbreviations and Acronyms .....	3
1. Summary .....	4
2. Brief introduction of the investigation .....	5
3. Ship's particulars and brief of the ship companies involved.....	6
3.1. M/V <i>HARVEST</i> and her company .....	6
3.2 M/V <i>JIN HAI KUN</i> and her company .....	7
4. Brief of the crew members.....	9
4.1 M/V <i>HARVEST</i> .....	9
4.2 M/V <i>JIN HAI Kun</i> .....	9
5. Environmental Conditions .....	10
6. Narrative .....	10
6.1. M/V <i>HARVEST</i> .....	10
6.2 M/V <i>JIN HAI KUN</i> .....	11
7. Determination of the elements in relation to collision .....	13
7.1Collision time.....	13
7.2Position of collision .....	13
7.3 Location where the ship sank.....	14
7.4 Situation of the collision .....	14
7.5 Collision angle .....	15
8. Determination of the course through investigation .....	15
9. Analysis.....	18
9.1 Fault of M/V <i>HARVEST</i> .....	19
9.2Fault of M/V <i>JIN HAI KUN</i> .....	20
10. Conclusions.....	20

## **Glossary of Abbreviations and Acronyms**

AIS - Automatic Identification System

Collision Regulations - International Regulations for Prevention

Collisions at Sea

GPS - Global Positioning System

IMO - International Maritime Organization

SOLAS - Safety of Life at Sea Convention

VHF - Very High Frequency

NLY-Northerly

SW-Southwest

LT-Local time

## 1. Summary

1.1 At around 0358 LT (GMT+0800, hereafter as the same) of April 8, 2007, M/V **HARVEST**, a Belize cargo vessel owned by KAILAI TOYOSAWA CO. (HK), carrying 5,600 tons of such goods as steel plates and sailing from Hai Phong, Vietnam, to Shanghai, China, collided with M/V **JIN HAI KUN**, a Chinese cargo vessel owned by Fujian Steamship Line and sailing from Fuzhou to Zhangjiagang, China at the very place which was 10 miles in the southeast of Xia Dachen Island of Taizhou, Zhejiang Province (approximate position is 28°20'.08N / 122°20'.64E).

1.2 The accident caused partial damages to M/V **JIN HAI KUN** and the sink of M/V **HARVEST** with one death of crew member plus missing of 19 crew members.

1.3 The investigation has established that the cause of the accident is as follows:

### 1.3.1 M/V **HARVEST**

(a) Failure to keep a regular watch.

(b) Blindly took the anti-collision action by turning to port side under the condition that the given way vessel of M/V **JIN HAI KUN** obviously failed to obey the regulation formulated in Article 16 of *International Regulations for Preventing Collisions at Sea (1972)* and took the give

way action.

### 1.3.2 M/V *JIN HAI KUN*

1. Failure to keep regular watch.
2. As the give-way vessel in crossing situation, she did not take substantial actions as early as possible to keep well clear.

## **2. Brief introduction of the investigation**

Sooner after the accident occurred, China MSA promptly established the accident investigation team, and conducted an overall investigation on the cause of accident. So far, the evidences, including 20 copies of enquiry record, 1 set of on-the-spot investigation report and photographs for M/V *JIN HAI KUN*, 1 copy of such documentations as Deck Log Book, Engine Room Log, Radio Log Book, navigational chart of the water area where the accident occurred, ship's certificate, competence certificate of the crew member. 1 copy of such documentations for M/V *HARVEST*, ship's particular, ship's certificate and competence certificate of the crew member, 1 copy of AIS basic data owned by both ships before and after the occurrence of accident. In addition, the accident investigation team specifically investigated the ship management company of M/V *HARVEST*. Through investigation and comprehensive analysis, the accident investigation team identified the cause of accident and

determined the recommendations to relevant organizations.

### **3. Ship's particulars and brief of the ship companies involved**

#### **3.1. M/V *HARVEST* and her company**

(a) Particulars of M/V *HARVEST*

Ship Name: *HARVEST*;

Port of Registry: BELIZE

Description of Ship: General Cargo Vessel

IMO Serial Number: 8201026 ;

Hull Material: Steel

Call Sign: V3LN2 ;

Total Length: 106 Meters

Molded Breadth: 16.4 Meters;

Molded Depth: 8.6 Meters

Gross Tonnage: 3784;

Net Tonnage: 2450;

Types of Marine Engine: Diesel engine (replaced in September of 2006,  
manufactured in Ningbo city of Zhejiang Province)

Main Engine Power: 3000 horsepower (2205 Kw)

Shipbuilding Plant and Address: GEMAKINSAATSANAIVETICA.S ;

Construction Date: October 1984

Ship owner: KAILAITOYOSAWCO.,LTD (HK)

(b) Ship Companies

KAILAI TOYOSAWA CO. ,LTD (HK) , the owner of M/V **HARVEST**, was established on February 28, 2003 and mainly engaged in the export trades covering ships, waste hardware, aluminum alloy and so on. Shanghai Guan Yu Ship Management Co., Ltd and Shanghai Feng Ri Shipping Co., Ltd jointly manage the safety of M/V **HARVEST**, in which the former is in charge of the safety management and shipping business of M/V **HARVEST** while the latter is in charge of crew members operations, ship's maintenance management and other relevant operations.

Shanghai Guan Yu Ship Management Co., Ltd, possessing DOC Certificate issued by the government of Belize, provides the ship with shipping management, navigation technology management, and machinery management. Both M/V **HARVEST** and M/V KAIYUAN are under the management of this company.

### **3.2 M/V JIN HAI KUN and her company**

(a) Particulars of M/V **JIN HAI KUN**

Ship Name: **JIN HAI KUN**                      Name Used Before: BRIGHTSTAR;

Port of Registry: Fuzhou                      Description of Ship: Bulk Carrier

IMO Serial Number: 8817320 ;

Hull Material: Steel

Call-Sign: BWHI ;

Total Length: 176.60 Meters  
Meters;

Molded Breadth: 26.00

Molded Depth: 13.30 Meters

Gross Tonnage: 17061;

Net Tonnage: 9904 ;

Types of Marine Engine: Internal

Combustion Engine (ICE)

Main Engine Power: 4635.00 kw

Shipbuilding Plant and Address: ShinKurushimaDockyard Co., Ltd.  
JAPAN;

Construction Date: March 29, 1989

Ship owner and operator: Fujian Steamship Line

(b) Ship Company

Four subsidiaries, including Fuzhou Oil Products Shipping Company, Container Shipping Company, Fuzhou Mineral Shipping Company, Crew Management Company, are subordinated to Fujian Steamship Line. Fuzhou Mineral Shipping Company, exercising jurisdiction over M/V *JIN HAI KUN*, possesses seven bulk carriers with their owners, operators and safety management belonging to the responsibility of Fujian Steamship Line. Therefore, Fuzhou Mineral Shipping Company,

corresponding to a department of Fujian Steamship Line, is at the same management level as the safety management department of Fujian Steamship Line within the scope of safety management system.

## **4. Brief of the crew members**

### **4.1 M/V *HARVEST***

M/V *HARVEST* at this voyage was staffed with 20 crew members, including the captain, first mate, second mate, third mate, chief engineer, first engineer officer, second engineer officer, third engineer officer, boatswain, crew chief, chief cook, electrician, ordinary seaman with each of the above-mentioned job titles being one person, 3 able-bodied seamen, 4 mechanics. The manning condition is consistent with the requirements formulated in Minimum Safe Manning Certificate of this ship.

Since all the crewmembers died or missed, the scenarios of personnel and duty at Navigation Bridge remain unclear.

### **4.2 M/V *JIN HAI KUN***

M/V *JIN HAI KUN* was staffed with 24 crew members, among whom the captain, first mate, second mate, third mate, electronic operator, chief engineer, first engineer officer, second engineer officer, third engineer officer, electrical engineer, boatswain, carpenter, chief cook, ordinary

seaman with each of the above-mentioned job titles being one person, 5 able-bodied seamen, 3 mechanics. The manning condition is consistent with the requirements formulated in Minimum Safe Manning Certificate of this ship.

## **5. Environmental Conditions**

The weather and sea condition of water area when accident occurred: clear, the NLY wind in Bulfort scale 4-5, light wave, visibility at 7-8 level. Current set SW in the speed of about 1 knot.

## **6. Narrative**

### **6.1. M/V *HARVEST***

At 0300LT on 7<sup>TH</sup> April 2007, M/V *HARVEST* sailed from Shanghai China, bound for Hai Phong, Vietnam, loaded with 5,600 tons of steel and cement equipments.

At 0314 LT of April 8, 2007, the ship's position was 28°25'. 85N / 122°05'. 67E, the course was 188 degree, the speed was 9.7 knot.

At 0335 LT, the ship's position was 28°22'. 54N / 122°05'. 20E, the course was 193 degree, the speed was 9.5 knot.

At 0337 LT, the ship's position was 28°21'. 15N / 122°05'.10E, the

course was 194 degree, the speed was 9.5 knot, and this ship began to change her course to the right.

At 0341 LT, the ship's position was 28°21'. 64N / 122°04'.71E, the course was 214 degree, the speed was 9.2 knot, and this ship was in the process of turning.

At 0344 LT, the ship's position was 28°21'. 30N / 122°04'.36E, the course was 228 degree, the speed was 9.2 knot, and then her course almost keep in a stable condition.

At 0353 LT, the ship's position was 28°21'. 46N / 122°03'.25E, the course was 234 degree, the speed was 9.1 knot,

At 0355 LT, the ship's position was 28°21'. 25N / 122°02'.99E, the course was 238 degree, the speed was 9.1 knot, and this ship began to turn port for avoiding collision.

At 0358 LT, collided with M/V *JIN HAI KUN*. And then, the ship's position was 28°21'9". 76N / 122°02'.60E, the course was 141 degree and her speed was 8.5 knot.

At around 0359 LT, M/V *HARVEST* sank.

## **6.2 M/V JIN HAI KUN**

At 1000 LT of April 4, 2007, M/V *JIN HAI KUN* sailed in ballast from Fuzhou to Zhangjiagang Port.

At 2350 LT of April 4, 2007, the second mate and a sailor were on duty on Navigation Bridge.

At 0335 LT, the ship's position was 28°15'.63N / 121°59'.10E, the course was 035 degree, the speed was 12.4 knot. Having contacted with the engine room, second mate found in ARPA radar screen that M/V **HARVEST** was about 9 miles right ahead.

At 0345 LT, the sailor went out of the navigation bridge to call the watch, and returned back to the navigation bridge at 0346LT. He followed the instruction given by the second mate, and changed the Auto Pilot into Manual Pilot.

At 0355 LT, first mate went into the navigation bridge, he observed the radar screen at first, and then took a look at the marine chart in the chart room before returning back to the navigation bridge.

About two minutes later, the first mate discovered the red side light and foremast light & after mast light. At about 0357LT, the first mate of Lin Xi considered the occurrence of being much too near between two ships, and gave the instruction of “Starboard 10”. When the rudder effect began to form, he gave the order of Midship. Afterwards, the first mate gave the order of “Starboard 20”.

At about 0400 LT, the ship's position was 28°20'.08N/122°02'.64E, the course was 045 degree, the speed was 12.0 knot, the ship bow of M/V

*JIN HAI KUN* collided with M/V *HARVEST* between her bridge and the cargo hold on the starboard side.

About one minute after the collision occurred, M/V *HARVEST* sank near the position of No.4 hold (starboard side) of M/V *JIN HAI KUN*.

## **7. Determination of the elements in relation to collision**

### **7.1 Collision time**

According to the records of inquiry from relevant crew members of M/V *JIN HAI KUN*, the collision time was round 0400LT. It has been verified that the deck watch of M/V *JIN HAI KUN* was 1.5 minutes faster than the astronomical clock. In addition, the difference between AIS data time record and local time is zero, the collision time of AIS data playback was at 0358LT of April 4. To sum up, the collision time is determined as 0358LT.

### **7.2 Position of collision**

According to the relevant records of M/V *JIN HAI KUN*, through the verification regarding the location of collision in light of AIS data playback, it is determined that the location of collision was at 28°20'.08N / 122°02'.64E.

### **7.3 Location where the ship sank**

According to the results of scanning and search, it is determined that the location where MV **HARVEST** sank was at 28°19'. 938N / 122°02'.949E.

### **7.4 Situation of the collision**

According to the relevant evidences of investigation, at 0341, the position of M/V **HARVEST** was 28°21'. 64N / 122°04'.71E, the course was 214 degree, the position of M/V **JIN HAI KUN** was 28°17'. 05N / 122°00'.30E, the course was 036 degree. At this point, the distance between both ships was about 6.1 miles. According to Article 22 of *International Regulations for Preventing Collisions at Sea (1972)*, both ships were at in sight of one another.

At about 0344LT, M/V **HARVEST** had basically finished her turning, and her course was 228 degree. At the mean time, the course of M/V **JIN HAI KUN** was 040 degree, both ships were in meeting situation at small crossing angle, which caused the risk of collision. According to Article 15 of *International Regulations for Preventing Collisions at Sea (1972)*, it is determined that both ships were in crossing situation.

During the crossing situation, M/V **HARVEST** was on the starboard bow of M/V **JIN HAI KUN**, which was categorized as stand-on vessel. On the

other hand, during the crossing situation, M/V *JIN HAI KUN* was on the port bow of M/V *HARVEST*, which was categorized as the give way vessel. The avoiding collision actions taken by both ships should comply with Article 15 of *Regulations for Preventing Collisions at Sea*.

## **7.5 Collision angle**

According to the written records left by the personnel on duty with M/V *JIN HAI KUN* and the headings of both ships indicated by AIS when the collision occurred, it is clear that the heading of M/V *JIN HAI KUN* was 045 degree while the heading of M/V *HARVEST* was 141 degree. The ship bow of M/V *JIN HAI KUN* collided with M/V *HARVEST* between its starboard navigation bridge and the cargo bay at the collision angle of 90 to 100 degree.

## **8. Determination of the course through investigation**

At 0300 LT on 7<sup>TH</sup> April 2007, M/V *HARVEST* sailed from Shanghai China, bound for Hai Phong, Vietnam, loaded with 5,600 tons of steel and cement equipments.

At 1000 LT on 4<sup>th</sup> April 2007, M/V *JIN HAI KUN* sailed in ballast from Fuzhou to Zhangjiagang Port.

At 0314LT of April 8, the position of M/V *HARVEST* was 28°25'.85N /

122°05'.67E, the course was 188 degree, the speed was 9.7 knot. At the same time, the position of M/V *JIN HAI KUN* was 28°12'.40N / 121°56'.50E, the course was 035 degree, the speed was 12.4 knot. The distance between both ships was 15.5 miles.

At around 0335LT, the position of M/V *HARVEST* was 28°22'.54N / 122°05'.20E, the course was 193 degree, the speed was 9.5 knot. This ship reached the turning point and began to turn right. At the same time, the position of M/V *JIN HAI KUN* was 28°15'.63N / 121°59'.10E with the speed of 12.4 knots, while the course was 035 degree. The distance between both ships was 8.3 miles.

At around 0337LT, the position of M/V *HARVEST* was 28°22'.15N / 122°05'.10E, the course was 194 degree, the speed was 19.5 knot, and this ship began to turn starboard. At the same time, the position of M/V *JIN HAI KUN* was 28°16'.35N / 121°59'.75E, the course was 035 degree, the speed was 12.4 knot.

At 0341LT, the position of M/V *HARVEST* was 28°21'.64N / 122°04'.71E, the course was 214 degree, the speed was 9.2 knot, and this ship was during the process of changing direction. At the same time, the position of M/V *JIN HAI KUN* was 28°17'.05N / 122°00'.30E, the course was 036 degree, the speed was 12.5 knot. The distance between both ships was 6.1 miles.

At 0344LT, the position of M/V **HARVEST** was 28°21'.30N / 122°04'.36E, the course was 228 degree, the speed was 9.2 knot, and the change of direction had been finished. At the same time, the position of M/V **JIN HAI KUN** was 28°17'.50N / 122°00'.75E, the course was 040 degree, the speed was 12.5 knot. The distance between both ships was 5.2 miles. Both ships were in meeting situation at small crossing angle, which caused the risk of collision.

At 0352LT, the position of M/V **HARVEST** was 28°20'.53N / 122°03'.40E, the course was 236 degree, the speed was 9.1 knot. At the same time, the position of M/V **JIN HAI KUN** was 28°18'.67N / 122°01'.89E, the course was 025 degree, the speed was 12.3 knot. The distance between both ships was 2.2 miles.

At 0355LT, the position of M/V **HARVEST** was 28°20'.25N / 122°02'.99E, the course was 238 degree, the speed was 9.1 knot, and this ship began to turn port substantially.

At 0356LT, the position of M/V **HARVEST** was 28°20'.32N / 122°02'.82E, the course was 230 degree, the speed was 9.2knot. At the same time, the position of M/V **JIN HAI KUN** was 28°19'.45N / 122°02'.32E, the course was 025 degree, the speed was 12.5 knot. The distance between both ships was less than 1 miles.

At 0357 LT, the position of M/V **JIN HAI KUN** was 28°19'. 62N /

122°02'.42E, the course was 026 degree, the speed was 12.4 knot, and this ship began to turn starboard substantially.

At 0358 LT, the position of M/V *HARVEST* was 28°19'.74N / 122°02'.64E, the course was 141 degree, the speed was 8.5 knot. At the same time, the position of M/V *JIN HAI KUN* was 28°19'.80N / 122°02'.56E, the course was 045 degree, the speed was 12.0 knot. Both ships collided with each other. The ship bow of M/V *JIN HAI KUN* collided with M/V *HARVEST* between its starboard navigation bridge and the cargo bay.

At around 0359LT, M/V *HARVEST* sank at the position of 28°19'.938N / 122°02'.949E.

## **9. Analysis**

Close—quarters situation was therefore caused due to the fact that on-duty navigators of both M/V *HARVEST* and M/V *JIN HAI KUN* neglected of look--out, failed to make a proper determine on the prevailing risk of collision, and failed to take substantial actions to avoid collision in time. When both ships took action to avoid collision at short range, M/V *HARVEST* took the action by substantially turning to port, which just offset the action taken by M/V *JIN HAI KUN* in terms of substantially turning to starboard. As a result, the collision accident

occurred.

## **9.1 Fault of M/V *HARVEST***

(a) Prior to the collision with M/V *JIN HAI KUN*, M/V *HARVEST* failed to keep regular watch, which violated the regulation formulated in Article 5 of *International Regulations for Preventing Collisions at Sea (1972)*, namely, every vessel should maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and situations so as to make a full appraisal of the situation and the risk of collision.

(b) M/V *HARVEST*, being the stand-on vessel in crossing situation, blindly took the anti-collision action by turning to port under the condition that the given way vessel of M/V *JIN HAI KUN* obviously failed to obey the regulation formulated in Article 16 of *International Regulations for Preventing Collisions at Sea (1972)* and took the give way action, which violated the regulations in Item (2) of Clause 1 of Article 17, Clause 2 and Clause 3, namely, the stand-on vessel shall take such action as will best aid to avoid collision when she finds herself so close that collision cannot be avoided by the action of the give-way vessel alone. Moreover, it is not allowed to alter course to port for a vessel on her own port side if the circumstances of the case admit.

## **9.2 Fault of M/V *JIN HAI KUN***

(a) Prior to the collision with M/V *HARVEST*, M/V *JIN HAI KUN* failed to keep regular watch, which violated the regulation formulated in Article 5 of *International Regulations for Preventing Collisions at Sea (1972)*, namely, every vessel should maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and situations so as to make a full appraisal of the situation and the risk of collision.

(b) M/V *JIN HAI KUN*, being the give-way vessel in crossing situation, should keep out of the way to another vessel, and take substantial actions as early as possible to keep well clear. However, it was just 2 minutes before the collision that M/V *JIN HAI KUN* took the anti-collision action by altering course to starboard for 20 degree. The anti-collision action was so late that close—quarters situation had caused, which violated the regulation formulated in Article 16 of *International Regulations for Preventing Collisions at Sea (1972)*.

## **10. Conclusions**

The cause of accident lies in the fact that on-duty navigators of both M/V *HARVEST* and M/V *JIN HAI KUN* violated the relevant regulations formulated in *International Regulations for Preventing Collisions at Sea*

(1972), failed to keep regular watch, and took the most effective anti-collision actions.

(a)The on-duty navigator of M/V **HARVEST**, encountered with the crossing situation, failed to keep regular watch prior to the occurrence of collision accident, and took the anti-collision action by substantially turning to port when discovering that the stand-on vessel obviously failed to take anti-collision action, which directly led to the occurrence of accident. The action violated the regulations formulated in Article 5, Item (2) of Clause 1 of Article 17, Clause 2 and Clause 3 of *International Regulations for Preventing Collisions at Sea (1972)*

(b)M/V **JIN HAI KUN**, encountered with the crossing situation, failed to keep regular watch and failed to take effective action for avoiding collision in time, causing the occurrence of close—quarters situation, and the ultimate occurrence of collision accident, which violated the regulations formulated in Article 5 and Article 16 of *International Regulations for Preventing Collisions at Sea (1972)*, and the regulations formulated in Clause (4) of Item 1 of Article 8 of Chapter under the supplementary provision of *International Convention on Standard of Training, Certification and Watchkeeping for Seamen (1978)*.