

P&I ロス・プリベンション・ガイド P&I Loss Prevention Bulletin

編集：日本船主責任相互保険組合 ロス・プリベンション推進部

The Japan Ship Owners Mutual Protection & Indemnity Association
Loss Prevention and Ship Inspection Department

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衝突事故の緊急初期対応 Emergency Response in the event of a Collision

はじめに

海難事故はその発生を未然に防止することに万全を期することが重要ですが、不幸にして事故が発生した場合、その初期措置の適否、その後の処理の巧拙が、乗組員・貨物・船体の安全に重大な影響を及ぼします。事故発生直後から陸上支援体制が確立されるまでの間、本船（船長）は船主の不利益とならないように配慮しながら事故対応を行わなければなりません。特に衝突や火災事故に於いて、本船では事故のショックや事故直後の対応の多忙さなどで混乱を極めており、事故処理を円滑に行うために必要とされる状況の確認や、把握すべき内容を記録することが困難となります。

事故が発生した場合、現在のように通信手段が発達していなかった頃は、陸上管理部門の支援を即座に受けることができなかったため、必要な手配のほとんどが船長に求められていました。メールやインマルサット電話など通信手段が発達した現在、陸上支援部門が現場の状況を入手するため混乱している本船に何度も連絡をしてしまうと、正確な情報が入手できないばかりか、却って現場（本船）と陸上間で余計な混乱を招く場合もあります。

被害を最小限に抑え、その後の事故処理を円滑に行うための初期対応は、最も重要な作業です。便利になった通信手段をうまく利用して、衝突事故の初期対応をどのように行ったら良いか、現場視点から説明してまいります。

1 章 衝突事故例

事故例 1

時刻	A 号 (77,211GT ばら積貨物船)	B 号 (25,836GT コンテナ船)
01:25	Co<082> 速力 14.3 ノット B 号を船首左 10 度、15 海里の地点にレーダーで確認。	Co<243> 速力 18.4 ノット A 号を確認していない。
01:37	レーダーと ARPA で方位変化がないことを認識。 (衝突のおそれを認識)	船首方向 9 海里の地点に A 号をレーダーで確認。
01:40	船首左 7 度、7 海里の地点に B 号の航海灯を確認。	ARPA で A 号が左へ横切ること、CPA 0.5 海里、速力 14 ノットを確認。
01:47	西航する第 3 船 (C 号) と左舷対左舷で航過することを VHF で交信。	A 号と C 号の VHF を傍受。自船も A 号と左舷対左舷で航過すると思う。
01:50	C 号を航過。B 号が船首左 6 度、1.8 海里に接近したが、ゆっくり左転開始。	避航するために、Co<248> に変針。(右転 5 度)

Preface

Needless to say, while it is most important to make every endeavour to prevent marine casualties, if the crew comes across a marine accident, the appropriate initial response is crucial and whether immediate counter measures are taken skilfully or not will be of great importance to the safety of the crew, cargo and hull. From immediately after an accident until the setting up of a backup system on shore, the master of the vessel on behalf of the Owner must take the initiative in coping with problems arising from the accident. In the event of a casualty such as a collision or fire, the crew may panic and/or become confused. Even if the crew manages to keep cool, they will be very busy with the initial response to the casualty. No one can deny that it would be very difficult to fully grasp the situation and take the appropriate record of the circumstances essential for the smooth and effective handling of any eventual claim.

In times when communications were less developed than nowadays, in the event of an accident, the master had to assume the heavy responsibility of making most of the arrangements necessary, since there was little quick support from the marine safety administration department of the ship owners. In modern times, through use of such well-developed global communications systems as e-mail and Inmarsat, backup teams on shore, wishing to collect as much information as possible about the accident, may disturb ship personnel with excessive contact, and make their confusion worse.

The most important mission for both shipboard and shore personnel is to ensure an appropriate response is made just after the accident in order to minimize damage as far as possible. This will also assist with the smooth handling of any resulting claim. We therefore wish to explain from the vessel's view what initial response should be made after a collision, using convenient means of communication.

1. Accident Cases

Case 1

Time Table	Vessel "A" (77,211GT, Bulker)	Vessel "B" (25,836GT, Container)
01:25	Course<082> Speed: 14.3kts Observed Vessel "B"; 10 degrees on port bow/ 15'miles by radar.	Course<243> Speed: 18.4kts Not accounted Vessel "A" yet by radar.
01:37	Observed no changing of Vessel "B"'s bearings by Radar/ARPA. (Accounted the Risk of Collision)	Observed Vessel "A" on right ahead 9'miles by radar.
01:40	Observed Vessel "B"'s navigation lights; 7 degrees on port bow/ 7'miles.	Observed Vessel "A" crossing from starboard to port by ARPA and Closest Point of Approach (CPA) 0.5'miles, speed 14knots
01:47	Exchanged VHF with the West bound third Vessel "C" passing with port to port.	Listened to VHF exchanged between Vessel "A" and "C". Assumed passing Vessel "A" with port to port.
01:50	Passed Vessel "C". Observed Vessel "B" approaching 6 degrees port bow/ 1.8'miles. Steered to port gradually.	To avoid Vessel "A", altered course to <248> (starboard 5 degrees).
A few seconds to 01:52	Observed Vessel "B" on right ahead 1.2'miles. Called Vessel "B" by VHF and requested Vessel "B" to pass with starboard to starboard. The master stepped out to the right wing after confirming to Vessel "B". Altered course to <073>.	Whilst steering to starboard, responded to Vessel "A"'s VHF, agreed to passing with starboard to starboard. Steered to port, but turning to starboard did not stop.
About thirty seconds past 01:52	Observed Vessel "B" on right ahead 0.7'miles and red navigation light. The 2/O requested Vessel "B" to pass with port to port by VHF without the master's approval. The master did not know the fact, but ordered hard port. One long blast by air horn.	As soon as turning to starboard stopped, responded to Vessel "A"'s VHF and steered to starboard.

時刻	A号(77,211GT ばら積貨物船)	B号(25,836GT コンテナ船)
01:52 少し前	B号が船首方向1.2海里。B号をVHFで呼び出し、右舷対右舷で航過することを要請。船長はこれを確認して右ウィングに出た。Co<073>を指示。	A号のVHFに応答し、右に回頭していたが、右舷対右舷で航過することを了解。左に舵を切りなおす。但し、右回頭は止まらなかった。
01:52 半	B号が船首0.7海里に近づき、左舷灯を見ているので、二等航海士が独断でVHFにより左舷対左舷で航過することを要請。船長はこのVHF交信を知らなかった。また、Hard Portを指示。長一声を吹鳴。	右回頭が止まった時点で、A号のVHFに応答し、再度舵をHard Starboardに取る。
01:53 半	Co<065>で衝突	Co<325>で衝突

= 裁決 =

B号の海上衝突予防法15条(横切り船の航法)、16条(避航船の航法)違反。
A号の同法17条(保持船)違反。(左転の禁止・最善の協力動作を取らなかった)

VHF交信は、衝突回避する為に相互の意思疎通を図って適切な動作をとることが出来る時間的・距離的に余裕のある時期に行うべき。2回のVHF交信とも時機を逸している。(衝突原因の判断の対象としては妥当でない。)

A号の二等航海士が独断でVHFにより航過舷を逆にしたことは衝突原因とならず、適切な時期に大幅に右転するなどの最善の協力動作を取らなかったこと及び1.8海里に接近した時点で左転したことが、A号側のより大きな衝突原因とされました。

A号の二等航海士と船長間のコミュニケーションが上手くなされていなかったことは、衝突原因の判断の対象とされていません。

参考図 1

添付資料をご参照下さい

Time Table	Vessel "A" (77,211GT, Bulker)	Vessel "B" (25,836GT, Container)
About thirty seconds past 01:53	Collision at course <065>	Collision at course <325>

= DECISION =

Vessel "B" violated rule 15 (Crossing situations) and rule 16 (The give-way vessel) of the International Regulations for Preventing Collisions at Sea 1972 (COLREGS). (Act on Preventing Collisions at Sea in Japan has been introduced from COLREGS. Hereinafter, the Law is read as COLREGS.)

Vessel "A" violated rule 17 (The stand-on vessel) of COLREGS. (The stand-on vessel (Vessel "A") should avoid turning to port in crossing situation. In addition, Vessel "A" did not take best action to avoid collision in cooperation with Vessel "B" in close-quarter situation. It is provided in the Act that the stand-on vessel shall maintain her course and speed, but she may take action to avoid collision if it becomes clear that the give-way vessel is not taking appropriate action, or when so close that collision can no longer be avoided by the actions of the give-way vessel alone.)

VHF communications should have been exchanged to avoid a collision when there was enough room in terms of time and distance to be able to take appropriate action to avoid each other. The chance to exchange VHF communications was lost twice. (However, this was not regarded as the cause of collision in the judgment.)

The second officer of Vessel "A", who by VHF arbitrarily requested Vessel "B" to pass port to port without the master's approval, did not cause the collision. The primary cause for the collision on the part of Vessel "A" is that Vessel "A" did not take such appropriate action as turning hard to starboard much earlier but instead, when she observed Vessel "B" approaching with 6 degrees on her port bow and to 1.8 nautical miles, steered to port.

The lack of communication between the second officer and the master of Vessel "A" is not the cause of the collision, according to the judgment.

Attachment 1

Please refer to attachment

事故例 2

時刻	W号 (3,947GT 一般貨物船)	K丸 (499GT 内航貨物船)
02:00	当直航海士が船長に視界不良を報告。速力12.6ノット。レーダー2台使用。	視界不良なるも、船長報告などは行わなかった。速力10ノット。レーダー不使用。
04:48	レーダーを3海里レンジ、1.5海里オフセンターで使用。	レーダーを作動し、正船首6.3海里にW号の映像を初認。
04:52	右船首5度、4.5海里にK丸の映像を初認。ARPAによるプロットングは行わなかった。	当直航海士はレーダーの取扱いに成れておらず、ARPAのプロットングも行わなかった。(できなかった。)
04:57	右船首5度、2.9海里までK丸が接近。左転して針路を<216>から<202>とした。	正船首3.0海里までW号が接近。右転して針路を<040>から<060>とした。
05:04	右舷20度、0.3海里でK丸が右転したのを認め、右舵一杯、機関停止。	左舷18度0.3海里まで接近。<090>とした後、右舵一杯。
05:05	衝突後、沈没 9名死亡	衝突、11名救助

適用航法：海上衝突予防法19条（視界制限状態における航法）

= 原因 =

K丸

- 船長が海上濃霧警報が発表されていることを知らなかった。
- 当直航海士が視界不良を船長に報告しなかった。
- 当直航海士がレーダー・ARPAの取り扱い方法を知らなかった。
- 霧中信号を行わなかった。安全な速力まで減速しなかった。(19条違反)
- 自船が右転したので、互いに左舷対左舷で航過すると思いついた。
- 管理会社による視界制限状態における安全運航指導が不十分であった。

W号

- 針路を左に転じた。(19条違反)
- 霧中信号を行わなかった。安全な速力まで減速しなかった。(19条違反)
- 相手船の動静監視が不十分であった。

= 原因の考察 =

K丸

- 19条による措置を取らなかった。
- 当直航海士がレーダー・ARPAの取り扱い方法を知らなかったことは、衝突の因果関係があるとは認められないが、海難防止の観点からは正されるべき。
- 管理会社による視界制限状態における安全運航指導が不十分であるため、海難防止の観点からは正されるべき。
- 船長が視界制限状態になったら報告するように、航海士を指導していなかった。

W号

- 19条による措置を取らなかった。
- 当直航海士がレーダーによる動静監視を怠り、必要な助言を船長に報告しなかった。
- 左転したことが衝突の主原因となった。

Case 2

Time Table	Vessel "W" (3,947 G/T General Cargo)	"K" Maru (499G/T Coastal Cargo Boat)
02:00	The duty officer reported poor visibility to the master. Speed: 12.6knots. Using two radars.	The duty officer did not report poor visibility to the master. Speed: 10 knots. Not using radar.
04:48	One radar was used in 3'miles range. The other radar was used in 1.5'miles off-centre.	The radar was activated. Observed first Vessel "W" on right ahead 6.3'miles by radar.
04:52	Observed first "K" Maru; 5 degrees on starboard bow/4.5'miles by radar. No plotting was made by ARPA.	The duty officer was not used to handle the radar. No plotting was made by ARPA. (He may have been unable to handle ARPA.)
04:57	Observed "K" Maru approaching 5 degrees on starboard bow/ 2.9'miles. Steered to port and altered course from <216> to <202>.	Observed Vessel "W" approaching on right ahead 3.0'miles. Steered to starboard and altered course from <040> to <060>.
05:04	Observed "K" Maru steering to starboard; 20 degrees on starboard bow/0.3'miles. Hard starboard/stop engine.	Observed Vessel "W" approaching 18 degrees on port bow/ 0.3'miles. Altered course to <090> and hard starboard.
05:05	The collision, then the sinking and the loss of 9 lives.	The collision, then the rescue of 11 crew from the sunken "W".

Applicable Navigation: Rule 19 of COLREGs (restricted visibility)

= CAUSE =

K Maru

- The master of "K" Maru was unaware of the warning of dense fog at sea.
- The duty officer did not report the poor visibility to the master.
- The duty officer did not know how to operate the radar・ARPA.
- No fog signal was blown. "K" Maru did not proceed at a safe speed. (Violation of Rule 19)
- The duty officer expected that both vessels could pass port to port, as he steered to starboard.
- The safe navigation guidance by the management company was insufficient in poor visibility conditions.

Vessel W

- The duty officer steered to port. (Violation of Rule 19)
- No fog signal was blown. Vessel "W" did not proceed at a safe speed. (Violation of Rule 19)
- Insufficient watch-keeping as regards movements of the other vessel.

= EXAMINATION OF CAUSE =

K Maru

- The duty officer did not take appropriate measures in compliance with Rule 19 of COLREGs.
- While there seems no relation of cause and effect between the collision and the lack of knowledge the duty officer had as to operating the radar・ARPA, it should be rectified in view of prevention of marine casualties.
- As the safe navigation guidance by the management company was insufficient in conditions of poor visibility, such guidance should be improved with a view to preventing marine casualties.
- The duty officer was not properly instructed by the master to report poor visibility to him.

Vessel W

- The duty officer did not take appropriate measures in compliance with Rule 19 of COLREGs.
- The duty officer failed to keep watch by the radar and he did not advise the master as necessary.
- The major cause of the collision was steering to port.**

参考図 2

添付資料をご参照下さい

2 章 事故発生時の基本動作

事故発生時に陸上側で支援を行う場合、まずは現場状況を確認する必要があります。無駄な時間を費やさない為に、事故種別ごとに船側・陸上側で共通の報告書式を定めておく必要があります。

安全管理マニュアル（SMS）では緊急対応のチェックリストや報告書式が定められていますが、現場における報告書類作成の手間をできる限り省くため、そして情報を錯綜させないために、チェックリストをそのまま報告書として使用できる形式にすることも一案です。

また、官憲当局へは事実のみを簡潔に報告することとし、未確認事項、推測、余分な情報などは報告しないで下さい。不確実なことやむなしく報告を要する場合は、「凡そ」や「約」など、幅を持たせた表現とすべきです。

虚偽の報告は百害あって一利なし

Attachment 2

Please refer to attachment

2. Basic Procedure at the Time of Accident

When a backup team on shore supports the vessel involved in the incident, it is absolutely necessary for the team to grasp the facts of the incident. In order not to waste time, it is necessary to have common reporting forms to be used between vessel/ shore, that are relevant to the types of the accidents.

The safety management manual SMS indicates check lists and reporting forms at the time of emergency response, in particular, at the very initial stage, it is absolutely necessary to save the vessel's personnel a lot of trouble in drafting reports. In order not to get complicated, there seems an idea that the check lists can be made use of as reports.

Only facts should be reported to relevant authorities. Please do not report unconfirmed information or engage in conjecture. Should any information have to be reported of which the reporter is not 100% certain, the information should be qualified with the expression "approximate" or "about".

The making of false statements will have innumerable harmful effects without doing any good at all.

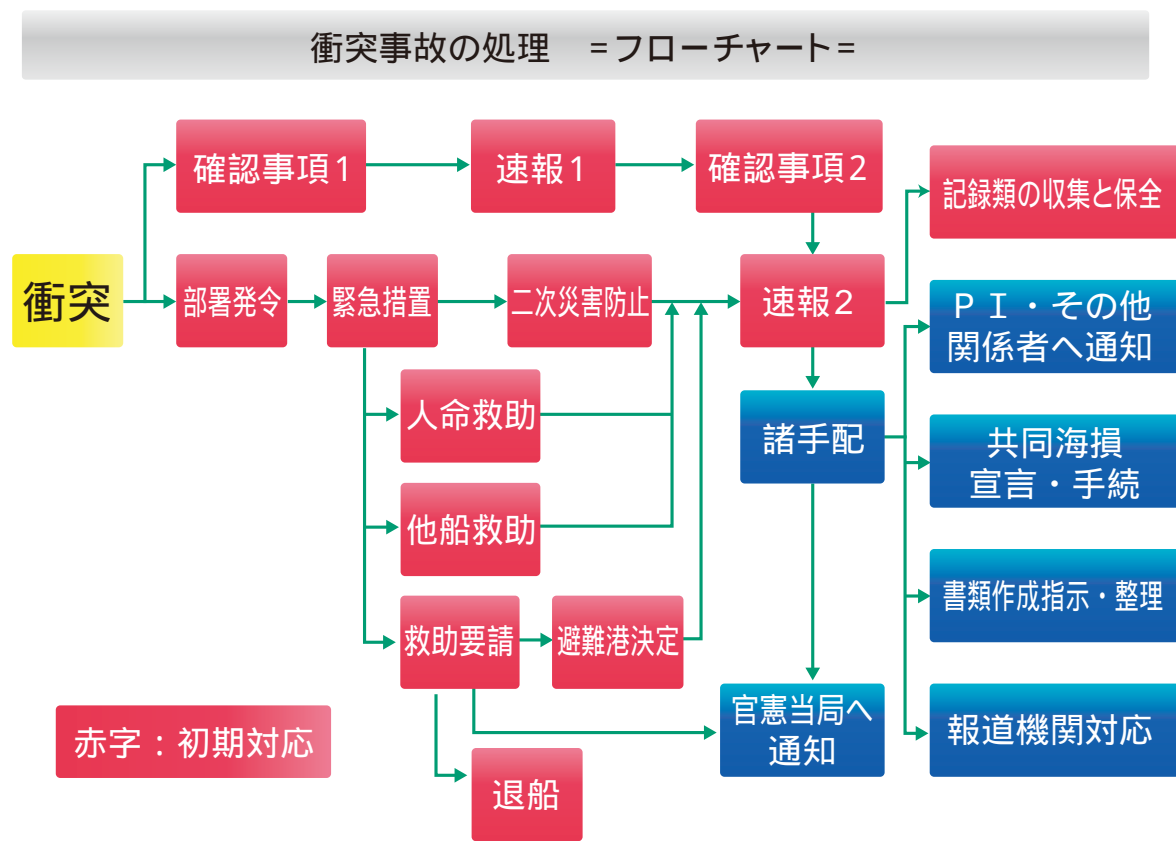
事故発生の一報を受けると、陸上側では事故処理に当り緊急対策チームが招集されます。当然の事ではありますが、組織として活動するためには、次の点に注意する必要があります。

・リーダーとサブリーダーを決める。

情報はリーダーに集中させ、チーム員はリーダーの指示に従って作業を行う。
(ばらばらに動く 『船頭多くして船が山に登る』)

・本船の連絡窓口(通常はSI)の一本化

Emergency Communication Diagram に沿い、連絡窓口担当者は主・副の2名を選任し、使用する電話回線は本船の連絡以外には使用しない。(船長から見ると、複数の人から異なった指示がなされることが、最も困惑・混乱する原因となる。)



3章 衝突事故の初期対応

(1) 日本国船員法の規定

船員法：船舶が衝突した場合における処置

第13条

船長は、船舶が衝突したとき、互いに人命及び船舶の救助に必要な手段を尽し、且つ船舶の名称、所有者、船籍港、発航港及び到達港を告げなければならない。但し、自己の指揮する船舶に急迫した危険があるときは、この限りでない。

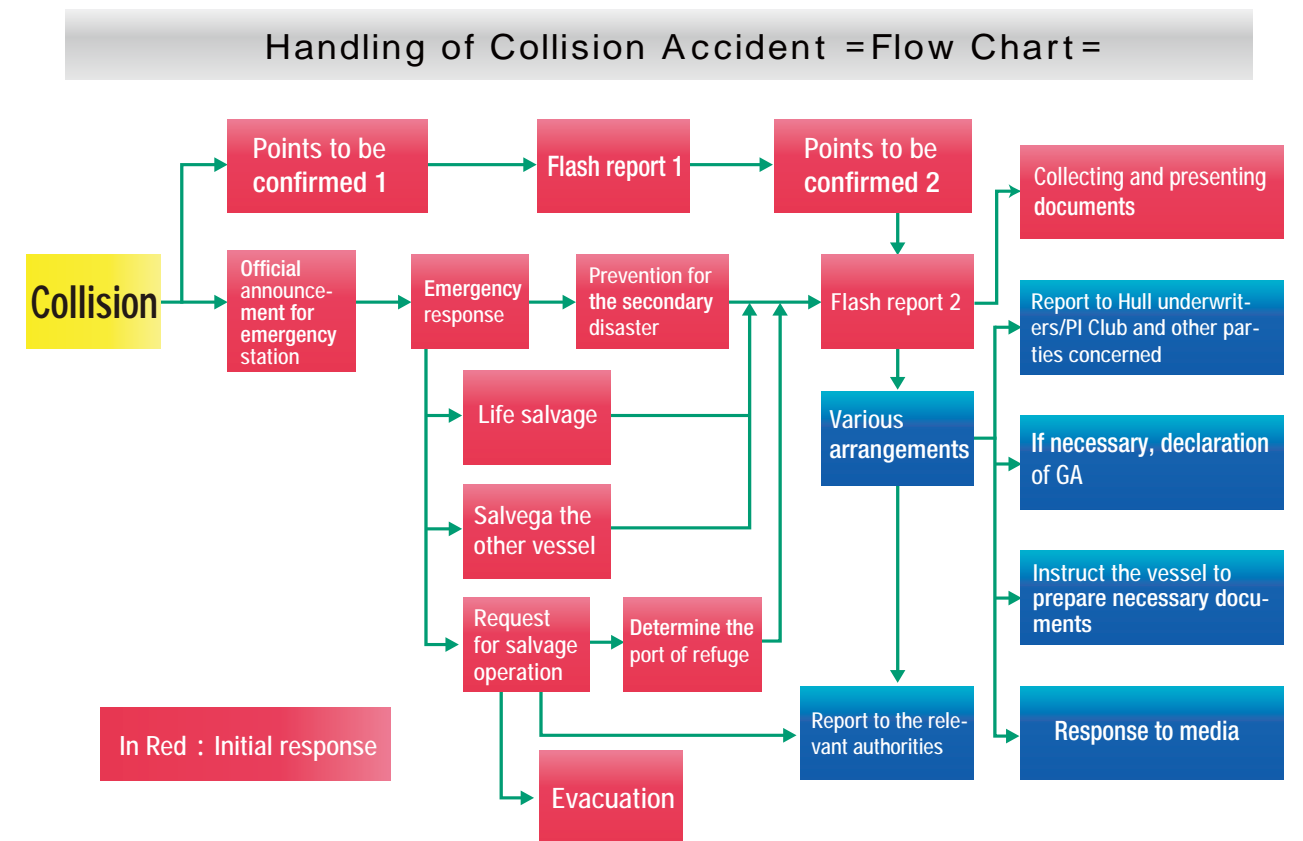
As soon as the first report of an accident is received, an emergency response team is usually convened in order to deal with it. As a matter of course, the following steps should be taken:

・ Decide the leader and second-in-command of the team.

Information should be concentrated on the leader. Team staff should work in accordance with the leader's instructions. (An unsystematic way should be avoided. Too many cooks spoil the broth.)

・ Decide a dedicated contact person (usually a superintendent) for the vessel.

In compliance with the Emergency Communication Diagram below, two people are to be assigned as main and sub-contact person, and their telephone lines should not be used other than to contact the vessel. (The situation must be avoided where different people give different instructions to the vessel's master, as this could embarrass and confuse him.)



3. Emergency Initial Response of Collision Accidents

(1) Regulations of Japanese Seamen s Law

Art.13 of the Japanese Seamen s Law:

When one vessel collides with another, both masters should make every endeavour to save lives and hulls and also notify to each other the name of their vessel, the owner, the port of registry, and ports of departure and intended arrival, unless one of vessels is in imminent danger.

(2) 初期対応

衝突事故の発生直後は船長、当直航海士ともに動転しています。

「初期対応」は頭で理解していても、多くの場合でそれを確実に実行することは困難となります。このため、陸上支援体制を可能な限り早く立ち上げ、本船をサポートすること、また初期対応をマニュアル化しておくことが必要となります。

衝突事故の場合、事故原因の究明と衝突責任割合の判断が、後の事故処理（相手船側との交渉）をする上で重要なポイントとなります。事故が発生したら直ちに証拠保全を行い、事故状況を正確に把握することが必要不可欠です。そのため、フローチャートに沿った処理を行うとともに、事故原因を究明する上で必要となる情報を取り洩らさないことが重要です。事故に備えて、チェックリストを予め準備しておいて下さい。

(3) 確認事項 1

A. 衝突直後

大洋航海中などは、船長が船橋に不在の時であっても衝突事故が発生することがあります。従って、当直航海士には衝突直後に、「資料 1 (p.38)」にある情報を可能な限り記録することが求められます。「資料 1」のチェックリストは、すぐに取り出すことができるように保管場所を決めておくこと、そして航海士は内容を熟知しておくことが必要です。

記録をする上で、注意しなければならない事項は次の通りです。

衝突時間

船橋内のどの時計で確認したのかを必ず記録し、以後使用する時計は統一する。初期対応中、余裕が少し出た際に誤差をチェックする。

少なくとも船橋内の時計整合は当直毎に確認し、誤差があった場合は修正の上、クロノメータジャーナルに記録する。この作業を航海士の当直業務として実施しておくことが必要です。

衝突時の自船 船首方向

AB (Q/M) に指示し、記録させる。当直航海士も確認する。

また、どのレピーターコンパスの値か確認する。

(AB ならば操舵スタンドになる。)

コースレコーダーと Engine Telegraph Logger に衝突時間をマーキングする。

衝突位置

GPS に印字機能があれば、印字させる。

海図にポジションを記入する。

* GPS (全地球測位システム : Global Positioning System)

衝突時の舵角

AB (Q/M) に指示し、記録させる。当直航海士も確認する。

自船と相手船の速力

LOG 若しくは GPS で衝突時の自船の速力を確認する。

記憶のある内に AIS や ARPA で相手船の速力を記録する。

* AIS (自動船舶識別装置 : Automatic Identification System)

* ARPA (自動衝突予防援助装置 (Automatic Radar Plotting Aids)

(2) Initial Response

Just after a collision occurs, the master and duty officer may be close to panic.

There appear a lot of difficulties in accurately making initial responses, despite the fact that they know what their initial response should be. The vessel should be supported by a back-up team on shore as soon as possible. Manuals for Initial Response should be documented.

It is essential to investigate the cause of the collision and to determine apportionment of the collision liability so as to settle damages with the opposing vessel at a later stage. Immediate preservation of evidence and an accurate grasp of circumstances surrounding the accident are indispensable for seeking the cause of the collision. In order to achieve this, it is very important to follow the flow chart and not to fail to collect any information essential for analysing the cause of the accident. Please keep a check list prepared beforehand.

(3) Points to be confirmed 1

A. Immediately after the collision

A collision could occur when the master is not on the bridge. On behalf of the master, the duty officer is then required to keep such records as Sample 1 (p.38) immediately after the collision as best he can. A check list of Sample 1 should be kept at a certain place in order to be consulted when necessary and deck officers must know its contents well.

Here is a list of what information must be recorded as soon as possible after a collision:

The time of the collision

Please write down what wall clock on the bridge was used to confirm the time of the collision. Only that clock is to be used thereafter for collision incident timings. If there is any time during the initial response, the clock's accuracy should be checked.

On every watch the accuracy of all clocks on the bridge should be checked. If the clocks have to be adjusted, this must be recorded in the chronometer journal. This practice should be established as routine for deck officers.

The heading at the time of the collision

The able seaman (quarter master) should be instructed to record the heading of the vessel and his record should be checked and endorsed by the duty officer.

When the vessel's bearing is confirmed, a record should be made as to which repeater compass was used. (The quarter master usually takes a note of the bearing of the steering compass.)

Please do not forget to mark the time of the collision on the course recorder and engine telegraphic logger as well.

The position of the collision

If Global Positioning System has a printing function, printing should be made.

Please do not forget to mark the position on the used chart.

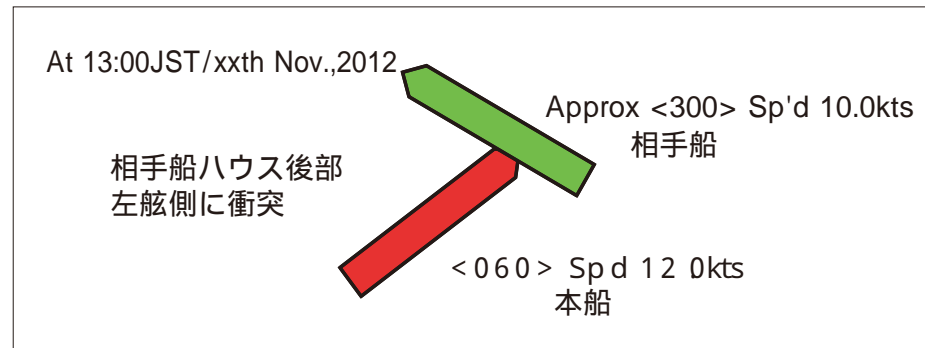
The rudder angle of the collision

The able seaman (Quarter Master) should be instructed to record the rudder angle and have his note endorsed by the duty officer.

衝突角度（衝突時の相手船との角度）

本船船首方位の記録の他、相手船のどの箇所に衝突したか、その時の相手船の船首方向（概略）を記録する。

相手船も同じように船首方位は記録しているはずであるが、後に相手船の証言と大きく食い違うこともあるので、まずは概略をスケッチする。



スケッチ例

その他、船長が昇橋するまでの間に実施・記録すべき事項

- Emergency Alarm（短7声＋長1声）の吹鳴と船内放送。
- 付近航行船舶に対する注意喚起（VHF）。
- 警報を意味する「Security」を冒頭に付け、VHF CH16で放送を行う。
- 運転不自由船の灯火はスイッチを入れることで対応。
- 形象物（黒球形象物2個）は、できる限り早く揚げる。
- 船長・機関長（またはEngine Control Room）への連絡。
- 船内放送で他乗組員にも周知した場合に兼用することが出来る。
- トランシーバーの準備。
- 少なくとも航海士のトランシーバーは、停泊中を除き、船橋に充電した状態で保管しておく。
- 船長が昇橋したら、状況報告をした後に指揮権を船長に渡す。また、その時間を記録する。

B. 部署発令

既に衝突発生時点で Emergency Alarm（短7声＋長1声）を吹鳴しているので、乗組員は Muster Station Diagram（資料8）（p.45）に従って所定の集合場所に向かう。船内放送で部署発令時は、衝突したことも周知する。現場指揮となる一等航海士は、船長と打ち合わせるため、まず船橋に向かう。各チームリーダーとトランシーバーで交信できるようになったら、人員点呼を行う。

人員点呼

乗組員が全員揃っているか確認する。この際、単純に「XXチーム揃いました。」といった報告ではなく、「XXチーム、リスト 名、現在員 名、欠員なし」のように詳細な報告をさせる。（日頃の操練で訓練しておく。）

欠員が生じた場合、まずは Missing Crew の確認を行う。この場合、基本的には「Back Up Team」を捜索に当たらせる。Back Up Team を分割させて捜索させる場合、分割した双方の組から報告が出来るように、分割したチームのリーダーにもトランシーバーを持参させる。捜索範囲を居住区内から実施する場合は、デッキ毎に結果を報告させる。分割して捜索する場合は、それぞれのチームの分担範囲を明確に指示する。

総指揮である船長は、乗組員がどこで何の作業を行っているのか、常時把握しておくことが必要

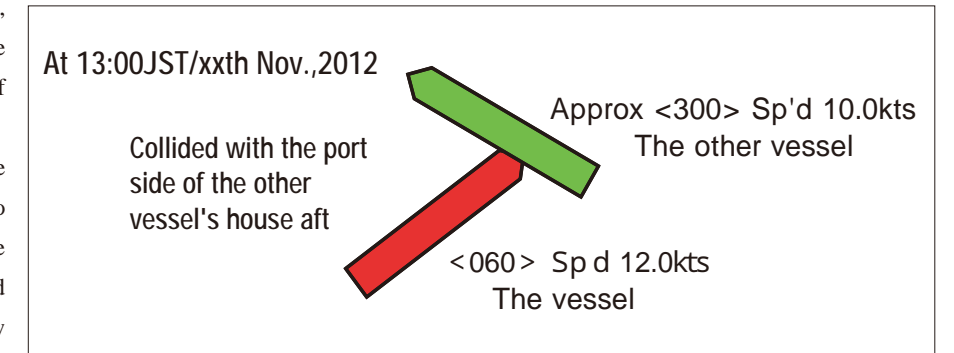
The speed of the vessel and the other vessel

The speed of the vessel at the time of the collision should be confirmed by LOG or GPS.

The speed of the other vessel at the time of the collision should be recorded using AIS (Automatic Identification System) or ARPA (Automatic Radar Plotting Aids).

Angle of the collision (angle of blow)

While the vessel's heading is recorded, please do not fail to take a note of the other vessel's heading and what part of the other vessel's hull is struck. Likewise, the other vessel must have recorded her heading. In order to avoid unnecessary disputes with the opposing testimony, please proceed as above and make a bird's-eye view sketch of the collision site.



Example

Things to be done and matters to be recorded until the master comes up to the bridge

Emergency Alarm (7 short blasts + 1 prolonged blast) must be blown and an inboard announcement must be made.

A warning must be sent via VHF CH16, beginning with the word "Security". Under the Radio Regulations, such a warning will draw the attention of other vessels navigating in the vicinity of the collision site.

Lights for "A vessel not under command" under Rule 27 of COLREGs can be easily turned on. Shapes (two black balls) should be exhibited as soon as possible.

Inboard announcements can cover reports to the master and the chief engineer or Engine Control Room (ECR).

Transceiver should be readied for operation. A charged transceiver for deck officers should be always kept in the bridge.

As soon as the master comes up to the bridge, after reporting to him, the deck officer will have to assign command authority to the master and record the time it is passed over.

B. Official announcement to muster at emergency stations

When the emergency alarm (7 short blasts + 1 prolonged blast) is blown at the point of the collision, the vessel's personnel must go to the designated place in compliance with the Muster Station Diagram (Sample 8 p.45). At the time of the inboard official announcement to muster at emergency stations, a full dissemination of the collision which occurred has to be made to the vessel's personnel.

The chief officer, a commander on the site, has to come up to the bridge in order to discuss the collision with the master. After communications amongst respective team leaders by transceivers can be established, the roll should be called.

Call the roll

First, please confirm whether all personnel are gathered. Please do not accept such a reporting "XX team is on standby", but have respective team leaders report that "XX team, listed people, now people, no vacancy". (Personnel should be trained in routine drills to provide this reporting.)

As the main commander, the master should always know where the vessel's personnel are and what they are doing.

If the roll call is not complete, immediately identify who is miss-

他船の情報収集

VHF で下記相手船情報を収集する。

- 船名
- 船籍港及び国籍
- 負傷者・死亡者の有無
- 救助の要否

AIS や目視で船名を確認する。船橋に一等航海士が昇橋しているなど、人員に余裕がある場合は、上記人員点呼と同時に相手船情報の確認を行う。

自船の二次災害の確認

目視により、油流出と火災発生の有無を確認する。

浸水について、船体傾斜や明らかな浸水が確認できない限り、確認中 (Unknown) とする。

火災・油流出を確認したら、防火・油防除部署を発令する。

一等航海士は損傷箇所・損傷程度の確認を開始する。
(カメラ持参)

従って、防火・油防除部署のリーダーは一等機関士 (On Scene Sub Leader) を任命する。

Mobile Team No.1 / No.2 は、防火・油防除部署に従って準備を開始する。

Back Up Team は、負傷者の救助が終了したら、救命艇降下準備を開始する。

Engine Room は機関全体の点検を開始する。

状況写真は後日多方面にわたり有力な証拠となる。但し、爆発事故のおそれがある場合のフラッシュ撮影は禁物。

C. 緊急措置

救助要請の要否判断

(1) 退船

沈没・火災延焼などの虞から、退船すべきか判断する。

退船する場合は、下記遭難信号を発信、重要書類を搬出し、相手船へ通知する。

- DSC (MF/HF 無線設備、VHF) による遭難警報
* DSC (デジタル選択呼出し : Digital Selective Calling)
- インマルサットによる遭難警報
- 衛星非常用位置指示無線標識 (EPIRB) による遭難信号
* EPIRB (Emergency Position Indicating Radio Beacon)

ing. In general, the “back-up team” should be involved in the search. If the team is to be split into two, transceivers should be kept by both teams’ leaders in order to maintain communication with each other.

All decks of the accommodation should be searched for personnel, and the result of the search should be reported for each deck. If there is more than one team instructed to search the ship, each team should receive clear instructions as to its area of search.

Collect information about the other vessel

Information about the other vessel should be collected by VHF, as follows:

- Name of the other vessel
- Flag State and Port of Registration
- Whether there has been injury and/or loss of life
- Whether salvage is necessary.

The name of the other vessel should be ascertained by way of AIS and visual observation. The above information should be confirmed at the time of calling the roll, in particular, while the personnel on the bridge with the chief officer.

Ascertain the possibility of any consequential accident.

By the visual observation, please ascertain whether there are oil spill and fire.

If the vessel shows no obvious list and there is no apparent ingress of sea water, it should be recorded that these are unknown and under investigation.

If there is a fire and/or oil spill, fire prevention and/or oil spill response stations should be established.

The chief officer should record with a camera the nature and extent of damage.

The first engineer should be appointed as “on scene sub-leader” for the fire prevention and oil spill response stations.

Mobile team No.1/No.2 start to prepare in compliance with the orders of the fire prevention and oil spill response stations.

A Back Up Team should start to lower lifeboat as soon as any injured crew have been treated and can be moved.

A detailed inspection should be carried out in the engine room.

Photographs should be taken of the ships involved as they could be used as evidence in various potential. However, if there is any risk of explosion, photographs should not be taken using a flashlight.

C. Emergency Treatment

Determine whether salvage operations are necessary.

(1) Evacuation

Taking into consideration the possibility of the ship sinking or fire spreading, please determine whether the vessel’s personnel should be evacuated from the vessel.

If evacuation is chosen, the following distress signals should be transmitted. Also, important documents should be preserved and notification of evacuation be made to the other vessel.

- Distress alert by means of Digital Selective Calling transmitted on VHF, or MF/HF.
- Ship-to-shore distress alert transmitted by the ship’s Inmarsat.
- Distress alert by means of EPIRB (Emergency Position Indicating Radio Beacon).
- Attention is drawn to the relevant sections of the International Code of Signals of COLREGS.

d) その他の国際海上衝突予防規則に定められる遭難信号

退船部署を発令し、船体放棄手順書を確認する。

(2) 救助要請

SI (又は緊急連絡先担当者) に連絡する。任意座礁地点・仮泊地点を検討する。

自力航行可否の判断

自力航行の可否、或いは修理の要否を判断する。

相手船の状況確認、救助方法の検討

で相手船の救助要請があった場合でも、自船が救助体制を取れるかどうかを ~ で確認した上で、救助体制が取れる場合は救助部署を発令する。

救助方法の検討

救助艇の降下可否。(気象・海象状況はどうか)

他船の救命艇や救命筏での脱出有無。

人員回収方法と資材準備。

操船方法の検討。

自船・相手船とも当面の緊急性がないと判断した場合、情報を交換する。

船主	Loa
管理会社	Cargo
仕出し港及び仕向け港	損傷状況
船種	連絡先情報
保険会社 (Hull & Machinery / P&I)	(相手船の E-mail アドレスを含む)
G / T	その他 (IMO No. / 船長名等)

VHF は他船も聴取可能であるため、可能であれば電話による情報交換を行う。

Evacuation declared by the master. The manual of the vessel's abandonment should be confirmed.

(2) Request for salvage

The superintendent should be notified. The point of intended grounding should be examined, if necessary or tentative anchorage be checked.

Check whether the vessel is under command or not

Please determine whether the vessel is under command, or whether repairs are necessary.

Confirm the other vessel's damage and the method of salvage

In the above , if the other vessel requests salvage, check the vessel's condition through the above ~ in order to assess whether the vessel could salvage the other vessel. If it is possible to salvage it, a salvage station should be established.

The method of salvage should be examined.

Please check whether lifeboats can be lowered. (Do weather conditions allow this?)

Evacuation from the other vessel by means of lifeboats/ rafts is observed.

The method of rescue should be considered and necessary materials be prepared.

The method of the vessel's maneuvering should be examined.

If it is confirmed that neither ship needs emergency action, exchange the following information with each other.

Name of the Owners	LOA
Management company	Type of cargo
Ports of departure/destination	Extent of damage
Type of vessels	Information as to contact details (including E-mail Address of the other vessel)
Name of Insurance company (Hull & machinery/P&I)	Others
G/T	(IMO No./ name of the master etc.)

If possible, exchange of information should be made by telephone. Needless to say, VHF communications can be heard by other vessels.

全てのタンク(バラスト・FO等) Void Space、Cargo Hold Bilge の計測開始。Mobile Team を作業に当たらせる。

No.	NAME	CAPACITY (m3)	Sounding		Level gauge		Di .	Judge	
			SOUNDING (m)	Volume (m3)	Level (m)	Volume (m3)		5%	Di
1	No.1 W. B. S. T. (P)	410.5	0.27	6.0	0.21	4	-2	good	0%
2	No.1 W. B. S. T. (S)	410.5	0.22	5.1	0.21	4	-1.1	good	0%
3	No.2 W. B. S. T. (P)	659.5	5.53	216.7	3.35	212.1	-4.6	good	-1%
4	No.2 W. B. S. T. (S)	663.1	6.18	269.1	3.73	255.8	-13.3	good	-2%
5	No.3 W. B. S. T. (P)	128.4	0.02	3.3	0.57	5.7	2.4	good	2%
6	No.3 W. B. S. T. (S)	126.1	0.00	3.0	0.57	5.7	2.7	good	2%
7	No.4 W. B. S. T. (P)	389.2	2.83	287.3	2.91	291	3.7	good	1%
8	No.4 W. B. S. T. (S)	389.2	2.07	268.7	2.77	271.3	2.6	good	1%
9	No.4 W. B. S. T. (CP)	462.4	0.00	28.4	0.38	51.2	22.8	good	5%
10	No.4 W. B. S. T. (CS)	462.4	0.00	30.5	0.38	51.2	20.7	good	4%
11	No.5 W. B. S. T. (P)	475.2	2.15	254.7	2.26	264.7	10	good	2%
12	No.5 W. B. S. T. (S)	475.2	1.83	196.9	1.86	203.1	6.2	good	1%
13	No.5 W. B. S. T. (C)	585.0	0.00	19.9	0.11	17.3	-2.6	good	0%
14	No.6 W. B. S. T. (P)	294.2	2.20	197.7	2.68	174.3	-23.4	no-good	-8%
15	No.6 W. B. S. T. (S)	294.2	2.16	194.9	2.65	170.5	-24.4	no-good	-8%
16	No.6 W. B. S. T. (CP)	404.9	0.02	13.7	0.22	20.1	6.4	good	2%
17	No.6 W. B. S. T. (CS)	404.9	0.03	18.2	0.2	17.5	-0.7	good	0%
18	AFT PEAK T (P)	797.1	0.42	0.6	0.42	0.6	0	good	0%
19	AFT PEAK T (C)	374.4	213.00	61.6	2.32	76.3	14.7	good	4%
20	AFT PEAK T (S)	625.7	0.44	7.1	0.44	2.4	-4.7	good	-1%

TOTAL 8,832.0

SEA WATER S.G.: 1.025

Trim

Heel

SOUNDING BY _____

CHIEF OFFICER _____

Sounding Example

= 目的 =

少量の浸水もタンク等の Sounding を継続することで発見できる。Sounding は通常の船内作業でも実施しているため、その記録用紙を使用する。事故発生直後からは、長くとも 2 時間毎に計測する。FO タンクの Sounding は機関部を実施させる。

計測は Sounding 計測値に変化がなく、浸水していないことを確実に確認できるまで継続して行う。また、ビルジ排出やバラストタンクの浚いを行う場合は、必ず開始前後の記録やバルブの開閉時間、ポンプ運転時刻を記録する。

浸水しているかどうか疑わしい場合(少量の変化)は、一度「浚い」をして見ることも必要。

次回の会社への報告予定時刻

SI (又は緊急連絡先担当者) に第一報を報告後、確認事項 2 (p.22 ~ 28) を実施する旨と、それを報告する予定時刻を連絡する。

Measuring all tanks (Ballast, FO etc.), void spaces, cargo hold bilges should be commenced. Mobile team should be in charge of measuring.

Refer to "Sounding Example" on left.

= Purpose =

A small quantity of sea-water ingress could be found by continuous soundings in the tanks. Sounding should have been carried out during routine works so that the same record book can be used. After the accident occurs, soundings should be carried out every two hours at the latest. Soundings to FO tanks should be made by the ship's Engineers.

Soundings should be continued until it is known for certain that there has been no ingress of sea water. If bilge is discharged and ballast tanks stripped, please do not fail to record measuring before and after the operation, the extent to which valves are open/ closed, and time table of driving pumps.

If a small quantity has been changed (there are doubts about sea-water ingress), stripping should be tried.

Time table of second report

After reporting "Points to be confirmed 1"(p.13 ~ 21), the master will have to say when "Points to be confirmed 2"(p.23 ~ 29) is reported.

Summary of Points to be confirmed 1

1. Check Item A (Immediate after the collision ~)

This is the point to be confirmed immediately after the collision.

If the master is not present on the bridge, the duty officers will have to record information in the usual way. Therefore, the duty officers should be educated as to what they should do if a collision occurs.

2. Check Item B (Official announcement ~)

First of all, the safety of the vessel's personnel should be confirmed. (The safety of lives should be top priority.)

Collecting basic information about the other vessel.

Confirming whether there is an imminent danger of a secondary disaster on the vessel.

3. Check Item C (Emergency Treatment ~)

Determining whether evacuation from the vessel and/or salvage is necessary.

If no imminent danger on the vessel is determined, confirm the condition of the other vessel.

if no imminent danger on both vessels is found, necessary information should be exchanged.

Soundings should be commenced and continued even if there is little evidence of seawater ingress as no one can deny the possibility that sea-water may have entered through possible cracks.

There should be little time to make a contact with the superintendent on shore until Check Items are confirmed up to Item C. After confirming no imminent danger on both vessels, the master should contact the superintendent and make the first report.

Things and documents to be preserved and taken from the ship in the event of an evacuation should be list in advance and the list used as a checklist, since the general muster station diagram is insufficient.

Details of the collision including the time and place of the incident, the other vessel's name, and confirmation neither ship is in imminent danger should all be given by telephone. Further information should be sent by e-mail or Fax as regards Check Item A ~ C. Time of reporting should be noted.



The person in charge of the matter on shore should explain to the master that an Emergency Response Team will be established immediately and start recording time and facts.



The master will notify the response team on shore of the time table in which next reporting will follow.

確認事項 1 まとめ

1. Check Item A(衝突直後 ~)

衝突直後に確認する。

船長が船橋に不在の時でも、当直航海士が記録しなければならない事項であるため、日頃から教育しておく必要がある。

2. Check Item B(部署発令 ~)

まず自船の人員確認を行う。(人命が最優先)

最小限度必要な相手船情報の収集を行う。

自船に急迫した二次災害があるかどうかを確認する。

3. Check Item C(緊急措置 ~)

自船に退船を含む救助要請が必要かどうか判断する。

自船に急迫した危険がないと判断した場合、相手船の状況を確認する。

自船と他船に切迫した危険がない場合、必要情報を交換する。

急激な浸水がなくとも、亀裂が発生して浸水している可能性があるため、Soundingを開始、継続する。

Check Item Cまでを確認する間は、SIに連絡する時間も取れない場合が殆どである。自船・他船とも急迫した危険がないと判断された場合にSIに第一報を電話連絡する。

不幸にして総員退船となった場合、船長が搬出すべきとして一般的な部署表に記載されている書類等だけでは不十分。別途、非常時の持ち出し書類等をリストアップしておき、Check Listとして使用する。

衝突した事実、相手船名、時間、位置、急迫した危険がないことを簡潔に電話で報告する。
詳細については、Check Item A ~ CをFax又はメールで送付する旨を説明。報告時間の確認。

電話を受けた陸上担当者は、緊急支援対策チームを立ち上げる事を船長に説明し、記録(時間・内容)を開始する。

船長は次回報告予定日時を担当者に報告する。

(4) 確認事項 2

自船・相手船に急迫した危険がないことが確認できたら、航海計器の状況や衝突に至るまでの経緯などを記憶の新しい内に纏めることが必要です。

D. 航海計器の確認

時計・ジャイロコンパス・テレグラフロガー・コースレコーダーの誤差確認

官憲の調査でも最初に船内時計の誤差確認が行われる。

確認事項1(p.12 ~ 22)で使用していた子時計、親時計、GPS時刻などの誤差を確認する。

ジャイロコンパスのマスターコンパスとレピーターコンパスの誤差を確認する。

クロノメータレコード・コンパスエラーレコードを、毎日記録することは担当航海士の義務です。

VDR(航海情報記録装置: Voyage Data Recorder)

最近の海難審判は、VDRの記録を元にして衝突原因を究明する傾向がある。一般的には過去12~24時間を、上書き記録しているので、データを保存する。機種ごとに取り扱い方法が異なるため、マニュアルを良く読み、取り扱い方法を熟知しておくべきである。退船時にデータリムーバブルディスクを取り外して持ち出すタイプもある。

航海計器の作動状況の記録

レーダー: 使用していたレンジ、ARPAの使用状況、オフセンターにして使用していたかどうか。

(4) Points to be confirmed 2

If it is confirmed that neither ship is in imminent danger, the master must make a written report as to conditions of nautical instruments and on the facts of the collision, while they are fresh in his memory.

D. Confirmation of nautical instruments

Please check any errors in Clocks/ Gyro Compass/ Telegraph-Logger/ Course Recorder.

In investigations by the relevant authorities, the first step is to check the errors of clocks on the bridge.

Please check whether there are errors of Clocks/ GPS time used in points to be confirmed 1 (p.13 ~ p.21). Please check errors of the master compass and repeater compass of Gyro Compass. Chronometer records/ Compass errors should be recorded every single day by the officers in charge as their strict duty.

VDR (Voyage Data Recorder)

Recent Maritime Disaster Inquiries use VDR records in investigating causes of collisions. In general, the VDR records for 12~24 hours and is automatically overwritten. Therefore, after an accident, the data should be stored. There are many types of VDR. Not all of them have the same mode of operation. The manuals for the actual VDR on board should be deeply read and the vessel's personnel should have full knowledge of how to operate it. There is a type of VDR, in which the data is stored on a removable disk.

Check nautical instruments were working before the collision

Please check what range of the radar was used, how ARPA was used, and whether ARPA was used in "Off-Centre".

Some of ECDIS (Electronic Chart Display and Information System) can record tracking in their data. The vessel's personnel should have full knowledge of how to operate it.

Please check if daytime signalling lights were working, and the conditions of the vessel's lights and shapes. Please check whether designated lights were turned on and shapes were exhibited.

How other nautical instruments were used before the collision. Examples: AIS, GPS, Echo Sounder, etc.

E. The weather conditions including wind waves / swell and Persons on duty

The weather conditions including wind waves/swell at the time of the collision:

Please record these carefully, in particular visibility conditions.

Name and rank of people on duty at the time of collision

With regard to people on duty on the bridge, please keep a record as to where and what they were doing on the bridge and also what nautical instruments were used by each. Regarding the Engine Department, please keep a record as to whether the operation was under M0 system and also whether anyone was there.

ECDIS (電子海図): 機種によって航跡記録がファイルとして保存できるものがある。自船のECDISの取り扱いに熟知しておく。

* ECDIS(電子海図情報表示システム)(Electronic Chart Display and Information System)

昼間信号灯の作動状況、自船の灯火や形象物の状況を記録。所定の灯火・形象物が点灯・掲揚していたかどうか。

その他: AIS、GPS、音響測深機等の航海計器の使用状況。

E. 気象・海象状況と当直員

衝突時の気象・海象状況

特に視界状況に注意して記録する。

衝突時の当直要員の氏名・職名

船橋当直員が、船橋のどの場所で何を行っていたか記録する。また、各当直員がどの航海計器を使用していたかも記録する。機関室ではM0運転中であったかどうか、また機関室に乗組員がいたかどうか記録する。

衝突時の操船指揮者

船長が衝突時に船橋に不在だった場合や水先人が操船していた場合、その後当直航海士や水先人から指揮を引き継いだ時間も記録する。

衝突時に誰が操船をしていたのか。



船長・水先人・当直航海士?

F. 衝突に至るまで

衝突した相手船の初認時の状況、衝突に至るまでに取った行動(変針・速力調整など)を纏める。しかし、通常の航海当直で避航操船を行った時間や変針角などを記録していることはないのが実情。

VDRは船橋内の会話も含めて記録しており、最近の衝突事故原因の究明は衝突した両船のVDRの記録を解析することが殆どとなっている。

VDR 搭載前:

両船の各種記録(海図・コースレコーダ・テレグラフロガー)と乗組員の証言から、衝突に至るまでの動静を推測。

VDR 搭載後:

VDR情報を解析。乗組員の証言と突き合わせて、衝突に至るまでの動静を分析。

あくまでも記憶の新しい内に記録をしておくが、時間や距離・方位等を正確に覚えていない場合は、記録に際しては、「凡そ」「約」などの表現とする。

相手船を初認した時間・方位・距離、確認手段、確認者名。ARPAで捕捉した場合は、その時間。

船舶輻輳海域に於いては、多数の映像をARPAで捕捉しており、相手船をどの時点で確認した(捕捉した)のか不明な場合もある。この場合、ARPAで方位変化やCPAの数値を確認した時点がレーダーによる初認時期になる。

* CPA(船舶間最接近距離: Closest Point of Approach)

Who was in command at the time of the collision?

If the master was not present on the bridge or a pilot was in command, please keep a record as to when the duty officer or pilot were relieved by the master.

Who was in command at the time of the collision?



Master/ Pilot/ Duty officer?

F. The full story of events leading up to the collision

Please make a summary report as to the circumstances of the other vessel when first sighted and what measures were taken to prevent the collision. In general, people on duty rarely keep a record as to when actions were taken to avoid the collision and the degree to which the course was changed.

Current investigations into causes of collisions often analyse the VDR of both vessels, as these record conversations on the bridge.

Before VDR:

Records (used charts, course recorder, and telegraphic logger) and personnel statements from both vessels were used to gauge the actions taken in the run-up to the collision.

After VDR:

Actions taken in the run-up to the collision can be analysed by using VDR data and personnel statements from both vessels.

Therefore, while a written record should be made while events are fresh in the memory, people are allowed to use “about” or “approx.”, when the reporter is not 100% certain of the time, distance, and bearings.

Please keep a record as to the other vessel's bearing, distance, the time first sighted and how to get these as well as by whom. If sighted by ARPA, please record the time.

In the busy traffic zone, there would be various targets to capture on ARPA and it may become difficult to check the time the other vessel was first sighted (captured). In this regard, the time first sighted should be at the time change of bearing and/or CPA (Closest Point of Approach) was confirmed using ARPA.

When the risk of a collision is determined

Under the Maritime Disaster Inquiry in Japan, the potential risk of a collision and imminent danger of collision are treated separately, and here, the vessel's personnel should record, after determining the potential risk of a collision, when and what first action was taken in accordance with applicable rules together with reason why done so.

The examples of the “reason” the personnel determined the potential risk would be, the other vessel not changing its bearing, CPA of ARPA showing nearly 0, or the other vessel showing unpredictable movement.

Actions taken leading up to the collision

The action first taken to avoid collision in the above including maintaining the vessel's course and speed as the stand-on vessel should be recorded. Afterwards, please record changing course, reducing speed, exchange of VHF communications, use of engine,

衝突の危険を判断した時期

海難審判上は「衝突のおそれ」と「衝突の危険」が区別されており、衝突の危険は「急迫した危険」とされている。ここでは、衝突のおそれを判断し、法規に従って最初の動作を取った時点の動作の内容と時刻、及び理由を記録する。(避航変針・保持動作開始・信号・VHFでのコンタクトなど)

理由としては、方位変化がない、ARPAのCPAがゼロに近い、相手船の動静が不明であるなどが挙げられる。

衝突に至るまでに取った動作の記録

前述で最初にとった避航動作(含む保持動作)を最初に記録する。以後、変針・減速・VHFによる交信・機関使用状況・汽笛や昼間信号灯による信号などを記録する。動作は覚えていても、時間や変針時の舵角などを覚えていない場合は、詳細は不明として動作のみを記録する。

記録内容がVDRの情報と大きく異なる場合、官憲当局の事情聴取で繰り返し尋ねられることもある。記憶が曖昧な場合、詳細は不明として凡その時間と動作を記録する。推測で記録しないこと。

G. その他情報の整理

相手船以外で衝突前後に関係があった第三船の確認

停泊船であれば、確認作業を開始する時点でAIS情報などから情報を入手すれば良いが、航行している第三船の船名までは覚えていないのが実情。印字機能があれば印刷する。

日本近海であれば、一部地域で、AIS情報を後日取得することも可能な場合もあるが、この時点では凡その相対関係だけを記録することでやむを得ない。

船体及び貨物の損傷状況の確認

できる限り損傷状況の把握を行い、写真を添付した報告書を作成する。但し後日状況が変化する場合もあるので、報告書には一連の番号を付ける。

相手船からの現認書の取り付け

後日の損害賠償請求に備え、相手船にクレーム通知を渡して衝突の事実を現認させておく。現在はE-mailなどで直接相手船に送付できる。

相手船からも同様の要求がなされるが、責任を認めさせられるような文言があるときは、その文言を抹消する。

相手船の現認書には「Without prejudice, receipt only」(責任を認めない。受領のみ。)と明記して署名する。責任を認める記述はしない。

sound and lights signals, etc. Please record what actions are taken by whom. While most personnel will remember what actions were taken, they may not exactly remember when the bearing was changed and to what. In this respect, please record the action taken without unknown details.

If there is a great difference between the above record and VDR data, the relevant authorities will ask the same question repeatedly. If the memory is vague, please do not enter conjecture but keep to which actions have been taken with the approximate time.

G. Other information to be recorded

Information about any third vessel before and after the collision

If a third vessel is at anchor, it would be possible to confirm its particulars by AIS but if the third vessel is on-going, the persons on duty would not remember its name in reality. If AIS has printing function, the record should be printed out.

In a certain zone of the vicinity of Japan, it would be possible to obtain AIS data at a later stage. Just after the collision, there may be no choice but to record simply the approximate distance from the third vessel.

Confirmation of Hull and Cargo damage conditions

The vessel's personnel should check damage conditions to the hull and the cargo on board as much as they can. They should make a report with photos attached. Make sure to note any reference number since the situation may change and there may be additional reports to follow.

Obtaining a statement of facts from the other vessel

In order to prepare a claim for damages, a claim notice should be delivered to the other vessel, which should acknowledge the fact of the collision. Nowadays, the notice will be sent by e-mail directly to the other vessel.

Likewise, the other vessel will require the vessel's acknowledgement. Any part of the notice admitting liability should be deleted.

A statement of facts (Letter of Protest) from the other vessel should be signed and annotated "Without prejudice, receipt only". Please ensure that no admission of liability is made.

記録類の収集・保管

特に重要な書類は次の通り。

海 図

航海計画（Passage Plan）にも船位確認のインターバルを記載し、それに従って船位を記入するように、日常から航海士に指導する。

コースレコーダー、エンジンロガーの記録紙

衝突した時間のマーキングを確認する。

ベルブック

Check List と平行してベルブックにも記入する。官憲による調査で提示・押収される重要書類になる。事実のみを記載する。また、確認事項 1 との整合性も必要となる。

航海 / 機関 Log Book

事故直後に航海 / 機関日誌を記入する余裕はない。また、記載内容は後日原因調査のために提示させられる。

急いで記入して間違えたり、不利になる記事を記入するよりは、陸上支援部門と相談しながら記載内容を確認すべき。

水先人が乗船中の衝突事故であるならば、状況陳述書（Statement of Fact）を水先人から取り付ける。

事故時の当直乗組員の状況陳述書（Statement of Fact）

衝突直後は実情を各乗組員が記憶しているが、時間の経過とともに曖昧となってくる。船長は自分自身も含めて、できる限り早期に関係乗組員を招集し、各乗組員の Statement of Fact（案）を作成させて陸上支援チームに送付する。

官憲の事情聴取は、乗組員の証言（時間も含めて）に食い違いがあると、一致するまで繰り返し同じ事情聴取を行うことが多い。

事実のみを記載することとし、曖昧な部分は「凡そ」「約」「頃」などを付記して、幅を持たせた表現にしておく。

確認事項 2 まとめ

1. Check Item D、E

航海計器の状況、衝突時点における当直員の配置、気象・海象状況の記録、操船を行っていた乗組員の確認を行う。できる限り早期に取り纏める。

2. Check Item F、G

VDR が設置される以前は、双方から乗組員の証言、各種記録類を押収し事故状況を推測していた。現在も乗組員の事情聴取や各種記録類が押収されることに違いはないが、VDR の情報と突き合わせて事故原因を究明している場合が多い。従って、事実のみの記載は勿論であるが、記憶が曖昧な部分は幅を持たせるような表現で記録する。

船体及び貨物の損傷状況は写真や図面を準備。一連の報告書番号を付ける。

Collection/ preservation of documents

Chart

The interval to check the vessel's position should be stated in the Passage plan and its position should be entered into the chart accordingly. Deck officers should be instructed to do this.

Print-outs of course recorder and engine logger

The marking of position at the time of the collision should be checked.

Bell book

It should be entered in line with Check List. It will be taken by the relevant authorities as one of the important documents. Only the facts should be recorded and they should be consistent with the records taken in accordance with “the Points to be checked 1”.

Log Book/ Engine Log Book

There is no room for recording details in Log Book/ Engine Log Book immediately after the collision. These documents will have to be submitted to the relevant authorities.

In order to avoid wrong or disadvantageous entries, the contents should be checked with the back-up team on shore.

Where a pilot was in command at the time of the collision, a statement of facts from him should be obtained.

Statement of Facts from persons on duty at the time of the collision

The memories of those on board will be fresh just after the collision but will fade as time goes by. The master should draw up a draft “Statement of Facts” as soon as possible and ensure that relevant officers and crew do this too. These papers should be sent to the company.

With regard to hearings by the relevant authorities, if there are different statements in the course of time or inconsistency between personnel, the authorities usually continue hearings until the differences are resolved.

Only facts should be entered into “Statement of Facts” and where the person giving the statement is not certain of the facts, expressions such as “about”/ “approx.” should be used.

Summary of Points to be confirmed 2

1. Check item D, E

To confirm conditions of nautical instruments, positions of persons on duty at the time of collision, weather/ sea conditions and who commanded at that time. The record should be made as soon as possible.

2. Check item F, G

Before introduction of VDR, the authorities usually gauged the circumstances of the accident after collecting statements and relevant documents from both sides. Although nowadays the authorities still continue taking statements and relevant documents, they almost always use VDR data to be checked with the above information in order to seek cause of the accident. Therefore, where the facts are not certain, words such as “about”/ “approx.” should be used.

Conditions of damage to the hull and the cargo onboard should be prepared by use of photos and drawings. Please do not forget to include reference numbers in the reports.

4 章 陸上支援チームによる初期諸手配

本船の事故発生に関する第一報を受けたら、早急に緊急支援対策チームを立ち上げ、記録（時間・行動・誰が行ったかなど）を開始します。

1. 沿岸国官憲への通報

日本国籍の場合、船員法 19 条により、衝突事故が発生した場合、船長は国土交通大臣へ報告するよう義務付けられている。また、領海内の事故については当該国の統治権・裁判権が及ぶため、一般的にも報告義務があります。双方の損傷が軽微で、沿岸国にも被害がなく安全を脅かす事故でない場合は保険会社に連絡し、相手船の対応なども考慮して、当該国への通報を行うかどうか相談します。

「通報内容・宛先・通報の方法等」を本船に指示する。

2. 保険会社への通知

事故発生日時・場所、相手船の状況など必要情報（初期対応で本船から報告があったものと同じ）を船舶保険者・P&I 保険に連絡します。以降、各種手配も後日の費用精算に関係するので、保険者と連絡を密にします。

3. 各種サーベイヤーの手配

保険会社と相談しながら、各種サーベイを手配します。

- (1) 船体損傷 (Hull Damage)
- (2) 積荷損害 (Cargo Damage)
- (3) Classification Survey (堪航性に問題がなければ不要)
- (4) Under Water Inspection Survey (必要に応じて)
- (5) ジョイントサーベイ

* 損傷事故が発生した場合に、事故に係る当事者の利益を代表するもの(船長、港湾施設管理者等)及びそれに係るサーベイヤーが現場に立会い、損傷程度、その範囲等を相互に確認するサーベイ。後日損傷の程度、修理等の費用、あるいは責任の負担をめぐる紛糾が予想されるような場合はこれを実施する必要がある。

船舶保険会社・P&I クラブと相談しながら手配を行う。

4. 本船に手配状況を連絡

事故後は相手方も含めて多数の関係者が来船します。また、場合によっては船長を含む事故当時の当直員の事情聴取が官憲当局の事務所で行われることもあります。本船側は、来船者の身元や、誰の委嘱で、何の目的で来船したのかを確認し、乗船・対応可否を判断しなければなりません。このため、陸上支援チームは本船側の関係者の情報を船長に連絡し、可能な限りチームの担当者 (SI など) を本船に常駐させることが望まれます。

陸上支援チーム

訪船者リストを作成し、本船に連絡する。

本船

舷門で訪船者の身元を確認する。

関係当局を除き、訪船者リスト外の訪船者は基本的に乗船させない。

また、対応は船長 (または SI) に限定し、他乗組員は状況等を他言しないように周知させる必要があります。基本的な対応方法は次の通りです。

4. Initial arrangements by a back-up team on shore

As soon as the first notice is received by the owners, the back-up team on shore should be established and start making records (what action was taken by who and when).

1. Notify the relevant authorities in the vicinity of the collision incident

For example, according Art.19 of Japanese Seamen's Law, the master of a Japanese flagged vessel is legally obliged to notify the Ministry of Land, Infrastructure, Transport and Tourism of any collision incident wherever it occurs. In general, the place of the collision is covered by any territorial waters of countries. Where exclusive jurisdiction is extended, the report should be sent to the country concerned. Even if damage to both vessels is minor and there seems no threat to the coastal countries, the back-up team should contact insurance companies as to whether any report should be made to the relevant authorities whilst considering the actions taken by the other vessel.

Such instructions as contents/ address/ method of notification should be given to the vessel's master.

2. Notification to the insurance company

Hull underwriters and/or P&I Club should be notified of the time, place and circumstances surrounding the other vessel (the same information as the initial report obtained from the vessel). The team should keep close contacts with them in order to settle various kinds of expenses and costs arising from the collision.

3. Appointment of surveyors

Discuss with the insurance company and arrange necessary surveys.

- (1) Hull damage survey
- (2) Cargo damage survey
- (3) Classification Survey (not necessary so long as the vessel is seaworthy.)
- (4) Under water inspection survey, if necessary.
- (5) Joint survey

* People who represent interests of the concerned parties and their surveyors attend the site in order to ascertain the extent/ degree of damage to each ship. These arrangements are necessary in order to avoid possible disputes as to degree of the damage, repair costs, and apportioning liability.

Please discuss how to make arrangements for the above survey with the hull underwriters/ P&I club and then proceed with the survey.

4. Liaise with the vessel as to arrangements

After an accident, many people, including the other vessel's interests, will want to visit the vessel. Sometimes, hearings by the relevant authorities for the officers on duty including the master will be held in the authorities' office on shore. The vessel's personnel have to check visitors' identification/ purpose and so on and have to decide whether the visitors are allowed to board the vessel. Therefore, the back-up team should liaise with the master as to visitors' information from the vessel's interests. It is highly desirable that the superintendent from the back-up team should be dispatched to the vessel as far as possible.

(1) 官憲当局

真摯に対応する。また、船長以外の乗組員に対しても取り調べが行われるので、聴取された内容は陸上支援チームに報告する。

(2) 本船側関係者

弁護士・サーベイヤー・P&I コレボン等、本船側関係者の調査には全面的に協力する。

(3) 相手方

相手方関係者には記録類開示不可、聴取にも応じない。できれば乗船自体を拒否すべき。相手方の損傷調査にも応じないこと。

5. 保証状(Letter of Guarantee or Letter of Undertaking)

双方保険会社間にて保証状の交換がなされる。

6. 海難報告書の作成と Log Book への記載内容の確認・指示

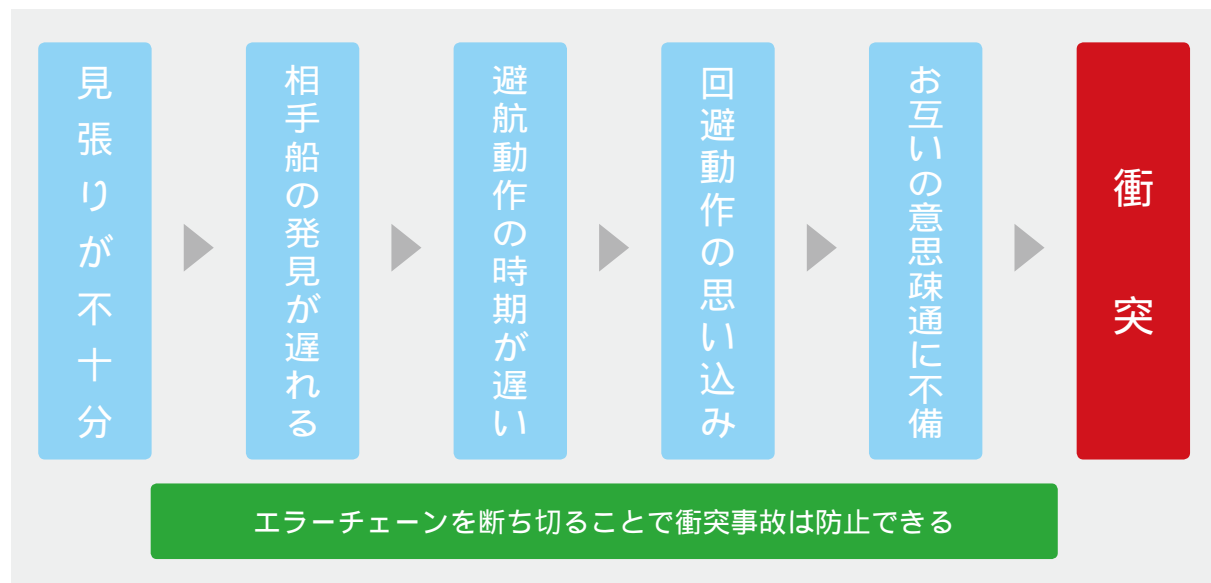
海難報告書と航海日誌は、取り消し不可の宣誓と解される。証拠書類としての重要性を認識し、注意深く作成・記入する。機関 Log Book、Bell Book、確認事項 1 ~ 2 (p.12 ~ 28) の記載内容には整合性を持たせることが必要。Log Book は要点のみの記載とする。

虚偽の記載は厳禁

5 章 衝突事故防止のために

1. 衝突事故原因

衝突事故は下記に示すように、いくつかのエラーが重なって発生します。従って、どこかでこのエラーチェーンを断ち切る必要があります。



The back-up team on shore

To make visitors' List which should be sent to the vessel.

The vessel

To confirm visitors' identification at the gate.

Visitors not listed except the relevant authorities should not be allowed to board.

Reception should be limited to the master (or the superintendent). Other officers and crew should not say anything about the accident at all. Basic reception is as follows.

(1)The relevant authorities

A co-operative attitude should be taken with them. Other officers and crew will be heard. The contents of hearings should be reported to the back-up team on shore.

(2)The vessel s interests

Full cooperation should be given to such vessel's interests as lawyers/ surveyors/ P&I correspondents.

(3)The other vessel s interests

Do not accept the concerned parties of the other vessel to investigate the documents or to carry out interviews. If possible, do not allow them to board the vessel. Do not accept their requests for the inquest on the damages.

5. Letter of Guarantee or Letter of Undertaking

The hull underwriters will exchange LOG (LOU) with each other.

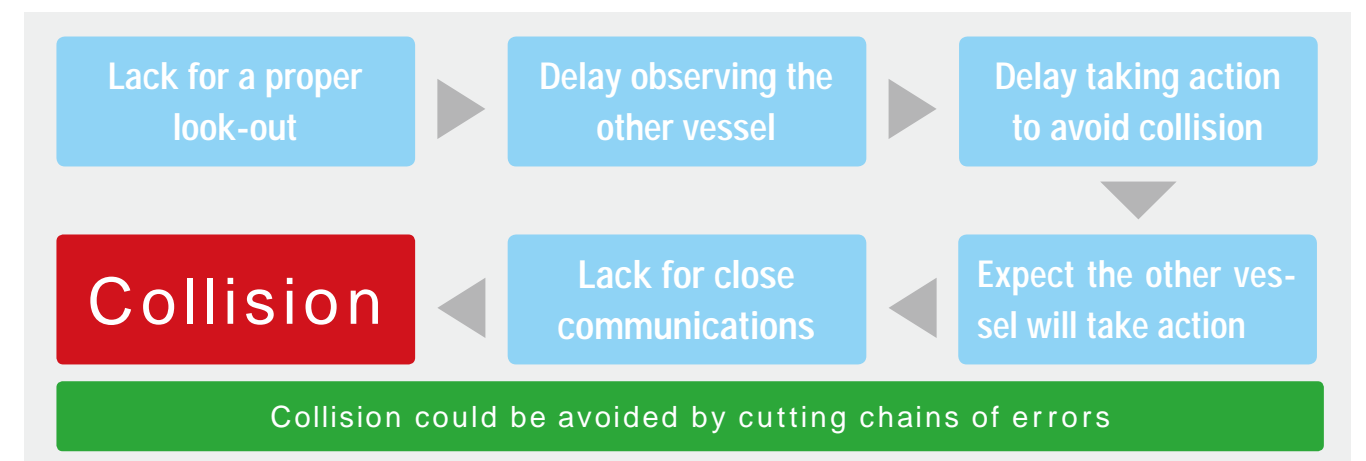
6. Preparation for Sea Protest and confirmation/instructions to entries to Log Book

Sea protest and Log Book are regarded as an irrevocable declaration. Therefore, please ensure the master recognises their importance as evidence, thus they should be carefully prepared and drawn up. Contents of Engine Log Book, Bell Book and Points to be confirmed 1~2 (p.13 ~ 29) should be consistent. Only the gist should be entered in the Log Book.

False entries are strictly prohibited.

5. To prevent a collision accident

1. Cause of the collision accident



2. 衝突事故防止のために

・見張りの重要性

目視は勿論、Radar・ARPA・AISなど利用できる航海機器は全て使用し、遠くからの継続的な動静監視が重要です。

・衝突回避動作

衝突の虞が生じる前に、早期・大角度の回避動作を取ることが重要です。

相手方の意図が不明であったり、動作に疑問がある場合は、信号・汽笛を用いると同時に、AISで船名を確認し、VHFで意思疎通を図ることも必要です。

・船舶輻輳海域・視界不良時に於ける当直員増員

躊躇することなく、航海士・甲板手を増員し、役割分担を明確に指示すること、また、BRMを徹底し、部下に報告を躊躇させないことが大切です。

* BRM (Bridge Resource Management) 又は BTM (Bridge Team Management)

船長

: 「了解」のみの回答ではなく、報告内容を反復して確認する。

: 操船意図の簡単な説明を励行する。

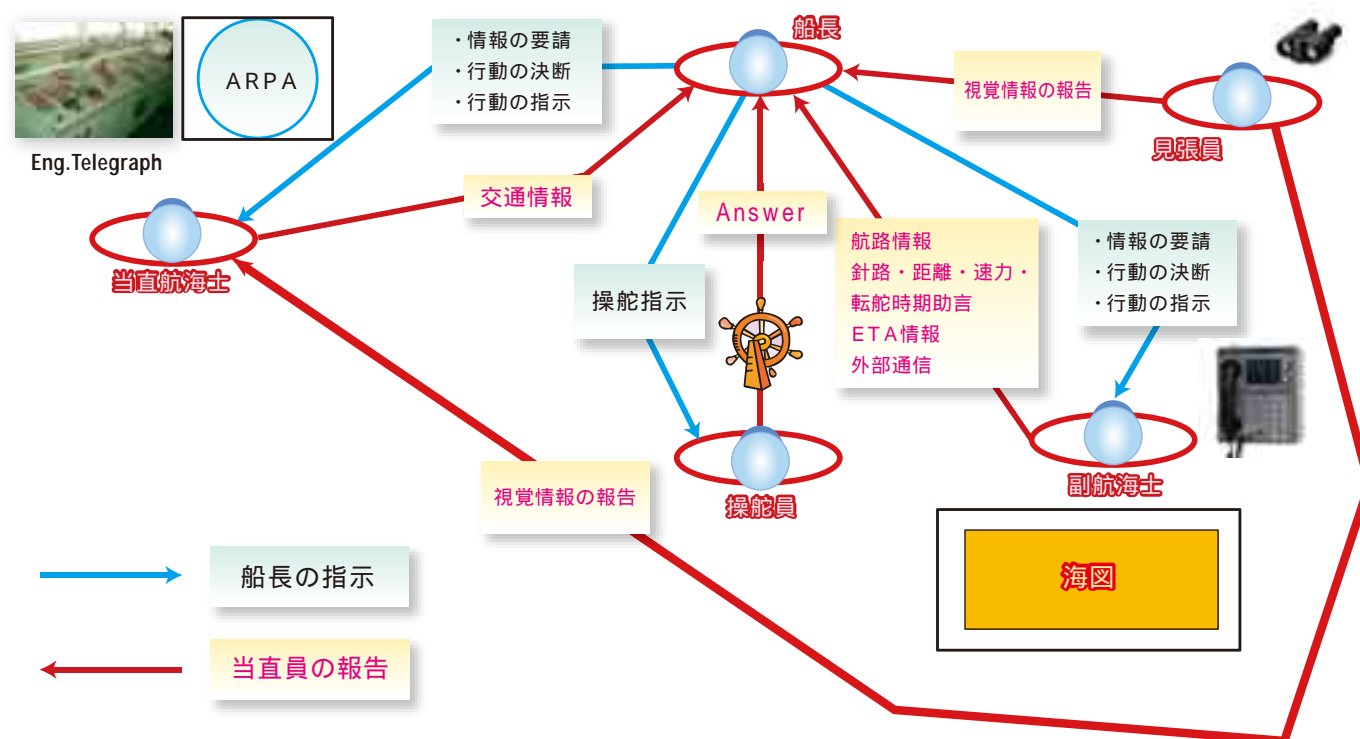
航海士・見張員

: 簡潔・明瞭に報告する。

: 他当直員の報告にも注意する。

: 疑問があったら確認する。

BRM: 船長が操船指揮、副直航海士と見張員を増員した場合の役割分担



2. To prevent a collision accident

・ Importance of look-out

It is important to continue observing the other vessel's manoeuvre even at some distance away. Do this by maintaining not only a proper look-out by sight but also all available other means, i.e., Radar, Automatic Radar Plotting Aid (ARPA), Automatic Identification System (AIS), etc.

・ Actions to avoid collision

It is necessary to take action to steer at wide range angle as soon as possible not to create a risk of collision.

If the other vessel's intentions and manoeuvres seem unclear and doubtful, signals and sound signals should be used and, at the same time, VHF radio should be used to make good communication, after confirming the other vessel's name by AIS.

・ Enhancement of watchmen in the busy traffic zone/ under poor visibility

Without hesitation, further deck officers and hands should be called and be clearly instructed on what they should do to assist in avoiding a collision. Bridge Resource Management (BRM) should be learned thoroughly. It should be important for officers and crew not to hesitate to report to more senior officers.

The master

: Repeating the contents reported. Saying only "understand" does not mean his firm confirmation.

: Making a brief explanation as to his intention of manoeuvring the vessel.

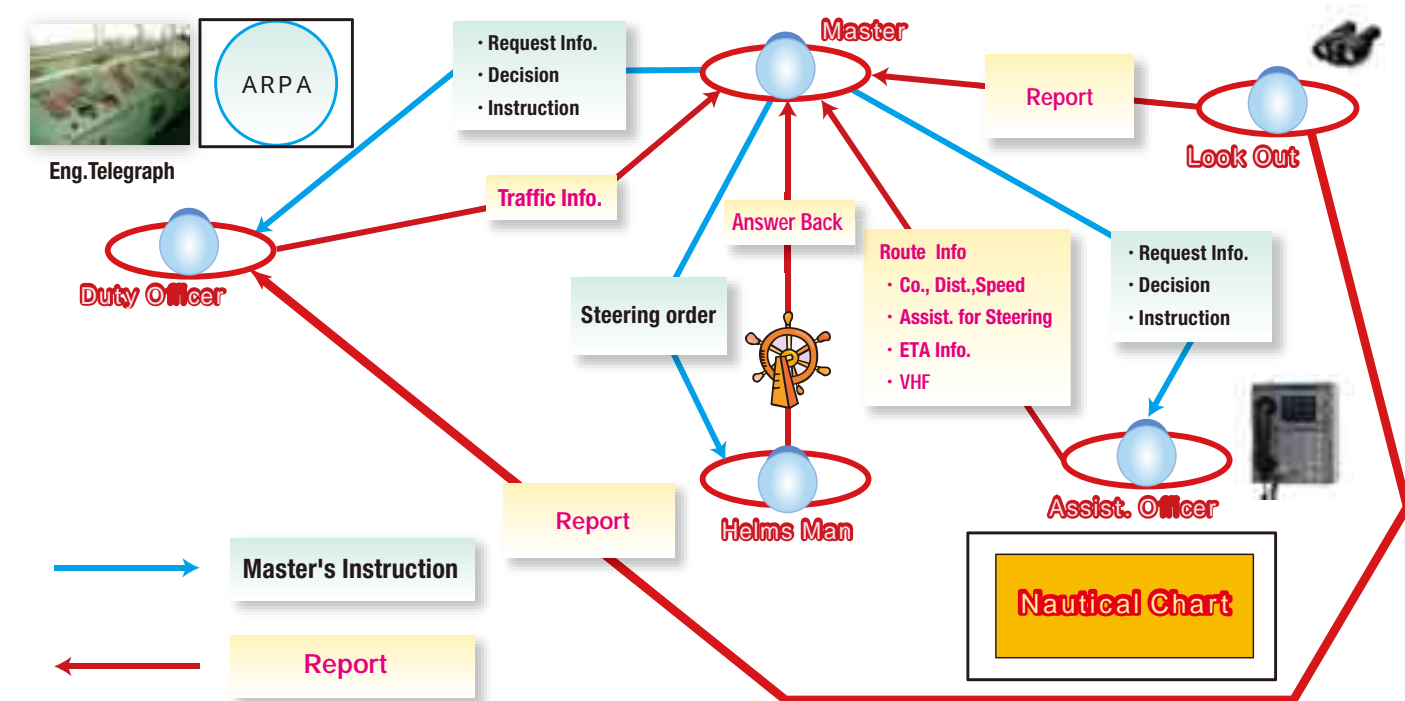
Deck officers and hands

: Reporting in brief clearly.

: Be careful with reporting from other officers and crew.

: If in doubt, please confirm.

BRM: Command by the Master In case of Additional Officer and Look Out added



- ・減速することに躊躇しない。

船舶輻輳海域では、躊躇わずに減速し、機関 S / B とします。

心理的にも物理的にも余裕を持てる

例：残航 20 海里を 20 ノットだと 1 時間、15 ノットならば 1 時間 20 分。(その差はたった 20 分)

- ・当直者の能力把握と指示を徹底する (船長)

= 当直者の能力把握 =

知識・技量不足：航海計器取り扱い、交通法規
On Board Training の実施、入港前のブリーフィング
個人差 (個性)：自信過剰、怠慢、油断、遠慮など
BRM の徹底・指導
能力限界：一人三役は無理 (通信・位置確認・見張り)
余裕を持った人員配置計画

= 指示徹底 =

Standing Order で守るべき CPA、視界が XX 海里以下になった場合の船長への報告などを具体的に指示する。
操船権の授受を明確にし、船長も当直航海士の引き継ぎを受ける。
BRM を徹底し、疑問に思ったら確認する雰囲気を保つ。
当直員を増員したら、役割分担を明確に指示する。

衝突を想定した操練を定期的にも実施することも、乗組員教育に有効です。

- ・ Do not hesitate to reduce speed.

In particular, in the busy traffic zone without hesitation, reduce speed. Engine should be stand-by.

By doing so, the vessel's personnel could be psychologically and physically calm.

For instance, assuming that the rest of voyage distance is 20 NM, it takes 1 hour by 20 knots and 1 hour and 20 minutes by 15 knots. (Delay would only be 20 minutes.)

- ・ For the master, to grasp capability of persons on duty and drive his instructions home to them.

= To grasp capability of persons on duty =

Lack of knowledge/skills: Handling nautical instruments/ rules for navigating vessels
Carrying out on board Training Briefing before entering ports
Personality: Overconfidence/ Negligence/ Carelessness/ Reserve, etc.
Ensuring people understand BRM.
Limit of capability: Impossible for one person to do three jobs, as in Communication/ positioning/ look-out
The arrangements for personnel stations should be clear.

= The thoroughness of the master's instructions =

Under Standing Orders, give clear instructions on CPA, and in the situation of poor visibility, under visibility of what nautical miles the master should be reported.
Communicate clearly when taking over the watch. Even the master should be given a briefing when taking over from officers on duty.
Ensure BRM is understood and carried out correctly. Create atmosphere where it is easy to ask if in doubt.
When enhanced officers and crew on duty, make sure everyone knows their job.

It is advisable for the purposes of educating the crew that collision drills should be practiced regularly.