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OUTLINE OF INCIDENT

At 0505 hours local time on 21 February 1990 the Australian flag bulk carrier IRON KEMBLA, whilst on passage from Newcastle NSW to Tobata, Japan, collided with the Japanese fishing vessel KASUGA MARU in a position approximately 4 miles WSW of Hino Misaki lighthouse in Kii Suido. The fishing vessel capsized and one of the two crew members lost his life.

AUTHORITY TO CONDUCT AN INVESTIGATION

On 8 March 1990 John Keith Leverton, Executive Officer Ship Operations Section, Maritime Operations Division, and John Anthony Thompson, Acting Principal Marine Surveyor NSW were appointed to make a preliminary investigation into the circumstances of the collision between the Australian flag motor ship IRON KEMBLA and the Japanese fishing vessel KASUGA MARU, in which one of the Japanese fishermen lost his life, in the vicinity of latitude 33 degrees 51.5 minutes North, longitude 134 degrees 59.5 minutes East on the 21st day of February 1990 and in particular :

the factors which caused or contributed to the collision

the actions taken by the Master and crew of IRON KEMBLA following the collision to protect life and property.

PERSONS INTERVIEWED

Captain J A Thompson boarded IRON KEMBLA at Port Kembla on 5 April 1990 and interviewed the following personnel :

Captain John Walker Johnston	Master
James Gordon Arthur	Chief Officer
Peter Gerard Lilly	Able Seaman

No statement by the Japanese Skipper of the fishing vessel KASUGA MARU was available to the investigating officers. Consequently this report is based upon the statements made by and the interviews of the above officers, plus the documentation of the incident from the IRON KEMBLA.

PARTICULARS OF SHIP

IRON KEMBLA Flag: Australian

Port of Registry: Melbourne

Type: Bulk Carrier

Year Built: 1986 Number of Crew: 28

Classification Society: Det Norske Veritas

Owners: BHP Transport Ltd., Melbourne, Victoria.

GRT	78625	Length Overall	283.50 m
NRT	48709	Beam	47.01 m
Deadweight	148140 tonnes	Depth	21.52 m
		Summer Draught	15.924m

Means of propulsion : Motor - single screw

Engine : Sulzer - 6 cylinders - 11760 kW

Speed : 14.25 Knots.

INTERNATIONAL CERTIFICATES EXPIRY DATES

Cargo Ship Safety Construction	26.03.91
Safety Equipment	16.03.90
Safety Radiotelegraphy	16.03.90
International Loadline	26.03.91
International Oil Pollution Prevention	16.03.93

NAVIGATION AIDS

Radars : Racal Marine type AC 1690 + ARPA 1690
Gyro Compass : Plath - Navigat II
VHF Radios : AWA Pilot Phone IX + Marconi Marine DSlOOR
SATNAV : Racal Decca MNS200
Echo sounder : Simrad - Skipper ED162
SATCOMM : Japan Radio Co - Inmarsat
Loran C
Decca Nav.

PARTICULARS OF SHIP

KASUGA MARU Flag : Japanese

Type : Power-driven fishing vessel

Length : 20 m (approximately)

Construction : Fibreglass

Crew : 2

EVENTS PRIOR TO THE COLLISION

IRON KEMBLA sailed from Newcastle, NSW, on 7 February 1990 with a cargo of 129,642 tonnes of coal in bulk for discharge at the Japanese ports of Tobata and Hirohata. Mean draught on departure was 14.515 metres.

The voyage northward was uneventful and as a result of better than average weather a good speed had been maintained. On the morning of 21 February 1990 IRON KEMBLA was steaming at the slightly reduced speed of 13 knots through the water in order to maintain ETA Osaka Wan Pilot Station at 0615 LMT.

At 0114 hours 21 February, in position by Satnav 33 04.9N: 135 15.8E, IRON KEMBLA was on a course of 340T and headed for the voluntary Traffic Separation Scheme off Hino Misaki in Kii Suido, the narrow strait between the east coast of Shikoku and Honshu. The night was fine, with excellent visibility and with the wind from the northwest at force 6.

The Master was called at 0300 hours, as per his instructions in the Night Order Book and arrived on the bridge at about 0315 hours. As anticipated by the Master the traffic in the area was heavy, with a great number of fishing vessels, some coastal shipping and a few larger ships. After assessing the situation the Master decided to take over responsibility for the conning of the ship and advised the Second Officer accordingly, leaving the Second Officer to concentrate on his navigational duties. The Master's preferred position for conning was on the centre line up against the bridge front windows, from which position he could quickly ascertain the relative movement of other shipping. A gyro compass repeater was located on the bridge front bulkhead at this position to facilitate this operation.

In addition to normal steaming lights IRON KEMBLA was also exhibiting an all-round, flashing green light, a light required under the Japanese regulations for vessels over 200 metres in length navigating in the Inland Sea.

At 0400 hours the Chief Officer relieved the Second Officer as Officer of the Watch, the Seaman Lookout also being relieved at this time. The Master advised the Chief Officer that he, the Master, would con the ship through the traffic whilst the Chief Officer kept track of the ship's position and assisted with the look-out for other shipping. Relieved of the responsibility for the con, the Chief Officer

proceeded to plot the ship's position at ten minute intervals. The Lookout was stationed on the starboard bridge-wing and reported lights to the Master and Chief Officer as they were seen.

IRON KEMBLA was proceeding under auto-pilot and with the main engines under bridge control, however the engineroom was manned, the Fourth Engineer having commenced duties at 0400 hours in readiness for arrival at the pilot station. Both of the ship's radar sets were in operation, with the 6 and 12 mile ranges being utilised as appropriate for navigational purposes. The Bridge VHF Radio was switched to Channel 16 and a listening watch was being maintained.

As IRON KEMBLA closed the land the wind moderated to about force 3 and became northerly. The visibility remained excellent with shore lights being picked up at ranges in excess of 20 miles.

Low slack water in the area had occurred at 0045 hours with the next high tide slack water being at 0846 hours. As IRON KEMBLA approached the Traffic Separation Scheme the ship would therefore have been experiencing a northerly flooding tide of about one knot, resulting in a speed of approximately 14 knots over the ground.

SEQUENCE OF EVENTS OF THE COLLISION

At 0441 hours 21 February 1990, in a position with Hino Misaki light bearing 030T distance 7.2 miles, IRON KEMBLA altered course from 340T to 003T, the course required to transit the Traffic Separation Scheme and to approach the Osaka Wan pilot station. On this new heading a number of fishing vessels were observed bearing between one and two points on the port bow, whilst a large number of fishing vessels and some small coasters were to starboard, in the inshore area off Hino Misaki.

At about 0452 hours a vessel was sighted by all three persons on the bridge, approximately 15 degrees on the port bow at an estimated distance of 3 miles. The vessel was showing a green (side) light and some white lights, which appeared to be from the accommodation. There was no discernible masthead or stern light.

The Master continued to observe this other vessel from his vantage point on the centre line and determined that it was crossing slowly from port to starboard: no compass bearings were taken of the other vessel, nor were the radars used either to ascertain the distance off or to run a plot - the vessel was not targetted on the ARPA.

At 0456 hours the other vessel had closed to about 8 degrees on the port bow, at a distance of approximately 2 miles and the Master estimated that it would cross ahead of IRON KEMBLA at a distance of about 1 mile. Then, at about 0500 hours, when the other vessel was still about 2 or 3 degrees on the port bow and a little over a mile away, the green sidelight cut out. Observing the other vessel through binoculars the Master was of the opinion that the other vessel had altered course to port and was running on an approximately parallel course to that of IRON KEMBLA and appeared to be making about 5 knots. The Master, at about 0501, ordered "hard a starboard" and sounded one short blast on the whistle. As the Lookout was on the starboard bridgewing, the Chief Officer went to the steering console to change over to manual mode and to carry out the helm order.

Very shortly thereafter the other vessel switched on a flashing amber light, a signal used by fishing vessels in Japanese coastal waters. The glare from this light lit up the deck of the vessel sufficiently for those on the IRON KEMBLA to be able to confirm that it was on a northerly heading. After about another minute the fishing vessel altered course to starboard, to head back across the bow of the IRON KEMBLA, which by this time was swinging fairly

quickly to starboard through a heading of approximately 021 degrees. Despite the fact that the IRON KEMBLA was swinging to starboard, the fishing vessel rapidly closed with IRON KEMBLA and very quickly disappeared from view to those on the IRON KEMBLA bridge, becoming hidden in the blind area caused by the flare of the bow, which at the draught and trim of IRON KEMBLA at that time would have extended some 250 metres ahead. The Master immediately ordered the helm "hard a port", fearing that in continuing the swing to starboard IRON KEMBLA's stern might swing into the fishing vessel.

At 0505 hours the Lookout reported an upturned boat close-to on the starboard side. Both the Master and the Chief Officer went to the starboard bridgewing and saw the capsized boat, which appeared to be of fibreglass construction and approximately 20 metres in length. Although nothing was felt or heard, the Master was of the opinion that contact between the two vessels occurred shortly after 0504 hours.

The Lookout was instructed to take the helm and to steady up on the 003T course, whilst the Chief Officer fixed the ship's position. The Master, at about 0506 hours, contacted Kobe Wan Radio by VHF radio, in order to report the incident, which, partly due to language difficulties, took several minutes.

EVENTS FOLLOWING THE COLLISION

Having steadied IRON KEMBLA on the 003T course, the Master considered that the traffic density was such that it was not safe to turn around at that point and so continued along the northbound traffic lane, concurrently reducing the main engine speed to full manoeuvring speed. The crew dayworkers were called at 0510 hours, turning out about ten minutes later, to rig overside flood lights and to prepare the rescue boat.

At 0518 the Master considered that he had sufficient sea room, turned about to starboard and proceeded back to the collision position WSW of Hino Misaki light, arriving at approximately 0548, as dawn was breaking. However, as there were already about half a dozen other fishing vessels at the scene, with others approaching, all that the Master could do was stand off at a distance of about 3 cables, monitoring instructions from Kobe Huan Radio.

At 0954 IRON KEMBLA was boarded by two Officers of the Japanese Maritime Safety Agency, who interviewed the Master, refusing his request for permission to proceed to Tobata, the first port of discharge. Instead, the Master was instructed to proceed to Tanabe, some 20 miles to the southeast, where the incident was to be investigated. IRON KEMBLA departed from the scene of the collision at 1107 hours and anchored off Tanabe at 1420 hours 21 February 1990, where she was detained until 1400 hours 24 February 1990.

During the course of the Japanese investigation it was established that the name of the fishing vessel was KASUGA MARU, that it had been crewed by a father and son team and that the son had lost his life. Reportedly, the fishing vessel skipper claimed that he had been on a course of ESE and proceeding at a speed of 2 knots. The fishing vessel was recovered and, reportedly, found to have only minor damage to the starboard quarter.

The only evidence of contact found on IRON KEMBLA was some light coloured paint on the eyebrow beneath the starboard hawsepipe.

COMMENT

Shipping in Japanese waters is extremely dense, with large numbers of small fishing vessels. Under Japanese local regulations, fishing vessels exhibit a bright all-round flashing amber light to indicate that they are fishing and for ease of recognition as a fishing vessel. Due to the high density of shipping, passing close to other ships is common-place and one ship crossing one mile ahead of another does not cause undue concern.

The all-round, flashing green light as exhibited by IRON KEMBLA is a signal required under the Japanese Inland Sea Navigation Regulations to be exhibited by vessels over 200 metres in length whilst navigating in the Inland Sea: such vessels have the right of way. The fact that IRON REMBLA was exhibiting this signal in the Kii Suido is not considered to be significant in this incident.

The Japanese Authorities have implemented a voluntary Traffic Separation Scheme at the southern end of the Kii Suido. As this Traffic Separation Scheme is voluntary and not adopted by the International Maritime Organization (IMO), its purpose being to separate traffic inbound for and outbound from the Inland Sea, the requirements of Rule 10 of the International Regulations for Preventing Collisions at Sea (COLREGS) do not apply.

In advising the Officer of the Watch (first the 2nd Officer and later the Chief Officer) that he was taking over the responsibility for conning the vessel, the Master was quite correct in his actions and in compliance with the IMO Standards for Training and Watchkeeping Convention and with the instructions contained in the owner's Operating Manual.

As visibility was clear, the Master chose to con the ship visually and by stationing himself on the centreline of the ship would have been able to readily ascertain whether or not the relative bearings of other ships were changing. However, bearings obtained in such a manner are only approximate and estimations of distance open to considerable error, even where a person has extensive experience.

The Master had at his disposal a gyro repeater situated on the centreline at the front of the wheelhouse, which would have assisted him in ascertaining the rate at which the other ship was crossing ahead. Also, the IRON KEMBLA is equipped with two radar sets, both of which were in operation at the time, and yet the Master did not move across to either of the sets in order to ascertain whether or not the KASUGA MARU was depicted on the screen and if so to confirm his estimate of the distance off.

The Chief Officer, as Officer of the Watch, was maintaining a frequent check on the ship's position, plotting the position at ten minute intervals. However, although the Master may formally take over responsibilty of the con, the Officer of the Watch should still monitor events, such as by monitoring the radar to ascertain the distance off of other ships and advise the Master as appropriate.

When course was altered at 0441 hours from 340 degrees to 003, the IRON KEMBLA was proceeding into a narrowing seaway with fairly dense shipping. Therefore it would have been prudent of the Master to double-up on the crew watchkeepers and place one of the men at the wheel. When the Master ordered 'hard a starboard' it was the Chief Officer who went to the steering console and executed the command, thus having his attention distracted from the other vessel at a crucial time. The lookout did not take the wheel until after the collision had occurred.

The lights exhibited by the KASUGA MARU indicated to those on the IRON KEMBLA that it was a ship headed in an easterly direction, across the track of the IRON KEMBLA from port to starboard. All three persons on the bridge of the IRON KEMBLA were adamant that the KASUGA MARU was not showing any fishing signals and the position was assumed to be that of a normal crossing situation, with the KASUGA MARU the "give way vessel". However, the lights as described by the Master (green side light and accommodation lights) and the Chief Officer (green side light) are those prescribed for a sailing vessel (COLREGS Rule 25[a]). The Master of IRON KEMBLA should therefore have acted as the "give-way vessel" and a small alteration of course to port, at approximately 0455, to put the KASUGA MARU right ahead, or fine to starboard would have been appropriate and would have avoided the developing situation. Even allowing that the KASUGA MARU was in fact a "power-driven vessel", as appraisal indicated that it would pass clear ahead, a small alteration of course to port under such circumstances would still have been appropriate.

When the KASUGA MARU, at about 0500 hours, at an estimated distance of a little over one mile and still fine on the port bow, allegedly altered course to port onto a course approximately parallel to that of the IRON KEMBLA, the action of the Master in altering course to starboard is considered to be correct. If at this stage the KASUGA MARU was in fact approximately one mile ahead, the Master's action of ordering "hard a starboard' appears rather over reactive: 15 or 20 degrees of starboard helm should conceivably have been sufficient.

Onordering the helm 'hard a starboard', the Master, correctly, sounded one short blast on the whistle, to indicate his action. The reasons for the KASUGA MARU then to display the flashing amber fishing light and then approximately another minute later to alter back to starboard across the bow of IRON KEMBLA are not known (see later comments). However, the fact that the KASUGA MARU then very shortly thereafter became obscured from view to those on the IRON KEMBLA bridge, due to the bow, indicates that the distance off was less than the Master had estimated earlier. This point may account for his 'instinctive reaction' of ordering 'hard a starboard' at 0501.

When the KASUGA MARU was observed to alter back to starboard, towards the IRON KEMBLA and thus precipitating the collision, the Master should have given at least five short rapid blasts on the whistle (Rule 34[d] of the COLREGS). However, it is doubtful whether the giving of such a signal would have altered the outcome of the incident.

At the time that the KASUGA MARU became obscured from view the IRON KEMBLA was swinging 'fairly quickly' to starboard, with the helm still in the 'hard a starboard' position. By changing the rudder from 'hard a starboard' to 'hard a port' the effect would have been to reduce the rate of turn and also to reduce the ship's speed through the water slightly (Master's evidence, by 1.5 knots). This resulted in the KASUGA MARU passing across the stem of the IRON KEMBLA, to appear, capsized, down the starboard side.

Had the helm been left in the 'hard a starboard' position the rate of turn of IRON KEMBLA would have increased as against being reduced. Whether such action would have been sufficient to avoid collision, or whether the KASUGA MARU would have then been hit fair and square by the stem, is a matter of conjecture.

On the sighting of the upturned KASUGA MARU passing down the starboard side the Able Seaman was placed on the wheel and instructed to steady up on the original course of 003 degrees. No consideration appears to have been given to swinging the stern clear of the KASUGA MARU or clear of any persons who may have been in the water. However, in all probability the KASUGA MARU and any persons in the water would have been well astern before any such actions would have taken effect.

Although under normal conditions engine speed is reduced under programmed sequence to manoeuvring speed, in an emergency situation under sea speed conditions the engine speed may be reduced or even stopped without undue problems occurring.

Although the shipping situation was reported to be such that the IRON KEMBLA could not turn about immediately, the ship's engine speed should have been greatly reduced, if not actually stopped, as soon as it was evident that a collision had occurred.

In advising the Japanese Authorities of the collision and in turning about, as soon as he considered it safe to do so, in order to offer assistance to the KASUGA MARU, the Master of the IRON KEMBLA was correct in his actions.

As the relative bearings and distances, possibly the times also, are approximate, reconstruction in diagramatic form is difficult. However, at around 0502.5 the KASUGA MARU was lost to view from the bridge of the IRON KEMBLA, due to the flare of the bow, thus being only some 240 metres from the bow. From this it is deduced that the Master over estimated distances by some 3 cables, certainly at 0500. A diagramatic indication of the approximate relative positions of the two vessels, based on the statement of the Master of IRON KEMBLA, is contained in Attachment 1.

The normal practice of Japanese pilots in the Seto Naikai (Inland Sea), where a fishing vessel is impeding the progress of a large ship (one over 200 metres in length displaying the green flashing light) is to sound a prolonged blast on the ship's whistle. Under Japanese Safety Laws and Regulations such large ships have the right of way.

The KASUGA MARU was observed to alter course to a northerly heading, a large alteration from its original easterly heading, and may therefore be assumed to have been taking, albeit rather late, avoiding action. Why the KASUGA MARU then altered back to starboard is difficult to explain. However, on hearing the whistle signal from the IRON KEMBLA the fisherman may have taken this to be a warning, rather than a manoeuvring signal. On looking astern the fisherman at this stage may well have been able to see both sidelights of the IRON KEMBLA and so have considered himself to be right ahead of this other ship. If so, expecting the IRON KEMBLA to maintain its course, he may then have decided to alter back onto his original course. What-ever the fisherman's reasons, his alteration to starboard, back to an easterly heading, must have quickly followed the commencement of IRON KEMBLA's swing to starboard under hard a starboard helm, thus making collision inevitable.

CONCLUSIONS

1 Had both ships maintained their course and speed as those for the period 0452 - 0459, the collision would not have occurred.

2 The collision is considered to have been brought about by the KASUGA MARU altering back onto an easterly course after having first altered onto a northerly course, parallel to that of the IRON KEMBLA. This second alteration occurred almost simultaneously with the alteration to starboard (towards the east) by the IRON KEMBLA. The coincidence of the alterations made the collision inevitable.

3 The KASUGA MARU was not exhibiting the correct navigation lights, either those for a power-driven vessel under way or those for a vessel engaged in fishing, as required by the International Regulations for Preventing Collisions at Sea.

4 The Master of the IRON KEMBLA was correct in ordering an alteration of course to starboard when the KASUGA MARU was observed to alter course to port to run on a parallel course.

5 The Master of the IRON KEMBLA was correct in advising the Japanese Authorities immediately after the incident that a collision had occurred.

6 The Master of IRON KEMBLA was correct in turning about in order to offer assistance to the crew of the capsized fishing vessel.

7 The Master of IRON KEMBLA is considered to have been at fault in assuming the KASUGA MARU to be power driven and that he therefore had the right of way, when the lights reportedly observed were those required to be shown by a sailing vessel.

8 The Master of IRON KEMBLA could have prevented the situation developing by making an early, small alteration of course to port, to assist the small vessel to cross his bow.

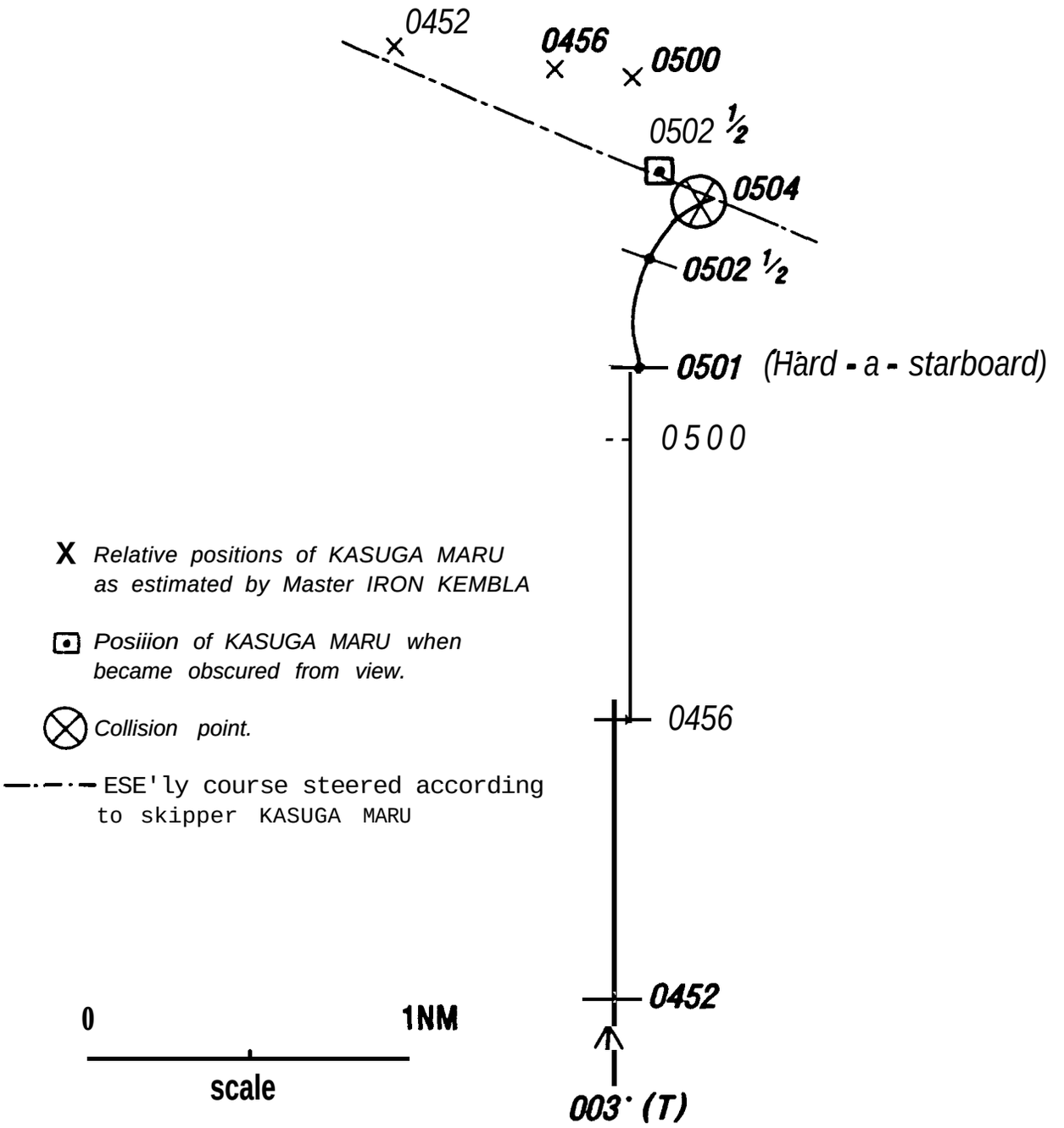
9 The Master of IRON KEMBLA is considered to have been negligent in that he did not make use of all of the navigational equipment available to him in conning the ship.

10 **The Master of the IRON KEMBLA is considered to have been remiss in not reducing speed immediately the capsized fishing vessel was sighted.**

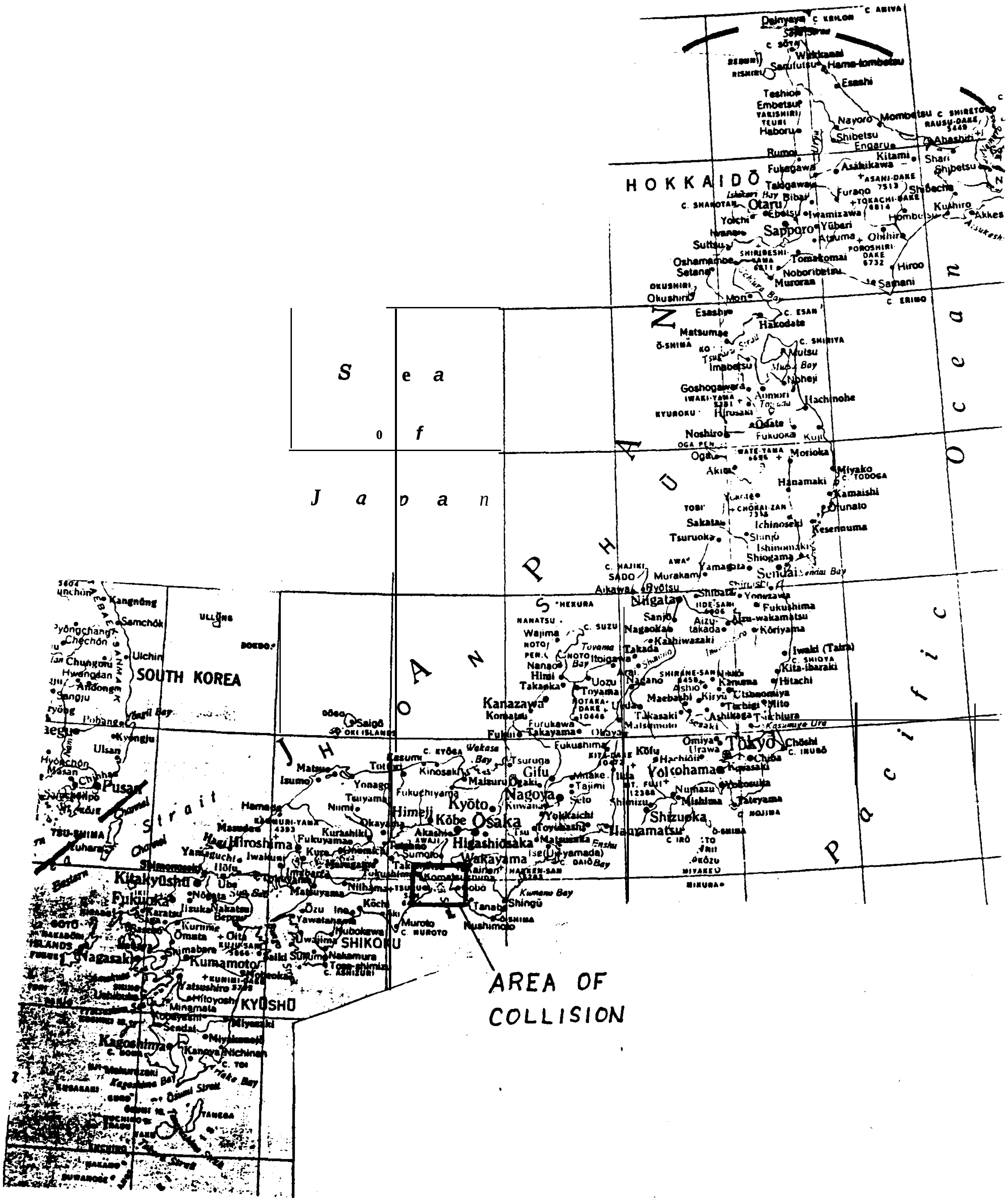
11 **The Bridge Procedures aboard the IRON KEMBLA were deficient in that the Officer of the Watch did not, as a matter of course, monitor shipping on the radar so as to assist the Master by keeping him informed of the distances of other ships, or by targetting other ships on the ARPA.**

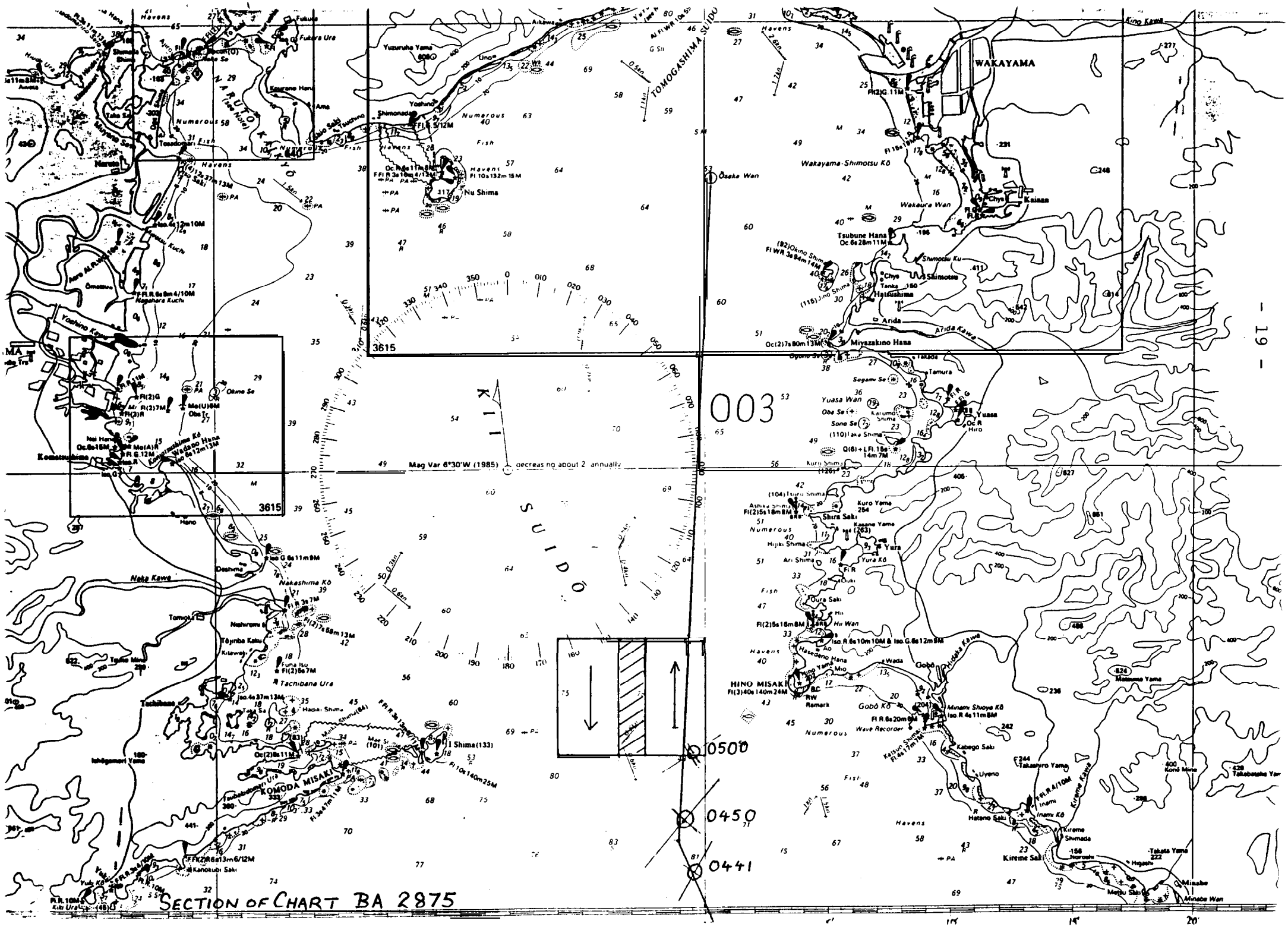
ATTACHMENT 1

DIAGRAM OF RELATIVE POSITION OF THE TWO VESSELS



Iron Kembla


Sea of Japan
HOKKAIDŌ
HONSHŪ
JAPAN
Pacific Ocean
SOUTH KOREA
SHIKOKU
KYŪSHŪ
Sapporo
Otaru
Hakodate
Sendai
Niigata
Tokyo
Yokohama
Nagoya
Kyōto
Kōbe
Osaka
Hiroshima
Fukuoka
Nagasaki
Kumamoto
Kagoshima
Pusan
AREA OF
COLLISION



SECTION OF CHART BA 2875