Report on the investigation of

the collision between the

United Kingdom registered feeder container ship

Celtic King

and the Belgian registered fishing vessel

De Bounty

to the south of The Smalls traffic separation scheme

off the south-west coast of Wales

on 19 March 2000

Marine Accident Investigation Branch
First Floor
Carlton House
Carlton Place
Southampton
United Kingdom
SO15 2DZ

Report No 2/2001

Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

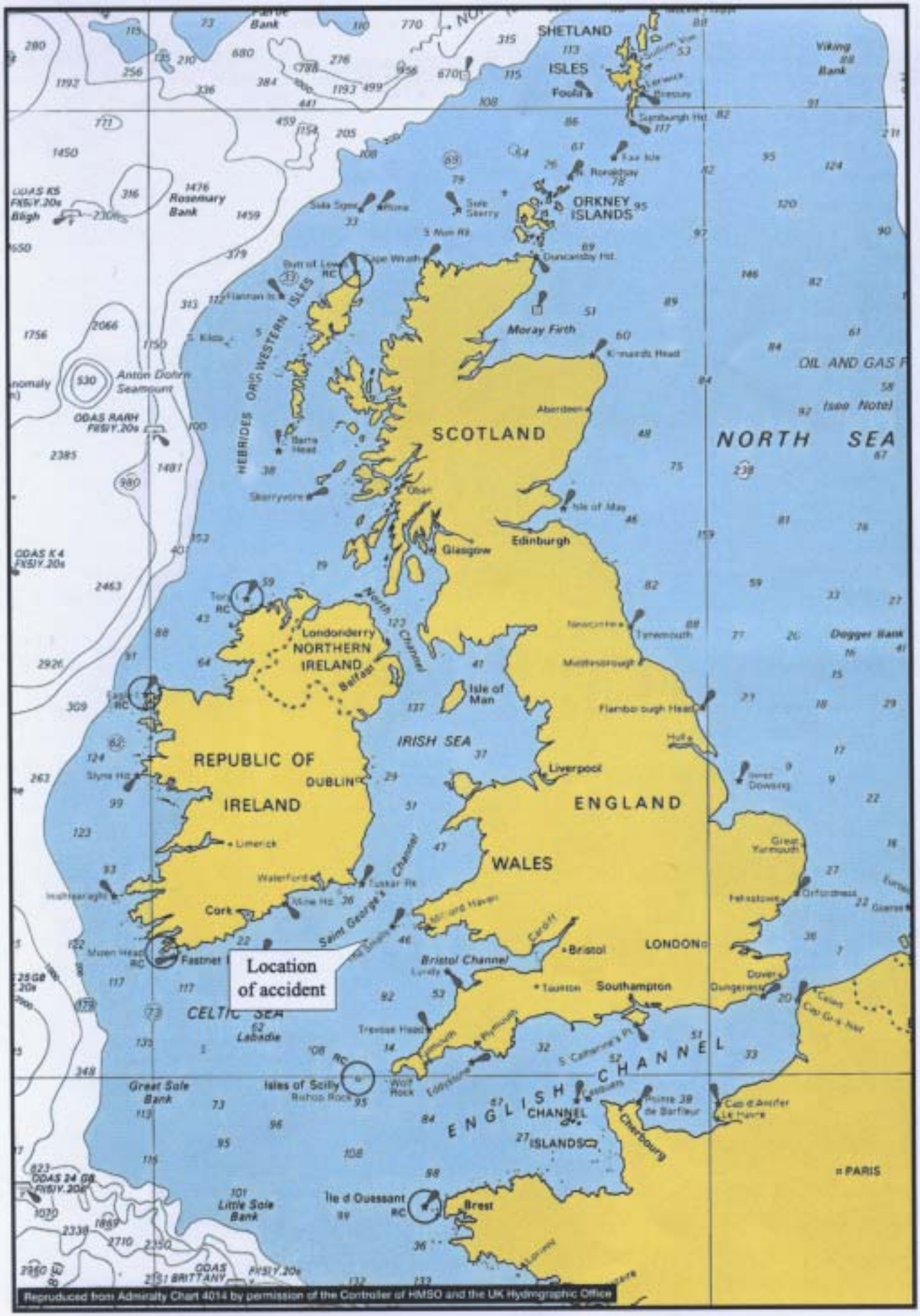
Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the cause with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ARCS	Admiralty Raster Chart Service
ARPA	Automatic radar plotting aid
CPA	Closest point of approach
GPS	Global positioning system
GMDSS	Global Maritime Distress and Safety System
m	metre
MCA	Maritime and Coastguard Agency
teu	Twenty-foot equivalent unit (container)
UTC	Universal co-ordinated time
VHF	Very high frequency



SYNOPSIS

At about 1912 (UTC) on 19 March 2000, the United Kingdom registered 4,015gt cargo ship *Celtic King* was in collision with the Belgian registered 38m fishing vessel *De Bounty*. The MAIB was informed of the accident at 2243 that day. Captain D Wheal and Captain P Kavanagh carried out the investigation.

Celtic King was on passage from Dublin to Le Havre with a cargo of containers. The chief officer was on the bridge. A lookout, who could be contacted at any time, was on stand-by below. The chief officer altered course at 1755 to 196° true to take the ship through The Smalls traffic separation scheme. The ship was making good a speed of 13.1 knots. The range of visibility was about 0.5 to 1 mile at that time. At about 1830, he observed a radar echo about 6 miles away on the starboard bow. The ARPA predicted that its CPA ahead was about 2 miles, the vessel was making good a course of about 110° and a speed of about 6 knots. At about 1902 the chief officer lost the echo in the sea clutter and used the manual clutter control to try and find it. He then saw a vessel on his starboard side at close range. The range of visibility had reduced such that he could not see the bow of his own ship. The bow of the other vessel collided with *Celtic King* and damaged the forward end of her accommodation superstructure.

De Bounty, a beam trawler, had shot her gear away at 1700; the mate relieved the skipper at about 1730 to take the navigational watch. The skipper went to his cabin, which was behind the wheelhouse, to read. The mate kept to the tracks which the skipper had entered into the electronic chart system. At first, the mate headed north, then turned the vessel and steered her in a generally southern direction. At about 1842 the echo of *Celtic King* appeared on *De Bounty*'s radar set on the 6-mile range scale. The mate knew that the echo was a ship heading towards *De Bounty* but he did not plot her movements. At about 1903, he turned the fishing vessel to port on to an easterly heading and made good a course of about 050°. At about 1907, he altered course to starboard and made good a course of about 072°. He then became concerned that a close quarters situation was developing, and made a sound signal on the whistle. This alerted the skipper, who entered the wheelhouse and saw an arced echo at close range. The skipper and the mate looked out of the wheelhouse windows and saw the starboard side of a ship at close range. The skipper put the engine astern but it was too late, and *De Bounty*'s bow collided with the ship. The fishing vessel sustained only minor damage.

The mate of *De Bounty* wrongly assumed that *Celtic King* was obliged to keep out of the way of his fishing vessel in restricted visibility, and kept to the planned track on the electronic chart system. The chief officer of *Celtic King* did not appreciate the changes in course made by *De Bounty* after the initial prediction made by the ARPA. Had he done so he might have taken suitable early and substantial action to avoid a close quarters situation.

The MAIB has no safety recommendations to make at this time.

PARTICULARS OF VESSELS AND ACCIDENT

Vessel details

Name of vessel	:	*Celtic King* **(Photograph 1)**	*De Bounty* **(Photograph 2)**
Registered owner	:	Charles M. Willie & Co Ltd	Rederij De Bounty B.V.B.A
Port of registry	:	Cardiff	Zeebrugge
Flag	:	United Kingdom	Belgium
Type	:	General cargo (feeder container)	Beam trawler
Built	:	1999 in Turkey	1993 in Belgium
Classification society	:	Lloyd's Register of Shipping	None
Construction	:	Steel	Steel
Length overall	:	99.4m	37.87m
Gross tonnage	:	4,015	385
Engine power	:	4,891kW	795kW
Service speed	:	15.5 knots	About 10 knots free running

Accident details

Time and date	:	1912 UTC on 19 March 2000
Location of incident	:	Latitude 51 36.6' N longitude 006 00.8'W 14.5 miles south-west of The Smalls lighthouse
Persons on board	:	11 / 6
Injuries/fatalities	:	None / None
Damage	:	Severely distorted bulwarks, gangway and hull / Slight damage to stem

Photograph 1

Celtic King alongside in Southampton

Photograph 2

De Bounty entering Milford Haven dock

SECTION 1 - FACTUAL INFORMATION

1.1 NARRATIVE

All times are UTC. All courses are true.

1.1.1 Events leading up to the collision - De Bounty

On 4 March 2000, *De Bounty* landed her catch in Milford Haven, remaining there while her crew went home on leave. On 10 March the crew returned and the vessel sailed from Milford Haven the next day. Each fishing tour lasted about three weeks, during which time the vessel landed her catch twice.

On 19 March, *De Bounty* hauled her nets at about 1600 and, because there were repairs to be carried out on her fishing gear, the crew did not shoot away again until about 1700 **(see section 1.4.1)**. The next haul was due at about 1930.

At 1730, the mate relieved the skipper in the wheelhouse. After talking to the other crew members, the skipper went to his cabin behind the wheelhouse, to read a book.

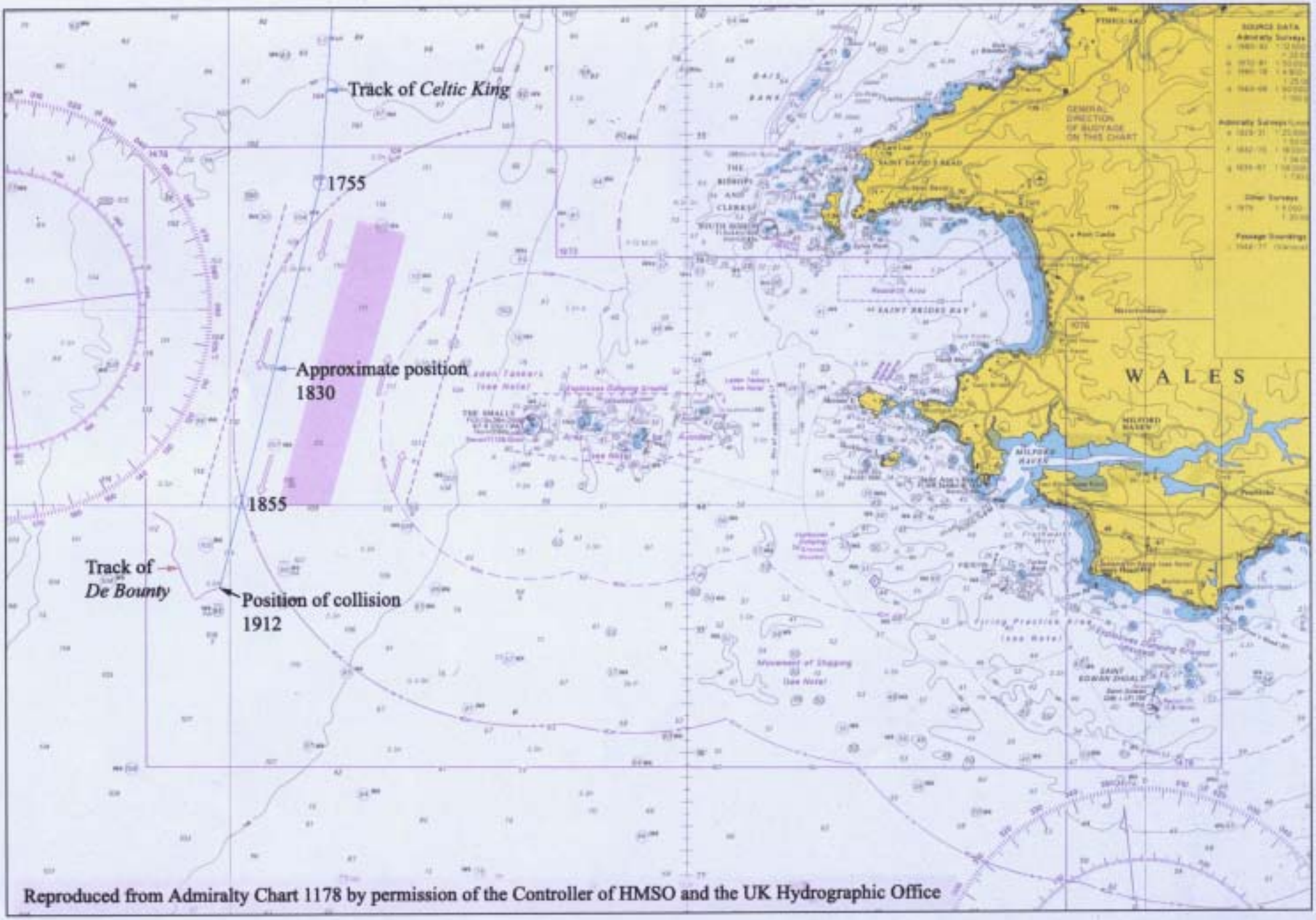
When the mate started his watch, the range of visibility was about 50m in fog. He followed the pre-planned tracks entered by the skipper into the electronic chart system. He headed north initially and then turned to head in a generally southern direction. After a while, he altered to an easterly heading.

The radar was on the 6-mile range scale and the mate saw an echo on the port side moving quickly towards him. Realising that a close quarters situation was developing, he sounded one prolonged blast followed by two short blasts on the whistle. The skipper heard the whistle and went into the wheelhouse. The mate told him that another vessel was closing on them. The skipper looked at the radar. The echo of the ship had arced and was close to them. As they were looking out of the wheelhouse windows to port and ahead, they suddenly saw the starboard side of the accommodation superstructure of a ship. The skipper moved the engine controls to astern, but *De Bounty*'s bow collided with the side of the ship, in line with her bridge.

1.1.2 Events leading up to the collision - Celtic King

Celtic King left Belfast at 1700 on 18 March 2000 and arrived at Dublin at 0100 the next day. She left Dublin at 1200 for Le Havre.

At about 1600, the chief officer began his navigational watch on the bridge. At this time the visibility was between 2 and 3 miles. A seaman who was contactable from the bridge by internal telephone or VHF radio, was on stand-by in his cabin. At 1755, the chief officer plotted the ship's position and then altered course to 196°, which would take *Celtic King* through The Smalls traffic separation scheme. The ship was making good a speed of 13.1 knots. There were no ships in sight, or on either of the two radars at that time. The automatic helm was in operation **(see chart extract opposite)**.



Reproduced from Admiralty Chart 1178 by permission of the Controller of HMSO and the UK Hydrographic Office

The port radar was on the 12-mile range scale and on relative motion, while the starboard radar was off-centred on the 6-mile range scale and on true motion. Both radars were gyro stabilised.

At about 1830, the chief officer observed three radar echoes about 3 points on the port bow, and one echo between 1.5 and 2 points on the starboard bow. All echoes were between 5 and 7 miles away. The chief officer acquired all the echoes by ARPA, which showed that the starboard echo was on a course of about 110° and its CPA ahead was about 2 miles.

The range of visibility reduced to between 0.5 mile and 1 mile. The chief officer observed that the starboard side echo had changed her heading by about 5°. He decided to maintain his course to pass round the vessel's stern before altering to the next planned course of 180°.

At about 1855, *Celtic King* cleared the traffic separation scheme. At this time the starboard side echo was between half a point and one point on the bow at a distance of about 3 miles. The chief officer did not notice any change in CPA, and the ARPA gave the speed of the vessel as about 6 knots. The echo was then lost in the sea clutter at a range of 3 miles. In an attempt to find the echo, the chief officer changed the range scale to 3 miles, and switched the sea clutter control from automatic to manual. He adjusted the control, but could not see the echo. He changed back to the 6-mile range scale and again adjusted the sea clutter to find the echo.

The chief officer remained at the radar set, and assumed that the echo would remain on course with a CPA ahead of 2 miles. He then saw a vessel about 3 points on his starboard side at very close range. The range of visibility at this time had reduced such that he could not see the bow of his own ship. At no time did he hear a sound signal from the other vessel.

At 1912 the bow of the other vessel collided with *Celtic King* on her starboard side, **(see section 1.3.4)** and then cleared the ship.

1.1.3 Events after the collision

When *Celtic King*'s master heard the collision, he went to the bridge and told the mate to sound the general alarm. The main engine was reduced to minimum speed. He told the bosun to sound the cargo hold bilges for ingress of water and the chief engineer to check the engine room, especially in the area of the collision damage.

On board *De Bounty*, the crew were sent forward to check the damage to the bows. They found she was not taking in water as all the damage was above the waterline. The fishing vessel began to haul in her fishing gear. This took some time because the nets had filled with sand when the vessel had stopped.

The two vessels contacted each other on VHF channel 16, which was intercepted by Milford Haven Coastguard. The coastguard established that they had been in collision and that neither vessel was taking in water or needed immediate assistance.

At 1935, the master of *Celtic King* asked *De Bounty*'s skipper if he would approach his ship to inspect the damage. Once the fishing vessel had hauled her nets she approached the ship at about 2015 and found no signs of pollution and no breaches in the hull; only damage to the structures above the main deck.

At 2051, the master reported *De Bounty*'s findings to Milford Haven Coastguard and told them that he was resuming his passage to Le Havre.

De Bounty resumed her fishing at 2140.

1.2 ENVIRONMENTAL CONDITIONS

The wind was north-west force 3 and the sea state was slight. There was dense fog at the time of the accident.

The tidal stream was setting to the south. Predicted high water at Milford Haven was at 1802 and it was two days before springs.

Sunset was at about 1838.

1.3 *CELTIC KING*

1.3.1 The ship

The vessel was a two-hold, one-decked, general cargo ship capable of carrying 467 teu containers. She had a cargo of containers at the time of the incident. The tall accommodation superstructure and the engine room were situated aft. She had a controllable pitch propeller and a bow thruster.

Her voyage schedule for the week of the incident was as follows:

Belfast – Saturday 18 March, arrive 0540 – sail 1700

Dublin – Sunday 19 March, arrive 0105 – sail 1200

Le Havre – Monday 20 March, arrive 2100 - sail 0300 Tuesday 21 March

Southampton – Tuesday 21 March, arrive 1100 – sail 2000

Felixstowe – Wednesday 22 March, arrive 1100 - sail 1500

Tilbury – Wednesday 22 March, arrive 2000 – sail 0200 Thursday 23 March

Dublin – Friday 24 March, arrive 1800 – sail 0200 Saturday 25 March

Belfast – Saturday 25 March, arrive 1100 – sail 1900

1.3.2 The crew

All 11 crew members were Polish nationals. The complement consisted of the master, chief officer, second officer, chief engineer, second engineer, bosun, three able seamen, a fitter and a cook.

The chief officer was 48 years old at the time of the accident. He had been employed with Charles M Willie & Co Ltd for between 6 and 7 years. He had joined *Celtic King* for the first time on 7 February, but had previously served on a sister ship. He held a Chief Mate's Certificate of Competency, which was issued in 1994 by the Polish authorities. At the time of the accident the Maritime and Coastguard Agency (MCA) was processing his United Kingdom Certificate of Equivalent Competency.

The vessel was being operated in compliance with a provisional safe manning document for a United Kingdom registered sea-going ship, which had been issued on 24 February 1999 by the MCA.

1.3.3 Navigational equipment and practices

The bridge was totally enclosed. There were two gyro repeaters: one to port and the other to starboard.

There was a "U" shaped control console at the centre of the bridge, which housed two Decca Bridgemaster ARPA radars in front of two chairs. The console contained the main instruments, including those for internal/external communications and engine and rudder controls. The chart table and the GMDSS station were to starboard of the console.

The chief officer kept the 0400 to 0800 and 1600 to 2000 navigational watches at sea, after which he spent about an hour preparing cargo plans. He also worked in port when the ship was discharging/loading containers.

The chief officer plotted the ship's position by GPS either every 30 minutes or hourly depending on the ship's proximity to land, or when the ship was approaching a waypoint. The planned track and waypoints were also displayed on the radars.

Lookouts were posted on bridge watch between 2000 and 0800. At other times, a lookout was on stand-by and could be called to the bridge at any time.

The company's standing orders required that during the hours of darkness, and in restricted visibility, an additional lookout must be posted on the bridge. The master's standing rules required that "in thick or hazy weather," officers of the watch must reduce the ship's speed, attend to regulation sound signals, and call the master. On the day of the collision the chief officer had signed the master's bridge order book confirming that he would abide by the standing rules.

1.3.4 Damage (see photograph 3)

The bulwark from the main deck to the forward starboard side of the accommodation superstructure was severely indented and scraped. The gangway stored aft of this was distorted. The fairing between the poop deck and the boat deck was distorted and ripped. The compartment below the poop deck was severely indented at the forward corner.

Photograph 3

Damage to *Celtic King*

1.4 *DE BOUNTY*

1.4.1 The fishing vessel

De Bounty was a relatively large modern beam trawler. She was rigged with two beams, with a net attached to each of them, which were towed along the seabed behind the vessel from two horizontal derricks.

At the end of one year and the beginning of the next, *De Bounty* trawled in the Celtic Sea, the Irish Sea and north of Ireland. In the summer she trawled in the Bay of Biscay. On either side of the New Year, she trawled in the North Sea. This had been the skipper's fishing pattern for the previous five years.

The nets were towed for between 2 and 2.5 hours. It took about half an hour to haul the nets, empty them and shoot them away again, after which the catch was processed. All the crew carried out these operations, with the skipper in the wheelhouse.

1.4.2 The crew

All six crew members were Belgian nationals, which included the skipper, the mate, a mechanic and three deckhands.

The skipper, a part owner of *De Bounty*, was 35 years old at the time of the accident. Before going to sea on beam trawlers at the age of 17, he attended two maritime colleges for 5 years; 3 years were spent at the nautical college in Bredehe and 2 years in an engineering college in Knokke-Heist. After 5 years at sea, he went back to college for 5 months and passed his skipper's examination in May 1988. He then served as relief skipper for 6 months and, in January 1989, became full-time skipper, serving in this capacity since then. He had always sailed on his father's fishing vessels but, with his three brothers, he became part owner of *De Bounty* when she was built in 1993.

The mate was 25 years old at the time of the accident and held a skipper's licence. In 1986 he went to a nautical college, which he attended for 5 years. He then went to sea and sailed on beam trawlers. In 1993 he joined the newly built *De Bounty*, and served on board for over 2 years. He then sailed on other fishing vessels for 2 years but rejoined *De Bounty* in September 1998. He had sailed on her ever since.

1.4.3 Navigational equipment and practices

The fishing vessel had a modern suite of navigational equipment, which included:

two Racal Decca radar sets;

a GPS set;

a Loran set;

two video plotters, one of which had ARCS electronic charts;

a Robertson automatic pilot; and

a magnetic compass.

There was also an extensive range of communication systems.

Once the nets were shot away and the catch had been processed, one of the crew members relieved the skipper in the wheelhouse until the nets were ready to be hauled in. This relief system was carried out on a rota system and involved the entire crew.

The skipper entered his intended tracks into the electronic chart system, and the watchkeeper steered the vessel accordingly to keep to those tracks.

1.4.4 Damage (see photograph 4)

There were scrape and indentations on either side of the stem between the main deck and the top of the whaleback. There was one small hole to port of the stem bar just beneath the whaleback deck edge.

Photograph 4

Damage to *De Bounty* confined to the upper part of the stem

1.5 STATUS OF VESSELS WITH REGARD TO THE COLLISION REGULATIONS

De Bounty was engaged in fishing and *Celtic King* was a power-driven vessel, under way and making way through the water. The visibility was severely restricted, and Rule 19 of the International Regulations for Preventing Collisions At Sea (Collision Regulations) applied to this set of circumstances. This rule does not differentiate between types of vessels and therefore applies to all vessels not in sight of one another.

Section (b) of the rule states that:

> *Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have her engines ready for immediate manoeuvre.*

Section (d) of the rule states that:

> *A vessel which detects by radar alone the presence of another vessel shall determine if a close-quarters situation is developing and/or risk of collision exists. If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided:*
>
> *(i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken*
>
> *(ii) an alteration of course towards a vessel abeam or abaft the beam.*

De Bounty

In addition to Rule 19, the following rules applied to *De Bounty*:

Rule 7 - *Risk of Collision*

> *(a) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.*
>
> *(b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.*
>
> *(c) Assumptions shall not be made on the basis of scanty information, especially scanty radar information.*

Rule 35 - *Sound signals in restricted visibility*

In or near an area of restricted visibility, whether by day or by night, the signals prescribed in this Rule shall be as follows:

(c) A vessel not under command, a vessel restricted in her ability to manoeuvre, a vessel constrained by her draught, a sailing vessel, a vessel engaged in fishing and a vessel engaged in towing or pushing another vessel shall, instead of signals prescribed in paragraph (a) or (b) of this Rule, sound at intervals of not more than 2 minutes three blasts in succession, namely one prolonged followed by two short blasts.

Rule 10 - *Traffic Separation Schemes*

(f) A vessel navigating in areas near terminations of traffic separation schemes shall do so with particular caution.

Celtic King

In addition to Rule 19, the following rules applied to *Celtic King*:

Rule 2 - *Responsibility*

(a) Nothing in these Rules shall exonerate any vessel, or owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

Rule 7 - *Risk of collision*

(b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

Rule 35 - *Sound signals in restricted visibility*

(a) A power-driven vessel making way through the water shall sound at intervals of not more than 2 minutes one prolonged blast.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations, if any, with the aim of preventing similar accidents occurring again.

This section will determine how *Celtic King* and *De Bounty*, both of which had modern radar and navigational equipment, collided in severely reduced visibility and when no other vessels had an influence on the accident.

2.2 THE COLLISION

2.2.1 Introduction

The track of the fishing vessel was being recorded on her electronic chart system, from which data were taken at sample points (latitude, longitude, time, distance and course made good since last sample point). A hard copy of the track was printed off and has been reproduced in **diagram 1**.

The events leading up to the collision were in three distinct stages:

1. the first stage was from 1830, when *Celtic King*'s chief officer acquired the echo of *De Bounty* on the ARPA, to 1842 **(see diagram 2)**;

2. the second stage from 1842 to 1903, during which time the fishing vessel made good a relatively steady track **(see diagram 3)**; and

3. the third stage was from 1903, when *De Bounty* turned to port, to 1912, the time of the collision **(see diagram 4)**.

Celtic King's chief officer plotted the ship's position at 1755 and at 1855. The course and speed made good (13.1 knots) between those two positions were the same as between the 1855 position and that of the collision at 1912.

2.2.2 *De Bounty*

With regard to point 1 above:

De Bounty made good a steady course of about 120° until just after 1830, which was the approximate time that *Celtic King*'s radar predicted *De Bounty*'s CPA ahead was about 2 miles. If the fishing vessel's track line is projected from the 1830 position to cross ahead of *Celtic King*, it is found that this would have occurred at about 1900 at a distance of about 1.4 mile. However, from about 1830, *De Bounty*'s track followed a more southerly route.

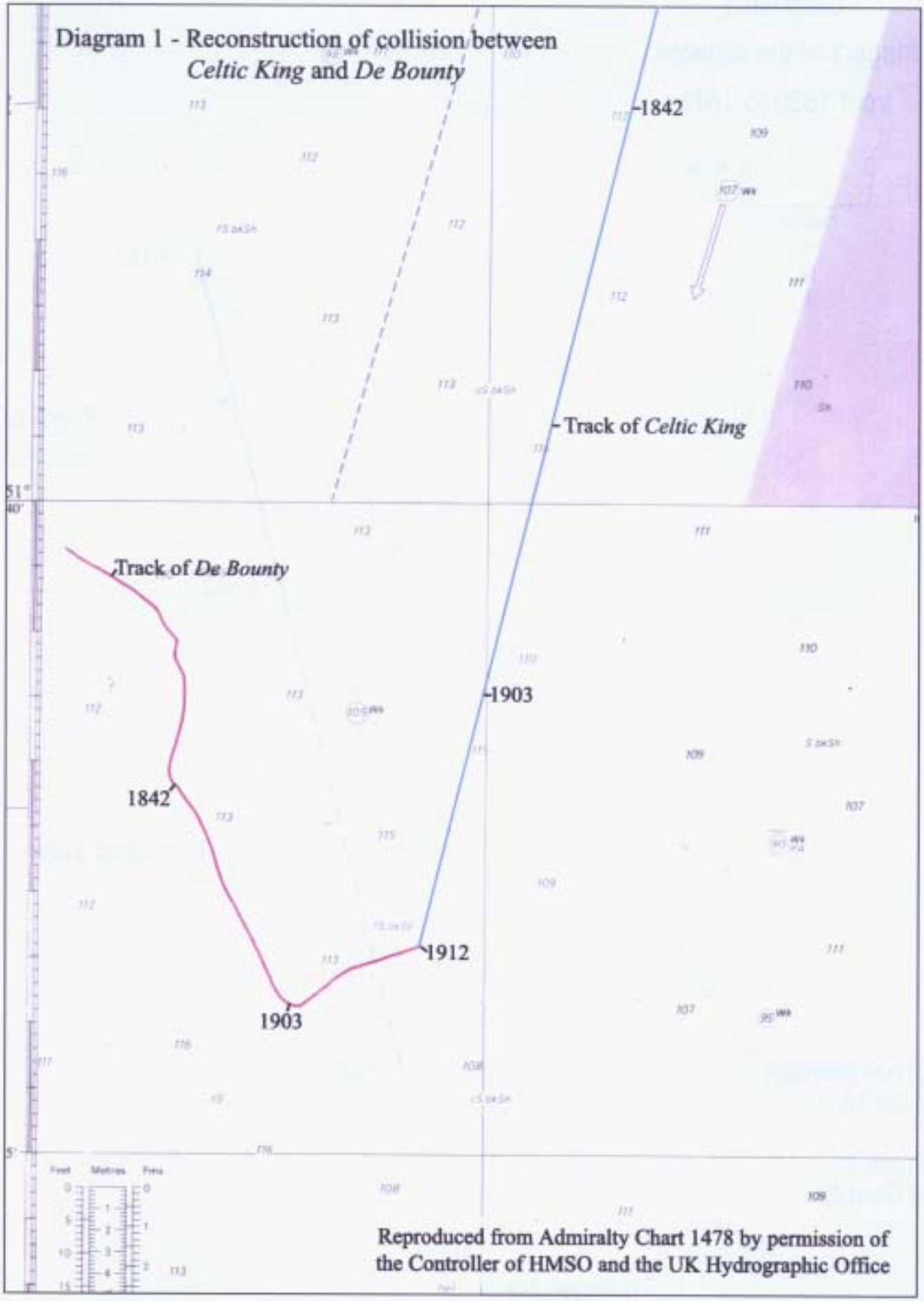
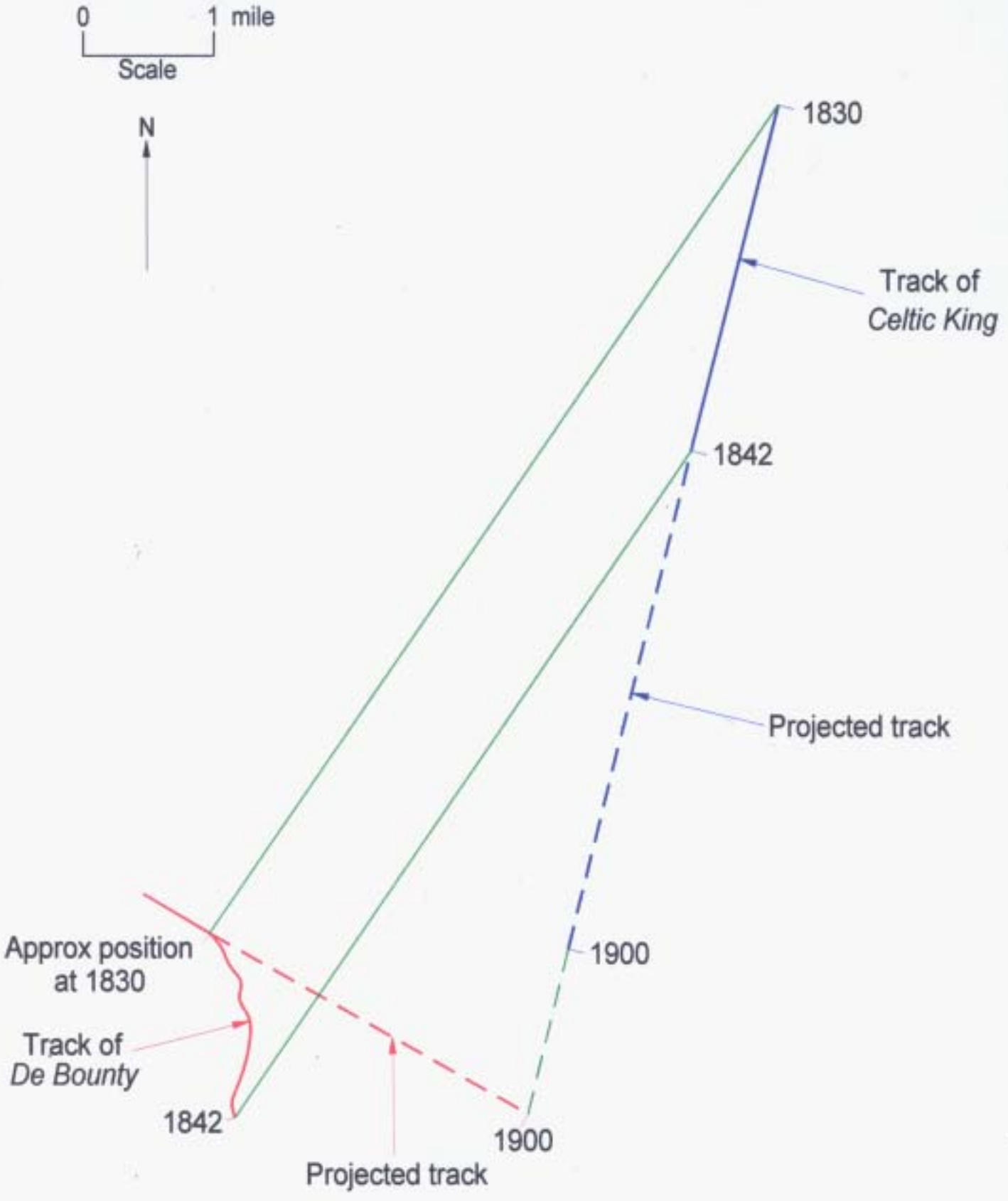


Diagram 1 - Reconstruction of collision between
Celtic King and De Bounty
1842
Track of Celtic King
Track of De Bounty
1903
1842
1912
1903
Reproduced from Admiralty Chart 1478 by permission of
the Controller of HMSO and the UK Hydrographic Office

Diagram 2

Stage 1 of the collision

from 1830 to 1842



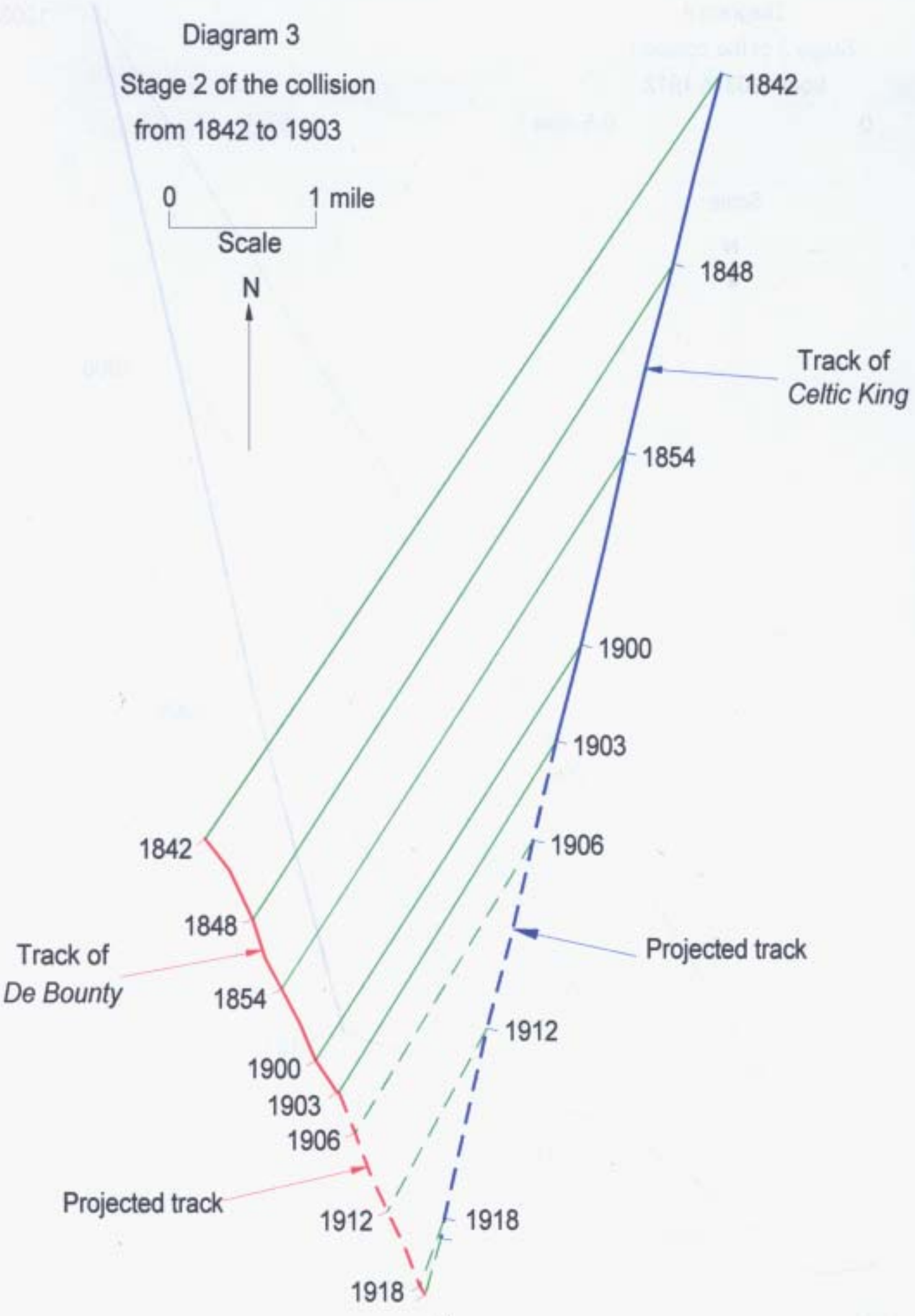
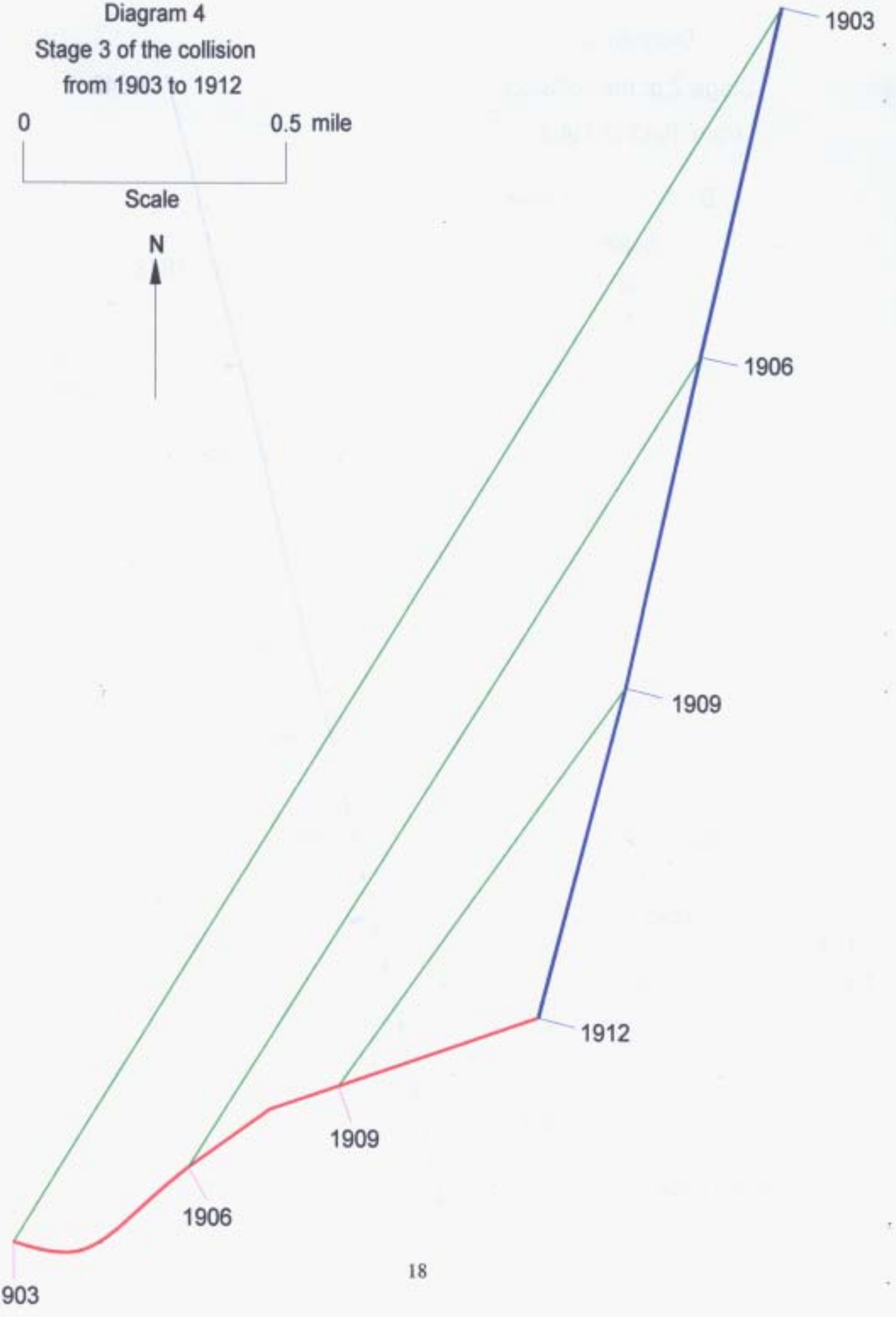


Diagram 3
Stage 2 of the collision
from 1842 to 1903
0
1 mile
Scale
N
1842
1848
Track of
Celtic King
1854
1900
1903
1906
Projected track
1912
1918
1842
1848
Track of
De Bounty
1854
1900
1903
1906
Projected track
1912
1918

Diagram 4

Stage 3 of the collision

from 1903 to 1912



With regard to point 2 above:

From 1842 *De Bounty* made good a relatively steady track of about 154° **(see diagram 3)**. At 1842, *Celtic King* was just over 6 miles away, and the mate would not have seen her echo on the radar until a few minutes later. When the echo appeared on the edge of the screen at 6 miles, it had a relative bearing of about 240° or nearly 3 points abaft the port beam.

The fishing vessel's speed was variable but, between 1842 and 1903 she had travelled 1.95 miles, which gave an average speed made good of about 5.6 knots. If the fishing vessel had continued on her course at that speed instead of turning on to an easterly heading, she would have crossed about 4 cables ahead of the ship **(see diagram 3)**. However, the fishing vessel's speed increased after 1903, which increased the crossing distance.

With regard to point 3 above

At 1903, the mate turned the fishing vessel to port, making good a course of about 050° until a little after 1907. At that time the vessel altered course to starboard and made good a course of about 072° until the collision. Had she continued on the 050° course, *De Bounty* would have crossed about 7 cables astern of *Celtic King*.

The mate on the fishing vessel made no systematic plots of the movement of the radar echo of *Celtic King* when on these various courses **(see Rule 7 (a) and (b) - section 1.5)**. He did not make any sound signals, until the later stages of the incident **(see Rule 35(c) - section 1.5)**. However, when he knew instinctively that a ship was bearing down on him rapidly, he should have called for assistance from the skipper. As the two vessels approached each other, the mate kept to the skipper's planned track, which took the vessel between 3 and 4 miles to the south of the termination of the south-west bound traffic separation lane; an area where particular caution was needed **(see Rule 10(f) – section 1.5)**. Under Rule 19, both vessels had the responsibility to keep out of the way of the other. At 1903, the mate of the fishing vessel altered course towards the ship, which was abaft his port beam, and was in contravention of Rule 19. Although the initial new heading would have resulted in the fishing vessel passing astern of the ship, he made a further alteration of course (to starboard and only about 4 to 5 minutes before contact) which brought about the collision.

By the time the skipper saw the arced radar echo of *Celtic King*, the ship was at close range and he was unable to assess her approach. He took avoiding action by putting the engine astern, but it was too late to avert the collision. The mate should have called the skipper for assistance when he saw the echo of *Celtic King* and/or when he became concerned that a close quarters situation was developing.

2.2.3 *Celtic King*

When the chief officer first observed, and then acquired, the echo of *De Bounty* at about 1830, the ARPA indicated that the fishing vessel's course was about 110° and her CPA ahead was about 2 miles. *De Bounty* then made a number of alterations of course, as described in the previous section, and the ARPA updated data on the echo.

However, the chief officer did not appreciate the changes in course other than the fishing vessel's change of heading of about 5° either way. Had he done so he might have taken suitable early and substantial action to avoid a close quarters situation.

Whichever course, or courses, the fishing vessel might have been steering, these clearing distances were too small in severely restricted visibility with plenty of sea room in which to manoeuvre **(see Rule 19 - section 1.5)**.

The chief officer lost the echo in the clutter at a range of 3 miles. The plot suggests this occurred at about 1902, just before the fishing vessel turned to port and towards his own ship. Before this time *De Bounty* was nearly broad side on to *Celtic King* and would have been presenting a good radar reflective profile. Perhaps when *De Bounty* altered course the radar profile of the fishing vessel reduced. It is unusual for sea clutter to extend out to a 3-mile range in the sea conditions that were being experienced at the time.

The chief officer spent valuable time (about 9 minutes) trying to find the echo, and he wrongly assumed that the fishing vessel would remain on course and cross ahead **(see Rule 7 (c) – section 1.5)**. Having lost the echo, it would have been wise for him to have reduced speed and navigated with caution **(see Rule 2(a) – section 1.5)**.

In accordance with good practice, the company's standing orders and the master's standing rules, the chief officer should have already called the master to the bridge in restricted visibility; reduced to a safe speed; sounded the fog signal **(see Rule 35(a) – section 1.5)** and posted a lookout.

The chief officer assumed the fishing vessel was going to cross 2 miles ahead, and thought it was unnecessary to sound the fog signal for a vessel at that range. He did not call the master or a lookout, because the visibility had been variable and there was only light traffic earlier.

In the 24 hours leading up to the accident, the chief officer had three rest periods in which to sleep, which were:

from 2000 until 0100 when the ship arrived in Dublin;

from sometime after arriving until 0600 when cargo work began;

from leaving Dublin at 1300 until 1600 when he began his navigational watch.

Overall he had had adequate sleep, but the periods were short and interrupted. The cluster of port visits were split between those in Ireland and those on the south coast of England (including Le Havre), with the longest period at sea being 33 hours. During the clusters, the ship was very busy during arriving/leaving the ports, pilotage passages and cargo operations, with only short periods at sea between ports. The longer periods at sea allowed the crew to have a degree of rest from the intensive activities of the cluster of port visits.

The chief officer had been on board for 6 weeks carrying out these schedules. There may have been an element of fatigue, which affected his judgment when faced with the

unpredictable movements of a vessel in severely restricted visibility. The chief officer felt fit for duty, but fatigue is insidious in that people are poor judges of their own level of fatigue.

The Canadian Transportation Safety Board's *A Guide for Investigating for Fatigue*, lists the following attention performance impairment indicators:

- overlooking sequential task elements;
- incorrectly ordering sequential task element;
- preoccupation with single tasks or elements;
- exhibiting lack of awareness of poor performance;
- reverting to old habits;
- focusing on a minor problem despite risk of major one;
- not appreciating the gravity of situation;
- not anticipating danger;
- displaying decreased vigilance; and
- not observing warning signs.

The chief officer showed a number of the above indicators by not appreciating the various movements of the fishing vessel; making an erroneous assumption that the fishing vessel would cross ahead; becoming preoccupied and wasting valuable time trying to find the radar echo, and not reducing speed at this latter stage and especially when a close quarter situation was imminent.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

3.1.1 *De Bounty*

1. The mate had the navigational watch of the fishing vessel until shortly before the collision, when he was joined by the skipper. [2.2.2]

2. The vessel was engaged in fishing throughout the time of the incident. [1.1.1, 1.5]

3. Although there was severely reduced visibility throughout the incident, the mate did not make any sound signals until just before the collision. [1.1.1, 1.1.2, 1.3]

4. The planned track, to be followed by the mate, was entered by the skipper into the electronic chart system. [2.2.1]

5. Overall, courses and speeds varied throughout, but generally the mate headed in a northerly direction, then turned to a southerly direction and finally towards the east. [1.1.2, 2.2.1, 2.2.2]

6. The echo of *Celtic King* appeared on *De Bounty*'s radar just after 1842 at which time she began to make a steady course of about 154°. [2.2.2]

7. The mate did not make a systematic plot of the echo. [2.2.2]

8. At about 1903, the mate altered course to port and towards *Celtic King*, which was in contravention of Rule 19 of the Collision Regulations. [2.2.2]

9. The mate had detected the presence of *Celtic King* and when a close quarters situation was developing, he was under an obligation to keep out of the way of the ship. [2.2.2]

10. At about 1907, he made an alteration of course to starboard, which placed *De Bounty* on collision course with *Celtic King*. [2.2.2]

11. When the ship was seen at close range, the skipper did take avoiding action but it was too late. [2.2.2]

3.1.2 *Celtic King*

1. The chief officer was the officer of the watch throughout the incident. [1.1.2]

2. There was no lookout on the bridge, nor was the master called to the bridge when the visibility became severely restricted, the speed of the ship was not reduced and no fog signals were sounded. Two radars were in use and the automatic helm was in operation. [2.2.3, 1.1.2]

3. At about 1830 the chief officer became aware of the echo of *De Bounty* which was on the starboard bow at a distance of between 6 and 7 miles. [2.2.2]

4. There were three other echoes on the port bow but they did not affect the incident. [2.1]

5. The ARPA predicted the fishing vessel was making good a course of 110° and a speed of about 6 knots. It also predicted that she would cross ahead by 2 miles. [1.1.2]

6. From *De Bounty*'s computer plotted track, this prediction was the initial course made by the fishing vessel in the incident. [2.2.3]

7. *De Bounty* made a subsequent series of substantial course alterations, and the ARPA updated the data on the echo. However, the chief officer did not appreciate the changes in course. [2.2.3]

8. None of the fishing vessel's new courses brought her on collision course with *Celtic King* except for the last one. [2.2.3]

9. The clearing distances for the various tracks were too small in severely restricted visibility and with plenty of sea room. [2.2.3]

10. After the fishing vessel altered course, at about 1903 towards *Celtic King*, her radar profile would have probably diminished. [2.2.3]

11. The chief officer lost the radar echo of the fishing vessel in the sea clutter at about 1903 when she was about 3 miles away. [2.2.3]

12. The chief officer spent valuable time trying to find the echo and he wrongly assumed that the fishing vessel would remain on course and cross ahead. [2.2.3]

13. The chief officer may have been suffering from a degree of fatigue, which might have affected his judgment when faced with the unpredictable movements of a vessel in severely restricted visibility. [2.2.3]

3.2 CAUSE

De Bounty altered on to a collision course with *Celtic King* after which neither vessel took effective avoiding action. [2.2.2, 2.2.3]

3.3 CONTRIBUTORY CAUSES

3.3.1 *De Bounty*

1. By keeping to the planned track on the electronic chart system, the mate wrongly assumed that he should stand-on, and that only *Celtic King* was obliged to keep out of the way of his fishing vessel in restricted visibility [2.2.2]

2. The mate did not plot the radar echo of *Celtic King* when on the various courses, but knew instinctively that she was moving rapidly towards his own vessel. [2.2.2]

3. The mate did not call the skipper for assistance when he saw the echo of *Celtic King* and/or when he became concerned that a close quarters situation was developing. [2.2.2]

4. The mate did not make any sound signals until the later stages of the incident. [2.2.2]

5. The planned track took the vessel between 3 and 4 miles to the south of the termination of the south-west bound traffic separation lane, an area where particular caution was needed. [2.2.2]

3.3.2 *Celtic King*

1. The chief officer did not appreciate the changes in course made by *De Bounty* from that of the initial prediction made by the ARPA. Had he done so he might have taken suitable early and substantial action to avoid a close quarters situation. [2.2.3]

2. The chief officer wrongly assumed the fishing vessel would maintain the initial ARPA predicted course and speed. [2.2.3]

3. The chief officer did not call the master and lookout for assistance. [2.2.3]

4. The chief officer did not sound any fog signals. [2.2.3]

5. The chief officer did not appreciate the fishing vessel's changes in course, which would have been updated by the ARPA. [2.2.3]

5. Having lost the echo, he should have reduced speed and navigated with caution. [2.2.3]

6. The chief officer showed a number of indicators in attention performance impairment. [2.2.3]

SECTION 4 - RECOMMENDATIONS

The MAIB has no safety recommendations to make at this time.

Marine Accident Investigation Branch
February 2001