Report on the investigation of

the collision between the

UK registered fishing vessel

Marbella

and the

Bravo Delta offshore platform

in the Rough Gas Field

about 25 miles south-east of Flamborough Head

8 May 2002

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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999 is to determine its circumstances and the causes 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.

This report is not written with liability in mind and is not intended to be used in court for the purpose of litigation. It endeavours to identify and analyse the relevant safety issues pertaining to the specific accident, and to make recommendations aimed at preventing similar accidents in the future.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ARPA	-	Automatic radar plotting aid
DEFRA	-	Department for Environment, Food and Rural Affairs
DSC	-	Digital selective calling
CPA	-	Closest point of approach
EBL	-	Electronic bearing line
FRC	-	Fast rescue craft
GPS	-	Global positioning system
HF	-	High frequency
IMO	-	International Maritime Organization
kW	-	kilowatt
m	-	metre
MF	-	Medium frequency
MGN	-	Marine Guidance Note
OIM	-	Offshore installation manager
OOW	-	Officer of the watch
RNLI	-	Royal National Lifeboat Institution
ROV	-	Remotely operated vehicle
VHF	-	Very high frequency
VTS	-	Vessel traffic service

SYNOPSIS

At 0936 (UTC+1) on 8 May 2002, the stern freezer trawler *Marbella* collided with the BD platform of the *Bravo* installation in the Rough Gas Field, off the coast of East Yorkshire. The fishing vessel suffered severe damage to the starboard bow, but there was relatively minor damage to the platform's jacket. There were no injuries and no pollution. Humber Coastguard informed the MAIB of the accident at 1141 that day.

Marbella left Alexandra Dock in Hull at 0425 on 8 May and carried out compass adjustments in the River Humber. Once the adjustments had been finished and the compass adjusters had been disembarked, she continued downriver to the sea to begin her passage to the fishing grounds in the Arctic Circle near Spitsbergen. The pilot disembarked at 0800 and the skipper and mate took the vessel through the traffic separation scheme. At 0845, just after the vessel had passed the N New Sands buoy, the skipper and mate went below, after handing over the watch to the second mate. The course had been set at 015° and the speed was about 13 knots. The visibility was between 1 and 2 miles. A lookout was on the bridge. The second mate saw the radar echo of what he interpreted to be the Rough Gas Field within the 12-mile range and on his starboard bow.

After a period of time, a routine engine room alarm sounded, and the second mate then walked around the bridge to make checks on the different systems. When he returned to the radar, he could not identify the echo of the Rough Gas Field. The visibility had reduced to about half a cable. The lookout shouted to the effect that the platform was ahead and the second mate quickly turned the automatic helm to port, but a collision with the platform ensued.

The master of the stand-by vessel, *Putford Achilles*, had plotted the approaching fishing vessel, and had tried to make contact with her by VHF radio before the accident, without success. A fault was later found with the VHF radio equipment. Non-essential crew were evacuated from the installation by helicopter to a nearby tanker, which had a helicopter deck, and to Humberside airport. An RNLI lifeboat and a tug escorted the vessel back to Hull, without further incident.

A number of causal factors led to this collision, including the lack of a satisfactory voyage plan and proper position plotting in relation to the installation, and an unexplained alteration of course to starboard some 6 minutes before the collision.

The MCA initiated discussions with the offshore and fishing industries with the aim of reducing the number of future similar incidents and near misses, and has produced a Safety Alert.

Chief Inspector's letters have been sent to Boston Putford Safety Ltd and Marr Fishing Vessel Management Limited, with respect to reinforcing existing company operating instructions and procedures relating respectively to potential infringements of the safety zone of offshore installations and effective passage planning and monitoring.

Photograph 1

Marbella

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *MARBELLA* AND ACCIDENT

Vessel details

Registered owner	:	Armana Limited
Manager	:	Marr Fishing Vessel Management Limited
Port of registry	:	Hull
Flag	:	UK
Type	:	Stern freezer trawler
Built	:	1989 in Norway
Classification society	:	Det Norske Veritas
Construction	:	Steel
Length overall	:	69.60m
Gross tonnage	:	2880
Engine power	:	2424kW

Accident details

Time and date	:	0936 (UTC +1) on 8 May 2002
Location of incident	:	Latitude 53° 49.95'N longitude 000° 26.45' E Rough Gas Field about 25 miles south-east of Flamborough Head
Persons on board	:	21
Injuries/fatalities	:	None
Damage	:	Extensive damage to *Marbella*'s starboard bow

1.2 NARRATIVE

1.2.1 Events leading up to the collision - *Marbella*

All times are UTC + 1 and all courses and bearings are true.

After the crew members had joined *Marbella* at Alexandra Dock in Hull, and routine checks had been made, the vessel let go at about 0425 on 8 May 2002. A pilot and two compass adjusters were on board. Once in the River Humber, the vessel was swung to adjust the magnetic compass. Once completed, the two adjusters disembarked at Riverside Quay at about 0540. The vessel let go at about 0600 and began her passage downriver to the sea. Her destination was the fishing grounds off Spitsbergen, in the Arctic Circle.

Before departure, the skipper and the mate had discussed and agreed a watch roster, and the second mate had been informed that he was to take the first watch with a lookout.

The second mate had been on the fo'c'sle head during the compass adjustment; he had then helped in preparing the vessel for sea, after which he had gone to his cabin to sort out his personal gear. He was then summoned to assist in disembarking the pilot before returning to his cabin. The pilot disembarked near the SE Chequer buoy at about 0800. The skipper and the mate then navigated the vessel through the New Sand traffic separation scheme towards the N New Sand buoy. About 15 minutes later, the bridge bell sounded and the second mate went to the bridge. By this time, about 0845, *Marbella* had passed the N New Sand buoy and the course had been set to 015°. He was joined by a spare hand who was to act as lookout. The visibility was about 1.5 miles. Once the skipper and the mate had handed over the watch to the second mate, they left the bridge.

Both radars were in operation; one was set on the 12-mile range, which had an ARPA facility, and the other was on the 6-mile range. The mate had explained the traffic movements on the ARPA radar and had identified a large echo to starboard of the heading line as the Rough Gas Field. Both radars were gyro stabilised and in the north-up mode. The second mate subsequently placed the EBL on what he interpreted was the echo nearest the heading line. He saw that the bearing was 022° and that the echo was drawing to starboard off the EBL. A paper chart was in use and a course line of 015° had been drawn on it. The automatic helm was in operation.

After a period of time, a routine engine room alarm activated on the forward console. The second mate got out of the wheelhouse chair and walked around the bridge to make checks on the different systems. He returned to the chair and, looking at the radar screen, interpreted that the echo of the Rough Gas Field had been lost in the clutter. He then changed the range scale to 3 miles and still could not see the echo. There is conflicting evidence as to what the

second mate said to the lookout concerning the echo. The lookout was standing to port of the forward console. The visibility, by this time, had reduced to about half a cable. The second mate then spent his time trying to distinguish the echo on the radar.

The lookout shouted to the second mate to the effect that the platform was right ahead. The second mate looked up and saw the platform was on the starboard bow and very close. He went to the automatic helm and altered course to port. However, *Marbella'*s starboard bow struck the south-west leg of the *Bravo Delta* jacket of the Rough Gas Field *Bravo* installation **(see Diagram 1)**. Soon afterwards, the skipper and the mate arrived on the bridge.

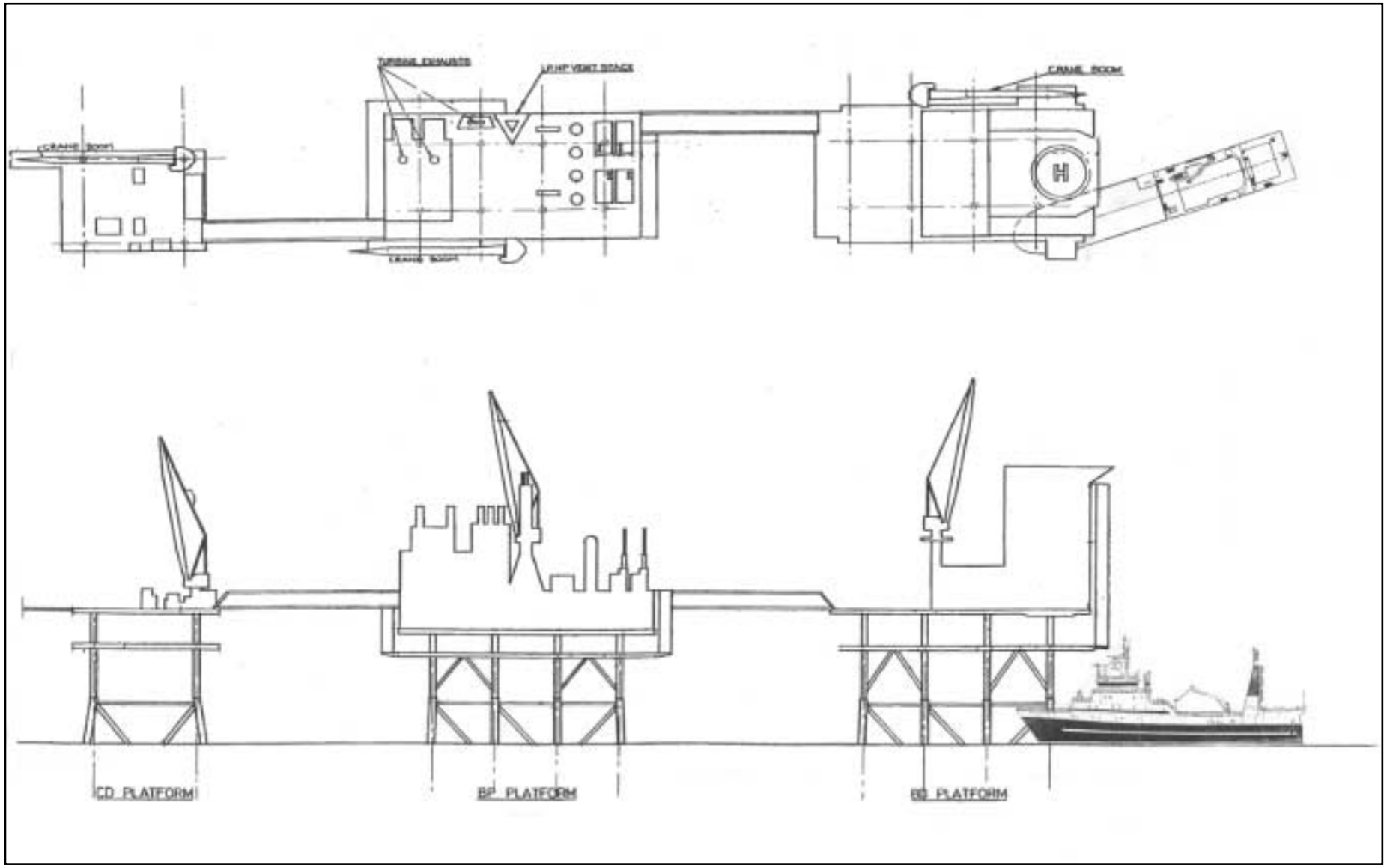
1.2.2 Events leading up to the collision - *Putford Achilles*

At about 2000 on 6 May 2002, *Putford Ajax* relieved *Putford Achilles* from her stand-by duties at the Rough Gas Field so that the latter could proceed on passage to Immingham for cargo operations. At 0120 the following morning, she was fast alongside and, soon after, began loading fuel oil and potable water. At 1150, all cargo operations were completed. She remained alongside until 0015 on 8 May 2002, when she sailed for the Rough Gas Field. At 0430, *Putford Achilles* relieved *Putford Ajax* and resumed her normal stand-by duties.

At 0730, the master relieved the second mate and took over the navigational watch. At that time the vessel was stationed, according to standard procedures, down-tide and on the north side of the installation.

Four fishing vessels were working in the area within 4 miles of the installation but none within the 500m zone. One radar was on the 12-mile range scale and the other was on the 2-mile range scale. The master chose not to use the guard zone on the former radar because of the fishing vessel activity. He noted a number of other echoes, including that of *Marbella,* which was approaching from the south at a range of about 12 miles. His interpretation of the movement and size of *Marbella*'s echo did not indicate to him anything different from the normal approach and activity of fishing vessels which operate in the area in and around the Rough Gas Field. From past experience, when the master could identify local fishing vessels which operated in the area, he routinely ignored his company's operating procedures for potential infringements of the safety zone. However, he was unable to identify *Marbella*'s echo, because of the restricted visibility, and was uncertain that she was one of the local fishing vessels that normally operated in the area.

When *Marbella*'s echo was 3.15 miles from the installation, the master began plotting it. Shortly afterwards, the plot showed that the other vessel would pass about 1 cable to the west of the installation. He then attempted to call the approaching vessel on VHF radio channels 16 and 72, the latter frequency being generally used by local fishing vessels. The master believed the echo was a small fishing vessel and he did not alert the installation of her approach. There



A reconstruction of the collision of *Marbella* with BD platform

Diagram 1

was no reply from the vessel, nor did she alter course. The master began to move *Putford Achilles* around the installation to identify the passing vessel. He then heard a “Pan Pan” message broadcast from *Marbella* indicating that she had collided with the installation.

1.2.3 Events after the collision

*Marbella’*s skipper broadcast a “Pan Pan” message on VHF radio channel 16, giving his vessel’s position, that she had been in collision with a rig (platform) in the Rough Gas Field, and that no one on board had been injured. Humber Coastguard responded to the message and then called rescue helicopter R128, and the Bridlington and Humber RNLI lifeboats.

Putford Achilles moved into the 500m safety zone, and the master called the complex to establish that there had been no injuries and no immediate risk to personnel or to the BD platform. The master then called *Marbella* to say that he had been calling her for about 15 minutes before the accident and that he was sending his FRC to her. He asked the skipper if his vessel had been holed, to which the skipper replied that his vessel was badly damaged but that the watertight integrity was not threatened, and added that he would have to take the vessel back to dock. *Putford Achilles* told Humber Coastguard that there were 128 personnel on the *Bravo* installation and that the vessel would be closing the platform to inspect the jacket for damage.

Personnel from the installation also inspected the BD jacket and it was reported to Humber Coastguard that the south-west leg, which carried four supporting struts, was damaged and that all mustered personnel were moving from BD to the BP platform. On receiving the report of the damage, the OIM decided to transfer the personnel for fear of structural collapse of the BD jacket. Because the BD platform held the accommodation block and the helicopter deck, the OIM, in conjunction with Dynegy’s Onshore Incident Response team, decided that, to reduce the risk to non-essential personnel, de-manning of the installation would be required, until the structural integrity of the jacket had been assured. A total of 109 personnel, out of a complement of 128, would be evacuated from the installation by way of the CD platform, which had a large open deck suitable for winching operations from a search and rescue helicopter. The nearest place of safety to transfer the personnel was the nearby *Alpha* installation where a commercial helicopter was on the landing deck awaiting confirmation that the helicopter deck on the BD platform could be used for the transfer.

At 1003, the shuttle tanker *Navion Europa* told Humber Coastguard that she was about 5 miles from the installation and that she had a helicopter deck. The tanker was instructed to proceed towards the platform but not to approach closer than 1 mile. At 1020, *Putford Achilles* reported to Humber Coastguard that all personnel had transferred to the BP platform, there were no injuries and that all persons had been accounted for.

At 1027, the Humber lifeboat rendezvoused with *Marbella* and she was then released from the scene to return to the River Humber under escort. The fishing vessel *Challenger* arrived on scene to provide any assistance needed.

At 1050, *Navion Europa* reported to *Putford Achilles* that she was on-scene. By 1132, helicopters R128 and R129 were on-scene, and shortly afterwards the evacuation of personnel from CD platform to *Navion Europa* began. Bridlington lifeboat and *Putford Achilles* provided the helicopter operations with safety cover. By 1318, 85 personnel had been transferred to *Navion Europa*, 24 were taken to Humberside airport and 19 remained on the installation. The remaining personnel on the installation ensured that all worksites were made safe and that basic utility services of the installation continued to function. At 1330, *Navion Europa* was released from the scene and she proceeded to her original destination, Tetney buoy, in the entrance to the River Humber. While on passage, commercial helicopters began to transfer installation personnel from *Navion Europa* to Humberside airport. However, these operations were stopped when visibility became severely restricted.

The tug *Lady Constantine* escorted *Marbella* upriver to Alexandra dock, where the latter made fast at about 1700.

At 1716, the Humber lifeboat was alongside *Navion Europa* to embark the remaining 61 installation personnel. By 1751, all personnel had been embarked and the lifeboat proceeded to Grimsby where they were landed by 1835.

1.3 ENVIRONMENTAL CONDITIONS

The general synopsis for 0700 on 8 May 2002 was a high at Bailey of 1034mb expected 350 miles north of Viking 1033mb by 0700 the next day. A low at Balearics of 999mb was expected south-west France 1004mb by the same time.

The area forecast for the German Bight and the Humber was wind east or north-east force 3 or 4 occasionally 5, occasional rain, good visibility with isolated fog patches.

The inshore forecast from Whitby to the Wash was:

Wind: north-east force 3 or 4, perhaps locally 5 Wash overnight.

Weather: fair but with patches of mist and drizzle.

Visibility: moderate or good, locally poor with fog patches.

Sea state: slight.

Visibility was between 1 and 2 miles when *Marbella* left the Humber but reduced to less than 1 cable at the time of the accident.

The tidal stream was setting to the north at a rate of 1.1 knots when the vessel left the traffic separation scheme, and was setting north-by-west at a rate of 1.2 knots at the time of the accident. It was daylight and 3 days before spring tides.

1.4 THE ROUGH GAS FIELD

1.4.1 Description

There were two separate installations in the Rough Gas Field:

two *Alpha* platforms, 47-8-AP and 47-8-AD, centred on latitude 53° 49.5'N and longitude 000° 28.2'E; and

three *Bravo* platforms, 47-3B-BD, 47-3B-BP and 47-3B-CD, centred on latitude 53° 50.05' N and longitude 000° 26.5'E **(see Diagram 2)**.

They were located off the coast of East Yorkshire, about 25 miles south-east of Flamborough Head. The two separate blocks were just over 1 mile apart. The three *Bravo* platforms were orientated approximately north-east/south-west.

The BD platform provided accommodation for all the personnel and gave temporary refuge with lifeboats and a helicopter deck. It was built in 1983 and, until December 1987, it housed all the necessary machinery, including a drilling derrick, which was used to drill the 12 wells located at the north end of the platform. However, drilling on this platform had finished and the derrick and all other drilling facilities had been removed. The Field control room on BD provided the main control point for the *Bravo* installation and routine monitoring of the *Alpha* installation via a fibre optic subsea cable and by line-of-sight telemetry.

The personnel on board the installation were housed in the BD platform accommodation and recreation areas while off duty. When on shift, they were spread around the installation, performing operational and maintenance tasks.

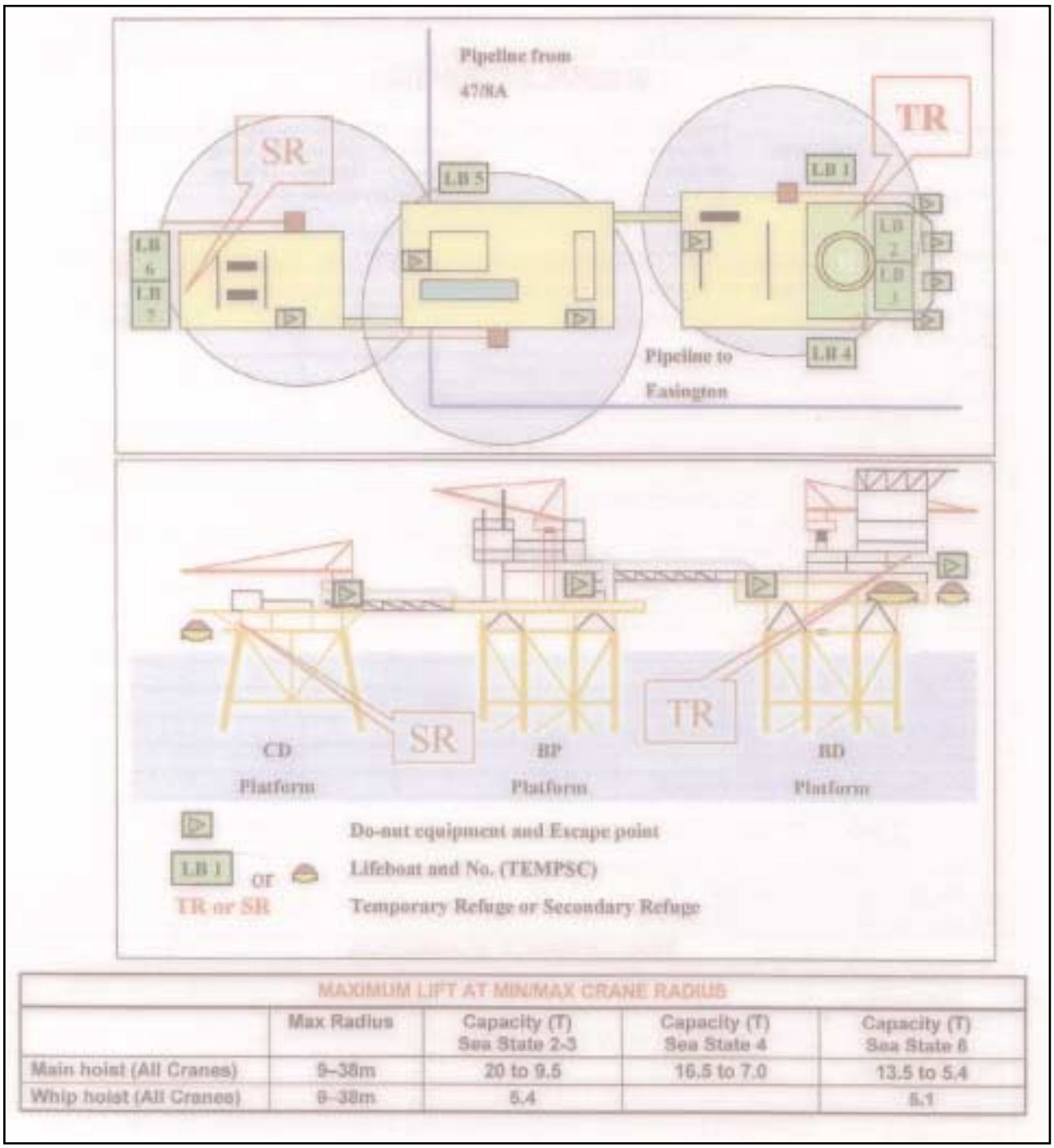
The CD platform, built in 1984, housed 12 wells and provided a secondary refuge with lifeboats.

The BP platform, also built in 1984, provided the central production and had a lifeboat.

British Gas took over ownership of the Field from Amoco in 1979 and Dynegy took over ownership on 28 November 2001.

At the time of the accident, the installation was undergoing its annual shutdown, and the process plant had been vented and purged of hydrocarbons. However, the production tubing above the down-hole safety valves to the well heads on the platform was still pressurised with hydrocarbon gas.

Diagram 2



MAXIMUM LIFT AT MIN/MAX CRANE RADIUS

	Max Radius	Capacity (T) Sea State 2-3	Capacity (T) Sea State 4	Capacity (T) Sea State 6
Main hoist (All Cranes)	9–38m	20 to 9.5	16.5 to 7.0	13.5 to 5.4
Whip hoist (All Cranes)	9–38m	5.4		5.1

Diagram showing the layout of the *Bravo* platform

1.4.2 Damage **(see Photographs 2 and 3)**

Marbella struck the south-west corner of the BD jacket in the vicinity of leg B4 and caused the following damage:

destruction of the two barge fenders and some other B4 leg appendages;

superficial damage to the B4 leg; and

damage to some secondary steelwork forming part of a navigational-aid platform located just above the point of collision.

The structural integrity of the jacket was assessed using information from three sources:

the support vessel *Kommander Subsea* above and below water (the latter by ROV deployed from the vessel);

results from a series of redundancy and impact analyses of BD jacket to explore possible damage scenarios; and

offshore inspection of the topsides and above water jacket elements, undertaken once it was considered safe to re-man the installation.

The overall conclusion from the assessments was that the jacket was robust and that structural integrity of the installation had not been unduly affected. Apart from a minor dent to a brace member, no damage to the primary structure was evident and the damage was limited to the leg appendages.

1.5 *MARBELLA*

1.5.1 The vessel

Marbella (ex: *Shetland Challenger*, *Norvestor*, *Klara Birting*, *Longva II*) was a stern freezer trawler and was ice-strengthened. She had a full-length shelter deck, freezing equipment and a refrigerated hold. The vessel was built for Shetland Island owners but was sold to Canadian interests in 1990. The vessel was purchased from Norwegian owners in 1995 by the present owner (under the management of Marr Fishing Vessel Management Limited) and brought back into the UK registry and renamed *Marbella*.

Her UK Fishing Vessel certificate was valid until 16 March 2004.

Photograph 2

General view of damage to BD jacket

Photograph 3

Close view of damage to BD jacket

1.5.2 The crew

There were 21 crew members on board at the time of the accident, consisting of the skipper, mate, second mate, bosun, cook, three engineers, nine spare hands and three learner deckhands. Most of them originated from the Hull area, while several were from Grimsby and one of the engineers was from Cape Town in South Africa.

The second mate had had his 53rd birthday the day before the accident. He first went to sea in 1964, sailing as galley-boy on side-trawlers out of Hull. He progressed to learner deckhand and then to spare hand. He served on these vessels until about 1978 when they were decommissioned. He moved to freezer-trawlers fishing for mackerel off Rockall, and served as deckhand and then as bosun. In 1984 he joined Marr Fishing Vessel Management Limited and served as deckhand on stern trawlers and, in 1986, was promoted to bosun. In the mid-90s he was promoted to first mate and he had served for one trip on *Marbella* about 4 years before the accident. This was his first trip back on the vessel.

He had passed the Second Hand Full Certificate of Competency in 1975. Before submitting his papers to the Registrar-General of Shipping and Seamen (now Registry of Shipping and Seamen) in Cardiff for his actual certificate, he had a personal accident while fishing, in which he suffered severe head injuries and the loss of sight to his right eye. Once he had recovered, he did not submit his papers, in the belief that the certificate would not be granted to him because of the loss of the sight in his right eye. However, in 1993, Marr Fishing Vessel Management Limited required him to produce his certificate as part of a general audit. As a result, he applied for the certificate from the examination branch of the Marine Safety Agency (now Maritime and Coastguard Agency). The actual certificate was issued to him in April 1993. The Fishing Vessels (Certification of Deck Officers and Engineers Officers) Regulations 1984 do not require fishermen to have regular medical examinations and they only need an eyesight test when applying as a candidate for a Fishing Vessel Certificate of Competency, Deck Department. Merchant Shipping Notice MSN 1746(M) states:

> *…monocular serving seafarers and those who become monocular in service and meet the required standard should be allowed to continue at sea.*

In an eyesight test performed since the collision, the second mate's near and distance vision for his left eye was found to be normal and, therefore, "met the required standard".

The skipper was 43 years old and had been at sea since 1975 serving on side trawlers, stern trawlers and freezer-trawlers. He was issued with his Deck Officer Certificate of Competency (Fishing Vessel) Class 1 in July 1992 and was promoted to skipper in the same year. He had served on *Marbella* for about 5 years; one year as mate and four years as skipper.

1.5.3 Navigational equipment, practices, instructions and guidelines

The vessel's navigational equipment included the following:

Anschultz Standard 14 **gyro compass**

Anschultz Nautopilot 14 **automatic pilot**

Furuno FR2110 **radar**

Furuno FR1510 Mk 3 **radar**

Furuno GP 500 Mk II **GPS** (console)

Furuno GP 50 Mk II **GPS** (chart table)

Shipmate 4000C **navigation system**

Shipmate 2500 **colour video plotter**.

There was no written voyage plan and only Admiralty charts 107 (Approaches to the River Humber) and 1190 (Flamborough Head to Blakeney Point) had courses drawn on them. On the latter chart, the course line was drawn such that it passed through the Bravo installation's 500m zone **(see Section 2.2.3)**. It was the practice to plot the position of the vessel every hour. Annex 24 *Voyage Planning* to IMO Resolution A.893(21) **(see Section 2.2.3)** states:

> *Investigations show that human error contributes to 80% of navigational accidents and that in many cases essential information that could have prevented the accident was available to but not used by those responsible for the navigation of the vessels concerned. Most accidents happen because simple mistakes in use of navigational equipment and interpretation of available information, rather than because of any deficiency in basic navigational skills or ability to use the equipment.*
>
> *Masters, skippers and watchkeepers should therefore adhere to the IMO Guidelines taking the following measures to ensure that they appreciate and reduce the risks to which they are exposed:*
>
> *a) ensure that the vessel's navigation is planned in adequate detail with contingency plans where appropriate;*
>
> *b) ensure that there is a systematic bridge organisation that provides for:*
>
> *i) comprehensive briefing of all concerned with the navigation of the vessel;*
>
> *ii) close and continuous monitoring of the vessel's position ensuring as far as possible that different methods of determining the position are used to check against error in any one system;*

iii) cross-checking of individual human decisions so that errors can be detected and corrected as early as possible;

iv) information available from plots of other traffic is used carefully to ensure against over-confidence, bearing in mind that other vessels may alter course and/or speed;

c) ensure that optimum and systematic use is made of all appropriate information that becomes available to the navigational staff; and

d) ensuring that the intentions of a pilot are fully understood and acceptable to the vessel's navigational staff.

The above resolution did not come into force until 1 July 2002. However, the MGN 84 (F) *Keeping a Safe Navigational Watch on Fishing Vessels* was "in force" at the time of the accident and contained the following relevant information:

The watch should always take into account the prevailing circumstances and conditions. Even where there is no statutory requirement for certificated officers, it is still essential that watchkeepers are always experienced, capable, and have been instructed in their duties. This is especially vital if you are making landfall, navigating close to the coast, in restricted visibility, severe weather conditions or in dense traffic.

Both the skipper and the watchkeepers should take full account of the quality and quantity of rest taken when determining fitness for duty.

The intended voyage should be planned in advance taking into account any relevant information. Courses should be checked before departure.

It is important that watchkeepers maintain a close watch on their vessel and always know the position, speed and course steered.

The watchkeeper should know the location and operation of all safety and navigational equipment on board and their limitations.

The company's *Vessel Operations Manual* had a whole chapter dedicated to voyage planning, giving an overview and instructions relating to responsibilities, electronic navigation systems, ocean waters, coastal waters, pilotage, ship's routeing, ship reporting systems, and VTS. The following are relevant extracts:

Passage planning is necessary to support the bridge team and ensure that the ship can be navigated safely between fishing grounds and ports from berth to berth. The passage plan should cover ocean, coastal and pilotage waters.

The passage plan should aim to establish the most favourable route while maintaining appropriate margins of safety and safe passing distances offshore.

The intended voyage should be planned prior to departure using appropriate and available charts and publications. The skipper should check that tracks laid down are safe….

It is important that when a route is planned through coastal or restricted waters, due consideration is given to ensuring that the progress of the ship can be effectively monitored.

The manual makes further references to other areas of which the following extracts are relevant:

The officer in charge of the first watch when leaving port should be adequately rested prior to going on watch to ensure that a safe and efficient watch is maintained. This is necessary from a health, as well as a safety consideration.

The skipper is expected to interpret this requirement in a reasonable manner and with the safety of the crew and the ship firmly in mind. Skippers must make suitable arrangements to ensure an adequate amount of rest while maintaining a reasonable momentum of work.

Individuals reporting for work on company's managed vessels whose behaviour reflects the consumption of alcoholic beverage and/or drugs shall not be permitted to conduct their normal duties until such time as their condition is deemed acceptable by the skipper.

When a vessel encounters fog or restricted visibility the following routine should immediately be adopted:

- *Reduce speed and start making the appropriate sound signals*
- *Call the skipper*
- *Station extra look-out forward, if possible*
- *Ensure the radar and echo sounder are fully operational*

The attention of skippers is drawn to the 500 metre safety zone established around offshore oil and gas installations. It is important for the safety of all those working in the hostile environment that skippers respect the safety zones around offshore installations by keeping clear of them at all times.

Vessels which are transiting or passing close to areas of offshore activity should navigate with care through or near these areas giving due consideration to safe speed and safe passing distances, taking into account the prevailing weather conditions and presence of other vessels and dangers.

1.5.4 Damage **(see Photograph 4)**

Marbella suffered substantial damage to the starboard bow, especially in way of the hospital and the first two-man cabin, both of which were on the shelter deck. Damage was also sustained to the masts and aerials on the accommodation superstructure and the after gantry.

Photograph 4

Damage to starboard bow of *Marbella*

1.6 *PUTFORD ACHILLES*

1.6.1 The vessel

Putford Achilles was a stand-by safety vessel for offshore oil and gas installations. She was built in 1973 in Canada as a conventional deck cargo tug/supply vessel, and had two controllable pitch propellers and a bow thruster. She was owned by Putford Enterprises Limited of Lowestoft, and had a multi-functional role, in that she also supplied cargo to the installation from Immingham, on average, every 9 days.

1.6.2 The master

The master was 54 years old and began his sea-going career when he left school. He originally went to sea on fishing vessels from Grimsby and attained his skipper's full certificate of competency when he was 21. He continued deep water fishing until 1976, when he bought his own fishing vessel and went pair-trawling in the North Sea. In 1980, he sold the vessel and joined Tidewater, serving on offshore oil industry supply and survey vessels. In 1983, he gained a command endorsement for stand-by vessels. He served with several companies until he joined Putford about 10 years before the accident, and he had served on *Putford Achilles* as master since then.

1.6.3 Navigational and communication equipment

The vessel's navigational and communication equipment included the following:

Two Furuno **GPS** sets

One Sperry **gyro**

One Sperry **automatic pilot**

Three Furuno **radars**

Three **VHF radio sets**; two Sailor and one Furuno DSC

One Furuno **MF/HF radio**

One ICS **Navtex**

One Dittel **helicopter radio**

1.6.4 Relevant extracts from Dynegy's instructions to stand-by vessels and for emergencies

Duty

To monitor using their ARPA potential ship collision and try to alert or divert vessel if impact is probable.

To inform the platform of any incident and assist in:

Reporting the nature, location and extent of the incident

Rescue of personnel from the sea

Application of water for cooling

Medical back up

Co-ordination of abandonment.

Vessel impact 47/3B

In all potential vessel impact situations, close liaison with the stand-by vessel should be maintained to discover the errant vessel tonnage, location, speed and predicted time of collision. As a guide, the following combinations of tonnage and speed will cause total jacket collapse:

47/3B

- *100,000 tonnes (eg a large crude oil tanker) at 1 knot*
- *6,000 tonnes (eg a small coaster or very large supply boat) at 4 knots.*

If impact looks probable, the platform should be shut down and vented. Personnel may be evacuated or moved onto another jacket eg CD. If long periods of time are available helicopter evacuation may be considered.

Use of the general alarm should be used to alert personnel. Personnel may be directed to muster at a single alternative muster point outside the Temporary Refuge by a public announcement. The announcement should take place as soon as possible to avoid confusion.

The choice of alternative muster location is at the discretion of the OIM, but it should be close to one of the installation bridges. This is to allow personnel to transfer at short notice to the platform least likely to be hit by the vessel.

1.6.5 Extracts from Putford's operating procedures

Infringements of the safety zone

The OOW shall attempt to contact any vessel coming within 5 nautical miles, or 20 minutes steaming if this is further, of a manned installation with a CPA of 500 metres or less. If no satisfactory contact is established and before the intruder reaches a point 15 minutes from the installation the OOW shall:

- *Call master*
- *Inform installation*
- *Switch on bridge tape recorder and log the time of doing so*
- *Continue efforts to contact intruder*
- *Put FRC crew on stand-by*
- *Move ship to intercept, if not engaged on a close stand-by task*
- *If on close stand-by, request permission to launch FRC and leave present position*

- *Close the intruder at best possible speed*
- *Continue to try and contact intruder*

If there is still no response from the intruding vessel and no later than 15 minutes from the potential collision:

- *Launch FRC or Daughter craft (weather permitting) to intercept, attract attention and obtain full details of intruding vessel.*
- *Inform OIM of possible collision in 15 minutes (in order to allow time to muster the installation personnel)*
- *Get as close to intruding vessel as safely practicable*
- *Continue using all available means to contact (horn, lights, flares etc.).*

If after using all available methods the intruding vessel has not changed course and a collision with the platform is inevitable:

- *Advise OIM and decide action to be taken*
- *Advise Coastguard*
- *Make ship ready to receive survivors from the water*
- *Move the ship into safe position from which to effect a rescue bearing in mind tidal flow, wind direction and the likelihood of fire, both on the platform and the ship that collided with it*
- *Inform local platforms and stand-by vessels of the situation*
- *Inform the duty manager – via the T/R ship if necessary.*

1.7 ACTION SINCE TAKEN BY THE MARITIME AND COASTGUARD AGENCY (MCA)

The MCA has initiated discussions with the offshore and fishing industries, with the aim of reducing the number of future similar incidents and near misses. The discussions have focussed primarily on communication, with the intention of formulating a best practice guide, and a Safety Alert has been published **(Annex)**.

SECTON 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 to prevent similar accidents occurring in the future.

The analysis focuses primarily on the actions taken by the watchkeepers of *Marbella* and *Putford Achilles* during the period leading up to the collision, and their relevance to existing company operating instructions and procedures.

2.2 THE COLLISION

2.2.1 Sources of information and its analysis

Other than from *Marbella'*s personnel, there were four sources of information giving the track of the vessel. The sources were:

1. Amethyst Gas Field radar;
2. Humber VTS radar;
3. *Putford Achilles'* radar plot; and
4. DEFRA's recorded position for *Marbella* at 0934.

The first source was a platform-mounted radar system, which tracked and recorded the movement of vessels within 25 miles of the Amethyst Gas Field installation **(see Section 2.3.2)**.

This system tracked *Marbella* in the new traffic separation scheme in the north-eastern approaches to the River Humber, past the N New Sands buoy and up to 7.5 cables from the BD platform, when the target was dropped from the system.

The Humber VTS radar tracked *Marbella* through the traffic separation scheme, past the N New Sands buoy and then up to about 3.2 miles from the BD platform.

The master *of Putford Achilles* made three plots of *Marbella*, starting when the latter was 3.15 miles from the BD platform until she was 1.15 miles away.

The first two sources agree that, from the N New Sands buoy *Marbella* was making good a course over the ground of 011° (+/- 0.5°) and an average speed of about 13.1 knots. The first three predicted that *Marbella* would pass to the west of the installation; either tangential to the 500m zone (Amethyst) or through the zone (VTS Humber and *Putford Achilles*).

However, the Amethyst radar plot from the penultimate position (0930 – 1.1 miles from BD platform) to the last position (0932 – 0.75 miles from BD platform) shows a course 12° to starboard of that made good up to that point **(see Diagram 3)**. The alteration was from a course which would pass the installation to starboard, to one which would collide with it. This is confirmed by *Marbella's* automatically transmitted 2-hourly GPS position to DEFRA at 0934. The position was latitude 53° 49.66'N longitude 000° 26.19'E, which placed her 3.2 cables away from BD platform, just outside the 500m zone and in line with the previous two Amethyst positions.

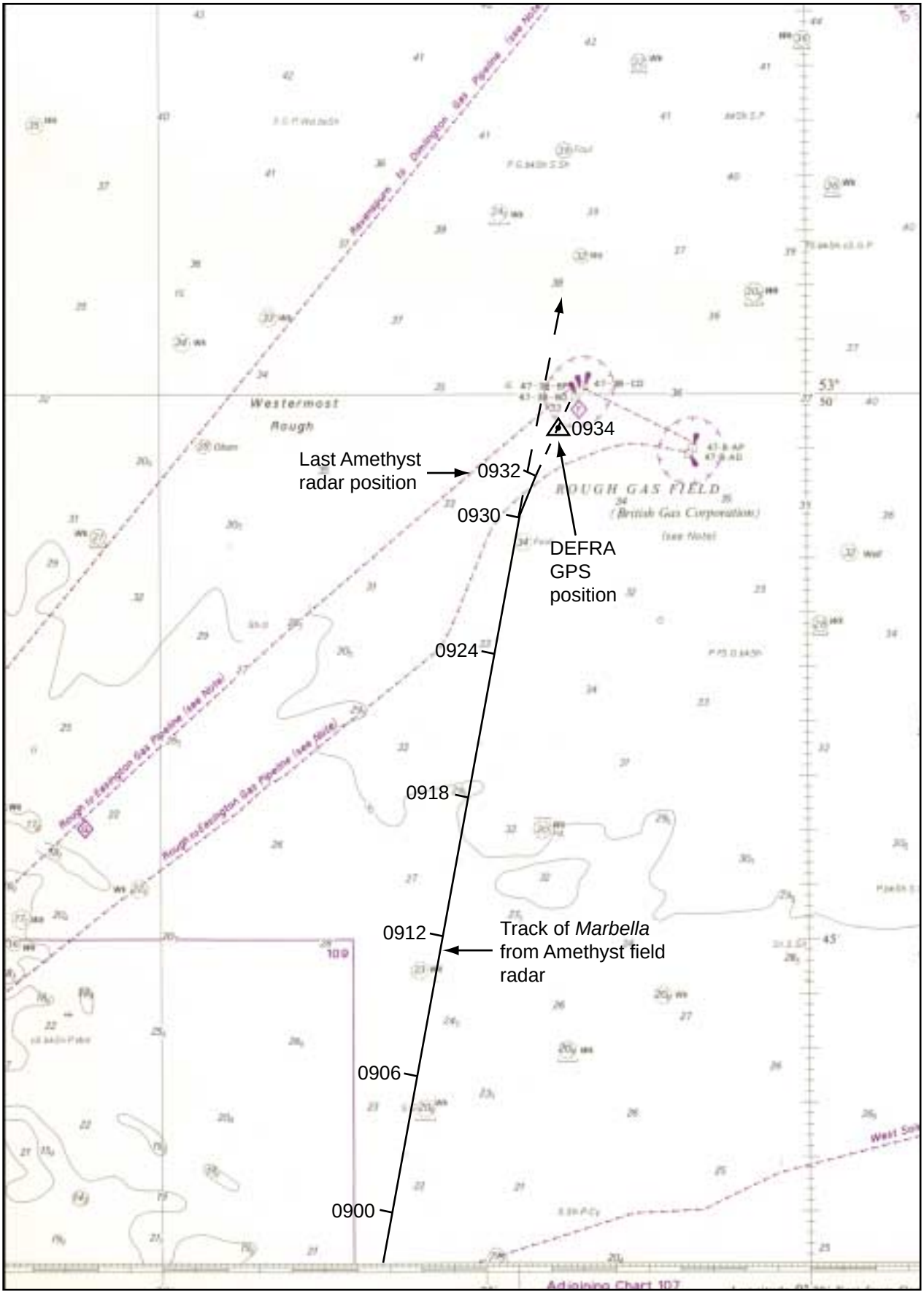
2.2.2 Second mate's actions

The reason for the alteration of course at about 0930 has not been identified. The second mate's recollection is that he did not alter the automatic steering until he attempted to avoid the platform at close quarters. Either before or after the accident, there was no report of any mechanical malfunction of the steering gear, gyro or automatic pilot. There was no traffic in the area for the second officer to avoid.

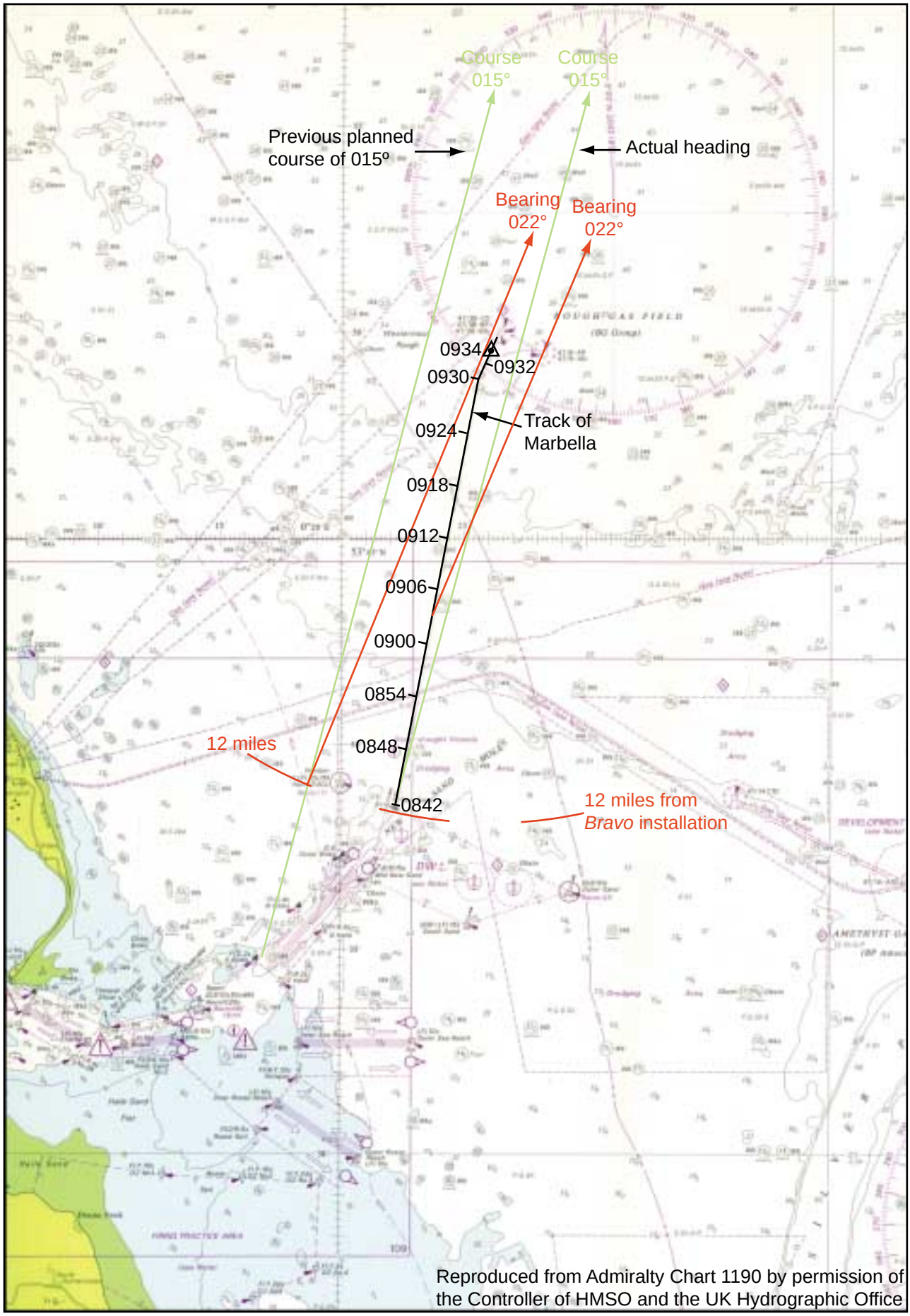
The second mate had placed the EBL on what he thought was the *Bravo* installation, which gave a bearing of 022°. However, from the tracks taken from VTS Humber and Amethyst, the *Bravo* installation would have been right ahead at about 0913 **(see Diagram 4)**. The *Alpha* installation would have been bearing 022° at about 0903. At no time during the incident was the *Bravo* installation bearing 022°. Although the second mate knew the difference in radar echo sizes between the *Alpha* and *Bravo* installations, the latter of which is the larger of the two, he seems not to have seen or have identified the echo ahead of him. This situation was not helped by not plotting the position of the vessel in relation to the installation at regular intervals, and he did not use the ARPA system. Therefore, he had not properly identified the two installations and the movement of the vessel in relation to them. The lack of monitoring was due, in part, to the procedure on board of only plotting the position of the vessel at hourly intervals **(see Section 1.5.3)**. He had attended a radar observer course but not one dealing with ARPA.

To the second mate's recollection, he had not been on watch after having just left the River Humber for about 4 years. The traffic separation scheme to the approaches to the River Humber was implemented in June 2001. Whereas in the past the vessel would have turned to the north for Norway when clear of shallow patches at S Binks buoy, she did not do so until she was past the N New Sands buoy, which is about 2.5 miles further to the east. As for many years in the past, the vessel used the same course of 015° from N New Sands buoy as from S Binks buoy. On the latter track, the bearing of the *Bravo* installation, when on the edge of the 12-mile radar range scale, is 022°. Therefore, the second mate's account of the events might have been confused with his previous experience of keeping a watch in the approach to the Rough Gas Field.

Diagram 3



Track of *Marbella* from Amethyst field radar



Tracks taken from VTS Humber and Amethyst radars

The second mate's interpretation was that the echo of the installation was lost in the clutter, when the radar was on the 3-mile range scale. However, the sea state was not rough enough to produce excessive clutter to hide the large echo of the installation. When he had reduced the range scale, he did not adjust any of the controls such as gain, clutter and tuning. It may have been that these controls had not been set up properly, and when the vessel neared the installation, the echo was lost near the centre of the screen. However, all witness evidence suggests that the radar controls were set appropriately.

In accordance with the company's instructions, when the visibility reduced, the second mate should have called the skipper, reduced speed and started to make sound signals **(see Section 1.5.3)**. A reduction in speed would have allowed more time in which to take avoiding action.

The second mate's actions and non-actions might have been affected by several personal factors. It had been his birthday the day before the accident, in celebration of which he had consumed an amount of alcohol in the afternoon and a meal at about 1930. He had gone to bed at about 2130 and had arisen at 0130 to join *Marbella.* The combination of alcohol, food, and a short sleep period possibly had some adverse effect on his initial state of alertness. Although he might have recovered, to some extent, by being on deck for several hours, as the day progressed during his watch, his state of alertness would possibly have degraded again through lack of rest. Because the joining time was in the early hours of the morning, it would have been wise if, before the vessel sailed, having identified who was to take the first watch, the second mate had been informed immediately and instructed to get some sleep without being required for further duties in the river. The skipper would then have been more assured that the first watchkeeper would be adequately rested before taking over the watch **(see Section 1.5.3)**.

In an eyesight test performed since the accident, the second mate's near and distance vision for his left eye was found to be normal. In this case, because of the presence of a lookout and normal vision in his left eye, it is concluded that the fact that the second mate had vision in one eye only, had no bearing on the causes of the accident.

2.2.3 Voyage planning

There was little evidence that a satisfactory voyage plan had been made by either the skipper or the mate for the passage from Hull to the fishing grounds in the Arctic Circle, despite extensive information and advice in the company's *Vessel Operations Manual.*

Originally, *Marbella*'s track was drawn on the paper chart through *Bravo*'s 500m safety zone. It has been a practice with fishing vessels that, when on passage to and from the fishing grounds, courses are drawn (either electronically or on paper charts) through offshore oil/gas fields, rather than to planned waypoints either side of them. It is the general rule that, when a fishing vessel encounters an installation, the watchkeeper alters course around the 500m zone.

IMO Resolution A.893(21) **(see Section 1.5.3)** came in to force on 1 July 2002 where voyage planning is required on all vessels (including fishing vessels) which proceed to sea. Although the resolution did not apply at the time of the accident, voyage planning has been in practice for many years. Had voyage planning been implemented on *Marbella*, and better navigational practices observed (under the guidance of MGN 84) regular monitoring of the vessel's position and the use of waypoints to keep clear of installations, may have helped to prevent the accident **(see Section 1.5.3)**.

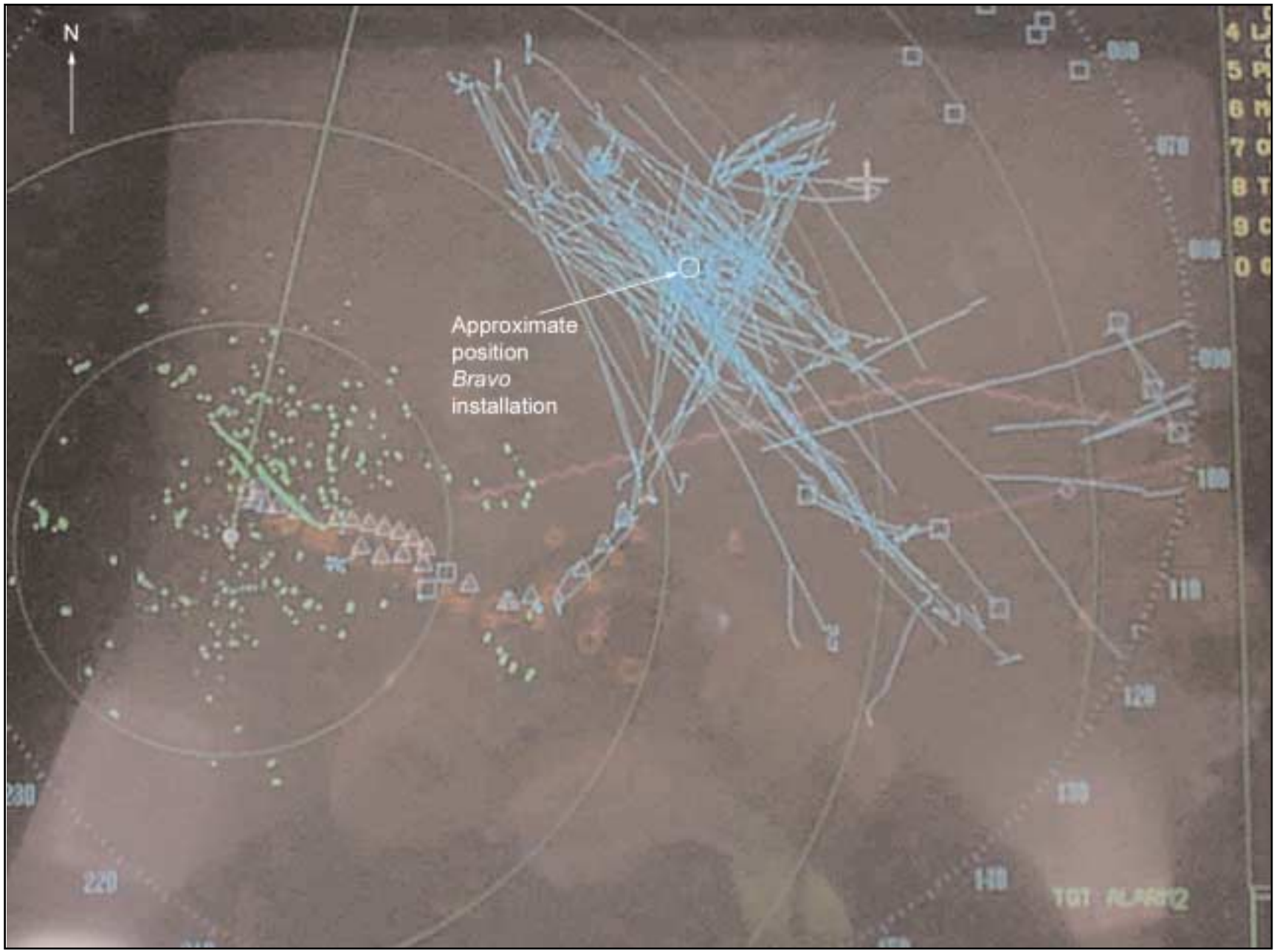
2.3 COLLISION PREVENTION

2.3.1 *Putford Achilles*

The main purposes, among others, of a stand-by vessel, is to guard against passing vessels entering the 500m safety zone and colliding with the installation. **Photograph 5** shows recorded tracks of acquired echoes from *Putford Achilles'* ARPA. There are distinct tracks of vessels travelling to and from Flamborough Head, to and from the Baltic and the movement of fishing vessels in and around the Rough Gas Field.

The seabed around the Rough Gas Field is suitable for potting and these type of fishing vessels can travel at speed when approaching the area. *Putford Achilles* had a list of 20 fishing vessels, which operated in the area. Only one was over 12m in length and some had a high engine power, giving likely speeds of up to 25 knots. It had become commonplace in reasonable visibility for the stand-by vessel's watchkeepers to take no action to intercept these vessels after they had been identified and been seen to be approaching the gas field.

At the time of the accident, the master had chosen not to use the radar guard zone because of the fishing vessel activity in the area. However, he had noted the movement of *Marbella's* echo from about 12 miles away. He thought this was yet another fishing vessel closing the Rough Gas Field and would stop at some time and begin fishing. However, he was sufficiently concerned that he manually plotted the echo when it was 3.15 miles and about 15 minutes away (the ARPA had been dropping targets from the screen) and made the third plot when the vessel was 1.15 miles and about 5 minutes before the collision, the results of which showed that the vessel would pass to the west of the installation **(see Section 2.2.1**). However, in accordance with Putford's operating procedures, the plots should have been completed when the vessel was 15 minutes away from the installation so that the master could give the required notice to the OIM in the case of a potential collision and personnel could be mustered **(see Section 1.6.5)**. Between the plots, the master tried to call *Marbella* on VHF radio channels 16 and 72 but without response. Had the master made contact with *Marbella*, it would have alerted the second mate that he was going to pass too close to the installation, and he would probably have altered course to give a much larger passing distance. The master's plot showed that the other vessel would pass through the 500m zone and close to the



Photograph 5

Recorded vessel tracks from *Putford Achilles* ARPA

installation; it was not on a collision course at the time of completing the plots; this happened a little later. Therefore, the master was dealing with a potential infringement of the safety zone and not with a collision scenario, which, together with his uncertainty as to whether or not the fishing vessel was going to stop and start fishing, is apparently why he did not intercept the vessel or inform the OIM of the situation. This was a breach of Putford's operating procedures **(see Section 1.6.5)**. In practice, given the number of fishing vessels fishing in the area on a regular basis, by following the procedures, the installation would have been alerted frequently and, on most occasions, unnecessarily. The master had previously ignored his company's operating procedures when he could identify the approaching vessel. On this occasion, however, he was unable to identify the vessel and failed to take this factor into account in assuming she would stop and start fishing without endangering the platform. His previous routine violation of the company's operating procedures probably made this failure all the more likely. The initiative since taken by the MCA should contribute to preventing stand-by vessel watchkeepers from assuming that known fishing vessels will stop and start fishing, and encourage compliance with existing company operating procedures.

The master believed that it would be difficult to go round the installation to intercept the approaching vessel because, as his vessel travelled nearer to the installation, its echo would arc on the radar screen and he would, therefore, have difficulty in keeping clear of it. However, if he had taken earlier action, in accordance with Putford's operating procedures, this problem could have been avoided.

The master was using a slave VHF radio handset near the radars. The master set was at the after end of the wheelhouse. When *Marbella* made her "Pan Pan" broadcast, the master heard it on the DSC VHF radio set, which he used to call *Marbella* in response. It was later found that the after master VHF radio handset had not been fully depressed because a faulty spring clip did not allow a micro switch to operate correctly. Because the micro-switch had not been operated, the slave handset was not active and the previous calls to *Marbella* were not broadcast. New clips have now been supplied to the vessel, and a warning notice has been posted to ensure that the handset is fully depressed to be able to operate the slave handset.

2.3.2 Installation-based radar

The fixed radar system, located on the BP operated Amethyst offshore installation to the south-east of the Rough Gas Field, was designed to give warning of approaching vessels to the Amethyst installation. Its ability to process the movements of numerous vessels is more sophisticated than the usual marine radars used on vessels. The data from the radar and computer processing system can be transmitted to the installation's command and control display, and to the field's stand-by vessel display, and, using an electronic

Admiralty chart, provide collision and other defined warnings to watchkeepers. It can guard not only the platform on which it is mounted, but also other satellite platforms; a task which would be onerous for one watchkeeper on a stand-by vessel. The automatic alarm system for approaching vessels which have a zero CPA for any of the platforms in the field, can be changed to a time basis, depending on the speed of the vessel, giving different stages of alertness. Not having to plot approaching vessels gives more time for the stand-by vessel personnel to decide what action needs to be taken. The control room of an installation is also alerted by the system instead of solely by the stand-by vessel. The system can also differentiate precipitation from that of a moving echo of a vessel, and suppress only the area of the precipitation, and not the whole radar picture. Because the radar scanner is large, mounted high up and on a static installation, the radar range is greater and more accurate in its prediction of the movement of an echo. The Amethyst-based radar is operating at the limits of its capabilities to cover the Rough Gas Field installations.

SECTION 3 - CONCLUSIONS

3.1 CAUSAL FACTORS

1. An unexplained alteration of course, from one that would have passed the installation to starboard side of the vessel, to one which was on a collision course with the installation. [2.2.2]

2. Little evidence of a satisfactory voyage plan. *Marbella* had been set originally on a course that would take her too close to the installation. Had a satisfactory voyage planning been implemented, with proper tracks clear of installations, it could have helped in preventing the accident. [2.2.3]

3. The second mate had not properly identified the two installations, because of poor monitoring, the radar's heading line, his previous experience, the practice of one-hour position plotting, and the movement of the vessel in relation to them. [2.2.2]

4. *Marbella's* radar controls might not have been set up properly, and when the vessel neared the installation, its echo might have been lost near the centre of the screen. However, all witness evidence suggests that the radar controls were set appropriately. [2.2.2]

5. When the visibility reduced, the second mate did not call the skipper or reduce speed, contrary to the company's instructions. A reduction in speed would have allowed more time in which to take avoiding action. [2.2]

6. It would have been wise if, before the vessel sailed, having identified who was to take the first watch, the second mate had been informed immediately and instructed to get some sleep without being required for further duties in the river. The skipper would then have been more assured that the first watchkeeper would be adequately rested before taking over the watch. [2.2.2]

7. *Putford Achilles'* master did not intercept or warn the OIM of the approaching vessel, which was a breach of Putford's operating procedures. [2.3.1]

8. *Putford Achilles'* master was dealing with a potential infringement of the safety zone and not with an impact scenario, which together with his uncertainty as to whether or not the fishing vessel was going to stop and start fishing, is apparently why he did not inform the OIM of the situation. From past experience, when he could identify local fishing vessels which operated in the area, he routinely ignored his company's operating procedures for potential infringements of the safety zone. A difference on this occasion was that he was unable to identify the approaching vessel, and failed to take this factor into account in assuming she would stop and start fishing without endangering the platform. His previous routine violation of the company's operating procedures probably made this failure all the more likely. [1.2.2, 2.3.1]

9. If *Putford Achilles'* master had verbally contacted *Marbella*, it would have alerted the second mate that he was going to pass too close to the installation and he would probably have altered course to give a much larger passing distance. Verbal contact was unknowingly prevented by faulty VHF radio equipment. [2.3.1]

3.2 OTHER FINDINGS

1. Had *Marbella* run full speed directly under the BD platform and into her cross supporting members, there was a high possibility that the platform might have collapsed, endangering the lives of those personnel that were on it at the time. [2.2.2]

2. *Marbella* would have passed to the west of the installation had she remained on her original track. [2.2.1]

3. The reason for the alteration of course at about 0930 has not been identified. [2.2.2]

4. The combination of alcohol, food, and a short sleep period possibly had some adverse effect on the second mate's initial state of alertness, which possibly degraded through lack of rest as the day progressed. [2.2.2]

5. The fact that the second mate had vision in only one eye had no bearing on the causes of the accident. [2.2.2]

6. The fault with *Putford Achilles'* VHF radio set has since been rectified. [2.3.1]

7. An installation-based radar may greatly help in monitoring the approach of vessels to an installation. [2.3.2]

8. The initiative since taken by the MCA should contribute to preventing stand-by vessel watchkeepers from assuming that known fishing vessels will stop and start fishing, and encourage compliance with existing company operating procedures. [2.3.1]

SECTION 4 - ACTION TAKEN

The MCA has initiated discussions with the offshore and fishing industries, with the aim of reducing the number of future similar incidents and near misses. The discussions have focussed primarily on communication, with the intention of formulating a best practice guide. This should contribute to preventing stand-by vessels from assuming that known vessels will stop and start fishing, and encourage compliance with existing company operating procedures.

In March 2003, the MCA issued a Safety Alert to be circulated throughout the industry **(see Annex)**.

A Chief Inspector's letter has been sent to Boston Putford Safety Ltd, recommending the company to:

- Reinforce its operating procedures with respect to potential infringements of the safety zone; and
- Ensure, through effective auditing, that its operating procedures are being complied with.

A Chief Inspector's letter has also been sent to Marr Fishing Vessel Management Limited, recommending the company to:

- Review its *Vessel Operations Manual* with respect to passage planning and monitoring, and provide additional specific instructions to ensure that:
    - Charted courselines pass clear of the 500m safety zone of offshore installations; and
    - Positions are regularly and frequently fixed on the chart in use; and
- Ensure, through effective auditing, that its instructions are being complied with.

Marine Accident Investigation Branch
September 2003

ANNEX

MCA Safety Alert

Safety Alert

March 2003

Navigation near Offshore Installations

Notice to Offshore Installation Managers, Shipowners, Masters, Officers and Seamen of Merchant Ships and to Owners, Skippers and Crews of Fishing Vessels

1. **There are a growing number of near miss incidents between vessels and offshore installations. These incidents have exposed the vessels, installations and their respective crews to unnecessary risk by passing too closely. In some cases, installations have had to stop their operations and muster personnel to Emergency Stations.**

2. **Safety zones exist not only to protect mariners by reducing the risk of collision but also to protect the lives and property of those working in the oil and gas industry, (divers and submersible vehicles are particularly vulnerable), and to reduce the risk of damage to the marine environment.**

3. The Maritime and Coastguard Agency wishes to remind vessels, Owners and Operators, that all oil and gas installations are protected under the Petroleum Act 1987. It is forbidden for vessels to enter the 500 metre safety zones except under the following conditions:

   (i) With the consent of the Secretary of State, or a person authorised by him;

   (ii) To lay, test, inspect, repair, alter, renew or remove a submarine cable or pipe-line;

   (iii) To provide services for an installation within the zone or to transport persons to or from it, or under authorisation of a government department to inspect it;

   (iv) For a general lighthouse authority vessel to perform duties relating to the safety of navigation;

   (v) To save life or property, owing to stress of weather or when in distress.

4. **In order to avoid near miss incidents happening in the future, MCA wish to make the following recommendations:**

   - **Vessels transiting or passing close to areas of offshore activity should navigate with extreme care.**
   - **Passage plans should give installations and areas of development a wide berth.**
   - **Vessels should, where practicable, avoid heading directly towards a safety zone or offshore installation. Such action may be perceived as a threat, resulting in the installation having to suspend its operations and muster personnel to Emergency Stations.**
   - **Mariners should bear in mind that installations may have to initiate emergency procedures when a vessel is heading towards them, at a distance of ten miles. This is not only costly for the installation operator but more importantly, detrimental for the safety of all concerned.**

5. **To avoid any doubt as to the intentions of vessels, MCA would encourage communication with the installations PROVIDED that it is safe to do so and that the Collision Regulations are adhered to.**

6. Communications should be initiated through Channel 70 on Digital Selective Calling (DSC), thence to Channel 13. Fishing vessels not yet fitted with GMDSS equipment, should use Channel 16 to call up (UNLESS DISTRESS/URGENCY MESSAGES ARE BEING PASSED), before switching to a working channel.

7. Installation operators should ensure they have sufficient communications equipment (GMDSS DSC) and qualified operators if they do not have a standby vessel in attendance.

8. **Entry into a safety zone by an unauthorised vessel makes the Owner, Skipper and others who have contributed to the offence liable on summary conviction to a fine, and on conviction on indictment, to imprisonment, or to a fine or to both. Vessels failing to communicate with installations who are concerned regarding their intentions may also be subject to enforcement action.**