# A MAJOR SALVAGE OPERATION

BY

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*The following is an account of the salvage of S.S.* Melika *and S.S.* Fernand Gilabert *which took place at the entrance of the Persian Gulf in September*, 1958, *during the Middle East crisis. The Author was, at the time, the Engineer Officer of H.M.S.* Puma.

' All in a hot and copper sky,
The bloody sun, at noon,
Right up above the mast did stand,
No bigger than the moon '.

Opportunities for salvage work in the Royal Navy do not often occur but, when they do, important decisions have to be taken quickly and the general situation appraised without delay, otherwise the ' prize ' may be lost or possible unnecessary loss of life might be incurred.

Large salvage operations occur only once in a lifetime. This operation is believed to be the largest in which the Royal Navy has ever been involved, and must be unique in the annals of the Service.

This is the story.

During the month of September the weather in the area to the south of the entrance to the Persian Gulf is extremely hot and humid, and living and working conditions on board any ship, which is not fully air conditioned, are most unpleasant. The only way that heat exhaustion can be avoided in this area in the summer months, is for all personnel to imbibe large quantities of liquids, together with salt, at regular intervals during the day. No one gets much sleep at night.

At 0215 on Saturday, 13th September, 1958, S.S. *Fernand Gilabert*, a French oil tanker in ballast on her way to bunker in the Persian Gulf, collided with a Liberian tanker, S.S. *Melika*, in position 21° 41′ N. and 59° 41′ E. S.S. *Melika* was on passage in deep condition from the Persian Gulf to the U.S.A.

The disposition of H.M. ships in this area on the night of Friday, 12th/Saturday, 13th September was as follows :—

(*a*) H.M.S. *Bulwark* was at sea, off the Dimaryiat Island, preparing to carry out flying operations in the Muscat area

(*b*) H.M.S. *Puma* was on passage from Karachi to Muscat after a period of self maintenance, and was on her way to carry out Oman patrol duties in the Persian Gulf

(*c*) H.M.S. *Loch Killisport* was inshore on the South Arabian coast acting as S.A.R. frigate for H.M.S. *Bulwark*

(*d*) H.M.S. *St. Bride's Bay* had been detached for passage to Singapore after having operated with H.M.S. *Bulwark*.

H.M.S. *Bulwark* at this date was at the end of a very arduous ' evaluation ' commission, and her officers and men were looking forward to returning home ; H.M.S. *Puma* had been seconded for duty in this area, for the period of the Middle East crisis, away from her normal station, S.A.S.A.; while H.M.S. *Loch Killisport* was in the middle of her 12 months' duty on the Persian Gulf

FIG. 1—FIRST SIGHT OF S.S. FERNAND GILABERT

station. No one was exactly looking forward to remaining unnecessarily in this unpleasant area in the month of September.

H.M.S. *Bulwark* first received a report of this collision at 0645 on the morning of Saturday, 13th September, and immediately recovered all her aircraft, except for one Skyraider, which was ordered to proceed to the scene of the collision and to report. The other R.N. ships in the area were alerted and were ordered to join H.M.S. *Bulwark*.

Shortly after this, the aircraft reported that the two tankers were eleven miles apart, abandoned, on fire, but that neither was sinking.

The following signal was sent by H.M.S. *Bulwark* to Admiralty for C.N.I.:—

> *Bulwark* in company with Swedish ship *Ceres* and British ships *Border Hunter* and *Anglican Diligence*. Helicopters transferring injured to *Bulwark*. Injured will be helicoptered to Masira for R.A.F. Casevec to Aden. *Bulwark* helicopters have landed party in French tanker *Fernand Gilabert* which is still burning. *St. Bride's Bay* closing *Fernand Gilabert*. No sign of Liberian tanker *Melika*. Air search continues.'

The medical staff from H.M.S. *Bulwark* boarded all the merchant ships in the area, which had injured survivors on board, and cared for the casualties. The seriously injured were transferred by helicopter to *Bulwark*. In the meantime another helicopter put the Executive Officer of H.M.S. *Bulwark* and a small boarding party on board S.S. *Fernand Gilabert* ; H.M.S. *Loch Killisport* and H.M.S. *St. Bride's Bay* were ordered to start salvage operations on S.S. *Fernand Gilabert* and to take her in tow.

S.S. *Melika* had meanwhile disappeared but was found several hours later by the Skyraider, 25 miles to the south of her estimated position, stopped, listing 10 degrees to port, abandoned and on fire amidships and aft. She had been abandoned with her machinery automatic controls still in use.

FIG. 2—FIRST SIGHT OF S.S. MELIKA

While the above was taking place in the early hours of Saturday, 13th September, H.M.S. *Puma* arrived at Muscat, anchored, and shut down her main machinery. At 0805 she picked up a distress signal and at 0840 she was proceeding at full speed (23 knots) towards the suspected area. This is typical of the immediate availability of these Diesel frigates. The time for getting under way is determined not by the machinery but by the speed in which booms, ladders, boats and anchors can be recovered. At 0940 a signal was received from H.M.S. *Bulwark* ordering her to proceed to S.S. *Melika's* latest position further to the southward, 21° 33′ N. and 59° 55′ E. She closed S.S. *Melika* at 1700 when the boarding party from H.M.S. *Bulwark* was seen being transferred to her by helicopter.

H.M.S. *Puma* found S.S. *Melika* drifting at two knots with her port beam to wind and sea, listing 10 degrees to port in grey breaking seas, a 10-ft swell and a rising wind of force 5-6.

A small boarding party was put on board *Melika* by the 27-ft motor whaler. This boat was one of the new G.R.P. boats and proved to be an excellent sea boat in the prevailing conditions.

S.S. *Melika* had been struck on her port side immediately abaft the bridge and was badly holed. The upper deck was cracked and buckled and was a tangled mass of wrecked pipes, derricks and cat-walk. Seas were breaking over her port side and gushing up in fountains of spray through the cracks and buckled hatches on deck ; and a medium sized oil fire was burning among the wreckage. Smoke and spurts of flame from this fire and an upper deck fire further aft were blowing down wind. Another fire was alight in the tiller flat and in other after compartments, though this was not so apparent. The scene, impressive enough by daylight was enhanced as the day began to run and it became magnificent after dark.

As dusk fell, the helicopters from H.M.S. *Bulwark* landed the seriously

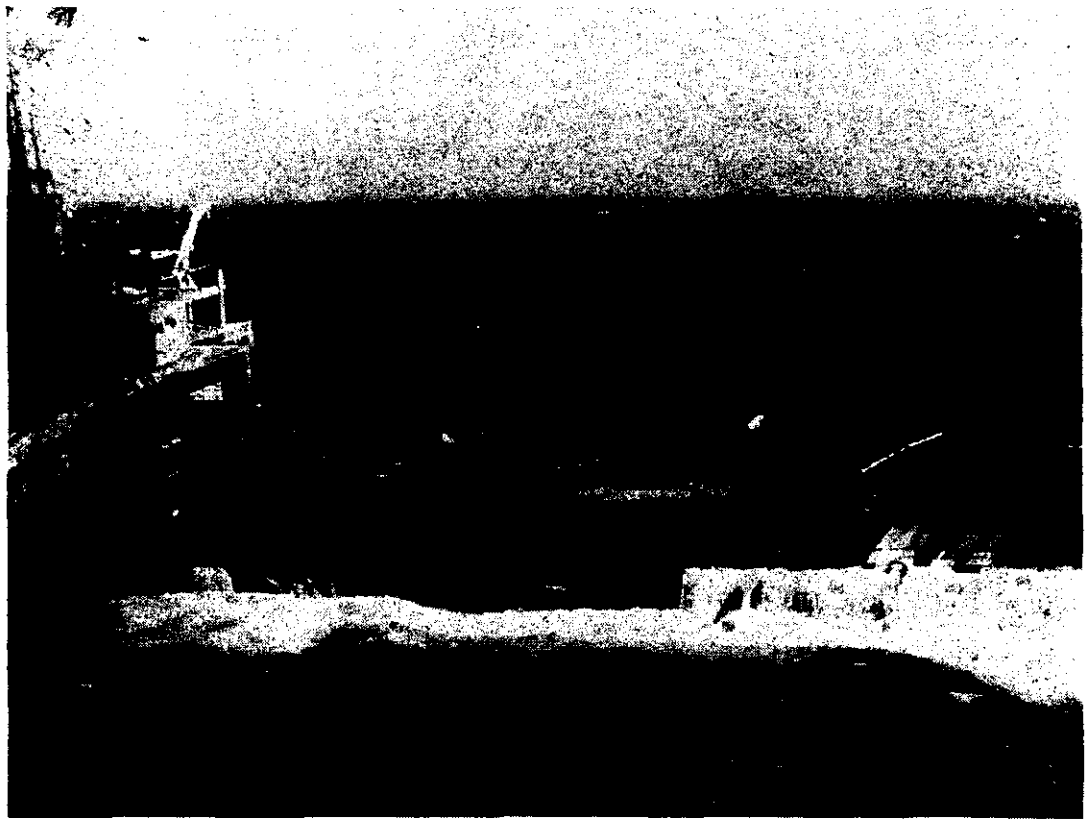

FIG. 3—S.S. MELIKA SHOWING DAMAGE SUSTAINED IN THE COLLISION

injured at Masira, where the R.A.F. had flown in a small field hospital. The next day they were flown to Bahrein. At 2100 *Bulwark* rejoined *Melika* and the real work of salvage began.

The following signal was sent by *Bulwark* to Admiralty :—

'Three tankers with casualties formed on *Bulwark* while 15 men were transferred by helicopter. Meanwhile salvage party was placed on board *Fernand Gilabert* by helicopter, which was on fire amidships. This party now report fire under control. *St. Bride's Bay* and *Loch Killisport* standing by. Further party placed aboard *Melika* by helicopter to fight oil fire amidships. *Melika* holed amidships and listing 10 degrees to port. *Puma* expected to meet *Melika* about 1730.

2. *Bulwark* steaming at full speed towards Masira to land by helicopter before dark nine seriously injured men for onward routing to Aden.

3. *Bulwark* will then stand by *Melika.*

4. Hope both ships will be salvaged.'

The story now became divided into two separate exploits ; the salvage of S.S. *Fernand Gilabert* and that of S.S. *Melika.*

This article will be confined to an eye witness account of the *Melika* story, and will only touch briefly on the salvage of *Fernand Gilabert.*

The object now was to get *Melika* and her cargo of 33,300 tons of crude oil somehow to an anchorage, which the owners and insurance agents would accept as being safe. There were only two real alternatives available :—

(i) To tow her to Karachi or Bahrein

(ii) To steam the ship under her own power to one of these ports after running repairs had been carried out, which might take several days.

The following parties were immediately put on board S.S. *Melika* from H.M.S.

FIG. 4—HELICOPTER FROM H.M.S. BULWARK OVER S.S. MELIKA

*Bulwark* and H.M.S. *Puma* to investigate the damage, to make the ship seaworthy for towing and if possible to raise steam :—

*H.M.S. Bulwark*
1 Lt.-Cdr. in command
1 Cdr. (E) in charge of repairs
1 Lt.-Cdr. (L) in charge of electrical repairs under Cdr. (E)
1 Lt.-Cdr.
2 Lts.
1 Lt. (E)
1 Constructor Lt.
4 Seamen
3 Communication Ratings
2 Petty Officers
4 Shipwrights
1 Chief Mechanician
2 E.R.A.s
1 Ch. M. (E)
2 P.O.M. (E)s
2 L.M.(E)s
6 M. (E)s.
1 P.O. (L)
1 L.E.M.
1 E.M.
1 P.O. Cook
1 P.O. Steward

H.M.S. *Puma*
1 Lt.-Cdr.
1 Lt.-Cdr. (E)
1 Shipwright
1 E.R.A.
1 P.O.M. (E)
1 L.M. (E)
1 M. (E)
2 P.O.E.L.s
1 L.E.M.
2 E.M.s
1 A.B.

The details of the work, conditions and difficulties experienced aboard S.S. *Melika* will now be continued in diary and note form.

**Night of Saturday, 13th September**

*General*

The combined boarding party was at first faced with the difficult tasks of fighting fires on the upper deck and between decks, assessing the damage between decks in the dark, restoring essential services especially lighting, and to work without detailed knowledge of the ship.

It must be mentioned here that it was soon discovered that the electrical power distribution system in S.S. *Melika* was 440-volt, 60-cycle, 3-phase A.C. As luck would have it, H.M.S. *Puma* was similarly powered and was therefore able to loan electrical portable pumps and other equipment, as well as ratings well versed in A.C. practice. Without this equipment and experience, electrical repairs and pumping operations would either have been impossible or would have taken much longer. There was no other R.N. ship in the area powered by A.C.

A preliminary survey revealed the following :—

(*a*) Structural Damage—Port side of the hull plating was perforated over a length of about 70 feet. The hole extended from the deck edge to a depth of 20 feet over the whole of its 70-ft length. The port longitudinal bulkhead was perforated in way of the hull damage. Three centreline and three adjacent wing tanks were open to the sea. The deck plating over these tanks was buckled upwards and part of it was lifting periodically from the action of the sea. The longitudinal tank deck stringer under the buckled plating was crippled. The athwartships tank deck gusset was cracked from its apex to the opposite side of the ship, and the deck movement was hinging about this apex.

(*b*) Boilers and Main Machinery—A preliminary investigation showed that the ship had been steaming on the starboard boiler with Bailey automatic controls in use, and with the telegraphs at full ahead—starboard turbo alternator had been in operation. There was no water in either boiler, and the tubes of the starboard boiler showed signs of a minor distortion.

(*c*) Auxiliary Machinery—Electric, Steam and Water Supplies—Boats—At first sight the auxiliary machinery appeared to be mainly in working order. Evidence existed of some machinery having been ill cared for. Wooden chocks were found under the main condenser and only one turbo feed pump out of three fitted, was available. The steering gear control rod gearing was bent and the gearing jammed.

All electric and steam leads to the forward part of ship had been severed. All the fresh and sanitary water, and fire main pipes to bridge, cargo tank steam drenching and oil pipes, and telemotor leads, passing over upper deck to forward, had been swept aside in way of the main hull damage and were piled in a tangled heap of wreckage just aft of the main bridge structure. No boats or life rafts were available.

(*d*) Flooding—Water was found entering the ship through the distorted stern gland and port side scuttles, which had been left open.

(*e*) Fires—Besides the fires on the upper deck, smaller fires were found in both the tiller flat and rope store aft.

(*f*) Emergency Diesel Generator—The emergency 100kW Diesel alternator, sited on the upper deck aft, was found to be running. It had evidently cut in when the steam turbo alternator had lost steam. This was the one encouraging facet and initially it provided a considerable boost to the morale on board.

*Tow*

No attempt was made that night and both ships patrolled in the vicinity.

*Fires and Flooding*

The boarding party set to immediately to deal with the fires and flooding. Emergency lighting was soon restored around the ship and portable pumps, supplied by H.M.S. *Puma*, were brought into operation (S.S. *Melika's* fire pump was steam driven and was therefore not available).

The small fires aft were soon put out and the scuttles on the port side shut after some had been faired. The engine room main inlets and discharges were closed. The rate of flooding through the stern gland into the stern gland compartment was then assessed. It was discovered that the stern gland compartpartment contained the ship's two fresh water pumps and two culinary water pumps, and that the only way of pumping up the boilers for raising steam was by means of one of these fresh water pumps. It was therefore essential to prevent salt water from reaching the motors of these two F.W. pumps.

It was decided, as a first measure, to transfer the water entering the stern gland compartment to the vast bilges of the engine room. This huge compartment contained all main machinery (except the boilers), all associated auxiliaries, and all other general purpose machinery. This operation also helped to improve the stability of the *Melika* as the engine room bilges were the lowest available empty compartment.

**Sunday, 14th September**

*Tow*

In the middle watch, H.M.S. *Bulwark* managed to pass the first tow rope by motor cutter, but had to let it go owing to the overheating of her L.P. turbines. One officer and one rating in the boat were injured but not seriously. In the forenoon the wind was blowing force 6. A tow was passed from *Bulwark*. However, it soon became apparent that *Melika* was going to be too difficult to tow in the sea running owing to the large area of damage below the waterline on the port side. The tow soon parted and no further effort was made to repass the tow during the day. A steaming party was put aboard *Fernand Gilabert* away to the east, and both H.M. ships again patrolled in the vicinity of the *Melika*. The following signal was sent by H.M.S. *Bulwark* to Admiralty for C.N.I. :—

> 'After the bitter disappointment of only just failing to take *Melika* in tow at 0315 this morning it was a great moment in *Bulwark*, when she closed *Melika* at 0630 to send over breakfast, so see that the parties on board had succeeded in extinguishing the major fire amidships. The teams from each end have now met and on this cold windy morning were warming themselves around one of the small fires that remained.
>
> 2. To the north of us news has come that *St. Bride's Bay* tow parted in the night but *Loch Killisport* is now trying again.
>
> 3. Everyone in the Royal Navy here is full of admiration for the magnificent work of the Merchant Navy in the three ships involved who recovered survivors in incredibly difficult conditions of wind, sea and burning oil. Weather now, wind 30 knots, long swell causes ship to pitch and roll and is an awkward sea for boatwork.'

The following signal sent by *Melika* to *Bulwark* :—

> 'All steam lines from aft severed by explosion. Do not think it is practicable to recover cable anchor and wire without power. Propose leaving starboard cable as it is and burning off below slip later when convenient and using port cable for next try'.

*Boilers*

All efforts were concentrated on finding out the exact state of the boilers, fuel and water systems and how to flash the boilers and to raise steam.

Luckily all the drawings and diagrams available were in English so the major-

FIG. 5—DELIVERING DIESEL FUEL TO S.S. MELIKA

ity of effort went into pipe tracing, examination of the condition of the boilers and investigating means of getting fuel and water to the boilers. A thorough search was made for supplies of feed water. The deaerator, surge and distilled water tanks were all found empty. Some water was, however, found in the fresh water and culinary tanks, but the two electric culinary pumps in the stern gland compartment had been submersed in sea water and were not available for use. It was found possible to marry the water systems, and to use the fresh water pumps in the stern gland compartment to pump water from the fresh water and culinary tanks to the boilers.

The two boilers were found to be Foster Wheeler 'D' type of 80,000 lb/hr steam output at 600 lb/sq in., 850 degrees F. and fitted with U.S.A. type registers and normal type economizers. Both uptakes passed into the one funnel. The furnace floors were fitted with a removable brick in the centre, a small sump underneath with a drain pipe leading away to the bilge.

It was decided to fill the port boiler with fresh water by means of one of the fresh water pumps in the stern gland compartment and to prepare it for raising steam. The starboard boiler had been found empty and it was thought unwise to use this boiler initially as the tubes did not look in very good condition from the furnace floor.

The combustion air to each enclosed boiler was supplied by a main electrically driven F.D. fan, whose power was beyond the capacity of the 100 kW Diesel alternator. An electrically driven lighting up F.D. fan was however fitted but even this fan demanded the majority of the load available from the 100 kW Diesel alternator. Badly fitting flaps were found in the main F.D. supply trunking to the boilers. These were fitted to prevent air from the lighting up F.D. fan escaping up these trunks before the main F.D. fan could be brought into use. Most of the other services and ventilation load had to be shed when this lighting-up fan was run. (The ship was obviously not fitted for flashing up from cold except when shore power was available).

Diesel fuel was flown in by helicopter from H.M.S. *Bulwark*, to keep both the 100 kW Diesel alternator running and to provide fuel for flashing the boilers from cold.

The port boiler was topped up with water through improvised hoses via the running down valve ; air regulating louvres were freed, the combustion equipment, which was in reasonable order, was cleaned, and the boiler prepared for flashing, using a lighting-up sprayer cap.

*Electrical*

Power was restored to the midship portion of ship by temporary cables. Navigation and N.U.C. lines were also made serviceable. The main switchboard was brought into operation and routine switchboard watchkeeping was started.

FIG. 6—BULWARK WITH MELIKA IN TOW

**Monday, 15th September**

*Tow*

During the morning the weather moderated and the wind eased to force 2-3, though the swell remained much as before.

The tow was taken up by H.M.S. *Bulwark* during the afternoon, while H.M.S. *Puma* tried to control the movements of *Melika's* stern. A lot of trouble was experienced in controlling the tow on a course for Karachi. Every influence was casting her to starboard. At this juncture the torn upper deck plates amidships in *Melika* started to work. Consequently it was decided to bring *Melika* back on to course for Muscat and not to risk a passage to Karachi in the monsoon season.

S.S. *Melika* still played up on this easier course and had to be watched every minute in order to prevent her from sheering either way.

The following signal sent by *Bulwark* to Admiralty for C.N.I. :—

'Today is easier, weather situation looks promising. Last night engineers raised steam pressure in *Melika* to 200 lb/sq in. with no trouble but had to stop for lack of dieso which was being used until fuel oil could be heated. 40-gallon drums of dieso was ferried aboard by helicopter this morning and boiler was relit. It is hoped to reach full pressure during the day. Engineers are unaccustomed to this strange machinery and have to go slowly. Fortunately detailed instructions in English are available. First task is to get necessary auxiliaries started. Hope main engines may be working within 24 hours. Meanwhile if weather continues to moderate further attempt to tow will be made by *Bulwark*. There is little doubt that naval parties got aboard just in time. Fire which had started in storeroom right aft had spread down to tiller flat and would undoubtedly have enveloped the whole of the engine room and after superstructure.

2. In *Fernand Gilabert* engineers put aboard by helicopter report progress and no major snags but have not raised steam yet. *Loch Killisport* is passing tow now.'

Signal from Admiralty to C.A.S.P.G.

'Reference *Melika* and *Fernand Gilabert* first consideration from salvage view point, is to get derelict ships to place of safety otherwise salvage incomplete and no award will be earned. Essential to keep parties on board derelicts until they are in place of safety.

2. Salvors entitled to complete control of derelicts. Vessels should not therefore be handed over to third party without further instructions. Messages received seem to indicate no tugs available.

3. Treasury solicitor is endeavouring to contact owners' representatives in London and will handle question of security. He points out that from point of view of obtaining salvage award most satisfactory course appears to be to get ships to Karachi.

4. Ships agents have been informed as necessary but Treasury solicitors instructed initially to handle matter.'

*Flooding*

The level of water in the stern gland compartment was maintained at a reasonable level, but now the level of water in the engine room bilges was beginning appreciably to rise.

*Boilers*

The port boiler was flashed using Diesel fuel, but a flash back occurred when the air box pressure rose to 1·7 in. W.G. Supplies of Diesel fuel ran out before the furnace fuel oil heater could be brought into use. As a result it was not found possible to raise a full head of steam. In addition damaged brickwork caused overheating of boiler casing. Steam was however opened out to the steam range and the turbo alternator before the boiler was shut down, and both proved to be in working order. A number of large steam-line leaks were evident. The turbo alternator was stopped as the steam pressure fell away ; the boiler was subsequently shut down.

The control shaft to the port F.D. fan was found seized. It had to be disconnected from the main cross-shaft to the starboard and centre F.D. fan before the port fan could be used.

Arrangements were made for larger quantities of Diesel fuel to be flown in daily for flashing the boilers. The starboard boiler was partially externally cleaned by hand from the furnace and was prepared for flashing. It was then thought that the external condition of the port boiler tube banks, and especially the external state of the economizer was the cause of the failure to keep steam in the port boiler and that the boiler would have to be externally cleaned.

*Miscellaneous*

The main galley was brought into use and meals were cooked for all those on board for the first time. These were served in the after saloon.

Oxy-acetylene burning equipment was transferred by helicopter from H.M.S. *Bulwark* and was used to free the starboard cable and make it available for towing.

The following signal sent by *Bulwark* to Admiralty for C.N.I.:—

'The following signal has been received from Engineer Officer in *Melika* now under tow by *Bulwark* and *Puma*. We have made several efforts to get boilers steaming with little luck. We expect to get steam up tonight or tomorrow. All the technical ratings worked hard and well. We have now mastered most of the steam and water systems and are ready to tackle main engines and auxiliaries and then steam if available. Ship was built in the U.K. and has U.K. drawings. The centre of the ship is very badly holed and the ship is held together only by the starboard wing tank. Morale is high. Food, stores and assistance have been excellent from all ships. Intend present technical party remain until task complete. Clean clothing will always be useful, overalls, underwear, shirts, socks and shorts. Water may be required for feed system. Engineer Officer of *Bulwark* has offered *Puma* water at any time. We do not intend to lose our prize. Many thanks for clothing and mail.'

**Tuesday, 16th September**

*Tow*

The tow proceeded slowly towards Muscat without any mishaps. Mail was passed from H.M.S. *Newfoundland.*

*Electrical*

The Diesel alternator starting batteries were recharged. This ' maid of all work ' was never touched during the salvage and ran continuously for a week without any complaint. The emergency W.T. batteries were also recharged.

*Boilers*

The starboard boiler was flashed and again it was found impossible to raise a full head of steam owing to insufficient combustion air being able to pass up through the generator, superheater and economizer tube banks. Air continued to escape past the flaps in the main F.D. trunking. The port boiler was prepared for external cleaning. The economizers and water drum side access doors were removed. As the two economizers were situated next to each other just below the common uptake, it was not possible to flash one boiler while the other economizer was being externally cleaned.

Thus started a series of external cleans and repairs to these boilers in the sweltering heat when little water was available to drink on board and no hot water available for washing and laundering of overalls.

External boiler cleaning gear was flown in from H.M.S. *Bulwark* and a partial external clean was carried out during the night on the port boiler using hand saws. A great deal of soot was removed from the economizers, which were badly choked, and from behind the generator tube bank. The soot was shovelled into empty 40-gallon drums which were hauled up by pulley from the boiler room to the upper deck, and the contents ditched overboard. It was now realized that only a few hours could be afforded for any sleep other than for those who were already watchkeeping. (Diesel alternator and main switchboard).

*Fresh Water*

The stocks of fresh water and culinary water, whose systems had now been married, were running low. Forty tons of fresh water was passed from H.M.S. *Loch Alvie* and eight tons from H.M.S. *Puma*, by hose. A small team had to crawl through all the bilges and many odd compartments in order to achieve mastery over all the various fresh, culinary water and distilled water systems.

*Flooding*

The level of flood water in the stern gland compartment continued to be maintained under control. With only two portable A.C. pumps available a careful watch had to be kept on the rising water levels in the stern gland compartment and engine room bilges where the level of water was beginning to threaten vital electrical machinery. The height of the upper deck above the engine room bilges was too great for one pump and the water from this compartment had to be pumped overboard in two stages in series.

*Miscellaneous*

The rudder was found over at 20 degrees to port. It was centred by means of the emergency hand pump after the replenishing tank, which had been found empty, had been filled. For the next four days, the rudder was actuated by means of the hand pump to facilitate the steering of S.S. *Melika.* Rudder orders were passed as required from H.M.S. *Bulwark.*

The following signal was sent by *Bulwark* to Admiralty for C.N.I.:—

' *Loch Killisport* reports she is plodding slowly to Karachi, *Gilabert* in tow. Engineers aboard *Gilabert* have raised steam but fractured electric leads must

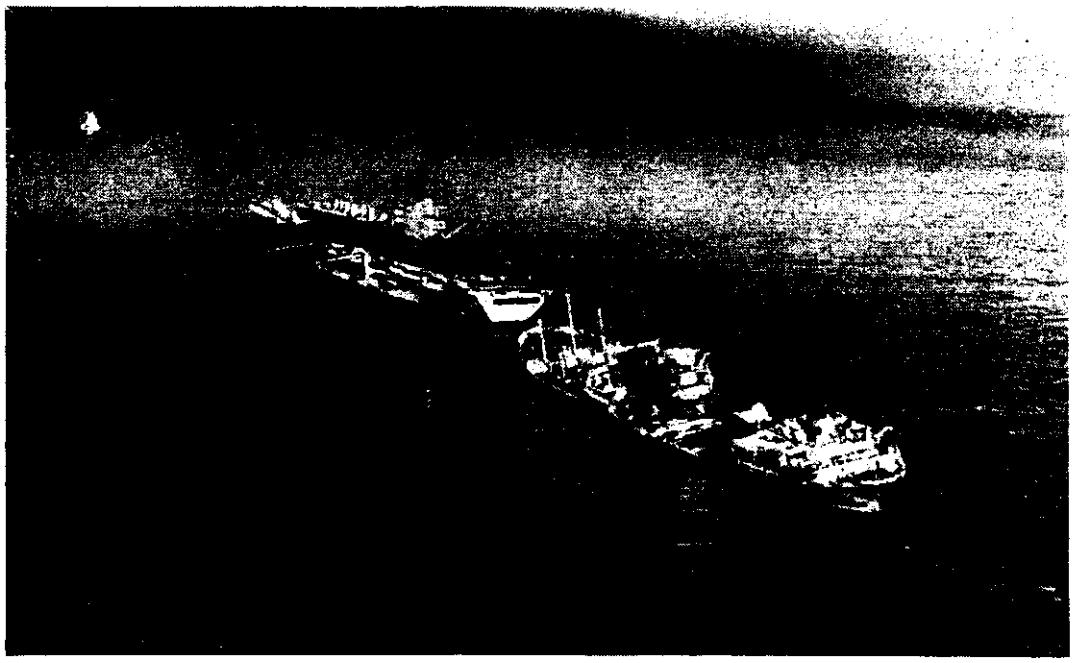

FIG. 7—BULWARK WITH MELIKA IN TOW

be repaired before ship can be steamed. *Bulwark* is transferring suitable cable to *St. Bride's Bay* who will take it to *Gilabert.*

2. When *Melika* was first taken in tow by *Bulwark* yesterday she bucked around like a young heifer. By 2100 last night she had been broken in and settled down to a fairly steady course at just over 2 knots to Ras-al-Had about 90 miles away. *Bulwark* is doing the pulling with *Puma* being towed astern of *Melika* to steer. Biggest problem in *Bulwark* is to tow slowly enough without overheating turbines. This is now being done by keeping *Melika* on port quarter and using starboard screw only. Engineer in *Melika* had to close down first boiler lit as damaged brickwork caused overheating. Brickwork of other boiler has been repaired and steam pressure is now rising.

3. In this cooler weather boiler room temperatures have dropped below 120 degrees F.

4. Crews of both tankers are tired, filthy but full of confidence. *Melika* has just refused our offer to send them a hot breakfast with the reply " No thank you we are having eggs and bacon." '

**Wednesday, 17th September**

*Tow*

This was a bad day—a force 6-7 wind raised a nasty sea and made S.S. *Melika* thoroughly fractious. Efforts were constantly made to bring her on course, but the wind was practically abeam. She continually tried to get head to wind. She became most difficult to handle even with H.M.S. *Puma* controlling the stern. This whole situation became very difficult after dark, and constant attention and adjustment was always required. The good astern power immediately available in a Diesel frigate was particularly valuable at this time.

*Flooding*

It was now clear that the engine room bilges needed urgent attention. The portable pumps were, therefore, alternated between the engine room bilges and the stern gland compartment—two pumps in series being needed to pump out the engine room bilges. Major salt water damage to electrically driven

extraction pump motors in the engine room was thus avoided—one extraction pump armature had to be dried out.

*Boilers*

The port boiler was again flashed, but it was still found impossible to raise steam as flashing back still occurred at about 1·7 in. W.G. air box pressure. It was then decided to obtain the water-washing gear from *Bulwark*, and to water-wash the starboard boiler externally. The gear was flown in by helicopter.

Work continued throughout the night as it was still hoped to steam *Melika* to a safe anchorage. This time a great deal more soot was removed. The sludge in the boiler room bilges was diluted and pumped overboard by using the boiler room bilges as the intermediate stage for lowering the engine room bilges. (The boiler room was situated two decks higher than the engine room bilges). The removable brick, the small sump and pipe fitted in the boiler furnace floors for water washing proved most useful.

*Electrical*

Full electrical facilities were restored within the capacity of the 100kW Diesel alternator by means of temporary cables. These cables were generously looped from aft to forward along the starboard rail on the upper deck with weak stops as a safety measure to give sentries time to cut off power should the ship start to split in two.

Whenever the boiler room electric lighting up fan was used, the washing and sanitary water pumps, although available for use, had to be stopped. Ventilation had to be shut off for the same reason. This was most annoying but could not be prevented in the circumstances.

*Miscellaneous*

Temporary canvas and rubber pipes were rigged across tank deck to restore washing and sanitary facilities to the forward accommodation.

The following signal sent by *Bulwark* to Admiralty for C.N.I.:—

> 'A disappointing day, wind has steadily increased to 35 knots making towing difficult. Wind and sea and need to reduce speed to avoid further damage to *Melika* have allowed us to make good little more than one knot.
>
> 2. *Melika* boilers have been steamed continuously for months if not years, and are in such a deplorable state that they cannot be lit without fans. As fans cannot be used until steam is raised there is nothing for it but complete cleaning of boilers. This is being started tonight by volunteers from air crew officers who, wearing breathing masks, are chipping, hammering and sawing through accumulations of soot which clog economizers. Helicopters busy all day ferrying stores including 150 feet of steam pipe fitted up in *Bulwark* to provide steam for windlass so that tow can be recovered. Several trips also made by boat but conditions becoming very difficult. Hope to start feeling shelter of land tomorrow evening'.

**Thursday, 18th September**

*Tow*

At 0400 it was blowing a full force 7, and early in the morning the tow rope between *Puma* and *Melika's* stern parted when *Puma* was endeavouring to pull *Melika's* stern to port. H.M.S. *Bulwark* now tried to manage the tow on her own, but found she was unable to do so, and consequently *Puma* was instructed to repass her tow. At last as H.M.S. *Bulwark* ran out of the monsoon into calmer waters, more progress was made, and with great excitement, the speed of the tow was seen to increase to five knots. However, *Bulwark's* tow parted in the dog watches when *Melika* sheered violently. Fortunately, H.M.S. *Puma*

FIG. 8—THE COMPLETE TOW

was able to put the ' brakes on ' and so prevent *Melika* from running down H.M.S. *Bulwark*. The tow was regained without difficulty as a preventer had been rigged. S.S. *Melika* now seemed to yaw both ways without cause. A most trying night was then experienced. Pressure had to be applied by H.M.S. *Puma* with great care and taken off at the precise moment.

The following signal sent by *Bulwark* to Admiralty for C.N.I.:—

> ' After an awkward night with wind gusting up to 40 knots *Puma* tow parted at 0430. *Bulwark* manœuvred to let *Melika* settle on the course she liked. This was only 40 degrees off course to Muscat and was continued until new tow had been prepared and passed. *Puma* has now long tow of manilla wire and cable and is lying with engines stopped and wheel hard to port. Under this condition *Melika* has chosen a course of 280 degrees which is as short as any to calm waters. *Bulwark* is manœvuring ahead to tow her on this course. *Melika* is making four knots through the water.
>
> 2. Officer in charge of towing gear remarked this morning that our towing wire is worth its weight in gold. Wire weighs 2½ tons and quick calculation indicates this weight of gold may be about the same value as our tow.'

*Boilers*

With these dirty boilers and the small capacity lighting up fan, it was found that when the main stop valve was opened the main steam pressure fell away before the main electric F.D. fan could be started (i.e. after the steam line had been warmed through, turbo-alternator run up, and arrangements made at the switchboard for the supply of electricity to the main F.D. fan).

When the water washing of the starboard boiler was complete and the economizer and access doors replaced, steam was raised. All hands were stationed to open the main stop, start the turbo-alternator as quickly as possible and to immediately put power on the main boiler room F.D. fan, which had been connected by emergency cables direct to the switchboard, before the steam drum pressure had a chance to drop.

At the first attempt this procedure failed ; the boiler lost full steam pressure, the water level dropped and a full head of steam had to be raised again in slow time, after the boiler had been topped up with water through the R.D. valve by means of the electric F.W. pump which took several hours. A second attempt was made to raise steam and to start the turbo alternator and the F.D. fan. This time all went well. The F.F.O. heaters were brought into use. Everybody now turned their attention to providing power for all the other services, mainly electrical, and to putting steam on the main engines.

However, another setback occurred—a tube burst in the back water wall of the starboard boiler. The correct leaky tube drill was carried out and the

turbo alternator and turbo-driven feed pump were shut down. This was a great disappointment as most of the boarding party were now looking forward to more ship's services being brought into use—but this was not to be.

Within seconds it was decided to start externally water washing the port boiler, even though the boiler was still warm and the cleaning party worn out. A further party of volunteers was recruited from H.M.S. *Bulwark's* unemployed pilots and the third external clean of a large boiler within 48 hours was started in a climate where external cleaning of a boiler would not normally even be contemplated. The technical staff were now working flat out for the full 24 hours a day, with only very short spells off for meals and rest.

The following signal sent from *Melika* to *Bulwark* :—

> ' Full head of steam starboard air crew boiler. Turbo alternator has taken over full load aft. Sorting out feed system. Stoker Sub-Lt. Second Class X, controlling fuel to furnace, has applied to Gulf Fleet Board. Water may be a problem anon.'

**Friday, 19th September**

*Tow*

Good progress was made towards Muscat and an improved calm weather towing technique of casting *Melika's* bow one way with *Puma's* bow the other was developed. Muscat light was raised at midnight.

The following signal sent by *Bulwark* to Admiralty :—

> ' Expect to arrive Muscat p.m. today or early a.m. tomorrow. Would be grateful for very early confirmation that this constitutes a safe anchorage within the meaning of the salvage laws'.

*Flooding*

The engine room bilges were now well under control, and the level of water in the stern gland compartment was maintained at a reasonable level.

*Boilers*

After working again throughout the night, steam was eventually raised without much difficulty in the port boiler by the afternoon, and the turbo alternator, main F.D. fan and T/D feed pump were started. However, feed water began to become short and it was discovered that it was passing at a fair rate into the furnace of the starboard boiler through an open feed check valve and the burst boiler tube. The port boiler had to be shut down owing to lack of feed water just when all seemed well. Unfortunately, the water in the furnace of the starboard boiler started to flow into the lighting up fan trunking which led from the bottom of the air box, on the front of the boiler, down below the boiler-room plates to the lighting up fan at the back of the boiler room. This meant that the port boiler could not be flashed again for a few hours until the water was removed from the trunking. This had to be done through a small hole drilled in the trunk—no portable pump could be spared for this job, and anyway it was essential not to damage this trunking and prejudice the lighting up of the port boiler.

*Miscellaneous*

A flexible copper pipe was rigged over the flying bridge and thus the steamline to the winch on the foc'sle was restored. One electric steering motor had also been dried out and became available for bringing S.S. *Melika* into harbour.

When drinking water was available, a small water cooler in the engine room supplied an incessant flow of cold water, and it became everyone's closest friend.

A number of the auxiliaries had to be topped up with lubricating oil.

Among many useful stores found on board *Melika*, there was a large quantity of bottled beer. This was issued in lieu of grog, drinking water and normal daily ration of beer. Despite a certain freedom required in these abnormal circumstances, great moderation was shown and no advantage taken.

The following signal sent from Admiralty to C.A.S.P.G.:—

'Lloyds form signed for *Fernand Gilabert*. Owners stated repairs definitely to be carried out at Karachi. Vessel may therefore enter harbour.'

The following signal sent by *Bulwark* to *Puma*, *Loch Alvie*, *Melika*, *Wave Knight* and *Loch Insh* :—

Wardroom to Wardroom. 'Splice the tow rope in *Bulwark* 1830 tomorrow. P.G. rig.'

**Saturday, 20th September**

*Tow*

At 0530 the tow was shortened, and at 0600 H.M.S. *Bulwark*, *Puma* and *Melika* hove to, and prepared for entering Muscat.

At 0815, exactly seven days to the minute, since H.M.S. *Puma* had piped 'cable party' in the same place, S.S. *Melika* came to rest on her port anchor in Matra Bay.

Signal from *Bulwark* to Admiralty :—

'*Melika* anchored off Muscat at 0815'.

*Boilers*

The port boiler was again flashed in the early hours of the morning and steam was put on the turbo alternator and T/D feed pump. The main F.D. fan and all necessary electrical services were started.

At 1600, the untiring efforts of the technical party were rewarded when full vacuum was raised and the Engineer Officer reported 'main engines ready for sea.' The Commanding Officer of H.M.S. *Bulwark* after receiving the report, turned the main engines ahead and astern. So ended seven days of hard labour, and a job of damage control and engineering that was both exacting and full of interest.

The following signal sent by *Bulwark* to Admiralty for C.N.I.:—

'The tow proceeded throughout yesterday in the sheltered waters of the north coast of Oman but even so *Bulwark* and *Puma* had to struggle continually to keep *Melika* under control. Several tankers passed close but *Wave Knight* and *Loch Alvie* were stationed on the starboard bow to warn off shipping. In *Melika* work progressed in the boiler room but many of the regular crew took a bit of a holiday in the warm sunshine. They really deserved a break.

2. Speed was adjusted to arrive off Muscat at first light this morning. As we neared land the large tow anchored, *Bulwark*, *Melika* and *Puma* to the seaward. *Bulwark* heaved in her $6\frac{1}{2}$ in. wire and eventually the shortened tow consisted of three shackles of *Melika's* cable attached to a slip on *Bulwark's* quarterdeck. The convoy then proceeded at very slow speed towards the anchorage off Muscat. The short length of tow was not springy and on several very tense occasions the whole of the cable came clear of the water. Despite the apparently terrific strain the wire pendant on the slip aft held. Progress was very slow and to those watching the cable on the quarterdeck must have seemed an eternity.

3. There was a wonderful relief when at 0815 *Bulwark* gave the order to *Melika* "anchor". The pre-arranged signal to anchor was three short blasts

on the siren followed by one long. As *Melika's* anchor rattled out the sirens of all the other ships repeated over and over again the " V " sign.

4. Since last Saturday helicopters of 845 Squadron have flown a total of 168 trips directly connected with rescue and salvage operations. On Monday when weather conditions were unsuitable for boat work a helicopter passed the tow to *Melika*. Total flying time was 54 hours.

5. It is a beautiful morning'.

The following signal sent from *Loch Killisport* to Admiralty for C.N.I.:—

' At 0845 local time this morning *Loch Killisport* slipped the tow of S.S. *Fernand Gilabert* inside the limits of the port of Karachi. *Fernand Gilabert* anchored having been towed some 350 miles in five days. She will be taken up harbour by tugs tomorrow Sunday.

2. The Naval Salvage Party is still on board after having spent seven days living in quarters gutted by fire and covered in soot and cinders. They are in excellent spirits and have done a splendid job in filthy surroundings.

3. *Loch Killisport* not designed to tow other than ships of her size in an emergency only. Had a tricky job towing a 12,000-ton helpless tanker in ballast. It had to be stern first since the bow was severely damaged and there was a strong wind varying from force 4-5. There were a few anxious moments when the large tanker attempted to take charge yawing side to side against a comparatively light tow and on several occasions it was touch and go. During the last 24 hours main speed of advance was $1\frac{1}{4}$ knots only.

4. It was therefore with great satisfaction that we made *Fernand Gilabert* drop her anchor within three cables of where she was meant to only $2\frac{1}{2}$ hours after the estimated time of arrival'.

*Miscellaneous*

It was finally agreed after protracted discussions in London between the parties concerned, that Muscat was not a suitable anchorage for ' salvage ' purposes. Meanwhile H.M.S. *Bulwark* and H.M.S. *Puma* had been ordered to proceed elsewhere and to turn over their ' charge ' to other naval vessels.

S.S. *Melika* was eventually towed by H.M. tug to Palermo, Sicily, after her cargo had been transferred to a sister ship and the hole patched. The Lloyds open form for salvage was then signed and the salvage operation finally completed.

If the unsuitability of Muscat had been known earlier, *Bulwark* and *Puma* would have either steamed or towed *Melika* to another suitable harbour, themselves. However, both H.M. ships had the satisfaction of bringing their ' prize ' without further damage to a safe anchorage, and preparing the boilers, engines and auxiliary machinery for use.

**Special features of the salvage work**

(*a*) *The Helicopter Squadron in H.M.S. Bulwark*

From the moment H.M.S. *Bulwark* decided to undertake this salvage task, the helicopter squadron played a most valuable role. These aircraft landed injured personnel ashore, transferred *Bulwark's* medical staff to merchantmen nearby, and delivered large quantities of various stores to *Melika*. In addition a daily passenger service between *Melika* and *Bulwark* was established for senior officers liaison and the transport of volunteers and reliefs for all the various special parties on board *Melika*. Supplies of Diesel fuel in 40-gallon drums were brought daily. Without these aircraft, supplies of spare overalls, clothing, food and special equipment would have been inadequate. For their work in this operation the Helicopter Squadron was awarded the annual ' Boyd ' trophy.

(*b*) *The Use of a Diesel Frigate as a Tug*

The machinery installation proved quite adaptable for such work. Even though between 400 and 500 clutch movements were needed in seven days, no clutch sticking occurred and no other major engine or clutch defects accrued as a result. In fact, the machinery stood up to the work of a tug remarkably well.

(*c*) *Safety Aspect of the Work on board S.S. Melika*

The possibility that S.S. *Melika* would split in two amidships existed throughout the seven days of the salvage. In the event of this happening, there would have been no chance of warning the personnel working between decks ; and if the accident had occurred at night, there would have been little chance of many survivors being recovered from the shark infested waters. (No lifeboats were available).

Emergency electrical cables carrying 440-volt, 60-cycle, 3-phase A.C. supplies from aft to forward were rigged over the upper deck. Any accidental parting of these cables would have probably caused ignition of local pockets of gas with the consequent risk of explosion.

The various water systems on board *Melika* were cross-connected out of necessity. The drinking water as a result was always suspect. During the periods that the fresh water pumps were out of use the men could not get clean and often had to eat and sleep unwashed. There was never enough water to allow washing of clothes. It became impossible to keep clothing clean for long even when extra supplies were flown in, owing to the profuse perspiration of the body and the quantities of soot, grease, oil and dirt everywhere. Food utensils were often washed in salt water and their cleanliness could never be guaranteed. There were signs of the spread of skin disease. Cases of extensive prickly heat were already well in evidence.

Various foul gases were present in a number of places around the ship. The first person to enter the main refrigerator lost consciousness and had to be transferred to *Bulwark* for medical treatment. Freon gas was also present in the tiller flat which could not be manned until it all had been ventilated. Smoke from the fires between decks aft penetrated the after accommodation and made it impossible to deal with the fires without the use of breathing apparatus. The vent pipes from the cargo tanks had been fractured and pockets of butane gas existed all round the ship.

(*d*) *Boiler Cleaning*

The work of externally cleaning these boilers in the temperature conditions prevailing, with 10 degrees of list, and the rolling of the ship between 0 and 14 degrees, together with the fact that the economizers were cleaned before they were cool was in itself hazardous. Short rest periods had to be organized for those working in the uptakes for both eye washes (even when eye shields were worn) and so that strength could be regained. Breathing apparatus was required for the removal of the incandescent soot below the economizers and from behind the generator tube banks.

**Summing Up**

This was a great experience and one that no one present will ever forget.

There is no doubt in my mind that in this day and age one would still have to go a long way to find a better man than the British Naval Rating.

'The naked hulk alongside came,
And the twain were casting dice ;
'The game is done ! I've won, I've won !'
Quote she, and whistles thrice.'