

THE SINKING OF H.M.S. HOOD

An examination of the timing of her fatal hit

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INTRODUCTION

The Battle of the Denmark Strait which took place during the Second World War on May 24, 1941 has been the subject of many books, papers, articles and internet forum discussions over the many ensuing years. Even now in 2014, some 73 years later, it still generates controversy and leaves many unanswered questions. Some of these, unfortunately, can never be answered with any degree of certainty.

The battle involved the German battleship *Bismarck* and the heavy cruiser *Prinz Eugen* versus a theoretically superior British force consisting of the famous battle cruiser *Hood*, which for twenty years had been the world's largest warship, and the new battleship *Prince of Wales*. In just 17 minutes of action, the *Hood* was destroyed by a magazine explosion and the *Prince of Wales* was damaged and broke off the action. *Bismarck* also received damage which thwarted her mission to attack the British convoy system in the Atlantic.

This paper will examine the phase of the battle leading to the sinking of H.M.S. *Hood* based on documented evidence and attempt to demonstrate that the officially accepted time for the fatal hit she received may not be accurate. In so doing, it is hoped that possible answers to some of the questions may emerge.

It must be emphasized that this is NOT an attempt to change the battle's history but merely to demonstrate a rational possibility and allow readers to decide for themselves on its merit or lack thereof.

TRADITIONAL TIMELINE OF THE BATTLE

The general events leading up to the interception of *Bismarck* and *Prinz Eugen* by *Hood* and *Prince of Wales* are well documented. In summary, the German squadron, under the command of Fleet Admiral Günther Lütjens, was attempting to break out into the North Atlantic to attack the trans-Atlantic convoy system so vital to the survival of Britain as she stood alone in the fight against Nazi Germany and Fascist Italy. The early stages of the operation, which was code named *Rheinübung*, had been detected by the British who had taken various measures to prevent it succeeding and, hopefully, destroy the two German warships.

Patrolling in the Denmark Strait between Iceland and Greenland were the heavy cruisers *Norfolk*, flying the flag of Rear-Admiral Frederic Wake-Walker, and *Suffolk*. On the night of May 23rd, the latter had detected the two German ships. Both cruisers took up shadowing positions astern of the Germans, signaling the enemy's position course and speed at intervals. This had enabled the Battle Cruiser Squadron of the Home Fleet, comprising the *Hood*, flying the flag of

Vice-Admiral Lancelot Holland, and the *Prince of Wales* to intercept them before they cleared the Strait on the morning of the 24th.

The timeline of the ensuing action has changed significantly over the years as the documented evidence has been examined more closely. Erroneous event times written into reports by various officers and witnesses led to significant confusion and misinterpretation of what actually happened. A major example of this is the time of disengagement by *Prince of Wales* after *Hood* was sunk, noted in the Commander-in-Chief-Home Fleet Admiral Sir John Tovey's Despatch as being 0613^{1a}. This was found to be in error and a later Admiralty document "corrected" it to 0603 which was more closely in line with the plot of the action drawn by Lt. Commander G.W. Rowell, Navigating Officer of HMS *Prince of Wales*^{1c,5}.

The "traditional" timeline basically is as follows:

0537: *Hood* and *Prince of Wales* are steaming on course 240° when *Prince of Wales* sights the Germans. Admiral Holland orders a "Blue 4" which is a 40° turn to starboard together to close with the enemy.

0549: Holland orders "Blue 2", a further 20° turn to starboard to course 300°. The turn closes the A-arcs for both ships, which means they can only fire their forward guns at the enemy.

0552+: *Hood* opens fire at a range of 25,000 yards. She erroneously targets *Prinz Eugen* since that ship is leading the German line and has a very similar silhouette to that of *Bismarck* at that range.

0553: *Prince of Wales* opens fire, correctly targeting *Bismarck*.

0555: *Bismarck* and *Prinz Eugen* return fire, both targeting *Hood*.

0555-0557: *Prinz Eugen*'s second salvo scores a hit on *Hood* on the port side of her boat deck near her mainmast causing a large fire among the ready-use ammunition lockers for her 4-inch secondary guns and unrotated projectile AA rockets. Admiral Holland orders a "2 Blue" – a 20° turn to port to open the A-arcs. The turn is executed and just after 0557, *Prince of Wales*' A-arcs are recorded as open.

0556+: *Bismarck*'s third salvo straddles *Hood*. This was thought by the British to have been the source of the hit that started the fire on the boat deck, but may in fact have put a shell through the battle cruiser's spotting top (suggested by survivor testimony that "bits" or "bodies" fell from it when the salvo subsequent to the one causing the boat deck hit arrived^{2,12}).

0600: Another "2 Blue" flag is seen to be flying from *Hood*'s foremast yardarm, but is not hauled down for the "execute" order before she is hit by *Bismarck*'s 5th salvo. This hit occurs a few seconds after *Hood* is seen to fire the first salvo from her aft turrets². A flash of flame shoots upward from the vicinity of her mainmast and the ship is quickly covered by a massive column of smoke. She breaks up and sinks within two minutes.

0600-0602: *Prince of Wales* following close off her starboard quarter is forced to make an emergency turn to starboard to avoid the wreck zone. She, having been taken under fire by *Prinz Eugen* two minutes earlier, is now quickly targeted by *Bismarck*. She suffers a total of seven hits, including one that passed through her compass platform and upper bridge, and another on her aft funnel both of which cause casualties. With mechanical breakdowns occurring in her 14-inch turrets and her secondary armament temporarily out of action, her captain, John Leach, having concerns about her capability to continue to fight the two German ships alone, orders her to turn away.

0602 onwards: *Prince of Wales* disengages behind a smoke screen firing three parting shots from her aft turret. She had received seven hits in total, but in return she had hit *Bismarck* three times.

0609: The Germans cease fire.

QUESTIONS ARISING

The first question that arises from the above timeline concerns *Bismarck's* salvo count. After firing three salvos between 0555 and 0557, straddling and possibly hitting *Hood* with her third, it seems strange that in the subsequent three minutes she only fired two. With *Bismarck's* theoretical capability of firing a 15-inch broadside every 20 to 30 seconds (2.4+ rounds per minute per gun¹⁹) and taking into account shell flight times, fall of shot observations and resulting aiming corrections, her output seems unusually low. How can this be explained?

According to Baron von Müllenheim-Rechberg, *Bismarck's* First Artillery Officer Adalbert Schneider noted *Bismarck's* first salvo as falling short of *Hood*. Schneider then ordered a 400 metre bracket with the "long" salvo falling over and the "base" salvo straddling the target¹⁶. This is consistent with the accepted British account of the first salvo landing ahead of *Hood*, the second falling astern between *Hood* and *Prince of Wales* and the third straddling *Hood*^{2,10,12,13}. Schneider then ordered "Full salvos good rapid," made the notation "*Hood* is burning," and repeated "Full salvos good rapid!"¹⁷ So the question arises: Why were there only two salvos fired by *Bismarck* between 0557 and 0600?

Another question arising is the time taken for *Hood* to fire the first salvo from her aft turrets, which is noted to have taken place seconds before she erupted^{12,13}. If the first 2 Blue turn to port, signaled by *Hood* and executed by both ships, opened *Prince of Wales's* A-arcs just after 0557^{1c}, *Hood's* should have been well clear as well. *Hood*, with each of her 15-inch turrets capable of a 300° arc of fire¹⁶, had greater forward-bearing capability for her aft turrets than *Prince of Wales* - 30° versus 45° off the bow. (Training the turrets to such a forward bearing, however was probably not practical given the blast damage to the ship's structure that would result.) Even allowing for the time required for the turrets to train and the guns to elevate in preparation for firing, almost three minutes to the first salvo from the after turrets seems strange as well. *Hood* was under extremely accurate, damaging fire from the enemy, so why would the full force of her gunnery be withheld for so long?

Next is the matter of the 2 Blue turns – one was definitely executed, the other has remained controversial. *Prince of Wales'* Captain Leach in his narrative report stated that *Hood* had the second signal flag flying when she was hit and blew up³. The execute command would have been signaled by the hauling down of the flag at which point the two ships would carry out the turn simultaneously. Yet on *Hood's* wreck her rudder is fixed for a turn to port¹⁵ – that position, forensic experts have stated, is as it would have been on the surface when the ship was hit. Why, therefore, was *Hood* turning while *Prince of Wales*, based on Leach's report, was not? Then again, there is testimony from *Prince of Wales* crew members that the ship was indeed turning in tandem with *Hood* when the latter was hit². How can this be rationalized?

According to the track chart, *Prince of Wales* began her turn away around the sinking *Hood* between 0601 and 0602^{1c}. This turn took place after her Captain, John Leach ordered the action to be broken off due to his concerns about his ship's gunnery efficiency versus the storm of accurate shellfire she was quickly subject to following *Hood's* demise³. He apparently did so immediately after a shell from *Bismarck* passed through the compass platform and upper bridge almost killing him. He was, according to reports, temporarily knocked unconscious⁹. This hit has been timed as taking place just before *Prince of Wales* passed between *Hood's* wreck and the Germans – supposedly less than a minute after *Hood* exploded. With *Hood's* hit taking place at 0600 this would put the compass platform hit at close to 0601.

With *Prince of Wales* beginning her swing away at about 0601:30, according to the track chart, this means that Leach had less than $\frac{3}{4}$ of a minute to recover from the blast of the shell passing through the compass platform, move to a position to place the order (he reportedly descended to the armoured conning tower⁹) and give the order at which point the helmsman had to respond. Then the ship had to respond to her rudder. How could this whole sequence be possible in so short a time?

Photographs of the battle taken from the *Prinz Eugen*, which are often described by their United States Naval History and Heritage designations NH69724 and NH69731²⁰, also pose some questions. The former shows *Hood's* initial explosion with *Prince of Wales* a short distance to her left and the latter shows *Prince of Wales* in retreat on the far right with a dark trail of smoke in the center at the point of *Hood's* sinking. Comparing the two to track charts drawn after the battle^{1c} showing the course of *Prince of Wales* around the sinking *Hood*, it seems *Prince of Wales* had proceeded much further to the right than she should have given the supposedly tight turn shown on the map. The slight change in perspective of those viewing from *Prinz Eugen* from 8 or so nautical miles away does not, on the surface, appear to account for the distance. How did *Prince of Wales* proceed so far beyond *Hood's* wreck site before turning away?

The last question is about the time it took the 48,000 ton, 860 foot long *Hood* to sink. Considering the eyewitness descriptions of the sinking process, particularly that of survivor Ted Briggs¹², it is difficult to see how it all took place in just the generally accepted "two minutes". If one uses a watch to check the passage of two minutes and pictures the unfolding event it becomes clear that the time seems much too short from the impact of the fatal shell to the ship's stem disappearing under water. Consider the following description:

Bismarck's fifth salvo screams down, the splashes from the straddling shells rising around Hood with the fatal shell piercing her hull to reach her magazines. Captain Leach, on Prince of Wales, pauses for a moment to see what the result of the hit might be. The 4-inch magazines ignite, the flash spreading to the 15-inch abaft them then the searing flame shoots up from her engine room vents on the boat deck, soaring to 1000 feet. Then there is the low rumble as grey smoke covers her as she is rent apart by the explosion - bits and pieces flying skyward including turrets, guns, the mainmast collapsing.

She loses way and first heels slowly 10 degrees to starboard, then slowly rights herself, then heels rapidly to port, her stern breaking away and crumbling into the sea. Her midsection begins to fill with water, starts to go under causing her bow to lift - some 500 feet of ship lifts into the air almost vertically as water surges into her pulling her down, down, down. The sea around her hisses and churns as escaping air turns it into a bubbling maelstrom stained with flaming oil and littered with debris. The oil fire sends a plume of black smoke skyward against the swirling grey clouds of the explosion. As the smoke drifts away, her beautiful clipper bow slips steadily downwards. The massive turrets slump over, there is a flash of flame, causing the Germans to think the guns had fired while the ship was in her death throes. The stem finally slips below the surface leaving a patch of blazing oil. The Mighty Hood is no more....

Two minutes? Captain Leach in his narrative said "three or four"³. Was Leach indeed correct in this?

THE EVIDENCE FOR 0600

Where does the designation of 0600 as the time for *Hood's* fatal hit come from? There were multiple witnesses to the event in the five other ships on the scene – *Prince of Wales*, *Norfolk*, *Suffolk*, *Bismarck* and *Prinz Eugen*. Some persons made a note of the time personally, other times were written in reports. Not unexpectedly there is significant inconsistency.

0600 is the time given in Captain Leach's narrative³, and this is also noted by Lt. Commander Anthony Hunter-Terry who was making observations and dictating notes to a junior officer². However, *Prince of Wales* reconstructed Ship's Log (the original was damaged by the compass platform hit) said *Hood* was sunk at 0605¹⁹!

Prinz Eugen's captain, Helmuth Brinkmann, notes the time as 0601:30 in his War Diary⁶. Fritz Otto Busch however, in a battle map in his book on *Prinz Eugen* written shortly after the battle, notes 0559 as the time for the fatal hit on *Hood*, but shows the ship sinking at 0601¹¹.

Admiral Lütjens, in his signal to Group West stated that *Hood* was destroyed within 5 minutes. Baron von Mullenheim-Rechberg, in his book Battleship *Bismarck*, a Survivor's Story, places the time as 0601¹⁷.

Suffolk's narrative stated that *Hood* blew up at 0559^{1b} and this is repeated by Rear-Admiral Wake-Walker in his report to Admiral Tovey¹⁹.

It seems that the British Admiralty's Boards of Inquiry, accepted Captain Leach's timing – which is also depicted on *Prince of Wales'* salvo plot and the track chart drawn by Lt. Cdr. William Rowell – and 0600 became the official British time for *Hood's* demise.

Given that the times for events are recorded by eyewitnesses in one way or another, determining the accuracy of that recording can be challenging. In a traumatic and spectacular event such as the destruction of *Hood* one has to consider:

- The accuracy of the time pieces used - it is virtually impossible that all timepieces used in the event were perfectly synchronized.
- The “gawk” factor – eyewitnesses would have been awestruck by what they were seeing and those whose responsibility it was to note times would have been so affected. The time may not necessarily have been noted at the very moment the event initiated. Some may have been recorded some time after the fact.

It is therefore impossible to pinpoint an event such as this to the very second as some may try to do. There has to be a great deal of due tolerance and it is far better to designate a time period rather than a precise point.

EVIDENCE OF AN EARLIER TIMING FOR THE FATAL HIT

We can now examine more carefully evidence that points to an earlier time for the hit that spelled the end of the *Pride of the Royal Navy*.

1 – FIVE SALVOS FROM *BISMARCK*

It is generally accepted in official British documentation that it was the fifth salvo from *Bismarck* which resulted in *Hood's* destruction². It was originally concluded that *Hood* opened fire first, *Bismarck* immediately replied after which *Prince of Wales* fired her first salvo. This was later corrected when it was shown that the Germans did not open fire until 0555⁶ after several British salvos had been fired (it is notable that *Hood* survivor Ordinary Signalman Ted Briggs correctly articulated this in his testimony to the Second Board of Inquiry into *Hood's* loss)².

As mentioned earlier, the account from the German side written by *Bismarck's* senior surviving officer, her Second Artillery Officer Baron Burkard von Müllenheim-Rechberg, describes *Bismarck's* First Artillery Officer Schneider as noting that *Bismarck's* opening salvo was “short”. He then fired a 400 metre bracket in which the long salvo was an “over” and the base salvo was “straddling”. Having straddled, Schneider then ordered “Full salvos good rapid!” He commented that *Hood* was burning and repeated “Full salvos good rapid”.¹⁷ The implication is, therefore,

that *Bismarck* began firing for effect once she had straddled *Hood* with her 3rd salvo – firing as rapidly as was practical at the time.

Prinz Eugen's First and Second Artillery Officers Paulus Jasper and Paul Schmalenbach observed *Prinz Eugen*'s second salvo strike home and start the fire noted by Schneider⁶. British observers incorrectly attributed the fire to *Bismarck*'s third salvo which straddled². The timing of this hit, if the Germans opened fire at 0555 would be in the region of 0556.

If *Hood* received the fatal hit at 0600, this means that *Bismarck* took over three minutes to fire two salvos! This is hardly compatible with "full salvos good rapid!" and would make no sense as Schneider would have lost his firing solution waiting so long between salvos! If *Bismarck*'s third salvo landed at some time between 0556 and 0557 and she started firing salvos intervals to allow spotting of fall of shot, her fifth should have landed somewhere in the region of 0558.

2 – PRINCE OF WALES' GUNNERY ASPECTS REPORT AND SALVO PLOT

A large part of the evidence stems from careful analysis of *Prince of Wales* Gunnery Aspects Report (GAR)^{1c}, prepared by her Chief Gunnery Officer Colin McMullen. This document provides precise information on *Prince of Wales*' salvos from her main and secondary armaments which were all timed and recorded on the Salvo Plot. Events are reported in relation to these salvos which can pin down their timing to a reasonable extent.

Prior to the battle, it had been determined that *Hood* and *Prince of Wales* would concentrate their fire on *Bismarck* in G.I.C – individual ship control – with each ship firing in alternating time sectors in order to distinguish each other's fall of shot¹⁶. As it turned out, *Hood* targeted *Prinz Eugen* and seemingly was not able to correct the error despite the fact that the shift of target was signaled to *Prince of Wales* which fired at *Bismarck* throughout. Nevertheless, the two ships should still have followed the firing plan, in which case *Prince of Wales* salvo plot could be used as a guide to extrapolate the salvos fired by *Hood*.

According to the GAR, *Prince of Wales* opened fire at 0553 and fired eighteen centrally-controlled salvos with her main armament (ten 14-inch guns) over 8 minutes and 58 seconds, ending at about 0602. She then fired three more salvos from Y-turret in local control during her retreat between 0603 and 0605. She also fired 3 salvos from her eight starboard 5.25-inch secondary guns, commencing at a range of 18,600 yards which corresponds to a time shortly before 0558. These guns ceased fire when their directors were disabled temporarily by two separate hits.

With regard to the opening of the A-arcs to bring the ships' broadsides to bear on the Germans, the GAR places this point at just after 0557, after salvo 8. This means that at salvo 9, *Prince of Wales*' aft turret could bear on the *Bismarck* and had joined the action. The bearing of *Bismarck* at 0555, based on the salvo plot was 333^o, with *Prince of Wales* on course 300^o placing the former 33^o degrees off her bow. Her aft turret's most forward bearing was 45^o off the bow so she needed only 12^o of turn to open her A-arcs. The turn ordered by Admiral Holland was 20^o so she need not have completed the turn for her aft turret to bear on the enemy. The point here is

that the turn could still have been in progress after the time noted on the plot for the A-arcs being open.

A key aspect of the GAR for this discussion relates to salvos 10 to 14. Salvo 10 was fired just after 0558 to a range of 17,150 yards and fell "short". Salvos 11 and 12 were respectively fired just before and just after 0559, both set for a range of 17,100 yards. Both were spotted as "short" and McMullen stated that an "unexplained" spread was observed – that is, the shell splashes were seen to be spread over a wider area than all the previous ones. The fact the salvos were short, indicates that *Bismarck* was actually at *greater* than 17,100 yards away.

Salvo 13, fired just before 0600 to a range of 16,450 yards was seen to straddle *Bismarck* (it actually scored the third and final hit by *Prince of Wales*), while Salvo 14, fired just after 0600 to a range of 16,300 yards was an "over" indicating *Bismarck* was at that point *closer* than 16,300 yards. Spreads were normal again and remained so until salvos 17 and 18 fired at around 0602 when the ship was turning away to disengage. These were noted as being "ragged" by McMullen due to the ship being under helm at the time, causing movement of the pointers.

We therefore have an "unexplained" large spread in salvos 11 and 12, then the actual range drops quite quickly from *greater* than 17,100 yards for salvo 12 (short), to 16,450 (a straddle and hit) for salvo 13 and then to *less* than 16,300 yards a few seconds later for salvo 14 (over). We know that at some point after *Hood* exploded, *Prince of Wales* made an emergency turn to starboard to increase her clearance from the wreck zone, given the smoke cloud and falling debris. The emergency turn, by necessity, would have been made without warning to the gunnery department to allow for the adjustment. Given the fact that she developed a large spread in her salvos during the turn away to disengage, could the spreads in salvos 11 and 12 be an indicator of the timing of her turn to avoid *Hood's* wreck? This is further reinforced by the drop in actual range to less than 16,300 yards by salvo 14, suggesting the ship had closed the enemy at a steeper angle for a short time.

If this is valid, then the timing for the emergency turn to avoid *Hood* is in the region of 0559! From there it follows that *Hood* exploded before 0559 – enough time before to allow Captain Leach to observe, recognize the danger and order the turn and for the ship to respond to her helm. We are therefore pointed to somewhere around 0558.

We also have a "heavy hit" noted in *Prince of Wales's* transmitting station at Salvo 12 which set the pointers oscillating violently. What hit was this? Salvo 12 was fired just after 0559. We will explore this further in the following section.

4 - THE FIRING OF PRINCE OF WALES' SECONDARY ARMAMENT

Another factor in the GAR is the timing of the firing of *Prince of Wales's* secondary armament. According to McMullen, the eight starboard 5.25-inch guns opened fire when the range was 18,600 yards. This corresponds to a time shortly before 0558. They had fired three salvos – a "deflection triple" when the support structure for the forward secondary armament (HACS) directors was hit by a shell which passed through without exploding. The directors were disabled so control was passed to the aft director but this was very quickly shaken by the

explosion of another hit – which struck the ship's crane and then exploded against her aft funnel sending splinters through her boat deck which killed a number of men in a radar office below. The 5.25's did not fire again for the rest of the battle.

In Captain Leach's narrative, the report he gave to Admiral Tovey, he states³:

"Prince of Wales" starboard 5.25" battery was now in action. Course had to be altered to starboard to avoid remains of "Hood"; meanwhile "Bismarck" had shifted main and secondary armament fire quickly and accurately onto "Prince of Wales". A heavy hit was felt almost immediately."

Fritz Otto Busch, observing from *Prinz Eugen*, wrote in his book '*Prinz Eugen im ersten Gefecht' of Prince of Wales*¹¹:

*"Now the (opponent's) ship fires: The housings of the stacks light up bright pink in the reflection of the afterglow. **Now his intermediate artillery also fires. Flashes came from below the superstructures and from behind the aft funnel.** It is not a continuous level string like on the "Hood": these are distinct separated shot groups from the 13.2 cm guns that are firing here.*

The opponent turns now somewhat towards us, since – as it became known shortly thereafter – he had to dodge the ruins of his flagship."

We therefore have *both* Captain Leach on the British side and Fritz Otto Busch on the German side linking the turn to avoid the remains of *Hood* to the firing of the 5.25-inch secondary guns. It is clear from the gunnery report that these guns fired 3 salvos starting just before 0558 – these were quick-firing guns – so by 0559 they had been silenced by the HACS hit by *Prinz Eugen*, at which point we have the ship turning to avoid *Hood*. This ties in perfectly with the timing of main armament salvos 11 and 12 which developed large spreads at 0559 from the unexpected turn. Once again this is pointing to a time of about 0558 for the fatal hit on *Hood*.

As noted above, the silencing of the 5.25's after only three salvos was due to TWO hits - the HACS hit which disabled the forward directors and the crane/funnel hit that affected the aft. After the first hit, aft director was ordered to take over but the blast from the second hit knocked over the control officer preventing him from doing so immediately. The 5.25's did not fire any further.

The crane/funnel hit was the ONLY hit on *Prince of Wales* to cause an explosion of consequence and, in *Prince of Wales'* damage report is thought to have been caused a 15-inch shell. The "heavy hit" felt at salvo 12 in the transmitting station, and the hit described by Leach as occurring "almost immediately" after the turn to avoid *Hood* would therefore seem to be one and the same. Salvo 12 was just after 0559, the 5.25's were silenced around 0559 again placing the turn to avoid *Hood's* wreck at around that time. If the hit was indeed a 15-inch, it means that *Bismarck* had shifted fire to *Prince of Wales* before 0559 (accounting for shell flight time). This is further support for *Hood* receiving the fatal hit at around 0558.

5 - HOOD'S "SALVO PLOT"

One great uncertainty regarding this action has been *Hood's* gunnery. All those who could report accurately on what happened were lost. We do know she opened fire between 0552 and 0553 on *Prinz Eugen*, and evidence from German observers^{6,7,11} suggest her first two salvos fell ahead of that ship, her third landed 50 meters short and slightly off the bow. Her fourth was an over and her fifth and all subsequent salvos landed astern in the ship's wake. *Prinz Eugen's* Second Artillery Officer Paul Schmalenbach estimated that *Hood* fired about ten salvos before she exploded. He was convinced they were all aimed at *Prinz Eugen*⁶.

Given that *Hood* was firing GIC with *Prince of Wales*, each in alternating time sectors, we can use *Prince of Wales's* Salvo Plot as a guide to the timing of *Hood's* salvos. When this is done, it is seen that *Hood* would have fired her 10th salvo shortly before 0558! See Fig. 1.

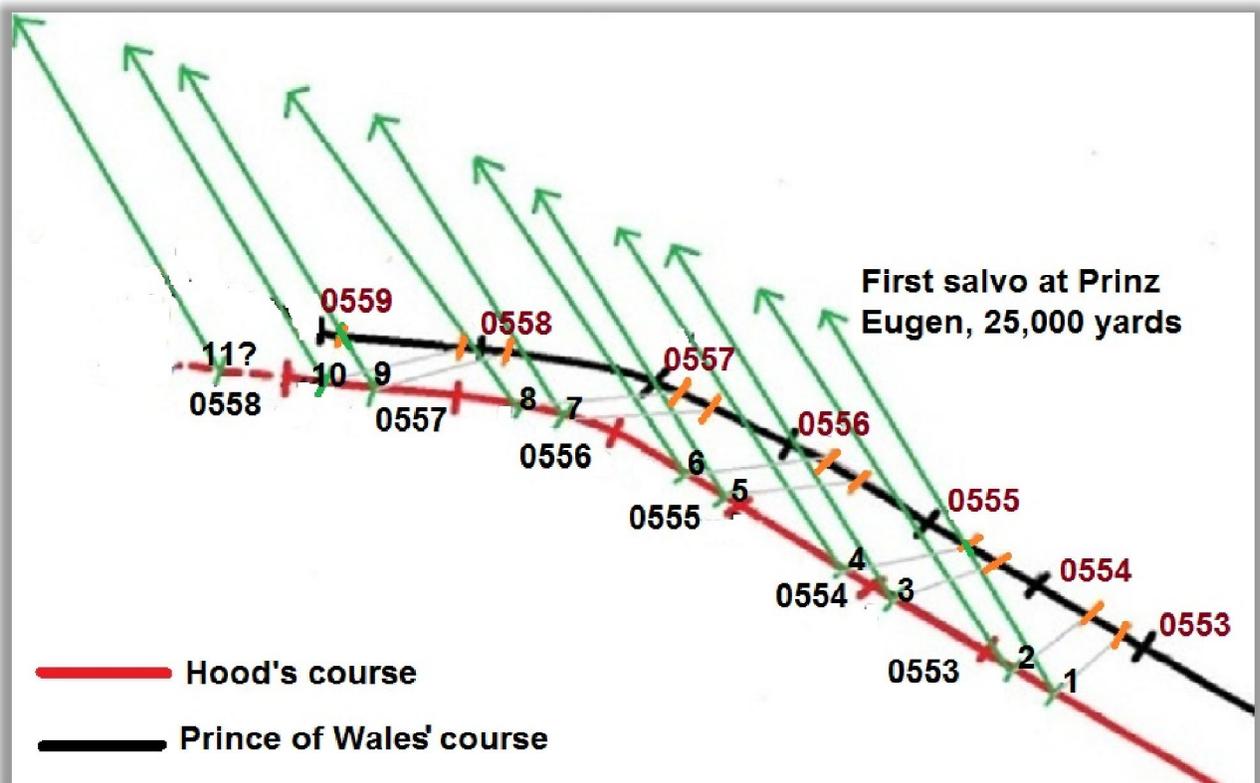


Figure 1: Projected Salvo Plot for Hood (red track with green arrows), based on that of Prince of Wales (black track), showing that ten salvos would take Hood to about 0558. An eleventh MAY have been fired seconds before she disintegrated. Prince of Wales equivalent salvos fired in alternating time sectors are marked on her track). Ten salvos were estimated by Paul Schmalenbach observing from Prinz Eugen, Hood's target-in-error.

6 – THOSE “2-BLUE” TURNS

One of the most vexing aspects of this battle is rationalizing the turn or turns that were made to port before *Hood's* demise. Most eyewitnesses aboard *Hood* and *Prince of Wales* describe ONE turn to open the A-arcs after which *Hood's* aft turret group fired a salvo seconds before the ship erupted. Captain Leach, in his narrative³, states that a turn was executed then *Hood* had another signal flag flying for another turn when she blew up. (The execution signal for the turn is the hauling down of the signal flag.) The conclusion would be that that second turn was never executed.

However, *Hood's* wreck tells a different story. Her rudder, in place on her stern which juts almost upright out of the sea floor, is set for a turn to port¹⁵. Forensic experts have concluded that this position is the same as it would have been when the stern left the surface^{15,18}.

How then could *Hood* have her rudder set for a turn whose execution was not signaled to *Prince of Wales*? The ships were to maneuver *together*. Here are some possible explanations:

First, it could be that the second turn was certainly not executed and the ship blew up before the first turn was completed. This seems unlikely since the turn was well underway for *Prince of Wales's* A-arcs to be clear by just after 0557. It could not still be underway after 0558.

Another possibility is that the second turn was signaled while the first was in progress with a view to it being continued a further 20° to make a 40° total turn. *Hood* therefore did not put her wheel back amidships after the first turn. This too, seems like too much time to be in a continuous turn without signaling the execution.

A third and very likely possibility is that of the intervention of battle damage:

Able Seaman Bob Tilburn, *Hood* survivor, who was in a position to see, reported that shortly before the final explosion, *Hood* received a hit at the base of her forward superstructure that killed scores of men sheltering there¹⁶. He did not report this in his Board of Inquiry testimony, but apparently told the story after the fact.

Ordinary Signalman Ted Briggs on *Hood's* compass platform saw a flash of flame shoot around outside the compass platform which he equated with the flash of the final explosion, when he was flung off his feet for a second time. He also reported hearing a “wild cacophony of voices” through the voice pipes and thought he heard his “oppo” signalman Ron Bell who was on the Flag Deck below, calling for help¹².

An aerial observer aboard a Sunderland aircraft that witnessed the battle described *Hood* as being on fire in two places – the boat deck aft and at the base of the bridge⁴.

Could a hit have prevented *Hood's* signal crew from hauling down the signal flag? *Hood* may therefore have gone into the second turn, and *Prince of Wales's* helmsman, duty-bound to keep station, simply followed her, hence Captain Leach's statement that the execution was never signaled.

Though this section does not in itself lead to 0558 as the timing of *Hood's* fatal hit, it nevertheless shows that the one turn or two scenarios are compatible with that time either way.

6 – THE BATTLE PHOTOGRAPHS

Comparing the photographs taken from *Prinz Eugen*, identified by their Naval History and Heritage designations NH69724 and NH69731, it appears that *Prince of Wales* has proceeded a significant distance beyond *Hood's* sinking site – much more than she should have given the tight turn shown on the official battle map drawn by Lt. Commander Rowell of *Prince of Wales*^{1c}.

Reproductions of the map and the photos are shown in Figures 2, 3, and 4.



Figure 2 – Shows the tight turn by *Prince of Wales* around *Hood's* wreck with the “traditional” track chart timeline.. NH69724 would be timed at just after 0600 while NH69731 would be timed at between 0603 and 0604. The red line is *Hood's* course, the black line *Prince of Wales'*. The tracks are inverted from the usual view in order to better compare with the orientation of the battle photos.

In Figure 5, a red line is drawn on NH69731 to indicate the course of *Prince of Wales* from where she would have been relative to *Hood's* sinking site in NH69724. It shows she would have proceeded even further to the right before swinging around to her disengagement course. In Figure 6, NH69731 is altered to show how it should have looked to be compatible with the battle map, with *Prince of Wales'* course shown in yellow.

Prinz Eugen, viewing from over eight miles away, steaming at 27 knots would have moved about 2500 - 2700 yards in the three minutes between the photos. The change in perspective may not be sufficient to account for the difference in separation shown in the photographs.

Graphic representations of the photographs described above are on the pages that follow.

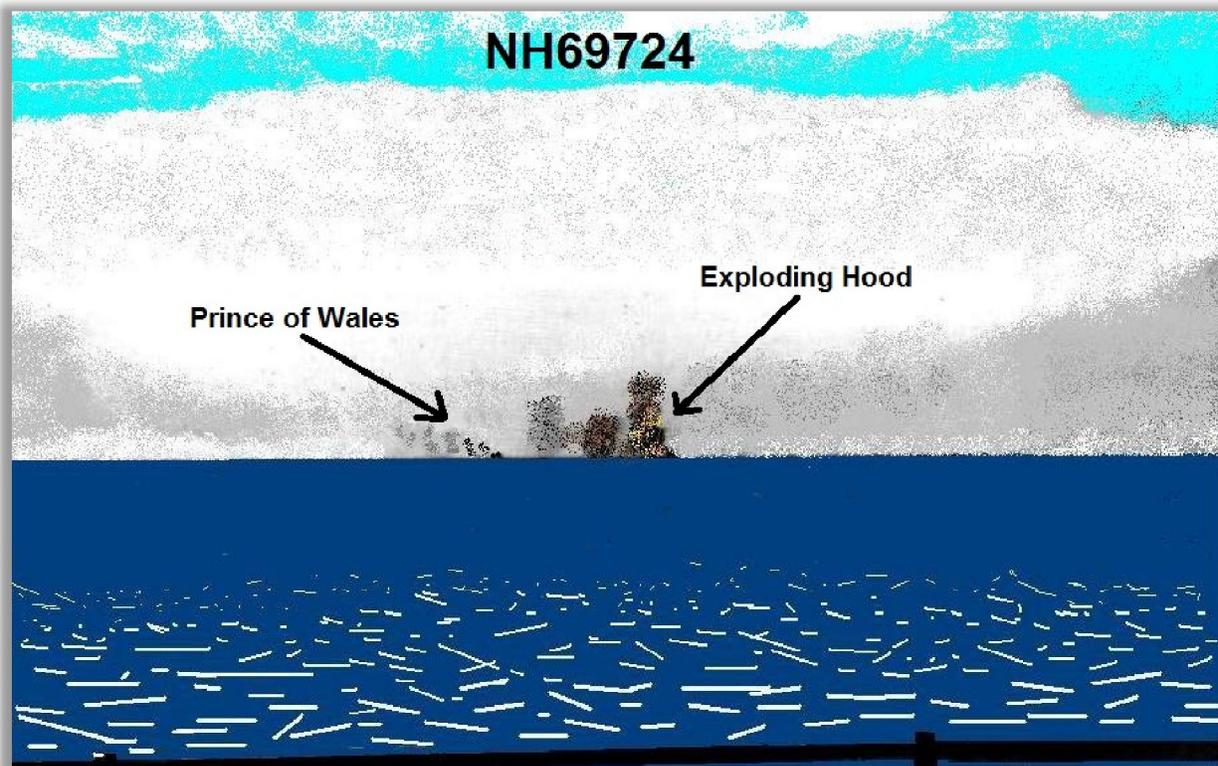


Figure 3: Reproduction of NH69724 – traditionally representing a time just after 0600, which this paper is suggesting should really be after 0558.

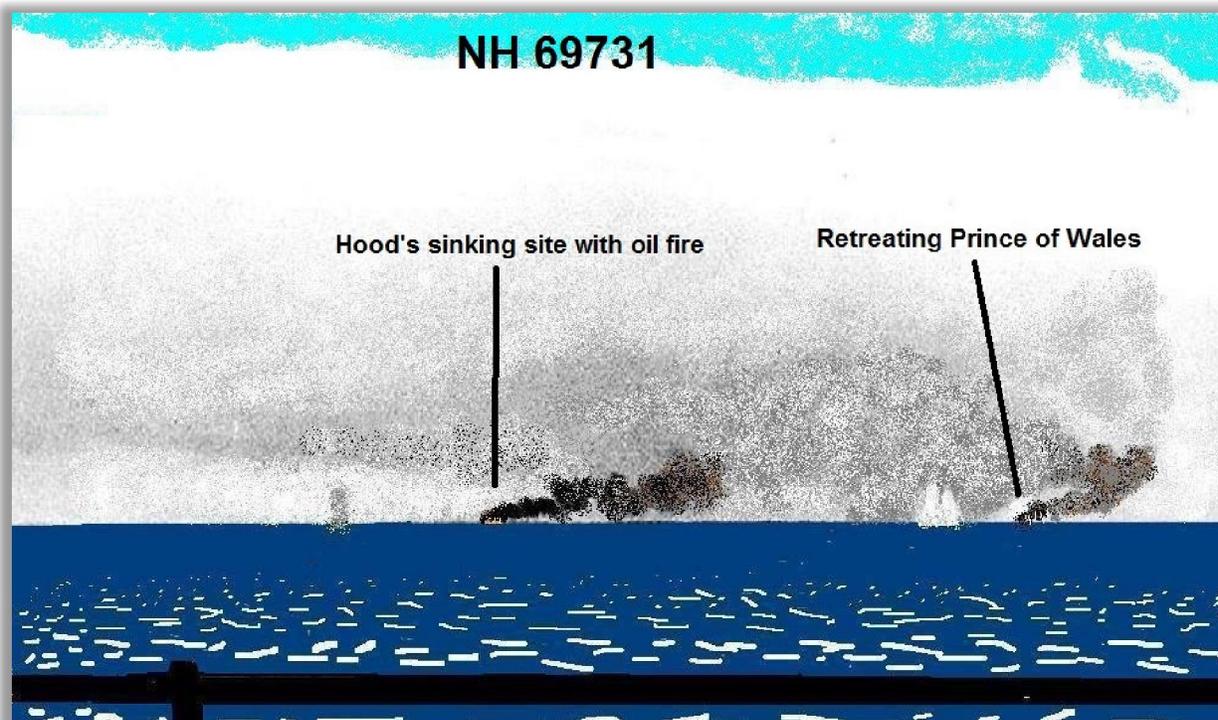


Figure 4: Reproduction of NH69731 (Established time – just after 0603 with shell splashes from Salvo 19 falling terribly short.)

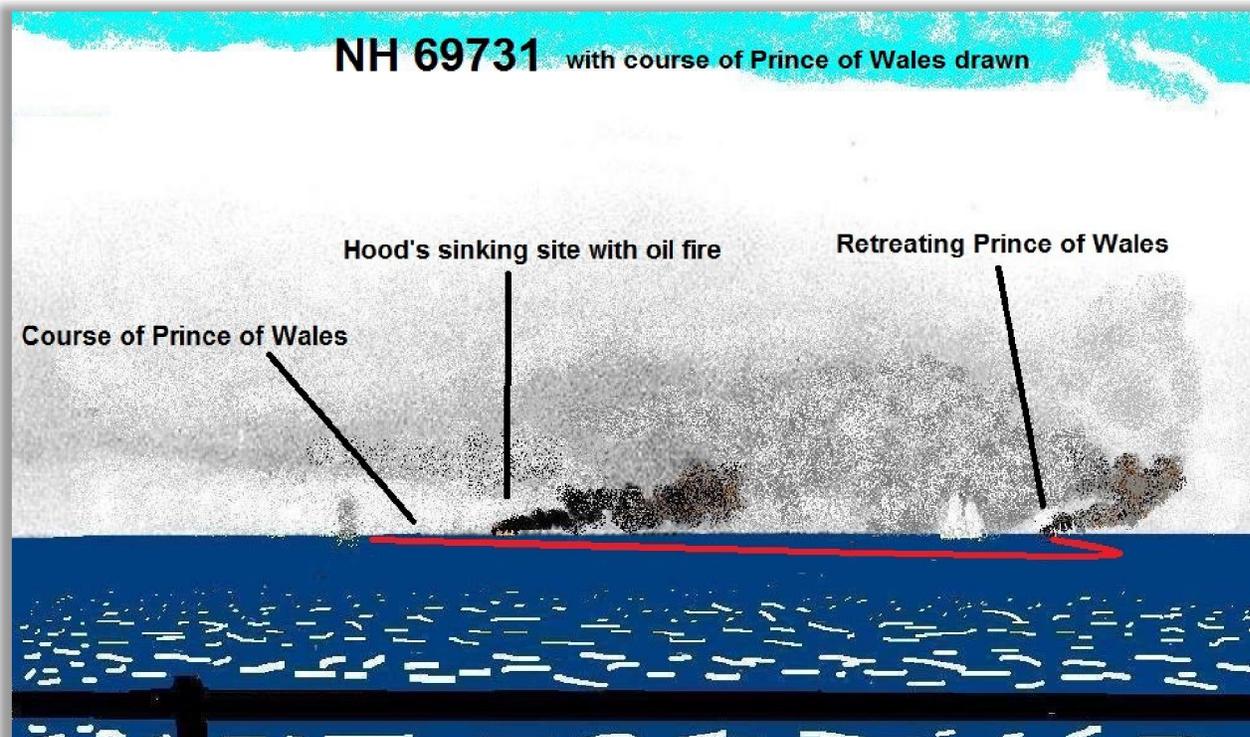


Figure 5: NH69731 reproduction showing *Prince of Wales* approximate course in red from her 0600 position in NH69724 to her new position at 0603.

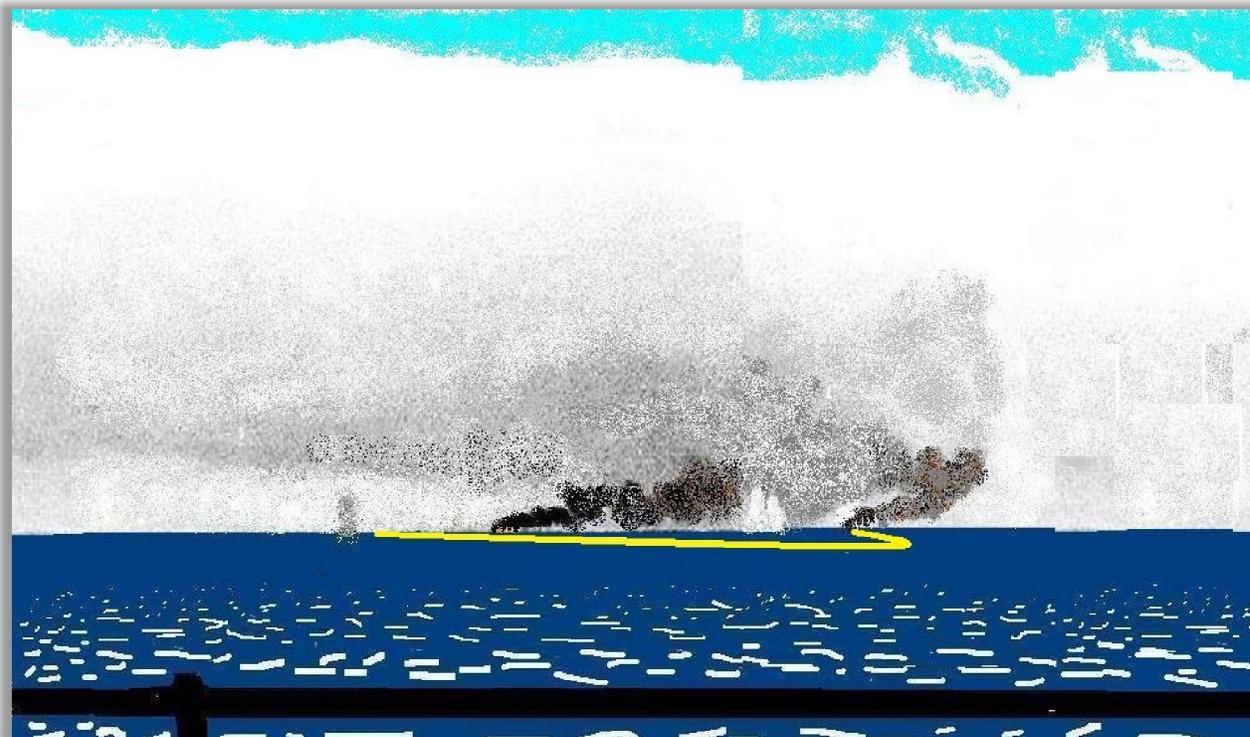


Figure 6: How NH69731 *should* look to be compatible with the battle map with *Hood* exploding at 0600. *Prince of Wales* appears much closer to *Hood's* sinking site at 0603 with her course from 0600 shown in yellow.

7 – NORFOLK'S COURSE CHANGES DURING THE BATTLE

The heavy cruiser *Norfolk*, flagship of Rear-Admiral Wake-Walker, was steaming hard to catch up with the unfolding battle. She steamed a parallel course to *Bismarck*, keeping her on her starboard bow. At about 0555, when the big ships were fully engaged, she turned to close the range rapidly. At 0600 she made a hard turn to port to once again parallel *Bismarck* before opening the range once it was clear *Prince of Wales* had given up. *Norfolk* did not open fire. See Figure 7.

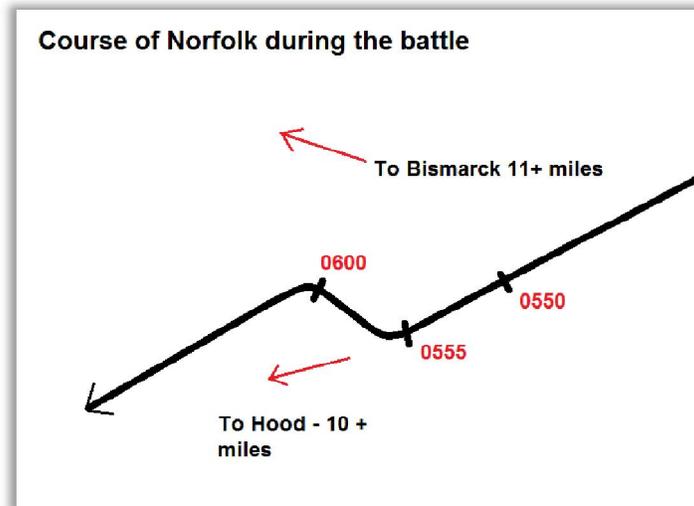


Figure 7: Course of *Norfolk* showing her turns at 0555 and 0600, based on the official track chart¹⁸.

So what is the relevance of these course changes to this discussion? The answer lies in the timing and the sequence of events required for a ship to turn. When *Hood* exploded, both Wake-Walker and Captain Phillips were observing the event - so much so that they were able to draw diagrams to illustrate what they saw. Wake-Walker had to realize the significance of what was happening, make the decision to alter course, tell Phillips, who would then pass the order to the helm, the helmsman had to spin the wheel and the ship had to respond. Had *Hood's* explosion been initiated at 0600, *Norfolk* could not have made her turn at 0600 as shown in her track chart, if she was turning in response to that event. Her 0600 turn would be in response to an event occurring *before* 0600.

8 – EYEWITNESS TESTIMONY

Careful scrutiny of the testimony of various eyewitnesses suggests that the time from the first hit on the boat deck to the final explosion was not very long. Going through all of them is beyond the scope of this paper, but they include *Hood* survivors Ted Briggs, Rear-Admiral Wake-Walker and Captain Phillips of *Norfolk*, and Paul Schmalenbach of *Prinz Eugen*. Others can be found in the transcripts of the Second Board of Inquiry on the HMS *Hood* Association website².

Ted Briggs:

In an interview posted on the website of the Imperial War Museum²¹ Briggs states:

"From the time that we opened fire to the time that Hood was fatally hit was about 5 minutes and she went down in less than three."

Rear-Admiral Wake-Walker:

*"I watched this fire and it then spread forward until its length was greater than its height and after a time it died down, particularly at the forward end. I thought that they may be able to get this fire under. Previous to this I had been so impressed by the fire that the ship would not continue as a fighting unit. As it died down I saw her two fore turrets fire and the thought "they may be able to get it under", came into my mind. Almost immediately there was an enormous explosion, which was of the same colour, and appeared to have a fairly broad base, widening out as it rose and then spreading into a mushroom of flame. I particularly noticed that the mushroom was flame and not smoke, at any rate in the lower half of it."*²

Captain Phillips of Norfolk:

*"This fire shortly afterwards died down, spread forward and pulsated rather like the appearance of a setting tropical sun and it appeared to me to get somewhat lighter in colour. I have tried to indicate this in rough sketch Phase III. HOOD appeared to continue firing and I particularly noticed either "X" and/or "Y" fire at this stage and I remarked on the fact at the time. Very shortly after this there appeared to be another salvo from the BISMARCK, 2 rounds of which I should say landed short, and she immediately blew up with an enormous explosion and was not seen again."*²

Second Artillery Officer Paul Schmalenbach of Prinz Eugen:

After describing the fire on Hood's boat deck caused by his ship's second salvo he states:

*"A few seconds later a salvo from Bismarck hit the ship aft, and that resulted in an explosion of major consequence."*⁶

Statements by Ted Briggs and by *Prince of Wales* Petty Officer Cyril Coates also seem to suggest that *Prince of Wales* steamed on past the wreck of *Hood* for a short time before she turned away, as opposed to circling the wreck as implied by the official track charts drawn by Rowell.

Ted Briggs:

While in the water after *Hood* had sunk he observed:

*"Several yards away I could see the stern of the Prince of Wales as she pressed on with her guns firing. She was being straddled by shells from the Bismarck and Prinz Eugen and I did not give much of a chance to her survival."*¹²

Cyril Coates:

*"I came down off the catapult control platform and we carried on steaming ahead of the Hood, and all I recognised was the bows forepart. They appeared to be turned completely round."*²

CONCLUSION

Weighing all the evidence presented here, it can be concluded that the actual time for *Hood* receiving the fatal hit from *Bismarck* could very well have been almost two minutes earlier than is traditionally accepted – at or shortly after 0558.

She had been under enemy fire for about three minutes – not five, not eight, but only *three* minutes! It was a small wonder that 0600 was designated as THE time. Five minutes of fire was somewhat less humiliating than three. She then took three or four minutes to sink which is much more compatible with descriptions of the sinking process, especially that given by survivor Ted Briggs.

A timing of 0558 for the fatal hit explains or is compatible with

- 5 salvos from *Bismarck* which opened fire shortly after 0555.
- 10 observed salvos from *Hood* (Schmalenbach), with her opening fire between 0552 and 0553.
- Either one turn to port or two, whichever actually happened (this probably will never be resolved).
- The distance shown to have been traveled by *Prince of Wales* in the battle photos NH69724 and NH69731 – with her course beyond *Hood*'s sinking site before turning being about one minute longer than is shown on the traditional track charts.
- The compass platform hit coming in about a minute earlier than currently thought, allowing Captain Leach sufficient time to recover from the blast and descend to the armoured conning tower as described by Geoffrey Brooke to give his disengagement order.

How, therefore, should the battle map appear if *Hood* blew up earlier than 0600? See Figures 8 and 9 on the next page to compare my "new" track chart to the official track chart drawn by Lt. Cdr. Rowell.

The sinking of HMS *Hood* was one of the most traumatic events causing the heaviest single loss of life experienced by the Royal Navy and the British Empire in the Second World War. It has been scrutinized, analyzed and dissected deeply over the years with much misinformation being propagated, most often unknowingly.

It is hoped that this discussion has helped to shed more light on the event and I invite the reader to draw his or her own conclusions based on what I have presented, though I believe I have made a very strong case.

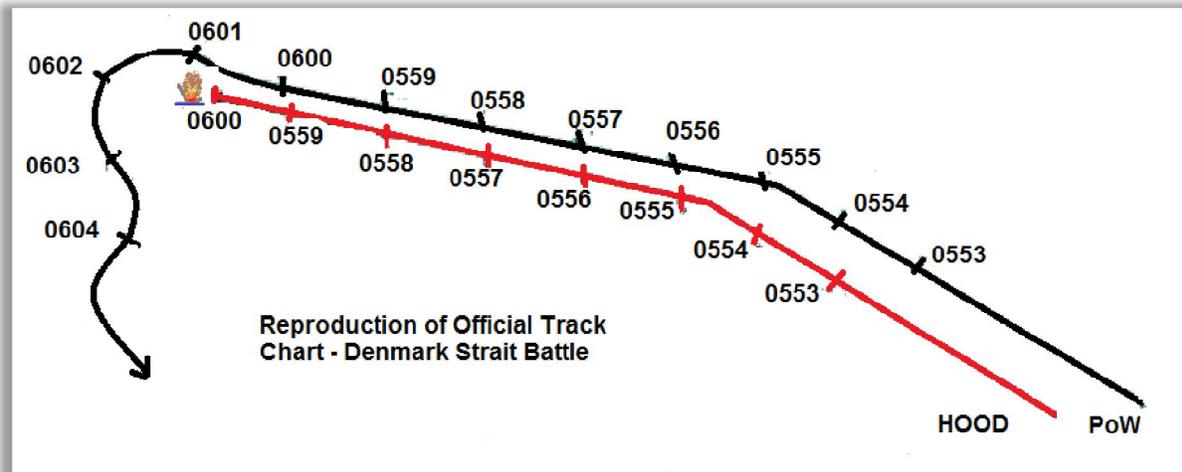


Figure 8 – Reproduction of the Rowell official track chart. The first “2 Blue” turn is depicted as a sharp angle *before* 0555. *Hood* is hit and explodes at 0600 with *Prince of Wales* taking the evasive turn within half a minute. Just before 0601 she receives the compass platform hit (and the other hits occur either simultaneously or after) and just after 0601 the ship is already turning away – all too fast to be practical. From the perspective of *Prinz Eugen*, she should have appeared much closer to *Hood*'s sinking site at 0603 as shown in Figure 6.

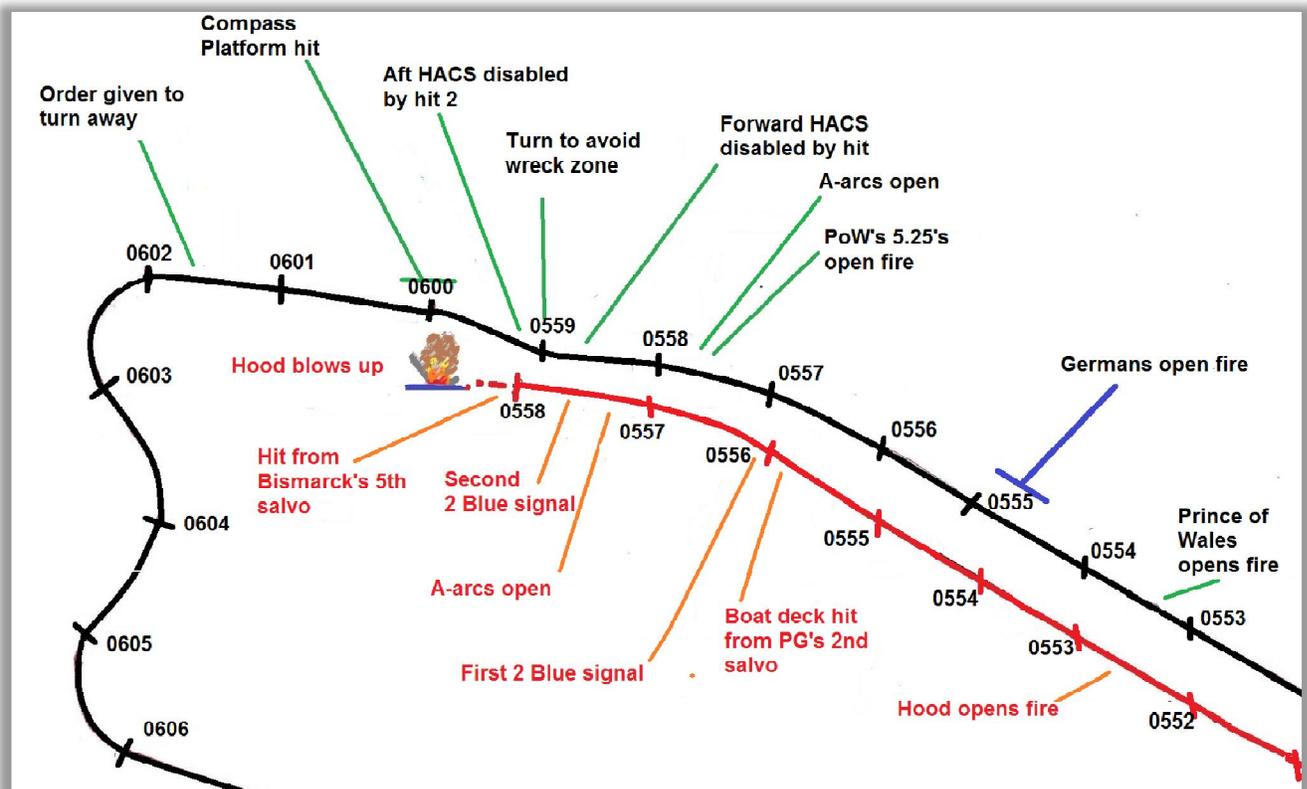


Figure 9: The suggested new battle map showing *Hood* being hit and exploding just after 0558. Note the gradual turn after 0556 for the first “2-Blue” signal, the ending of *Hood*'s track just after 0558 and the longer forward course by *Prince of Wales* after avoiding *Hood*'s wreck, which accounts for both the time needed by Captain Leach to recover from the compass platform hit and give his disengagement order and the separation between *Hood*'s sinking site and *Prince of Wales* in NH69731.

Acknowledgements

I wish to sincerely thank all the contributors to the *KBismarck* Warship Discussion Forum whose support and/or challenging discussion helped immensely in the formulation of this theory. In particular I must thank Antonio Bonomi for his tireless research, his challenges and his openness in sharing information much of which has helped cement my ideas despite his misgivings. His generous spirit, even in disagreement, is one which should be emulated. To Dan Blackburn, who from day one told me "Stick to your guns, Doctor!" I must say a BIG "thank you!" His support and encouragement have been unwavering and his keen eye for detail was invaluable as I finalized this paper.

I must also thank the operators of the HMS *Hood* Association and *KBismarck* websites. The treasure trove of information available on these sites is incredible and the associated discussion forums, though the *Hood* forum is now closed, have provided an unparalleled learning experience for me and so many others.

Finally, I must thank my family and friends at home in Jamaica and abroad who have tolerated, understood and even encouraged my obsession with all things *Hood* and *Bismarck* over the years!

A handwritten signature in black ink, appearing to read 'Paul Cadogan', followed by a horizontal line.

Paul Cadogan

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