# ‘Executive Fuller!’ - The Royal Air Force and the Channel Dash

**By Gp Capt Alistair Byford**

In February 1942, the *Wehrmacht* executed a well-planned and highly effective joint air-sea operation to transfer a powerful battle squadron from Brest to Wilhelmshaven in what become known as the ‘Channel Dash’. Although this was a relatively minor action, it resonated strongly across the levels of warfare: for the Germans, it was a tactical success, but ultimately a strategic failure, while for the British, it was a minor tactical embarrassment that was inflated by the context of other events into a direct threat to the survival of Churchill’s government at the grand strategic level. This paper provides an analysis of the RAF’s participation in the Channel Dash and identifies the key points of failure: these include structure, in terms of the poor organisation of the system of command, and agency, particularly in the characters of the most important personalities involved. Other important themes emerge: at a time of intense focus on air-land integration, the Channel Dash illustrates that empathy and understanding is also required to make air-maritime operations work, while the need to balance operational security against the requirement for absolute clarity of communication in high-tempo military actions is also prominent.

*The Channel Dash.*[1]

*'Their pilots fought bravely, tenaciously and untiringly, but they were sent into action with insufficient planning, without a clear concept of attack, without a centre of gravity and without systematic tactics'.*

**Adolf Galland**[2]

## Introduction

In February 1942, the German *Wehrmacht* mounted an audacious air-sea operation to transfer a powerful *Kriegsmarine* battle-squadron through the English Channel from Brest, on France's Atlantic coast, to the apparent safety of Wilhelmshaven in Germany. The break-out of the battlecruisers *Scharnhorst* and *Gneisenau* and the heavy cruiser *Prinz Eugen* was given the codename *Cerberus* by the Germans;[3] to the British, it became known as the 'Channel Dash', a public relations disaster that was hugely damaging to the reputation of both the government and the armed forces. Despite clear intelligence that a major operation was imminent, the German ships remained undetected for fourteen hours after leaving harbour and were subsequently able to brush off a series of gallant, but ineffectual, British attacks with dismissive ease. *The Times* characterized this as the greatest national humiliation since the Dutch burned the fleet at Chatham in 1667;[4] certainly, it was the first time a hostile naval force of any significance had entered the Channel since the Spanish Armada. However, like many *Wehrmacht* operations, *Cerberus* was a tactical success but a strategic failure, as the battlecruisers were a far greater threat to the Atlantic supply-lines at Brest than at Wilhelmshaven, where the concentration of all of the *Kriegsmarine's* capital units at one location also made the task

of containment and eventual destruction far easier for the Royal Air Force (RAF) and Royal Navy (RN). Nevertheless, Britain's failure to act decisively in waters that it considered its own was a huge embarrassment; in conjunction with the fall of Singapore just two days later, the Channel Dash arguably marked the nadir of Britain's military fortunes in the Second War, calling into question the competence of Churchill's administration and providing a striking example of how tactical actions may have strategic, and even grand-strategic implications.

The Channel Dash has considerable contemporary relevance. First, it is a timely reminder during a period of intense focus on air-land integration that air-sea cooperation also cannot be taken for granted; it demonstrates that *ad hoc* coordination is rarely successful and effective results will only be achieved through empathy and understanding developed over time. It also raises important issues of command and control, the effective coordination of operations within a joint framework and, particularly, the balance between operational security and the clarity of communication required to enable mission command and effective decentralized execution in fast-moving, high-tempo operations.

**Strategic Direction - Hitler's Decision**

On 23 March 1941, the *Scharnhorst* and *Gneisenau* docked at Brest at the conclusion of Operation *Berlin*, a three-month cruise during which the two battlecruisers had sailed 17,800 miles and sunk or captured twenty-two merchantmen, illustrating in stark terms the threat that these powerful vessels posed to the Atlantic convoys. They were joined on 1 June 1941 by *Prinz Eugen*, which had escaped to Brest after her consort, the battleship *Bismarck*, was sunk on 27 May. A comprehensive range of active and passive anti-aircraft measures were implemented at the port to protect the ships from bombing, including sophisticated camouflage and concealment techniques, an intense concentration of anti-aircraft guns and a highly effective smoke-screen system.[5] Nevertheless, the RAF mounted repeated raids over the next nine months, dropping 3,413 tons of bombs and inflicting significant damage on all three ships, albeit at the cost of 127 aircraft. *Prinz Eugen* received a direct hit which killed sixty of her crew, while the *Scharnhorst* and *Gneisenau* were put out of commission for four months and six months respectively, the latter as a result of an extremely gallant torpedo attack executed by a Coastal Command Beaufort, the pilot, Flight Lieutenant Kenneth Campbell, being awarded a posthumous Victoria Cross.

The constant raids persuaded the German high command that it would only be a matter of time before the RAF was able to sink the vessels, especially as Hermann Goering, the head of the *Luftwaffe*, refused to sanction any increase in fighter cover. Although he cited the *Luftwaffe's* commitments on the newly opened Eastern Front in mitigation, he was probably motivated by his fierce inter-service rivalry with *Gross-Admiral Raeder*, the *Kriegsmarine* commander. Meanwhile, Hitler was fixated on the illusory threat of a British invasion of Norway, so the danger posed by the RAF's bombing raids only added

to his growing conviction that the battlecruisers must be brought back to Germany as soon as they were seaworthy, so that they could be defended more easily and would be available for redeployment into Scandinavian waters if necessary. Consequently, Hitler ordered the ships to evacuate Brest at a conference at his Rastenberg Headquarters on 12 January, comparing the battle squadron to 'a patient with cancer who is doomed unless he submits to an operation'.[6]

Once Hitler had made this decision, two courses of action were available. The *Kriegsmarine* preferred to route the squadron out into the Atlantic to take the Denmark Strait passage, well to the north of Great Britain,but there was also the option to use the short - but apparently much more dangerous - direct route through the English Channel. Hitler chose the bold alternative with little hesitation. Although this was partly because he was concerned that the Brest squadron might not be capable of an extended Atlantic passage after being bottled-up in harbour for a protracted period of time, his decision was largely based on intuition. Drawing on previous experience, Hitler believed that if the British high command was taken by surprise, it would lack the agility to act decisively in response to a rapidly changing situation;[7] he felt that if he seized the initiative he could operate within his opponent's decision cycle, and events were to prove that he was absolutely right.[8] Naval Command West, under Admiral Alfred Saalwächter, was directed to plan the operation; execution would fall to Vice-Admiral Otto Ciliax, flying his flag on *Scharnhorst*.

*British commanders: Air Vice-Marshal 'Jack' Baldwin, acting Commander-in-Chief Bomber Command (left), Air Vice-Marshal Trafford Leigh-Mallory, Air Officer Commanding-in-Chief No.11 Group, Fighter Command (centre) and Vice-Admiral Bertram Ramsey, Flag Officer Dover (right).*[9]

## Operational Planning - the British Approach

British contingency planning to prevent a break-out began as soon as the ships' arrival at Brest was confirmed by photographic reconnaissance on 28 March 1941. It was quickly apparent that responsibility for enforcing a blockade would fall mainly to the RAF, because of the RN's pressing commitments elsewhere. Capital ship cover had to be maintained at Scapa Flow, in case of a raid by German heavy units (primarily the battleship *Bismarck*) into the Atlantic via the North Sea; and battleship escorts were also needed to protect the 'WS' convoys sailing to the Middle East with reinforcements for the 8th Army, as these were vulnerable to the Brest squadron as they routed through the Bay of Biscay. The sinking of the *Bismarck* did not materially affect the operational calculus, because her sister-ship, the *Tirpitz*, was about to be commissioned at Wilhelmshaven, so the RN was still faced with geographically separate threats from capital ships to both the north and west. This meant that it had to split its heavy units to cover both eventualities and only light surface forces – the destroyers and Motor Torpedo Boats

(MTBs) commanded by the Flag Officer Dover, Vice-Admiral Sir Bertram Ramsey – would be available to contest a German force in the Channel. As Ramsey's command was likely to be totally overmatched by the German squadron and its attendant flotillas of escorting destroyers and E-boats,[10] a coordinated joint operation maximising the use of air power represented the only realistic means of destroying or crippling any of the German ships.

The recent loss of 'Force Z' (the battleship *Prince of Wales* and battlecruiser *Repulse*) to Japanese air attack off the coast of Malaya had reinforced the Admiralty's opinion that it could not risk battleships in the Channel in the teeth of German air power; conversely, it also heightened expectations about what the RAF might achieve against German capital units, although the circumstances were very different. Whereas the Japanese had employed a specialist wing (the 'Genzan' air group) trained and equipped in anti-shipping techniques to attack ships with weak anti-aircraft defences in conditions of total air superiority and excellent weather, the RAF would have to attack with whatever aircraft and crews could be made available, in poor winter weather, against modern ships that were much better armed and would be heavily defended by a thick screen of highly capable fighter aircraft. However, the transparent weakness of Ramsey's naval forces meant that air power was still the most potentially lethal form of attack available, so the Air Staff took the planning lead for the operation to stop the *Scharnhorst* and *Gneisenau*. This was given the codename *Fuller*: activation would be implemented by the order '*Executive Fuller*'.[11]

The production of a properly integrated air plan proved to be problematic, however, because no RAF officer was given overall responsibility for the operation and the three commands involved – Bomber, Fighter and Coastal – 'were virtually autonomous within their own spheres',[12] a legacy of the decision that had been made in 1936 to structure the RAF into single-role commands. This had proved to be a useful means of organizing pre-war expansion and enabled Fighter Command to provide an effective air defence of Great Britain (notably in the Battle of Britain) and Bomber Command to conduct its own strategic offensive - but these campaigns were both a linked series of isolated, single-role operations. There were continual difficulties whenever the commands were required to act together in any joint endeavour requiring a broad spectrum of air power capabilities.In contrast to the RAF system of mono-functional commands, the *Luftwaffe* was divided into multi-role *Luftflotte* or air fleets, which meant that properly integrating a coordinated air effort was far less challenging: the *Luftwaffe's* contribution to Operation *Cerberus*, for example, was provided by *Generalfeldmarshal* Hugo Sperrle's *Luftflotte 3*, which included all of the necessary air assets as integral elements of its own order of battle, including bombers, single and twin-engined fighters, and reconnaissance, 'sea-service' and electronic warfare aircraft.

British air planning was also hindered by excessive secrecy. Only a very few senior officers in each command were

allowed to know what *Fuller* meant and this had a profound affect on the RAF's speed of response when the operation was activated, as these men could not always be located quickly enough to issue the appropriate orders and brief what was required. The result was that many of the aircrew involved had no knowledge of their mission, even after being ordered into the air.[13] With only sketchy information available, British air operations were characterized by misunderstandings and a piecemeal application of the air effort, as the true significance of events was unclear to most of the participants.

It was expected that the main onus for stopping the German ships would fall to Coastal Command, as Bomber Command was neither trained nor equipped to attack moving targets at sea. Coastal Command possessed three squadrons of relatively modern and capable Beaufort torpedo-bombers specialized exactly for this task;[14] it was anticipated that these would execute a concentrated attack to saturate the defences, protected by a heavy fighter escort. In the event, a failure to coordinate the movement of the squadrons, poor weather (there was widespread snowfall in February 1942) and a logistics catastrophe - one squadron arrived without some of its torpedoes - meant that the planned, three-squadron attack degenerated into 'a series of uncoordinated raids by aircraft in ones and twos, spread over three hours in steadily worsening weather conditions'.[15] Coastal Command's other role was to provide a dusk to dawn reconnaissance screen to provide early warning of any German movements, centred on three patrol lines in the central and western Channel: 'Stopper', 'Line SE' and 'Habo'. Hudson aircraft equipped with Air-to-Surface Vessel (ASV) radar were nominated for this task. As these would be vulnerableto German fighters when operating close to enemy territory in daylight, Fighter Command was allocated the visual maritime reconnaissance mission in what were known as 'Jim Crow' patrols, but these were not expected to be significant, as it was thought that the Germans were unlikely to risk a passage of the Channel in daylight. This preconception was reinforced by an otherwise highly prescient intelligence appreciation submitted by the Admiralty on 3 February, which accurately predicted that a German operation was imminent and that the selected route would be up the Channel – but in the hours of darkness.

In the event of a break-out, Bomber Command had been directed by the Air Ministry to attack the ships 'to the maximum practical effect'. As a result of the Admiralty's intelligence appreciation, 300 bombers were allocated to Operation *Fuller* on 4 February, to be held at two hours' notice. This represented the core of Bomber Command's available frontline force, meaning that major raids on Germany had to be suspended. Bomber Command was in a very difficult position during this period, as it was still struggling to establish itself as a viable force capable of inflicting real damage on the enemy heartland. Losses had been very heavy in return for indifferent results and the Air Officer Commanding-in-Chief (AOC-in-C), Sir Richard Peirse, had been replaced after ordering a particularly disastrous raid in very poor weather on the night of 7/8 November 1941.[16]

The acting AOC-in-C, Air Vice-Marshal 'Jack' Baldwin, was therefore eager to underscore the command's worth while acting as its caretaker, pending the arrival in post of the new chief, Air Marshal Sir Arthur 'Bomber' Harris. Baldwin felt that this was much more likely to be achieved by continuing with raids on area targets in Germany rather than through a putative attack on a heavily defended naval battle-squadron manoeuvring at speed, where the chances of achieving any sort of success were slim. At his instigation, the Air Ministry approached the Admiralty on 8 February to suggest that the bomber force allocated to *Fuller* should be released. The Admiralty's response was robust: it was convinced that a German break-out was imminent and reaffirmed its opinion that the destruction of the *Scharnhorst* and *Gneisenau* would be far more significant, in terms of the overall course of the war, than a few extra bombing raids on Germany. This assessment was passed back to Bomber Command by the Air Ministry, but Baldwin decided unilaterally to withdraw 200 aircraft from the *Fuller* commitment and put the remaining 100 bombers (of No.5 Group) back to normal (four hours) stand-by. Moreover, he did not inform the Air Ministry, the RN, or the other RAF commands of this decision. The result was that although Bomber Command would eventually mount a significant effort against the German ships, the first aircraft could not be made ready until three hours after the *Executive Fuller* order was received towards noon, so the attacks had to be prosecuted after the weather had deteriorated and dusk was falling. Had the bombers been able to attack even an hour earlier, some may well have found the *Scharnhorst* when she was stationary and vulnerable following a mine-strike at 14.31 hours.

Fighter Command's main contribution to *Fuller* would be the responsibility of No.11 Group, led by Air-Vice Marshal Trafford Leigh-Mallory. Its role, apart from providing the 'Jim Crow' patrols, was to provide fighter cover for all other air and naval operations.[17] A direct telephone link was established between No. 11 Group's headquarters at Uxbridge and the naval command at Dover Castle to facilitate cooperation, but events were to prove that inter-service and even inter-command integration was poor, although this was more a function of organization and culture rather than the mechanics of the communications set-up. Fighter Command was also faced with a qualitative challenge: the 'F' model of the *Luftwaffe's* Messerschmitt Bf 109 was at least comparable with its best fighter, the Spitfire Mark V, while the Focke Wulf Fw 190 was superior in all respects. Both German types had a clear advantage over the Hurricanes and twin-engined Whirlwinds that were also fielded by Fighter Command.

*The German operational commanders: Vice-Admiral Otto Ciliax (right), was the German naval commander. He was not a popular officer, unlike the flamboyant air commander, 'Dolfo' Galland, General der Jagdflieger (left). In November 1942, Galland would become the youngest general in the Wehrmacht at the age of 30.*[18]

**The Effectiveness of German Joint Planning**

The plan for Operation *Cerberus* demonstrated that the *Wehrmacht* was still capable of operational excellence, despite the shortcomings in Germany's strategic direction of the war effort. The most important decision was to leave Brest in darkness and risk running the Channel in daylight, the planners calculating – quite correctly – that achieving surprise in the departure phase was more important than the risks involved later, on the basis that the *Luftwaffe* would be able to beat off any subsequent daylight air and surface attacks. Essentially, the plan was to seize the initiative at the outset and set a tempo that the British could not match.

This put much of the responsibility for success onto the shoulders of the designated air commander, *Oberst* Adolf Galland, the flamboyant fighter ace and youthful *General der Jagdflieger*. He admitted to Hitler that he would need 'complete surprise and a little luck into the bargain' to see the operation through, but he was also determined to make his own luck.[19] Despite the high-level antipathy and in-fighting between the two Service chiefs, Goering and Raeder, Galland was determined to foster the closest possible level of understanding with his naval counterparts at the operational level and in the event, 'coordination worked without friction'.[20] His air plan was codenamed *Donnerkeil* ('Thunderbolt') and was executed from headquarters at Caen and Le Touquet in France and Schipol in the Netherlands, with control being transferred from one to the other as the ships passed *en route*. This was a maximum effort for the *Luftwaffe*; twelve aircraft from the Fighter Training School at Paris were even included in the total of 250 day and thirty night fighters put at Galland's disposal. He planned to provide constant cover over the fleet by cycling squadrons through the task. A standing air patrol would employ a minimum of sixteen fighters at any one time, increasing to up to thirty-two fighters during the periods of squadron relief, which amounted to ten minutes in every half hour. Additionally, on-call reserve squadrons were available at four bases along the route, in case the scale of British air attack threatened to overwhelm the defences. After dusk, standing cover would be limited to two night fighters at any one time, to ensure deconfliction and effective radar control.

Galland provided crystal-clear direction to his pilots, who would all be expected to fly at least four sorties on the day of the operation. Success would not be measured by numbers of enemy aircraft shot down, but solely in terms of the level of protection provided for the warships. Consequently, RAF aircraft leaving the target area were to be avoided, but attacking aircraft were to be engaged at all costs – if necessary, through ramming.[21] Galland delegated one of his senior subordinates, *Oberst* Hans Ibel, to sail with the squadron as the *Jafü*, or on-scene fighter controller, and the *Luftwaffe's* own short-wave radio equipment was installed on all of the ships to guarantee seamless air-sea communication. In contrast to the ambiguous British command structure, Galland was empowered by the authority of a 'Führer Order' to take control of all air assets

participating in *Donnerkeil*, including the bomber force, which was retained at readiness throughout the operation to counter any prospective movement south by British naval units. Finally, to ensure that the complex choreography required would work in practice, 450 sorties were flown between 22 January and 10 February in an elaborate mission rehearsal exercise known - somewhat optimistically - as 'The Beginning of Spring'.[22]

Other elements of the German plan displayed the same meticulous attention to detail. British coastal radar would have to be jammed if tactical surprise was to be retained, but a sudden increase in jamming would, in itself, alert the British. Consequently, General Martini, the *Luftwaffe's* Director of Communications, carefully raised the level of jamming over a two-week period, subtlety increasing the duration and intensity to desensitize the British operators over time. This was highly effective: the heavy jamming from the *Luftwaffe's* coastal stations, supplemented by two specialist Heinkel He 111 electronic warfare aircraft, was successful in masking the movement of the German ships on the day of operation, while British watch officers who expressed suspicion at the higher than usual level of electronic noise were branded as 'scaremongers'.[23]

No detail was too small to be overlooked: additional light *flak* guns manned by *Luftwaffe* gunners were placed on the decks of the ships in extemporized mountings to increase the volume of anti-aircraft fire, and a mine-sweeping schedule was arranged at night and conducted in sections, so that no pattern or swept route was readily apparent. Finally, as the Germans were fully aware that the British ran French intelligence agents in Brest, an elaborate deception operation was mounted to indicate that the squadron would break-out west for a destination in the South Atlantic; rumours were spread around town to that effect, tropical helmets were ostentatiously brought on board and French dockers were tasked to load oil barrels clearly marked 'for use in the tropics only'.[24]

**Tactical Actions - The Break-out**

Following a two-hour delay imposed by another RAF raid, Operation *Cerberus* commenced when the German fleet slipped its moorings at 21.15 hours on the night of 11 February. Galland had acknowledged the role of luck in military operations regardless of the thoroughness of planning, and the Germans squadron immediately experienced a huge and unpredictable slice of good fortune when a mixture of bad management and unreliable equipment allowed it to pass through all three Coastal Command patrol lines without being detected. 'Stopper' was unmanned for three hours when its Hudson had to return to its base at RAF St. Eval in Cornwall after being damaged by a German night-fighter. A spare aircraft was available, but its ASV was unserviceable – later found to be a result of a blown fuse - and the second replacement Hudson failed to start, this time because of a damp sparking plug. The crew eventually managed to find a serviceable aircraft and arrived on station at 22.38 hours, but by this time the German squadron had already passed the patrol line. The Hudson at 'Line SE'

also had a problem with its ASV. After ninety minutes, the crew broke radio silence to report the fault and was ordered to back to base, but no replacement cover was provided. Finally, the station commander at RAF Thorney Island, near Portsmouth, ordered the Hudson covering 'Habo' to recover early, as he was concerned that mist on the airfield might turn to fog and make landing difficult. The Hudson duly left its station at 06.15 hours, just as the German squadron was approaching the point where it would have come within the 30-mile range of the aircraft's ASV.


*A Lockheed Hudson maritime patrol aircraft of Coastal Command pictured in a contemporary edition of 'Flight Magazine'.*

What was as damaging as Coastal Command's inability to detect the warships was its subsequent failure to inform Flag Officer Dover - and the other RAF commands - of the extent to which its patrol coverage had been compromised. Consequently, all of the commanders assumed that the German squadron was still in harbour and the forces allocated to *Fuller* were stood down to normal readiness. At this stage, the German squadron had already been at sea for over ten hours and had steamed some 300 miles.

The first real indication of something unusual was when RAF radar-operators noticed the high level of German air activity over the Channel, even though the effective German electronic noise-jamming was still masking the 'blips' generated by the ships themselves. Additional Spitfires were dispatched to supplement the standing 'Jim Crow' patrol and these finally spotted the German squadron at 10.42 hours. However, due to the secrecy pervading *Fuller*, the pilots were under strict orders not to break radio silence, although the fighter leader was Group Captain Victor Beamish, who in his previous appointment as Senior Air Staff Officer at No. 11 Group had signed off the *Fuller* directive, which included a proviso that permitted radio-telephony ('R-T') to be used 'in an emergency'.[25] Nonetheless, a sighting report was not raised until after the Spitfires had landed and, as Fighter Command had not been expected to be the first agency to locate the German fleet, further valuable time was lost while it was determined who needed to be notified. Eventually, '*Executive Fuller*' was declared after the report reached the Admiralty at 11.25 hours, some fourteen hours after the ships had left harbour.

The initial British response was a series of piecemeal and uncoordinated attacks mounted by whatever force elements came to readiness first. The long-range guns of the Army's coastal artillery were immediately available and the South Foreland battery was equipped with the new, 'K-type' radar, which was able to burn through the jamming and track the German fleet as it passed Cap Gris Nez. However, the maximum visibility was only five

miles, so although radar-predicted full salvo firing began at 12.19 hours, the fall of shot could not be verified visually, markedly reducing accuracy. By now, the German ships had worked up to 30 knots and quickly moved out of range, suffering no damage from the thirty-three rounds fired. Next, five MTBs of the Dover and Ramsgate flotillas attacked, but it was obvious that they would be unable to break through the strong screen of destroyers and E-boats protecting the three big ships without additional support, and they were reduced to launching hopeful torpedo shots at extreme range: unsurprisingly, all of these missed.

In a rare act of British initiative, Wing Commander Constable-Roberts, Flag Officer Dover's air liaison officer, had ordered the six obsolete Swordfish biplane torpedo bombers of the Fleet Air Arm's No. 825 Naval Air Squadron, based at RAF Manston in Kent, to be armed and brought to immediate readiness after hearing the first reports of unusual activity from the coastal radar stations. These old aircraft were not expected to survive a daylight raid on the German squadron; they were only ever intended to be used to drop flares in support of a night MTB attack, on the assumption that the Germans would run the Channel in darkness. Nevertheless, because the other forces earmarked for *Fuller* had been stood down at dawn, there were no other options available for an immediate response. Ramsey was fully aware of the vulnerability of the Swordfish and, after some soul-searching, made an agonized telephone call to the First Sea Lord, Sir Dudley Pound, to request his advice. Pound replied that 'the navy would attack the enemy whenever and wherever he be found', and Ramsey reluctantly ordered the attack to go ahead.[26]

Although No.11 Group had promised three squadrons of Spitfires as a fighter escort and another two squadrons in a flak-suppression role, poor communication between Flag Officer Dover and Headquarters No.11 Group meant that only the ten Spitfires of No. 72 Squadron, commanded by Squadron Leader Brian Kingcombe, arrived at the rendezvous overhead Manston. Like most other RAF units, No.72 Squadron had not been briefed about the mission and Kingcombe had no inkling of the scale of opposition that would be encountered. As the German ships were already passing abeam Ramsgate, the Swordfish could not afford to wait for the rest of the escort and had to press on, but they were intercepted by German fighters with twelve miles still to run. Although Kingcombe's Spitfires quickly engaged the Bf 109s and Fw 190s, the six Swordfish were all hacked out of the sky by either the fighters or the barrage of anti-aircraft fire, as they attacked at low level and a speed of just eighty knots. No damage was inflicted on the warships, and only five of the eighteen aircrew involved survived to be rescued by the withdrawing MTBs. The mission lasted less than twenty minutes from the time of take-off until the last Swordfish crashed into the sea. Ramsay wrote: 'In my opinion, the gallant sortie of these six aircraft constitutes one of the finest exhibitions of self-sacrifice and devotion to duty the war had ever witnessed'. Even the austere Ciliax was moved to acknowledge 'the mothball attack of a handful

of ancient planes, piloted by men whose bravery surpasses any other action by either side that day'.[27] The commanding officer, Lieutenant Commander Eugene Esmonde, was awarded a posthumous Victoria Cross. Ironically, he had visited Buckingham Palace the day before the Channel Dash to receive the Distinguished Service Order for the leading role he had played in crippling the *Bismarck* eight months previously.

*The Fairey Swordfish was too vulnerable to be effective in daylight operations.*

The final throw of the dice for British naval forces was represented by six elderly destroyers of the Harwich flotilla, led by Captain Mark Pizey in HMS *Campbell*. This force had been stood down in the morning and was consequently off station practising gunnery in the North Sea when it received the '*Executive Fuller*' transmission. Pizey realised that he was unlikely to be able to intercept the German squadron in time, but he managed to get into a position to deliver a torpedo attack by steaming south at full speed across two un-swept minefields: unfortunately, all of the salvoes missed, while counter-fire from *Gneisenau* and *Prinz Eugen* severely damaged *Worcester*, although the destroyer eventually limped back to port. In a good illustration of the way that the fog and friction of war affected both sides in the grey winter light and poor weather, two RAF Wellingtons bombed and near-missed another of the destroyers, *Walpole*, but were driven off by the Messerschmitt Bf 109s of *Jagdgeschwader 2* before they could do serious damage. *Walpole* prudently withheld her fire as the German fighters then provided a close (and disconcerting) escort for the British ship, in the mistaken assumption that it was a *Kriegsmarine Zerstorer*, until they reached the limit of their endurance and peeled off to return to France.[28] Meanwhile, the German destroyer *Hermann Schoemann* was firing frantically at a *Luftwaffe* Dornier Do 217, which repeatedly bombed her and then raked her with machine-gun fire.[29] Captain Wright of *Mackay* reported that 'the mixture of aircraft in our vicinity was extraordinary… some aircraft thought we were friendly; some of our own thought we were hostile. We, on our part, opened fire on aircraft later recognised as friendly'. He added, with characteristic understatement: 'The aircraft on both sides must have found the situation rather confusing'.[30]

The three Beaufort squadrons of Coastal Command had been expected to pose the greatest threat to the German squadron. No. 217 Squadron was first into the fight, but could only muster four serviceable aircraft to fly to Manston to meet its fighter escort. Their leader, Squadron Leader Carson, had not been briefed before departing Thorney Island and did not know what his target was, or even what the codeword *Fuller* meant. Headquarters No. 16 Group, Coastal Command, intended to pass

the details to him in morse over wireless-telephony ('W/T') when the Beauforts reached Manston, but was not aware that No.217's Beauforts had been converted to R/T. After circling the airfield for some time in puzzled silence, Carson landed and made his way to Manston's operations room to ask the station commander if he knew what his mission was. After getting airborne again, he failed to make radio contact with the other three Beauforts, which were still patiently waiting in the overhead; nevertheless, they followed as he set course towards the battle squadron's last reported position. The four aircraft finally found the German ships at 15.40 hours and began their attacks, joined eventually by three more Beauforts that had been made ready at Thorney Island in the interim. These had also been kept in ignorance about *Fuller* and been forced to land at Manston to be briefed. By now, the visibility was extremely poor and no hits were scored: one aircraft was shot down by the fighter screen. Most of the other Beauforts were badly shot-up by the German ships' defences, but all managed to make it back to Manston, including Pilot Office Etheridge, whose aircraft suffered further severe damage from the Ramsgate anti-aircraft batteries, which 'appeared to be shooting at everything coming up the Channel'.[31]

No. 42 Squadron's preparations had also been chaotic. Its move south from Leuchars had been delayed by poor weather and only nine of its fourteen aircraft were armed. Consequently, the other five aircraft were ordered to land at North Coates, a Coastal Command airfield, to be loaded with torpedoes, but the heavy snowfall on the East Coast meant they had to divert to Coltishall, a fighter station. In theory, a specialist Mobile Torpedo Unit was available to transport their weapons from North Coates to Coltishall, but what was subsequently christened the 'Immobile Unit' took so long to bring to readiness and deploy that this plan had to be abandoned, and only the original nine aircraft could be used.[32] These rendezvoused at Manston with eleven Hudsons of No. 407 Squadron, Royal Canadian Air Force, and twenty Spitfires to act as fighter escort, but neither of the bomber formations had been briefed about *Fuller* and a farcical situation developed, as each squadron attempted to follow the other in the hope that they would be led to a suitable target. Eventually, the Beaufort's leader, Squadron Leader Cliff, lost patience and set course for the Channel to see what he could find.

Five Hudsons continued to hold at Manston until they ran short of fuel and returned to RAF Bircham Newton in Norfolk, but the other six followed Cliff. However, they soon lost contact with the Beauforts in heavy rain, but picked up some blips on their ASVs and dived through low cloud to attack some German *Zerstorers* and E-boats, losing two of their number to the heavy *flak* barrage.[33] Meanwhile, Cliff was taken aback to stumble across a powerful battle-fleet and its escorting fighter umbrella, steaming east at thirty knots: he later telephoned No.16 Group to complain – not unreasonably in the circumstances - that 'I was expecting a coastal convoy. Why was I not told about the bloody great battleships'?[34] In the ensuing confusion, three crews mistook the retreating Harwich destroyer flotilla

for elements of the German squadron and attacked the British ships, but fortunately, all missed, as did the four aircraft that correctly identified and launched their torpedoes against the German vessels.

It was a similar story for No. 86 Squadron, the last Beaufort squadron to go into action following a staged deployment from its home base at St. Eval. The leader waited for the promised fighter support until dusk was beginning to fall, when he decided he would have to complete the mission without an escort. Two of the Beauforts either flew into the sea or were shot down by German fighters on the way to the target, and none of the survivors was able to find the German squadron in the worsening weather.

Because of its initial lack of readiness, RAF Bomber Command's response was slow, and further delays were caused by the requirement to re-arm the aircraft that were available. The 100 bombers retained by Baldwin at readiness for *Fuller* had been loaded with 500-lb semi-armour piercing (SAP) bombs, the only weapons likely to inflict fatal damage on heavily armoured warships. However, these bombs had to be dropped from a minimum of 7,000 feet in order to fuze properly and by noon, the cloud-base was already less than 1000 feet. Therefore, the decision was made to load aircraft with general purpose (GP) bombs as they were brought to readiness, as these weapons could be dropped at low-level. This meant that the German ships were unlikely to be sunk if they were hit, but significant blast damage might still be caused to their superstructures. This decision was partially countermanded when it was realised that the 100 aircraft already armed with SAP could not be de-bombed, rearmed with GP and still take-off in time to catch the German squadron before nightfall. Accordingly, these were dispatched with their original weapon-loads in the hope – which was not to be fulfilled - that they might find a break in the clouds.

Two hundred and forty-two bombers eventually took off in three waves. Ninety-two Wellingtons, sixty-four Hampdens, thirty-seven Blenheims, fifteen Manchesters, thirteen Halifaxes, eleven Stirlings and ten Bostons were employed in what was the largest daylight bombing operation of the war to date,[35] but only thirty-nine of the bombers were able to find the German ships in low cloud, rain and gathering darkness: actual conditions were reported as ten-tenths cloud cover at six hundred feet with visibility less than 1,400 yards in drizzle and rain.[36] In these circumstances, the heavy, four-engined, Halifaxes and Stirlings were simply too unwieldy to manoeuvre into a position to attack and only the medium and light bombers claimed to have bombed the warships. The experience of No. 241 Squadron, based at RAF Stradishall, was typical. It was preparing for a night raid on Germany when it received the declaration '*Executive Fuller*'. Twelve of its Wellingtons took off at 14.45 hours, but formation keeping proved impossible as the cloud base dropped to less than 500 feet, and the squadron quickly split into individual elements. Only one aircraft claimed to have seen the German ships and the Wellington flown by the squadron's commanding officer, Wing Commander Macfadden, failed to return. The Operational

Log Book (Form 540) commented laconically that 'the squadron had a very unsuccessful day and lost the Commanding Officer'.[37]

Bomber Command lost fourteen other aircraft, predominantly to the *Luftwaffe's* fighter umbrella, as the poor weather also hampered the anti-aircraft gunners on the ships, who found it difficult to track attacking aircraft as they emerged through the mist and rain. Another bomber crashed while attempting to land back at its base. Unfortunately, but not surprisingly, only minor splinter damage was caused by these gallant but uncoordinated attacks, although the fighting was so intense that the sailors had to cool the ships' flak guns by pouring buckets of water over them and at least one gun-barrel burst.[38] Ciliax acknowledged the gallantry of the Bomber Command crews in his post-action report: 'From about 12.45 until 6.30 p.m. massed and individual attacks from aircraft of all types. Impressions: Dogged aggressive spirit, very plucky flying'.[39]

Fighter Command flew 398 sorties during the operation. Although - with the benefit of hindsight - the poor coordination of fighter escorts appears culpable, the context has to be taken into account; arrangements were inevitably *ad hoc*, given the secrecy and lack of available information available, and the short planning time following the late declaration of '*Executive Fuller*'. Commendably, most of the leaders of the fighter escorts acted on their own initiative if they failed to make contact with their designated attacking force, making their own way to the scene of action to try and disrupt or disturb the German fighter screen.

Undoubtedly, the losses to bomber aircraft conducting piecemeal attacks over several hours would have been far higher if the fighters had not flown to the 'sound of the guns'. Post-war analysis indicates that Fighter Command shot down sixteen German aircraft for the loss of seventeen of its own aircraft, a commendable effort given the technical superiority generally enjoyed by the German fighter force, although in line with Galland's directive, the *Luftwaffe's* priority targets were the RAF's bombers rather than its fighters. Twenty-one Spitfire squadrons were employed and these generally held their own, losing just five aircraft between them, but the four Hurricane squadrons lost five aircraft and No. 137 Squadron was particularly roughly handled, losing four of the eight Whirlwind long-range fighters that it committed to battle. These losses were a simple reflection of the relative capabilities of the aircraft involved; in air combat, even ostensibly small qualitative advantages invariably have a disproportionate affect on the outcome.

Just as it appeared that the German ships would escape entirely unscathed, they ran into a series of minefields that had been laid by the Hampdens and Manchesters of Bomber Command's No. 5 Group. Ninety-eight mines had been dropped between 3 and 9 February in anticipation of a German break-out, and a further thirteen were laid in the path of the battle-squadron on 12 February itself.[40] *Scharnhorst* hit two mines off Flushing and was forced to stop for repairs; in accordance with the *Cerberus* directive, the rest of the ships pressed on without her, but

she was eventually able to get under way again and managed to make harbour the following morning, albeit with serious damage. *Gneisenau* also struck one of the air-dropped mines at Terschelling and was forced to stop for half an hour for repairs, but her damage was much lighter. The mine-strikes caused concern and confusion within the German force and Ciliax was forced to transfer his flag twice, in anticipation that one or both of the battlecruisers might have to be left to their fate, much to the derision of the respective ships' companies – he was a highly unpopular commander. However, the German squadron was shrouded in the darkness of the long winter night and remained undetected by the British while it was potentially vulnerable to attack. By 09.00 hours on 13 February, all three big ships had berthed safely in Wilhelmshaven, allowing Ciliax to signal Admiral Saalwächter: 'It is my duty to inform you that Operation *Cerberus* has been successfully completed'.

**The Reckoning**

Despite the intensity of the fighting, casualties on both sides – while not insignificant - were relatively minor in the context of an existential war of national survival. The British lost a total of forty-two fighters and bombers, shooting down sixteen *Luftwaffe* aircraft in return: eleven of the German pilots were killed. No British ships were lost, although HMS *Worcester* was severely damaged and twenty-seven of her crew were killed by enemy shell-fire. On the German side, in addition to the mine damage to the capital ships, the torpedo boats *T13* and *Jaguar* received light damage from bomb splinters and machine-gun fire, suffering one killed and two wounded; another sailor on *Prinz Eugen* was also killed by bomb splinters.

Paradoxically, the very success of the Channel Dash resulted in the *Scharnhorst*, *Gneisenau* and *Prinz Eugen* being neutralized as an immediate threat to Britain's supply lines, the German Naval Staff itself characterizing the outcome as a 'tactical victory, but a strategic defeat'.[41] The ships were no longer a menace to the Atlantic convoys at Wilhelmshaven, instead being earmarked for employment in Hitler's 'zone of destiny' in Norway, while on the night of 26/27 March - a month after *Cerberus* - the St. Nazaire raid was successful in blocking off the last French port capable of handling the *Kriegsmarine's* capital ships, effectively removing any lingering threat to the Atlantic. Moreover, the German ports did not provide the expected safe haven from British attack and all three ships were crippled or destroyed in the aftermath of the Channel Dash: *Scharnhorst* was in dock for six months due to the mine-damage and was then caught by the Home Fleet and sunk off the North Cape when she did sail; *Gneisenau* received a direct hit during an RAF bombing attack on the night 26/27 February, just a fortnight after the Channel Dash, killing 116 of her crew and causing so much damage that she was never returned to service, instead being filled with concrete and used as a static fort; and *Prinz Eugen* had her stern blown off by a British submarine three days later, taking no further effective part in the war, but surviving as a hulk to be sunk in a post-war nuclear test in the Pacific.

Therefore, in strictly strategic and material terms, the outcome of Operation *Cerberus* was highly advantageous to Britain; but contemporaneous perceptions were very different. Whereas all Germany rejoiced and the operation was celebrated by the propaganda machine as an unprecedented triumph, in Great Britain, the sense of national shame was profound, and this had inevitable political consequences. Churchill was taken aback by the scale of popular anger; it seemed that by this stage of the war, while the British public was inured to a seemingly unbroken run of defeats on land, it was not prepared to accept humiliation in a domain that it considered to be its birthright. An editorial in *The Times* asserted that: 'Vice-Admiral Ciliax has succeeded where the Duke of Medina Sidonia failed. Nothing more mortifying to the pride of our sea power has happened since the seventeenth century',[42] while the *News Chronicle* characterized the operation as a story of 'individual courage and steadfast devotion to duty', but 'not one that reflects much credit on those primarily responsible'.[43]

The government came under blistering attack in the Commons from all sides of the House, where the Channel Dash was described as a 'major blunder'[44] and, unusually, the Admiralty and Air Staff were openly criticised in Parliament. Churchill was forced to convene a formal commission of enquiry, but ironically, the furore about Operation *Fuller* was politically beneficial in the sense that its reverberations masked the impact of the fall of Singapore two days later, on 15 February 1942. This was a disaster of an entirely different order of magnitude, with 150,000 British and Commonwealth troops surrendering to a much smaller Japanese force in the largest capitulation in British military history. In his history of World War 2, Churchill noted that by comparison, the Channel Dash was 'an episode of minor importance as I judged it', but acknowledged it as 'arousing even greater wrath and distress among the public' and he accepted that 'it is certainly not strange that public confidence in the Administration and its conduct of the war should have quavered'.[45] The damage to the reputation of the armed forces in an alliance context was also significant. Churchill conducted an elaborate correspondence with President Roosevelt to convince him that the Channel Dash did not represent another strategic defeat and was duly grateful for the President's assurance that he would couch a radio address to the American nation in emollient terms.[46]

**The Post-Mortem**

The Board of Inquiry was convened under Mr Justice Bucknill on 16 February 1942 and delivered its findings in early March;[47] these were not published due to security considerations, but the Deputy Prime Minister, Clement Atlee, made a statement to the House on 18 March, explaining that 'the general findings do not reveal that there were any serious deficiencies in either foresight, co-operation or organisation between the Services concerned and their respective Commands'.[48] Unsurprisingly, this was greeted with widespread scepticism and, at a secret session of the House of Commons on April 23, Churchill was forced to give more

details in an attempt to suppress further dissent. He acknowledged that he had been 'impressed by the shock which the passage of these two ships through the Channel gave to the loyal masses of the British nation'[49] and won over the House by using the details of the Admiralty's intelligence appreciation to argue that the German operation had not come as a surprise, asserting that the British forces were as well-prepared as they could have been, but there were simply not enough of them, because of commitments elsewhere. Most of the torpedo-bombers were required in the Mediterranean, the majority of destroyers had to be used for convoy escort duties in the Atlantic and the few capital ships available, after the requirements of the Mediterranean and the Far East had been met, could not be employed in the Channel because of the danger of air attack.[50] While Churchill's statement won the debate and his administration survived to fight another day, he was certainly disingenuous in suggesting that the actions of the limited forces that were available were as well-led and well-organised as they could have been.

**An Inevitable Failure?**

Given the scarcity of the resources committed to *Fuller*, it is highly unlikely that the operation could ever have succeeded without a mixture of extraordinary good fortune and the closest possible inter-service and inter-command cooperation. Unhappily, a chain of bad luck, poor decision-making and incompetence delayed the detection of the break-out, and this ensured that the British reaction was uncoordinated and reactive, with weak force elements being committed to battle as they became available; the piecemeal attacks that ensued were easily countered by the powerful, concentrated and well-integrated German force. It has even been argued that British planners tacitly accepted Operation *Cerberus* as a *fait accompli*, as they acknowledged that insufficient forces were available to prevent a break-out, but also knew that this would not represent an entirely undesirable strategic outcome.[51] If this really was an acknowledged but unspoken belief held by Air Staff and Admiralty planners, then it was - at best - politically naïve, and represented a complete misreading of the likely public reaction.

Although the inadequacy of the available forces was largely a consequence of strategic realities, the incoherence between the RAF and the RN, and between the RAF commands, was far less excusable. This was partially structural, because of the organisation of the system of command, but was also a result of agency, in terms of the personalities involved. The initial point of failure was the lack of an overall authority responsible for the execution of *Fuller*; as the Bucknill Report noted, this compromised any realistic prospect of the achievement of unity of purpose. This was compounded by the lack of trust and communication between commands. The demarcation of responsibilities between Coastal Command and the RN had been an enduring source of friction and, although a Joint Headquarters had been established as early in April 1941, ultimately delivering a high level of integration, the lack of effective cooperation during *Fuller* indicates

that even sensible organisations and processes will be inadequate if the will to make them work properly is absent, and it is very apparent that the power of personality was critical. While Ramsey was an outstanding naval leader, he was extremely sceptical about the support that he could expect from the RAF. In 1940 he had commanded Operation *Dynamo*, the Dunkirk evacuation, where he had been disappointed with the RAF's contribution. Although this assessment was incorrect and unfair,[52] it meant that he was predisposed to doubt the RAF's commitment to maritime operations and he was highly critical of the air force in the aftermath of *Fuller*. He was especially bitter about the role of Leigh-Mallory and No.11 Group, particularly because of the failure to provide the full escort promised for the Swordfish attack.[53] The character of the AOC-in-C Coastal Command, Air Marshal Sir Philip Joubert de la Ferte, was also unhelpful, as he was unable to maintain the generally harmonious relationship with theRN that his predecessor, Air Marshal Sir Frederick Bowhill, had established. Ironically, the release of the full details of the Bucknill Report in 1946 was used as ammunition in a further, post-war, inter-service battle for control of land-based maritime air assets.

However, the most toxic relationships existed not between the RAF and the RN, but between the different RAF commands and commanders. Joubert and Leigh-Mallory were both 'career officers of the old-fashioned type'[54] and the tripartite participation of elements of Bomber, Coastal and Fighter Commands without the nomination of one as *primus inter pares* was disastrous. Each essentially represented the personal fiefdom of its commander and there was a marked reluctance to pool their resources for a common purpose. In the wake of *Fuller* - and the criticisms implicit in the Bucknill Report - Joubert proposed that Coastal Command should take the lead in maritime operations involving units from the other commands. However logical the suggestion, it was rejected out of hand by Leigh-Mallory, who perceived it as empire-building. The No. 11 Group AOC-in-C – described by a senior subordinate as 'a pompous, ambitious fuddy-duddy'[55] - had already demonstrated during the Battle of Britain, as AOC-in-C No.12 Group, that he was hardly a team player. Now, he insisted on perpetuating the inadequate, three-pronged approach to joint operations that had been found so wanting during *Fuller*. The Air Staff was not inclined to impose a solution, and it was not until Joubert and Leigh-Mallory were replaced that a satisfactory inter-command arrangement was brokered, enabling later operations to be more successfully coordinated. The misplaced secrecy that so hindered air operations was also entirely symptomatic of the organisational preference to centralise control - at all costs and at the highest level - that so pervaded the highest echelons of RAF command at this stage of war.

Although Bomber Command had been the most reluctant participant in Operation *Fuller*, ultimately it made the greatest contribution to the favourable strategic situation that was finally achieved. It was the incessant bombing attacks – mounted from the date of the *Scharnhorst* and

*Gneisenau's* arrival in March 1941 to the very eve of their departure – that made Brest untenable for the German ships and precipitated the decision to withdraw them to Wilhelmshaven, thus simplifying Britain's strategic dilemma by corralling the entire German fleet at a single location; and it was Bomber Command's indirect air mining operations that inflicted the only significant damage on the German ships, negating them as a threat in the immediate aftermath of the operation.

In the final analysis, the ultimate failure of *Fuller* is attributable to the British high command's lack of agility. As foreseen by the Germans, after the initial shock, the British were simply unable to regain their balance and take the initiative. The last word may be left to Ciliax, whose summary of the operation is apt:

*The British were surprised, which led … to desultory and precipitate actions by their forces. During a period spanning one and a half hours after the first attack, no English aircraft succeeded in reaching the Squadron due to our excellent fighter cover.*[56]

## Notes

[1] A painting by Robert Taylor.
[2] Adolf Galland, *The First and the Last*, 3rd edn., (London: Methuen, 1973),167.
[3] Appropriately enough, as in Greek mythology, Cerberus was the three-headed dog that guarded the gate to Hades.
[4] John Deane Potter, *Fiasco: the break-out of the German Battleships*, (London: Heinemann, 1970), 200.
[5] Martin Middlebrook and Chris Everitt, *The Bomber Command War Diaries: An Operational Reference Book* (London: Penguin, 1985), 235.
[6] Stephen Roskill, *The War at Sea, 1939-45*, 3 vols., (London: HMSO, 1954), Vol.1., 150.
[7] Galland, *First*, 144.
[8] Boyd characterises the decision-cycle as the 'OODA loop', with the steps running from 'Observe', through 'Orient' and 'Decide' to 'Act'. Robert Coram, *Boyd: The Fighter Pilot who Changed the Art of War* (New York: Little Brown and Company), 25.
[9] Photographs courtesy of the *RAF* and *RN* websites, **http.//www.raf.mod.uk and http.//www.royalnavy.mod.uk**.
[10] The British acronym for 'Enemy Boats', the German fast attack craft also and more correctly known as S-boats, for the German *Schnellbooten*.
[11] AIR 14/823 Operation 'Fuller' 1941 Apr. 1942 Oct. IIH/241/3/733 BC/S22200/22.
[12] Peter Kemp, *Escape of the Scharnhorst and Gneisenau*, (London: Ian Allan, 1975), 26.
[13] *Ibid*.
[14] Owen Thetford, *Aircraft of the Royal Air Force since 1918*, 4th ed. (London: Putnam, 1968), 87.
[15] Kemp, Escape, 26.
[16] Middlebrook, *Bomber Command*, 238.
[17] AIR 16/403 Operation 'Fuller' 1941 Apr.-1942 Apr AHB Reference and Fighter Command File Reference: IIH/240/4/149 FC/S24043.
[18] Photographs courtesy of **http.//www.marine.de**.
[19] Galland, *First*, 144.
[20] *ibid*, 146.
[21] *ibid*, 150.
[22] *ibid*, 146.
[23] Kemp, *Escape*, 35.
[24] Terence Robertson, *Channel Dash: The Drama of Twenty-four Hours of War* (Quality Book Club: London, 1958), 60.
[25] Kemp, *Escape*, 60.
[26] *The Channel Dash Association*, **http.//www.channeldash.orgswordfish17.**

htm1, accessed 18 Aug 09.
[27] Potter, *Fiasco*, 189.
[28] Robertson, *Channel Dash*, 147.
[29] Potter, *Fiasco*, 116.
[30] Robertson, *Channel Dash*, 147.
[31] *ibid*, 141.
[32] *Robertson, Channel Dash*,
[33] Potter, 139.
[34] *ibid*, 192.
[35] Middlebrook, *Bomber Command*, 235.
[36] Kemp, *Escape*, 71.
[37] Potter, *Fiasco*, 143.
[38] *ibid*, 168.
[39] *ibid*,146.
[40] Roskill, *War at Sea*, 150.
[41] *Ibid*, 159.
[42] *Ibid*.
[43] Robertson, *Channel Dash*, 191.
[44] *Ibid*, 170.
[45] Winston Churchill, *The Second World War, Vol. 4, The Hinge of Fate* (Chartwell Edn., London: The Educational Book Company, 1951), 63.
[46] Churchill, *Hinge of Fate*, 90.
[47] ADM 116/4528 Escape of German battle cruisers GNEISENAU and SCHARNHORST and heavy cruiser PRINZ EUGEN up the Channel: Operation 'Fuller' and Board of Enquiry. 1941-1942.
[48] Robertson, *Channel Dash*.
[49] Churchill, *Hinge of Fate*, 90.
[50] *Ibid*, 91.
[51] Robertson, *Channel Dash*, 190.
[52] Roskill, *War at Sea*, 67.
[53] Robertson, *Channel Dash*, 188.
[54] Potter, *Fiasco*, 192.
[55] *Ibid*.
[56] *Ibid*, 146.