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H. M. SHIPS DAMAGED OR SUNK BY ENEMY ACTION

3rd. SEPT. 1939 to 2nd. SEPT. 1945

1952

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CONTENTS

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Director of Naval Construction,
Admiralty.

AMENDMENTS

Amendment No.	C.A.F.O. "P" No.	Date of Insertion in this copy	Initials

Admiralty,

1952.

P.02159/48

C.B.4273(52), H.M. Ships Damaged or Sunk by Enemy Action 3rd Sept. 1939 to 2nd Sept. 1945, having been approved by My Lords Commissioners of the Admiralty is hereby promulgated for information and guidance.

C.B's 4273(1), (2), (3), (4) and (5) are hereby superseded and all copies are to be destroyed, certificates of destruction being forwarded through the usual channels.

By Command of Their Lordships,

J.S. Lang

INTRODUCTION

The information in this book is set out as a series of "incidents", those which occurred to Battleships are collected in the section headed BATTLESHIPS and those which occurred to Cruisers in the section headed CRUISERS, and so on. Within each section the incidents are given in order of date and the year is printed at the head of each page.

Each incident is dealt with in the following order;

(a) Name of the Ship and nature of attack.
(b) Date, and time out of action as a result of the attack.
(c) Brief description of the incident.
(d) Fighting efficiency after the attack.
(e) Remarks, lessons learned.

It is a complete summary as far as is known of War Damage to H.M. Ships in the Second World War and is based on reports in the Admiralty. Any additional information known to readers of the book that should be incorporated, or any corrections required to the text should be forwarded to the Secretary of the Admiralty through the usual channels and will be welcomed.

2. With the release of British Naval Prisoners of War, additional information became available for some ships damaged in the earlier stages of the war, this and other information has been included.

3. The report number (D.N.C.4B/R. or 6/R. series) is quoted below the name of the ship for those incidents which have been described in detail in Damage Reports prepared by the Naval Construction Department. Such reports have been prepared only for those incidents considered to be of particular technical interest, and for which the data supplied by the Commanding Officers are sufficiently comprehensive.

4. For completeness the Appendix gives a brief summary of incidents known in the Naval Construction Department in which H.M. Ships were sunk or damaged by British or Allied weapons. It should be noted that these incidents have not been taken into account in the "Analysis of Loss and Damage" (see paragraph 6 and page) or included in the General Alphabetical Index.

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5. The General Alphabetical Index covers all the major war vessels referred to and is subdivided to indicate the type of weapon responsible for the damage.

6. The "Analysis of Loss and Damage by Enemy Action 1939 - 1945", to be found on page immediately following this introduction, has been made for each main type of ship and includes all ships of that type known to have been attacked by the enemy. The number of each type which was lost, seriously damaged or slightly damaged in each year, up to 1945, has been indicated; corresponding numbers are also shown for the complete period 1939 - 1945.

When considering this analysis it should be noted that:-

(a) No differentiation has been made between the various sizes of weapon, their method of actuation, or methods of attack employed.

(b) No discrimination has been made between ships of the same general type on account of varying size, age or protection.

(c) No consideration has been given to the tactical issues involved in individual incidents or the losses sustained by the enemy forces.

(d) Submarines and all combined-operations and small craft have been omitted.

(e) Ships listed in the appendix have not been included in this Analysis.

(f) Unless otherwise stated, the "Time Out of Action" quoted throughout, is the actual period from the date of damage until the ship was fully repaired and 100% operational. This information has been extracted from the weekly lists issued by Dockyard Department. "Nil" means either that the ship was not undergoing repairs for a sufficient time for her name to appear in the Dockyard Lists, or that the work was carried out by the Ship's Staff, by Depot Ship, or by a foreign dockyard which did not record the time taken.

ANALYSIS OF LOSS AND DAMAGE BY ENEMY ACTION

1939 to 1945

Type of Ship	Nature of Casualty	Nature of Attack: Shell							Bomb							Mine							Torpedo						
		1939-40 No.	1940-41 No.	1941-42 No.	1942-43 No.	1943-44 No.	1944-45 No.	1939-45 No.	1939-40 No.	1940-41 No.	1941-42 No.	1942-43 No.	1943-44 No.	1944-45 No.	1939-45 No.	1939-40 No.	1940-41 No.	1941-42 No.	1942-43 No.	1943-44 No.	1944-45 No.	1939-45 No.	1939-40 No.	1940-41 No.	1941-42 No.	1942-43 No.	1943-44 No.	1944-45 No.	1939-45 No.
Capital Ships	Sunk	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3	-	-	-	4
	Serious Damage	-	1	-	-	1	-	2	-	2	3	-	1	-	6	1		2		2		5	1	2	2	-	-	-	5
	Slight Damage	2	1	-	-	-	-	3	6	5	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aircraft Carriers	Sunk	1	-	-	-	-	-	1	-	-	1	-	-	-	1	-	-	-	-	-	-	-	1	-	3	1	-	-	5
	Serious Damage	-	-	-	-	-	-	-	-	5	1	1	-	3	10	-	-	-	-	1	-	1	-	-	-	1	1	1	3
	Slight Damage	-	-	-	-	-	-	-	1	2	1	-	-	3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cruisers	Sunk	-	-	3	-	-	-	3	1	4	3	1	1	-	10	-	-	1	-	-	-	1	1	1	9	-	2	-	13
	Serious Damage	2	3	2	-	1	1	9	7	16	6	3	6	4	42	2	2	2	-	2	-	8	1	8	5	7	2	1	24
	Slight Damage	4	5	5	2	5	1	22	17	14	8	1	3	2	45	1	-	1	-	-	-	2	-	-	-	-	-	-	-
Destroyers	Sunk	5	-	4	4	-	-	13	13	11	14	2	4	-	44	6	4	3	-	4	1	18	7	3	15	12	15	-	52
	Serious Damage	4	3	14	8	6	5	40	28	21	13	7	8	4	81	3	16	5	2	6	3	35	3	2	3	4	2	1	15
	Slight Damage	11	8	12	11	27	5	74	44	36	23	8	6	1	118	-	4	-	-	-	-	4	-	-	-	1	1	-	2
Sloops Corvettes Frigates and Minesweepers	Sunk	-	-	1	1	-	-	2	3	6	4	2	-	1	16	2	2	2	3	6	2	17	1	3	7	8	19	12	50
	Serious Damage	-	-	1	1	-	-	2	9	8	5	4	2	-	28	1	8	3	2	12	13	39	-	1	-	4	6	8	19
	Slight Damage	-	1	2	1	5	1	10	7	11	7	4	3	1	33	1	2	-	1	4	2	10	-	1	-	-	-	1	2

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
HOOD 26th Sept., 1939	One Direct Hit with Bomb	Nil	HOOD was hit by a bomb which struck the top of the port bulge a glancing blow and caused minor damage to the bulge plating. No damage was caused to the side armour. Bulge compartments in the vicinity of the damage were flooded. Fighting Efficiency - Not impaired.
ROYAL OAK 14th Oct., 1939	Four Contact Torpedoes Fired from Submarine	Sunk	ROYAL OAK was anchored at Scapa Flow when an explosion occurred well forward; this was followed 12 minutes later by three other explosions, all to starboard, abreast the engine room, forward boiler room and 'A' and 'B' magazines. The ship heeled quickly to about 45 degrees remaining there for about 2 to 3 minutes, and then sank, 13 minutes later, in 15 fathoms. REMARKS This incident emphasised the need for ships to be kept watertight up to about 8 feet above the deep waterline.
IRON DUKE 17th Oct., 1939	Two Near Misses with delay action fuzed Bombs, judged to have been 250 kgm.	Beached	IRON DUKE was moored at Scapa Flow when two near miss bombs caused flooding of 'C' boiler room and 'Q' and 'Y' magazines. The ship was beached at Ore Bay but subsequent slow flooding filled all compartments abaft 'B' boiler room. IRON DUKE was moved to Longhope on the 14th December and re-beached on the 26th January 1940 where she was aground at all tides. Note The ship had been demilitarized when this incident occurred.

BATTLESHIPS - 1939

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NELSON 4th Dec., 1939 D.N.C.4B/R2	One Magnetic Mine in 20 fathoms Charge 1500 lbs. T.N.T.	7 months	NELSON was entering Loch Ewe at 13 knots when an explosion occurred forward under the bottom on the starboard side. The outer bottom plating and framing for 70 feet on the starboard side was set inboard a maximum of 4 feet and ruptured in several places. Flooding extended for 140 feet and the ship heeled 3 degrees to starboard. No major shock damage occurred to main machinery. Loading arrangements of the main armament were seriously damaged by shock and the torpedo armament was out of action due to flooding. Fighting Efficiency - Seriously impaired. The main and torpedo armament were out of action. The speed was reduced to 10 knots due to flooding. NELSON was able to steam in calm weather at 14 knots from Loch Ewe to Portsmouth - about 1,000 miles - after temporary repairs had been made. REMARKS This incident emphasised the need for modification of the pumping arrangements in this class of ship.
BARHAM 28th Dec., 1939 D.N.C.4B/R5	One Contact Torpedo Fired from Submarine	6 months	**BARHAM** was operating at 19 knots off the west coast of Scotland when a torpedo struck the port side abreast 'A' and 'B' shell rooms. The bulge structure was wrecked over an area of 32 feet by 17 feet and the main protective bulkhead was ruptured and forced inboard about 6 feet. The forward magazine group and most compartments abreast the hit were flooded. An immediate 7 degree heel to port was corrected by the transference of oil fuel. No damage was caused to the main machinery or to the guns or mountings of the main and secondary armament. Fighting Efficiency - Seriously impaired. 'A' and 'B' turrets were out of action due to flooding of their magazines. The speed was temporarily reduced to 10 knots but after 1½ hours this was increased to 16 knots. REMARKS As indicated on experimental work this incident confirmed that vent plates in underwater protection systems do not reduce the damage caused by an underwater explosion.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
IRON DUKE 16th March, 1940	Two Near Misses with delay action fuzed Bombs	Indeterminate (Ship already beached)	IRON DUKE had been beached at Longhope and was being used as an accommodation ship and supplementary defence unit for Scapa Flow when she was attacked by enemy aircraft. Two near miss bombs caused slight buckling of the hull plating in way of the bilge keel.
RODNEY 9th April, 1940 D.N.C.4B/R8	One Direct hit with delay action fuzed Bomb, judged to have been 500 kgm A.P. type	Nil	RODNEY was operating off the Norwegian coast, when a bomb struck the shelter deck between the funnel and the bridge. The bomb perforated the upper and main decks and penetrated the 4 inch armoured middle deck where it broke up and partially detonated. Minor damage to the internal structure was caused by blast and splinters. Fighting Efficiency - Slightly impaired. P.1. 6 inch turret was temporarily put out of action.
RENOWN 9th April, 1940 D.N.C.4B/R7	Two Direct hits with 11 inch Shells, neither detonating and possibly one Direct hit with 8 inch shell	1 month including repairs due to own gun blast and heavy weather damage	RENOWN was in action against the SCHARNHORST and HIPPER off the Norwegian coast when she sustained two and possibly three direct hits from shells. One 11 inch shell perforated the main leg of the foremast and passed overboard without detonating. Another 11 inch shell struck aft on the starboard side plating, between the upper and main decks, passed across the ship and out through the port side without detonating. The casing at the top of the forward funnel was split and bulged and it was thought that this may have been caused by a third shell of 8 inch calibre. Fighting Efficiency - Not impaired. REMARKS The value of the tripod mast was indicated

BATTLESHIPS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
RESOLUTION 16th May, 1940 D.N.C.4B/R21	One Direct Hit with delay action fuzed Bomb, judged to have been 100 kgm A.P. type	2 weeks	RESOLUTION was anchored at Tjeldsundet, Norway, when she was hit by a bomb which struck the starboard side of the upper deck between 'X' and 'Y' turrets. The bomb perforated the main and middle decks before finally bursting with partial detonation on the sloping protective deck. Apart from minor effects from blast, structural damage was confined mainly to that caused by the passage of the bomb through the ship. Small fires which were started amongst clothing and bedding were quickly extinguished. Fighting Efficiency - Not impaired. Temporary repairs were affected by the ship's staff and RESOLUTION remained in service for one month before permanent repairs were carried out.
HOOD 3rd July, 1940	Shell "Shorts"	Nil	HOOD sustained splinter damage from "shorts", whilst in action against the French Fleet at Oran. Damage was only of a superficial nature and was confined to fittings and structure above the waterline. Fighting Efficiency - Not impaired.
WARSPITE 8th July, 1940	One Near Miss with direct action fuzed Bomb, judged to have been 100 kgm	Nil	WARSPITE was operating in the Mediterranean when she was damaged by a near miss on the port side abreast No.2 - 4 inch mounting. Minor damage to structure was caused by splinters. Fighting Efficiency - Not impaired.
MALAYA 8th July, 1940	One Near Miss Bomb	Nil	MALAYA was operating in the Mediterranean when a splinter from a near miss bomb cut one of the multicore cables to the forward H.A. director. This affected the telephones, Evershed and firing circuits of the forward H.A. guns until temporary repairs were completed in about half an hour. Fighting Efficiency - Temporarily impaired. Control of the forward H.A. guns was temporarily lost.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
WARSPITE 12th July, 1940	One Near Miss with direct action fuzed Bomb, judged to have been 50 kgm	2 days	WARSPITE was operating in the Mediterranean when she sustained damage from a near miss bomb which burst abreast the flying deck on the starboard side. Minor damage to structure was caused by splinters. Fighting Efficiency - Not impaired. WARSPITE remained in service for one month before permanent repairs were carried out.
RENOWN 24th Sept., 1940	Near Miss Bombs	Nil	RENOWN, was attacked by 40 French planes at Gibraltar and sustained some damage from near miss bombs. Details of the damage are unknown but the ship was able to proceed to sea immediately after the attack. Fighting Efficiency - Not seriously impaired.

BATTLESHIPS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
RESOLUTION 25th Sept., 1940 D.N.C.4B/R51	One Contact Torpedo (French) Fired from Submarine	6 months Repaired in U.S.A.	RESOLUTION was in action off Dakar at 19 knots when a torpedo struck the port side abreast the forward boiler room. The full depth of the bulge structure was wrecked for 50 feet and the inner and outer bottoms were destroyed over a length of 30 feet. The longitudinal protective bulkhead was strained and leaked. In the vicinity of the explosion the bulge compartments were flooded for 80 feet as were most wing compartments up to the main deck level. The forward boiler room and some adjacent compartments on the port side flooded slowly. A heel of 12 degrees to port was corrected by the transference of oil fuel and portable equipment. Two small fires, caused by electrical failures, were quickly extinguished. A fire due to leaking oil fuel was discovered in the forward boiler room, about an hour after the explosion occurred. This fire was extinguished as the boiler room flooded. The main armament was undamaged mechanically but the port battery of the secondary armament was damaged by the heavy column of water thrown up by the explosion. Fighting Efficiency - Seriously impaired. RESOLUTION was forced to withdraw from action as her main armament could not be trained due to the heavy list. The port side secondary armament was out of action. $4\frac{1}{2}$ hours after the explosion, the main engines were temporarily immobilised, due to a failure in the forced lubrication system. REMARKS This incident emphasised the following points:- 1. The importance of maintaining efficient watertight integrity within the ship as secondary flooding greatly increased the effects of the torpedo. 2. Access trunks to important compartments should be large enough for a pump and men to pass through with ease. 3. Corners and edges of compartments should be kept as clear as possible of pipes and fittings to provide ready access for emergency repairs. 4. All watertight electrical fittings within reach of flooding from oil fuel tanks should be made oiltight. 5. Ventilation trunking through the main deck should be filled with watertight valves at this deck. 6. Watertight doors such as those to oil fuel working spaces should be so arranged that flooding from outboard tends to force them on to their seatings.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
BARHAM 25th Sept., 1940	One Direct Hit and One Short with delay action fuzed Shell, judged to have been 9.4 inch One Direct Hit with 6.1 inch direct action fuzed Shell	Nil	BARHAM was damaged by shellfire when in action off Dakar. A 6.1 inch shell struck and detonated on the upper bulge on the starboard side abreast 'B' turret. A hole 4 feet diameter was blown in the bulge plating but otherwise no major damage was caused. The upper and lower bulge compartments abreast the hit were open to the sea. A 9.4 inch shell struck the starboard side of the saluting gun deck, perforated the superstructure and finally detonated on impact with the port paravane davit. Minor damage to structure was caused in way of burst. Another shell, probably 9.4 inch (possibly 15 inch) exploded short, underwater, on the starboard side abreast the funnel. The bulge structure for 7 feet abreast the explosion was forced inboard and sufficiently strained to allow slow flooding of the lower bulge compartments. Fighting Efficiency - Not impaired.
WARSPITE 10th Jan., 1941	One Near Miss with Bomb, judged to have been 1000 kgm	Nil	WARSPITE was operating off Malta when a near miss bomb burst off the starboard side abreast the bow. No major damage was caused to the hull structure but the starboard lower hawse pipe was split, the anchor damaged and the paravane chains severed. Fighting Efficiency - Not impaired.
VALIANT 10th Jan., 1941	Five Near Misses with 500 kgm direct action fuzed Bombs	Nil	VALIANT operating off Malta, suffered superficial splinter damage from five near miss bombs. The yoke on the starboard rudder was loosened and dropped 3/16 inch. Fighting Efficiency - Not impaired.

BATTLESHIPS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
MALAYA 20th March, 1941 D.N.C.4B/R76	One Contact Torpedo Fired from Submarine	13 weeks Repaired in U.S.A.	MALAYA was escorting a convoy at 7 knots off the west coast of Africa when a torpedo struck the port side just abaft the forward bulkhead of the forward boiler room. The bulge structure was destroyed for 35 feet and the inner and outer bottom plating was ruptured over an area of 22 ft. by 10 ft. No major damage occurred to the main longitudinal bulkhead. Five armour plates in the lower tier were displaced. In the vicinity of the explosion the bulge compartments for 100 feet, wing protection compartments for 60 feet and all oil fuel tanks abreast the forward boiler room were flooded. The ship heeled 7 degrees to port but this was corrected to $1\frac{1}{2}$ degrees to port by counter flooding. No serious damage occurred to the main engines, electrical equipment or gun armament. Fighting Efficiency - Not seriously impaired. Although the forward boiler room was not put out of action, and could have been used in an emergency, it was decided as a precautionary measure to temporarily shut down this compartment and to restrict the speed to a maximum of 14 knots.
WARSPITE 22nd May, 1941 D.N.C.4B/R106	One Direct Hit judged to have been 250 kgm S.A.P. type delay action fuzed Bomb	7 months including 4 months permanent damage repairs and refit in U.S.A.	WARSPITE during the evacuation of Crete was hit by a bomb which perforated the starboard side of the forecastle deck, abreast the funnel, and exploded on the upper deck near the ship's starboard side. Extensive structural damage occurred in the vicinity of the burst. The forecastle deck was blown upwards over an area of 90 ft. by 30 ft. and the upper deck was holed for 8 ft. by 6 ft. and blown downwards over an area of 130 ft. by 30 ft. No damage was caused to the main engines but No.3 boiler room was temporarily abandoned due to smoke and fumes. Minor fires in the vicinity of the explosion were quickly extinguished. S.1. twin 4 inch A/A gun was blown overboard and S.3 and 4-6 inch guns were badly damaged. Fighting Efficiency - Seriously impaired. On the starboard side, two of the four guns of the 6 inch battery were completely out of action and the foremost 4 inch mounting was missing. The two remaining 6 inch guns and the after 4 inch gun, although undamaged and in local control, were not considered safe for firing due to structural weaknesses. For the same reason it was doubted whether it would have been safe to have fired the main armament except in an emergency. No.3 boiler room was temporarily out of action.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
VALIANT 22nd May, 1941 D.N.C.4B/R199	Two Direct Hits and One Near Miss with 50 kgm direct action fuzed Bombs	Nil	VALIANT was damaged in a high level bombing attack during the evacuation of Crete. Two direct hits on the port side of the upper deck, near 'X' turret, caused minor structural and splinter damage. A near miss close to the bulge on the port side, abreast the funnel, caused minor structural damage to the upper and lower bulge compartments which, as a result, flooded for 20 feet. Fighting Efficiency - Not impaired.

BATTLESHIPS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
HOOD 24th May, 1941	Probably Two or more Direct Hits with 15 inch delay action fuzed Shell	Sunk	HOOD was sunk in the Denmark Straits off Iceland, whilst in action against the German battleship BISMARCK and the cruiser PRINZ EUGEN. Owing to the lack of evidence concerning the direct cause of the loss of HOOD, the following has been based on the Report of the Board of Enquiry on this incident. "We consider it established that the 3rd salvo from BISMARCK hit HOOD on the boat deck with at least one shell. Another shell, just short, from this salvo may have hit her below the waterline. The bulk of the evidence shows that HOOD was straddled by the 5th or 6th salvo from BISMARCK. One shell of this salvo apparently hit her on the boat deck somewhere near the mainmast, the others may have hit her below the waterline. Very shortly after 0555 a fire was observed somewhere on the port after end of the boat deck of HOOD. We consider it established that this fire was caused by a hit from BISMARCK's 3rd salvo. It burned with a clear flame and appeared to spread and then died down just before 0600. V.A.B.C.S. hoisted a signal ordering a further turn of 20° to port together, (the range at the time being about 16,300 yards) but it was never executed as at 0600 HOOD blew up and sank in under 3 minutes. The board concluded:- 1. That the sinking of the HOOD was due to a hit from BISMARCK's 15" shell in, or adjacent to, HOOD's 4" or 15" magazines, causing them all to explode and wreck the after part of the ship. The probability is that the 4" magazines exploded first. 2. There is no conclusive evidence that one or two torpedo warheads detonated or exploded simultaneously with the magazines or at any other time, but the possibility cannot be entirely excluded. We consider that if they had done so, their effect would not have been so disastrous as to cause immediate destruction of the ship, and on the whole we are of the opinion that they did not. 3. That the fire which was seen on HOOD's boat deck, and in which U.P. and, or 4" magazines, was certainly involved, was not the cause of her loss." REMARKS As a result of this incident additional splinter protection to the magazines of capital ships was arranged where recent experience indicated it to be necessary. As the above water torpedo tubes were a possible source of danger in Battlecruisers the forward sets of tubes were landed from RENOWN and REPULSE.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PRINCE OF WALES 24th May, 1941 D.N.C.4B/R69	Three Direct Hits with 15 inch Three Direct Hits with 8 inch and One Direct Hit with 8 inch or possibly 15 inch delay action fuzed Shell, four of which did not Detonate	6 weeks	PRINCE OF WALES was damaged in the same action as that in which HOOD was sunk. A 15 inch shell struck the forward corner of the compass platform and then passed across the compartment and overboard without detonating. The majority of bridge personnel were killed or wounded. A 15 inch shell struck the starboard aircraft crane and burst just abaft the after funnel. The boat deck and after funnel were extensively damaged by splinters and the type 285 radar office was wrecked. A 15 inch shell perforated the starboard bulge, 28 feet below the waterline and came to rest, without detonating, after striking the protective bulkhead. Immediate flooding of bulge compartment resulted. An 8 inch shell perforated the boat deck, shelter deck and armoured casemate to P.3-5.25 inch mounting, richochetted off the ring bulkhead and finally struck the side of the casemate without detonating. P.3 mounting was temporarily put out of action. An 8 inch shell struck the starboard side below the waterline just abaft the armour and partially detonated about 11 feet inboard. Blast and splinters caused minor damage, and the lower deck was flooded for 60 feet. An 8 inch shell burst on impact with the starboard side 5 feet below the waterline. The sloping armour over the steering compartment was set down, and the after end at lower deck level was flooded for 80 feet. An 8 inch shell (possibly 15 inch) struck the 4 inch H.A.C.S. support and passed overboard without detonating. The port H.A. director was put out of action and the starboard director temporarily out of action. Fighting Efficiency - Seriously impaired. Speed was reduced to a maximum of 26 knots due to flooding. Efficiency of secondary armament was reduced due to damage H.A. directors. Temporary disorganisation of ship control due to bridge casualties. REMARKS The following lessons were learned as a result of this incident. 1. The need for watertight doors to certain important compartments below the middle (armour) deck to be blanked and trunked access provided in lieu. 2. Portable pumps should be splash proof and their overboard discharges modified. 3. The ventilation supply to action machinery and other important compartments was inadequate to prevent excessive temperatures. 4. Boiler room intakes when situated near a damaged funnel are a serious danger to boiler room personnel. 5. The number of electric supply plugs at the ends of the ship was inadequate to meet emergency conditions. 6. A warning telephone system was required to transmit orders swiftly from the D.C.H.Q. to repair stations. 7. H.A. directors were extremely vulnerable to splinters.

BATTLESHIPS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
BARHAM 27th May, 1941 D.N.C.4B/R171	One Direct Hit and One Near Miss with 250 kgm delay action fuzed Bombs	2 months	BARHAM was damaged during a dive bombing attack while operating in the Eastern Mediterranean. One bomb detonated on contact with the roof of 'Y' turret. The roof plate (5 inch N.C. armour) was holed 18 inches in diameter and the plate itself lifted and slightly distorted. Extensive but not serious damage was caused to equipment in and around the gun house. Cordite charges in the port gun loading tray were ignited by splinters and a fire started which caused damage to electric cables in the gun house. The fire was under control within 20 minutes. A near miss off the port side abreast 'A' turret extensively damaged the lower bulge which was holed and distorted over an area 20 ft. by 16 ft. Flooding of the bulge caused the ship to heel $1\frac{1}{2}$ degrees to port but this was corrected by the transference of oil fuel. Fighting Efficiency - Not seriously impaired. 'Y' turret and the 0.5" machine gun on the roof of 'X' turret were both out of action. Speed was slightly reduced due to flooding.
WARSPITE 23rd June, 1941	One Near Miss with delay action fuzed Bomb, judged to have been 500 kgm	Nil (Damaged whilst undergoing temporary repairs)	WARSPITE was damaged during an air raid on Alexandria Dockyard whilst undergoing temporary repairs for bomb damage received on 22nd May, 1941. A near miss bomb burst underwater on the starboard side abreast 'A' turret. The upper and lower bulge plating, above and below the waterline, was crushed over a length of 60 feet. Some damage was caused by splinters. The lower bulges were flooded for a length of 90 feet. Fighting Efficiency - Not seriously impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NELSON 27th Sept., 1941 D.N.C.4B/R95	One Contact Torpedo (Italian) Dropped by Aircraft	6 months, including refit	NELSON while operating in the Western Mediterranean at 15 knots, was torpedoed forward on the port side at the platform deck level. A hole 30 feet long by 15 feet deep was blown in the outer bottom. Extensive flooding occurred forward and the platform deck was flooded for a length of 75 feet. The torpedo body room was wrecked and the tubes rendered unserviceable. Fighting Efficiency - Not seriously impaired. Speed was restricted to about 15 knots due to flooding and the risk of undue strain on the damaged structure. The main armament although undamaged would only have been used in an emergency to avoid the risk of disturbing the shoring of damaged structure. The underwater torpedo tubes were out of action. REMARKS Modifications were made to both the fixed and portable pumping systems in this class of ship as a result of this incident.

BATTLESHIPS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
BARHAM 25th Nov., 1941	Three possibly Four Contact Torpedoes Fired from a Submarine	Sunk	BARHAM while carrying out a sweep in the Eastern Mediterranean with the Battle Fleet, was torpedoed and sunk. Owing to the lack of detailed evidence about this incident the following has been based upon the Report of the Board of Inquiry. "At 1625 three or four torpedoes struck the port side between the funnel and the after turrets. Between the attack and a heavy explosion, four minutes elapsed, by which time BARHAM was on her beam ends, to port. The seat of the explosion was probably abreast 'X' and 'Y' 15 inch magazines, which vented through the upper deck and the ship's side starboard. We are unable to establish the reason for the explosion but it may have been due to a fire, started in the port 4 inch magazine, which spread to the adjacent 15 inch magazine. Although this explosion accelerated the rate of sinking it is our opinion that it was not the primary cause of the foundering of BARHAM. We believe that the ship's port side was blown in over a considerable length which opened her vitals to the sea, thus causing a heavy list to port, a slight pause at an angle of 40°, to continue until she capsized in about 4 minutes. The internal lighting and communications system failed rapidly. The vessel was in a recognised state for cruising with a satisfactory degree of water-tight sub-division. The damage and rapidity of heel was so considerable as to preclude any effective measures to save the ship. The conditions for launching boats or rafts were extremely severe. Certain rafts secured with lashings proved an unsatisfactory feature. No general orders for the conduct of the ship were heard subsequent to her being struck. This was probably due to the failure of the broadcasting system."

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PRINCE OF WALES 10th Dec., 1941	(i) Six, possibly Seven Contact Torpedoes (Japanese) judged to contain 867 lb. Warheads. Dropped by aircraft. (ii) One Direct Hit and several Near Misses probably 250 kgm delay action fuzed Bombs	Sunk	PRINCE OF WALES was sunk off the east coast of Malaya. In the first attack there were two and probably three torpedo hits on the port side and the ship quickly heeled to about 11 degrees with both port engines out of action. The second attack occurred when counterflooding was being carried out. Four torpedoes hit the starboard side, and the ship was brought nearly upright, with a trim aft of about 20 ft. The starboard outer shaft was out of action. In the third attack high level bombing scored a direct hit on the catapult deck, and several near misses. Extensive damage and flooding caused the ship to capsize to port and sink, 96 minutes after the first attack. REMARKS This incident emphasised the following points:- 1. The space at the top of the sandwich protection should not be used for ship purposes. 2. Greater use should be made of steam-driven auxiliaries. 3. Trunked access to important machinery spaces is necessary. 4. Air escape pipes should be fitted with cocks. 5. Side scuttles, ventilation systems, W.T. doors and hatches should be reduced to a minimum. 6. Rapid pumping of spaces immediately inboard of the protective bulkheads is a necessity. 7. Number and distribution of portable pumps needs reconsideration. 8. W.T. bulkheads to be continued as high as possible. 9. 5.25" Ammunition supply should be modified to improve watertightness. 10. Scuppers and drains should be modified to improve watertightness. 11. Question of steam or electrically driven pumps for the steering gear requires review. 12. Number of plummer blocks used on long shafting requires review and bulkhead glands require redesign to remain watertight when the shaft is slightly out of true. 13. Sound powered telephones should be extended and essential services duplicated and made watertight. 14. Damage control communication to be sound powered and independent of the main exchange. 15. Damage control officer required in addition to "heel and trim" officer in D.C.H.Q. 16. D.C.H.Q. must be easily accessible and sectional H.Q. need built-in accommodation. 17. In PRINCE OF WALES the shipwright complement was too small to deal with the damage. 18. Draught indicators are necessary.

BATTLESHIPS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
REPULSE 10th Dec., 1941	(i) One Direct Hit and Several Near Misses probably 250 kgm delay action fuzed Bombs, (ii) Four Contact Torpedoes (Japanese) judged to contain 867 lbs. warheads. Dropped by Aircraft	Sunk	REPULSE was sunk in the same action as the PRINCE OF WALES. The first attack was from pattern bombing at 10,000 feet during which the ship was damaged by one hit and several near misses. The direct hit passed through the port hangar and burst on the armoured deck. As the result of this attack fires were started and steam pipes were fractured, which made conditions between decks very difficult for personnel. In the second attack a torpedo struck amidships on the port side. In the third and final attack three torpedoes struck the ship. Two were on the port side, one of which jammed the rudder. The third hit the starboard side. REPULSE was abandoned and sank 80 minutes after the first attack.
QUEEN ELIZABETH 19th Dec., 1941 D.N.C.4B/R113	A 500 lb. to 1000 lb. Charge placed somewhere between Contact and the sea bed by the crew of an Italian two man Submarine. Depth of water 8 fathoms	17½ months Repaired in U.S.A.	QUEEN ELIZABETH while moored in Alexandria harbour, was damaged by a mine which had been slung under 'B' boiler room by the crew of a two man submarine. The bottom structure under 'B' boiler room was blown up into the ship and similar damage, but to a less extent, occurred under 'A' and 'X' boiler rooms. The damage under the bottom extended over an area of 190 ft. by 60 ft. to include the port and starboard bulges. Immediate flooding occurred in 'A', 'B' and 'X' boiler rooms and the 4.5 inch magazines. 'Y' boiler room and numerous other compartments slowly flooded up to the main deck level. Boilers, auxiliary machinery and associated electrical equipment were severely damaged by the explosion and the subsequent flooding. Main and secondary armament was serviceable, but all hydraulic power was lost. Fighting Efficiency - Seriously impaired. The ship was immobilised and unseaworthy. Main and secondary armament could only have been used with greatly reduced efficiency.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
VALIANT 19th Dec., 1941 D.N.C.4B/R115	A 500 lb. to 1000 lb. Charge placed somewhere between Contact and the sea bed by the crew of an Italian two man Submarine. Depth of water 8 fathoms	6½ months	VALIANT while moored in Alexandria harbour, was damaged by a mine which had been slung under the port bulge abreast 'A' turret by the crew of an Italian two man submarine. The lower bulge structure on the port side was holed and blown up into the ship over an area of 60 ft. by 30 ft. and internal damage extended from the middle line up to the bottom of the upper bulge compartments. Flooding immediately occurred in the lower bulge, inner bottom, 'A' shell room and magazine and in adjacent compartments up to the lower deck level. Outside the flooded area, minor damage to electrical equipment occurred due to shock. No damage occurred to the main or auxiliary machinery. The lower portion of the revolving structure of 'A' turret was distorted. Fighting Efficiency - Seriously impaired. 'A' turret was out of action. Had it been necessary for the ship to proceed to sea there would have been a reduction in speed due to the flooding and the risk of undue damage to structure. REMARKS In view of the increased allowance of portable electric pumps it was found necessary for provision to be made for the fitting of more connecting boxes to supply power for pumping in an emergency.

BATTLESHIPS - 1942

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
RAMILLIES 30th May, 1942 D.N.C.4B/R125	One Contact Torpedo. Fired by Japanese Midget Submarine	12 months	RAMILLIES while at anchor in the inner harbour of Diego Suarez Bay, was struck by a torpedo on the port bulge just forward of 'A' mounting. The bulge plating was holed for 30 ft. by 30 ft. and the outer bottom for 20 ft. by 16 ft. Internal damage extended inboard to the middle line and from the hold to the lower deck level. Flooding occurred in the magazines and shellrooms of 'A' and 'B' guns, the forward 4 inch magazines, H.A.C.P. and other adjacent compartments up to the main deck level. Extensive damage was caused to gunnery and electrical equipment due to flooding. Outside the limits of the immediate effects of the torpedo only minor damage occurred. All lighting and power forward of 'B' turret and all telephone communications failed. No damage occurred to the main engines but auxiliary machinery suffered minor damage. Fighting Efficiency - Seriously impaired. The efficiency of the main and secondary armaments was greatly reduced due to flooding. Had RAMILLIES been at sea there would have been a reduction of speed due to flooding and the risk of further damage to the structure. REMARKS This incident emphasised the following points. 1. The need for torpedo embarkation hatches to be replaced by half hatches of stronger construction. 2. The value of increasing the number of hose connections that could be fitted to scupper pipes. 3. The three 8 feet lengths of suction hose provided for each portable pump were found to be inadequate and an extra length of hose was required.
RODNEY 12th Aug., 1942	One Near Miss Bomb	1 month	RODNEY while operating in the Mediterranean was damaged by a near miss bomb which fell abaft the stern. Minor damage was caused to the rudders and the tubes of one superheater were found to be defective. Fighting Efficiency - Slightly impaired. Maximum speed was restricted to $18\frac{1}{2}$ knots due to the boiler defects.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
WARSPITE 16th Sept., 1943 D.N.C.4B/R273	One Direct Hit and One Near Miss with delay action fuzed, radio corrected Bomb P.C. 1400 kgm type F.X.	7 months (Partial repair of damage)	WARSPITE was damaged while in action off the Salerno beaches at 10 knots. A direct hit on the boat deck just abaft the funnel, perforated various decks, passed through No.4 boiler room and finally detonated in the double bottoms. The outer bottom was holed for a length of 20 ft. and for a width of 7-14 ft. and the inner bottom was blown upwards over this area. No.4 boiler room was wrecked. Main transverse bulkheads, forward, abaft and between the boiler rooms were buckled and damaged by splinters. A near miss on the starboard side burst underwater near the bottom of the bulge abreast No.5 boiler room, corrugating the inner and outer bottom plating under this boiler room. The bulge plating was also ruptured and distorted. Immediate flooding occurred in Nos. 2, 3, 4, 5 and 6 boiler rooms, the double bottom air spaces and in the O.F. tanks, lower bulge and the cable passages near machinery spaces. Slow flooding was controlled in both engine rooms, No.1 boiler room, two dynamo rooms, shaft passages and various other compartments abreast the machinery spaces. A list to starboard reached a maximum of 4 degrees. All boilers were damaged by shock and flooding and the feed water was contaminated. The main turbines, although unusable through loss of steam, were not materially damaged. Electrical power failed through the lack of steam but essential services were supplied by diesels. W/T and radar equipment suffered through the loss of aerials, flooding and shock. Fighting Efficiency - Seriously impaired. The ship was immobilised through the loss of steam and W/T and radar equipment were out of action. Main armament was out of action due to the loss of hydraulic power.
DUKE OF YORK 26th Dec., 1943	One Direct Hit with 11 inch Shell and one direct hit with Shell judged to have been 5.9 inch both of which did not detonate	1 month	DUKE OF YORK was damaged while in action against the SCHARNHORST. A direct hit with an 11 inch shell passed through the mainmast and its port strut without detonating. Approximately half of the mainmast sectional area and rather more of the strut section in the path of the shell were destroyed. A direct hit with a 5.9 inch shell passed through the port strut of the foremast without detonating, destroying rather less than half of the sectional area of the strut. Fighting Efficiency - Slightly impaired. The efficiency of the radar equipment was reduced due to damaged aerials. REMARKS In spite of adverse weather conditions, the tripod masts did not carry away.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
WARSPITE 13th June, 1944 D.N.C.6/R317	One Ground Mine in 17 fathoms, probably Acoustic or "Sammy", type G.C. Charge about 1500 lbs.	2 months (Partial repair of damage)	WARSPITE was on passage from Portsmouth to Rosyth at 16 knots when an explosion occurred off the port side abreast 'Y' turret. Corrugation of the port bulge plating extended over 150 feet, abreast the engine rooms, gearing rooms and after magazine group. Over this area the outer bottom, below the bulge, was corrugated between frames, to a maximum depth of 3 inches. Between 'X' and 'Y' turrets the bulge structure was forced inboard a maximum of 2 feet. Minor buckling occurred for 90 feet on the starboard bulge plating abreast the gearing rooms and after magazine group. Minor damage to the inner bottom was also sustained. Over the damaged area extensive flooding of the port bulge occurred with minor flooding in the double bottoms. A list of $4\frac{1}{2}$ degrees to port was corrected by counter flooding and the transference of oil fuel. Extensive shock damage affected the main and auxiliary machinery. The port outer shaft seized up and the port inner shaft was out of action with several plummer blocks fractured. The fixed and sliding feet of the port and starboard inner H.P. turbines were fractured and the port inner turbine, gearing and thrust block were put out of action. Shock damage to electrical equipment, W/T and radar sets, also occurred. Fighting Efficiency - Seriously impaired. Both port shafts were out of action but the ship was able to proceed under her own power at 10 knots on the two starboard shafts. 'Y' turret was adjudged safe for single gun firing only, due to the weakened condition of the surrounding structure.
NELSON 18th June, 1944	Two Ground Mines in 15 fathoms, probably Acoustic type. Charge about 1500 lbs.	$6\frac{1}{2}$ months, including refit. (Repaired in U.S.A.)	NELSON was proceeding from the Normandy coast to Spithead at 16 knots when two mines exploded almost simultaneously, one about 50 yards to starboard abreast the bridge and the other further forward under the bottom. Double bottom tanks were damaged and the outer bottom plating corrugated from abreast 'A' turret to the fore end of the forward engine room, particularly between the port and starboard second longitudinals. Forward of 'A' turret, the double bottom compartments below the forward store rooms were damaged. Uncontrolled flooding occurred in one rapid flood compartment; and the remainder abreast the damage had slow controlled flooding. Several double bottom oil fuel tanks were damaged and made common. A list to starboard of 3 degrees, due to flooding of some wing spaces was reduced to 1 degree by pumping out the starboard rapid flood compartments. Extensive, but principally minor shock damage affected secondary armament directors, A.D.O. sights, radar, gyro compasses and the 16 inch fire control equipment. Fighting Efficiency - Not seriously impaired. The ship was operationally fit within 24 hours but permanent repairs to the damaged outer bottom were essential at a later date.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
COURAGEOUS 17th Sept., 1939	One probably two, possibly three Contact Torpedoes Fired from Submarine	Sunk	COURAGEOUS was carrying out offensive air operations against enemy submarines in the North Atlantic at 18 knots when she was torpedoed on the port side. The ship was hit by one torpedo at a position well forward of the bridge and probably by another torpedo almost immediately afterwards in the vicinity of the boiler rooms. There was a complete breakdown of electrical power as a result of this attack. The ship immediately heeled about 10 degrees to port and this increased rapidly to 40 degrees. COURAGEOUS trimmed heavily by the bow, righted herself and eventually sank 20 minutes after the first hit. REMARKS This incident emphasised the following points:- 1. Ships to be kept wateright up to about 8 feet above the deep waterline. 2. An efficient secondary lighting system is a necessity.
FURIOUS 18th April, 1940	Two Near Misses judged to have been 100 kgm delay action fuzed Bombs	4 days	FURIOUS while operating off Norway was damaged by two near miss bombs which fell about 15 yards to port. No damage was caused to the structure but some of the blades to the starboard inner H.P. turbine were cracked which necessitated the uncoupling of one shaft to avoid further damage. Fighting Efficiency - Slightly impaired. The maximum speed was reduced by the loss of one shaft.
GLORIOUS 8th June, 1940	Direct Hits with probably 11 inch and possibly 8 inch Shells	Sunk	GLORIOUS, while returning from Norway, escorted by two destroyers, was engaged by the German ships SCHARNHORST and GNEISNAU. The first salvo which caused serious damage perforated the flight deck and burst in the hangar. Small arms ammunition exploded and a fire was started in the hangar but this was soon got under control. The next hits were on and near the bridge as a result of which the Commanding Officer and most of the bridge personnel were killed. Further hits followed rapidly and one salvo which struck on or abaft the after centre engine room caused serious damage. The ship began to lose speed and circled to port with a list to starboard. GLORIOUS eventually rolled over to port and sank about one hour after she was first attacked. REMARKS This incident emphasised the need for the boat hoists and winches to be modified and sufficient rope to be provided to enable boats to be lowered when the ship has considerable heel.

AIRCRAFT CARRIERS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ILLUSTRIOUS 10th Jan., 1941 D.N.C.4B/R92	Five Direct Hits and One Near Miss with 500 kgm delay action fuzed Bombs, one of which did not detonate. One Direct Hit with 1000 kgm delay action fuzed Bomb and One Direct Hit with probably 500 kgm or possibly 250 kgm delay action fuzed Bomb	10½ months, including 6 months permanent damage repairs in U.S.A.	ILLUSTRIOUS was escorting a convoy in the Mediterranean when she was subjected to a sustained dive bombing attack. Bomb No.1 hit and destroyed S.2 pom-pom but otherwise caused only minor damage in the vicinity of burst. Bomb No.2 perforated the forward end of the flight deck and passed overboard to explode about 10 feet above the waterline. Extensive splinter damage was caused to compartments near the waterline and many of these were flooded. Splinters also caused a fire in the lamp room. Bomb No.3 was a direct hit which exploded in the after lift well about 10 to 20 feet below the flight deck. This caused severe damage to the lift structure and electrical equipment. Bomb No.4 (1000 kgm) perforated the armoured flight deck and exploded about 10 feet above the hangar deck. Serious damage was caused to the forward lift and the surrounding hangar deck structure. The hangar fire curtains were blown away and a serious fire was started in the hangar. Bomb No.5 was a direct hit at the after end of the after lift so increasing the damage already sustained from Hit No.3. Bomb No.6 perforated P.1. pom-pom platform and passed through the ship and then overboard to strike the side armour without detonating. A fire was started in two mess decks. Bomb No.7 - possibly 250 kgm - was a direct hit in the after lift well and this completed the destruction of the lift structure. Bomb No.8 was a near miss off the starboard side. This caused minor damage to the structure and slight flooding. Fighting Efficiency - Seriously impaired. The ship was out of action as an aircraft carrier. Severe damage to the stern put the steering gear out of action and caused the ship to be temporarily out of control. ILLUSTRIOUS returned to Malta steered by main engines. REMARKS This incident emphasised the following points. 1. Secondary positions for hangar spraying are required. 2. Scuppers in hangars should be provided with guards to prevent choking by debris. 3. Steering gear compartments should be provided with trunked access. 4. Steel hangar fire curtains should be replaced by fearnought or asbestos cloth. 5. Improved arrangements are necessary for fighting fires in the overhead stores in the hangar.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ILLUSTRIOUS 16th Jan., 1941 D.N.C.4B/R92	One Direct Hit with 500 kgm delay action fuzed Bomb and several Near Misses with Bombs of unknown size.	Nil (damaged whilst undergoing temporary repairs)	ILLUSTRIOUS while at Malta undergoing temporary repairs to bomb damage was subjected to further air attacks. The direct hit perforated the unarmoured portion of the flight deck aft and exploded above the gallery deck. Further serious damage was caused to the structure at the after end and a hole 15 feet diameter was blown in the hangar deck. The near misses caused only minor damage. Fighting Efficiency - Further impaired.
ILLUSTRIOUS 19th Jan., 1941 D.N.C.4B/R92	One Near Miss with 500 kgm delay action fuzed Bomb	Nil (Damaged whilst undergoing temporary repairs)	ILLUSTRIOUS was again damaged during further air attacks on Malta. A near miss close off the port side pushed in the bottom of the side armour about 3 inches and dished the side plating and framing a maximum of 5 feet over a length of 75 feet. The protective bulkhead was undamaged but flooding outboard of this caused the ship to heel 5 degrees to port. The port boiler room was put out of action as a result of shock damage to the brickwork and pipe systems. The sliding feet of the port H.P. and L.P. turbines were also fractured and some auxiliaries were damaged. Fighting Efficiency - Further impaired. As a result of this attack the port engine was out of action. After temporary repairs to the damage from all attacks had been completed, ILLUSTRIOUS proceeded to Alexandria under her own power at 23 knots.
FURIOUS 16th April, 1941	Two Near Miss Bombs	Nil (damaged whilst undergoing repairs)	FURIOUS was straddled by a stick of four bombs while berthed at Victoria Wharf during an air raid on Belfast. Damage to the structure was slight. The superstructure and the associated electrical leads were damaged by splinters. Fighting Efficiency - Not Impaired.

AIRCRAFT CARRIERS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
FURIOUS 5th May, 1941	One Direct Hit with delay action fuzed Bomb	7 days	FURIOUS was again damaged during another air raid on Belfast. A direct hit perforated the flight deck just abaft the forward lift, passed through the upper deck and exploded in the lower hangar. Damage to structure from blast and splinters was not severe but the spraying arrangements in the lower hangar were damaged and the fire curtains were destroyed. A fire which started in the hangar was soon under control. Fighting Efficiency - Not seriously impaired.
PEGASUS 5th May, 1941	One Near Miss with direct action fuzed Bomb	Nil (damaged whilst undergoing repairs)	PEGASUS was damaged by a near miss bomb off the port side amidships during an air raid on Belfast. The whole of the port side above the waterline was perforated by splinters which also caused minor damage to fittings. Oil fuel from damaged tanks above the waterline leaked into the fairway and the oil became ignited. Fighting Efficiency - Not seriously impaired.
FORMIDABLE 26th May, 1941 D.N.C.4B/R107	Two Direct Hits with 1000 kgm armour piercing delay action fuzed Bombs	6 months, including 3 months permanent damage repairs in U.S.A.	FORMIDABLE while operating off Scarpanto was attacked by dive bombers. One bomb struck the forward end of the flight deck and passed down through the ship to detonate below the hangar deck close to the starboard side. A hole 52 ft. by 14 ft. was blown in the side plating, between the upper and lower gallery decks, and internal structure was seriously damaged. A fire which started in the vicinity of the burst was quickly under control. A second bomb struck 'X' gun bay, passed out through the ship's side starboard and burst underwater about 18 feet from the ship's side. The upper arm of the starboard 'A' bracket was fractured but otherwise only minor damage occurred in the path of the bomb through the ship. Fighting Efficiency - Seriously impaired. 'X' mounting was out of action. The forward aircraft lift and two forward groups of guns could only have been used in an emergency. The speed was reduced to 20 knots in fair weather.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ARK ROYAL 13/14th Nov., 1941	One Torpedo probably Contact Fired from Submarine	Sunk	ARK ROYAL was returning to Gibraltar at 22 knots after completing an operation, when she was torpedoed and sunk. The following is based upon the report of the Board of Enquiry. "An explosion occurred under the bottom on the starboard side abreast the island structure. A hole approximately 130 ft. by 30 ft. was reported to have been blown in the bottom plating. The air spaces, oil tanks and watertight compartments on the starboard side, together with machinery spaces and other main compartments in the vicinity of the explosion flooded rapidly. The ship immediately heeled 10 degrees to starboard. Flooding of the main switchboard room and telephone exchange caused the failure of all lighting, electrical power and telephones. No major damage occurred to main or auxiliary machinery. The telegraphs from the Bridge to the Machinery Control Room were jammed, and the heel had increased to 17 degrees before the engines could be stopped. Counterflooding was carried out and reduced the heel to 14 degrees. Half an hour after the explosion the majority of the ship's company were disembarked. Electric power, feed water and pumps were supplied by an escorting destroyer, and the ship was taken in tow at 2 knots. Steam was raised in the port boiler and lighting was restored. The starboard Engine Room flooded slowly, and the heel increased to 17 degrees. Flooding of the boiler uptakes caused a major fire in the port boiler air casing, which led to the evacuation of the boiler room and to total loss of power. When the heel had increased to 27 degrees, orders were given to abandon ship. 12 hours after being hit, all personnel had been withdrawn, and the heel had increased to 35 degrees. The ship capsized and sank two hours later." REMARKS This incident emphasised the following points:- 1. It is essential that the training and organisation of Damage Control personnel should be of the highest possible standard in order to deal with an emergency of this type. 2. Individual boiler uptakes and fan intakes should be carried higher where practicable. 3. Machinery should be operated in units irrespective of numbers of boilers alight. 4. Positions of main switchboard and telephone exchange should be reviewed to render them less liable to flooding. 5. Control of the ring main and thereby distribution of electrical power requires review to avoid false operation of ring main switchgear if the switchboard is flooded or control wiring is damaged. 6. Diesel driven dynamos are necessary in all large ships. 7. Direct telephone communication between engine room and bridge with an alternative power supply must always be available. At least one sound-powered telephone between these positions and also the emergency steering positions is desirable. 8. Counterflooding is necessary in the event of heavy (6 degrees) heel.

AIRCRAFT CARRIERS - 1941/42

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AUDACITY 21st Dec., 1941	Three Contact Torpedoes Fired from Submarine	Sunk	AUDACITY while operating in the North Atlantic, sank after being hit by three torpedoes. At 2035 one torpedo struck abreast No.5 hold. The immediate flooding of the shaft tunnel and subsequent flooding of the engine room immobilised the ship within 10 minutes and caused her to settle aft until the stern was just awash. At 2145 two more torpedoes struck the port side, one abreast the bridge and the other between the bulge and the first hit. AUDACITY broke up and sank about 10 minutes after the second attack.
HERMES 9th April, 1942	Several Direct Hits with Bombs, judged to have been 100 kgm	Sunk	HERMES while operating south of Trincomalee at 23 knots was attacked and sunk by Japanese aircraft. At 1035 the first bombs struck the ship, hits being registered aft and on the forward aircraft lift. From this time on HERMES was repeatedly hit. Both boiler rooms were put out of action and the forward aircraft lift was wrecked. At 1050 the ship was immobilised, on fire, and had a heavy list to port. At 1055 HERMES capsized to port and sank.
EAGLE 11th Aug., 1942 D.N.C.4B/R165	Four Contact Torpedoes Fired from Submarine	Sunk	EAGLE while operating in the Western Mediterranean at 13 knots was sunk as the result of four torpedo hits. The first explosion occurred on the port quarter and this was followed within 10 seconds by three other explosions. All torpedoes struck the port side between P.2 and P.3 guns. After the first hit the ship heeled 5 degrees to port and this increased to 15 degrees after the fourth hit. Evidence indicated that hits occurred in the vicinity of the port wing engine room but no damage occurred in the centre and starboard engine rooms. 'A', 'C' and 'D' boiler rooms were flooded and in each case the port wing bulkhead collapsed. EAGLE finally settled bodily with a 30 degree heel and sank 6 minutes after the first torpedo hit.
VICTORIOUS 12th Aug., 1942	One Direct Hit with Bomb which did not Detonate	Nil	VICTORIOUS while escorting a convoy to Malta was hit by a bomb which struck the flight deck and then bounced overboard without detonating. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
INDOMITABLE 12th August, 1942 D.N.C.4B/R123	Two Direct Hits and three Near Misses with 500 kgm delay action fuzed Bombs	6 months	INDOMITABLE was subjected to an attack by enemy aircraft while operating South West of Sicily at 20 knots. Hit No.1 landed near the forward lift and perforated the upper gallery deck and exploded above the upper hangar deck. A hole 20 ft. by 12 ft. was blown in the upper gallery deck and one 20 ft. by 28 ft. in the upper hangar deck. Severe structural and splinter damage was caused between the flight and lower gallery decks and inboard to the middle line. The forward lift canted up 5 ft. on the starboard side. There was a minor fire in the hangar and the R.U. ammunition to 'A' 1 and 'A' 2 4.5 inch guns ignited. Hit No.2 landed abaft the after lift, perforated the upper gallery deck, and exploded just above the upper hangar deck. The upper gallery for a width of 20 ft. and the upper hangar for 16 ft. were destroyed and a large hole was blown in the flight deck. The lower gallery deck and the lift structure sustained minor damage. A small fire was started near the torpedo body room but the warheads were undamaged. Near Miss No.1 grazed the port pom-pom director and exploded 5 ft. from the hull at the upper hangar deck level. The side plating between the lower and upper gallery decks was destroyed. Structural and splinter damage extended for 52 ft. inboard. Near Miss No.2 exploded 25 ft. underwater to port abreast C.2 O.F. tank. The ship's side was blown in over an area of 40 ft. by 20 ft. and minor internal damage was sustained. The wing compartments in the vicinity of the explosion were flooded causing a heel of 8° to port. This was corrected by counterflooding. Near Miss No.3 exploded underwater off the port quarter causing minor structural damage and a few splinter holes through the hull above the waterline. Fighting Efficiency - Seriously impaired. The forward lift, 'A' 1 and 'A' 2-4.5 inch mountings and 'B' director were out of action. The after lift was temporarily out of action. REMARKS This incident emphasised the following points:- 1. The design of aircraft lifts to operate under conditions of considerable misalignment of the transmission gear, proved invaluable. 2. War experience indicates no technical reason for restricting the operation of lift platforms whilst in action. 3. Keeps to electrically operated lifts to be abolished. 4. Allowance of spray nozzles to be increased to 30% of the total number of branch pipes (A.F.O.3023/42). 5. Design of existing leather joints of indicator test plugs to be improved. 6. To simplify the method of securing manhole covers where single wedges are fitted, the positions and direction of movement of clips should be painted on the manhole covers and stops fitted in order to prevent the openings being closed with the clips on the wrong side. 7. W.T. doors and hatches to be strengthened (A.F.O's 3905/42 and 5051/42). 8. Separate sea suctions for hangar spray pumps arranged for in later ships. 9. Portable diesel driven pumps to be supplied to aircraft carriers.

AIRCRAFT CARRIERS - 1942

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ARGUS 10th Nov., 1942 D.N.C.4B/R191	One Direct Hit with 250 kgm direct action fuzed Bomb and near misses delay action and direct action fuzed 1000 and 250 kgm Bombs	1 month	ARGUS while operating off Algiers at 18 knots was hit by a 250 kgm bomb on the safety netting at the after end of the flight deck. The flight deck and the cantilever support were fractured and damaged by blast in the vicinity of the burst. The port crane and the hangar fire curtains were damaged by blast and splinters. The port side of the smoke duct was blown away. Minor damage was caused to electrical equipment P.5 and 6 Oerlikons were damaged by splinters and out of action. One aircraft was destroyed and two seriously damaged. Numerous near misses within 50 yards of the ship caused four girdle tanks on the port side and one on the starboard side to be strained and leaking. The ship listed approx. $3\frac{1}{2}$ degrees to port. Fighting Efficiency - Slightly impaired. The ship was able to maintain full speed and operate aircraft. Difficulty was experienced in operating the Q.D. armament due to funnel gases being discharged on to the quarter deck.
AVENGER (Escort Carrier) 15th Dec., 1942	One Contact Torpedo Fired from Submarine	Sunk	AVENGER whilst escorting a convoy west of Gibraltar, was struck by a torpedo abreast the bomb room. The bomb room exploded and was accompanied by a vivid red flash along the starboard side which lasted for about 2 seconds. The ship broke up and sank within 3 minutes of being torpedoed. REMARKS Longitudinal bulkheads should be fitted between the bomb room and ship's side for all ships of this class.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
INDOMITABLE 16th July, 1943 D.N.C.4B/R278	One Contact Torpedo dropped by Aircraft	8½ months Repaired in U.S.A.	INDOMITABLE whilst operating in the Mediterranean was struck by a torpedo abreast the after end of the boiler room on the butt of the lower edge of the 180 lbs. 'C' side armour. The outer bottom was holed for 25 feet vertically and 28 feet longitudinally and severe buckling extended for a further 60 feet. The corner of one armour plate broke and four pieces were projected into the ship. The structure of the wing protection compartments was wrecked. The main longitudinal protective bulkhead at the after end of the boiler room was bulged inwards and holed over an area 8 feet by 6 feet by fragments of armour. The main deck was wrecked in the vicinity of the explosion. The ship heeled 12½ to port but this was corrected by counterflooding. Immediate flooding occurred in the port boiler room, protective wing spaces abreast and for 36 feet abaft the boiler room and the boiler room uptake space on the main deck. Minor flooding on the lower hangar deck and inboard of the protective bulkhead abaft the boiler room occurred. The port boiler was wrecked by fragments of armour, and some auxiliary machinery was seriously damaged. The port H.P. and L.P. compressor rooms were also wrecked. Lighting, power and communications were out of action in the damaged area. Fighting Efficiency - Seriously impaired. The port boiler room was out of action and the centre boiler room was temporarily abandoned due to smoke and fumes. The speed was reduced due to damage and flooding. REMARKS This incident emphasised the following points:- The bottom tier of armour should be non-cemented quality to reduce the risk of breaking up when struck by a torpedo. Dwarf bulkheads between the funnel uptakes and air intakes should be continued and made watertight to the lower gallery deck level.

AIRCRAFT CARRIERS - 1944

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SLINGER (Escort Carrier) 5th Feb., 1944 D.N.C.4B/R297	One Ground Mine on 17 fathoms probably type G.C. or G.G. Charge about 1500 lbs.	8½ months	SLINGER was on passage from Sheerness to the Clyde at 18 knots when an explosion occurred under the bottom in way of the engine room. The outer bottom was seriously damaged abreast the cofferdams between the reserve feed tanks and oil fuel tanks under the engine room. The plating was buckled, split and holed in many places, the largest opening being 7 ft. by 2 ft. From the middle line to just above the port bilge keel, the plating was corrugated between frames under and fore and aft of the engine room, the total damaged length being about 100 feet. The starboard plating was slightly buckled. The rudder was lifted ¾ inch. Uncontrolled flooding included No.3 oil fuel tank No.4 starboard reserve feed tank, pipe tunnel and cofferdams. Leakage occurred into the engine room through a cracked main circulator inlet but was later controlled. The ship heeled 5 degrees to port. Extensive shock damage affected the main and auxiliary machinery. The turbine casings were displaced and the main circulator inlet and fire shaft bearings were fractured. The boilers were shut down due to contamination of the feed water and the feed pumps were damaged and out of action. Extensive shock damage occurred to the electrical installations. The breakers of the turbo generators "came off" and the power temporarily failed, essential services being supplied by diesels. Armament, radar and W/T equipment sustained extensive shock damage. Fighting Efficiency - Seriously impaired. The ship was immobilised due to the loss of steam and shock damage to the main engines. Aircraft could have been landed but not operated. Fighter direction was out of action due to radar damage.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NABOB (Escort Carrier) 22nd August, 1944 D.N.C. N6/R324	One Contact Torpedo Fired from Submarine	Indeterminate (Ship placed in reserve)	NABOB was operating in the North Sea during a Fleet Air Arm attack on TIRPITZ at 15 knots when a torpedo struck the starboard side about 50 feet abaft the engine room in the vicinity of the forward bomb room. A hole was made in the ship's side, 32 feet long by 33 feet deep. The internal structure was wrecked over a length of 36 feet from keel level to the second deck and inboard as far as the middle line. A length of 150 feet between the after bulkhead of the engine room and the fore bulkhead of the after peak was open to the sea. All but two of the after O.F. tanks, the shaft tunnel and the after magazines and bomb rooms were flooded. The ship listed 7 degrees to starboard. This was later reduced to two degrees by the transference of oil fuel. All engine room auxiliaries were stopped as a result of the failure of all electrical power. The main engines were stopped and all boilers were shut down. The engine room was temporarily evacuated owing to the presence of fumes and steam. Fighting Efficiency - Seriously impaired. The ship was later able to proceed a distance of 1090 miles to port under her own power at an average of 10 knots. The ability to operate aircraft was seriously reduced due to the after aircraft lift being out of action.

AIRCRAFT CARRIERS - 1945

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
THANE (Escort Carrier) 15th Jan., 1945	Probably one Non-Contact Acoustic Homing Torpedo Fired from Submarine	Indeterminate (Ship placed in reserve)	THANE was ferrying ammunition and aircraft from Northern Ireland and was nearing the Clyde Light vessel at 17 knots when an explosion occurred close to the ship's starboard side, abreast the after magazines and about 6 ft. below the waterline. The starboard side plating for 48 feet forward of the after peak tank and from 2 ft. above the keel to the underside of the 5 inch gun sponsor was blown inboard a maximum distance of 25 ft. and over this area the internal structure was wrecked or seriously damaged. The port side bottom plating was only slightly corrugated and no major damage to the hull structure occurred outside these limits. The hangar deck was fractured in two places on the port side but otherwise it was not seriously damaged. The extreme after end of the flight deck was fractured for 9 ft. longitudinally at about the middle line. The starboard after corner of the flight deck, the catwalk and the secondary steering position were set up bodily for about 6 feet. The after aircraft lift was distorted and fixed in the 'up' position. The after end was flooded for approximately 80 feet, including the after peak tank, shaft tunnel, after group of oil fuel tanks, magazines and crew spaces. Minor flooding thro' the fractured side plating into the engine room was controlled. The explosion disconnected and distorted the propellor shaft. The starboard after 5 inch gun and sponson were torn away and missing. Aircraft stowed on the hangar deck were damaged by bumping subsequent to the fracture of their holding down wires. Fighting Efficiency - Seriously impaired. The ship was immobilised by the damaged shafting. She was unable to fly off her aircraft but could probably have used the catapult in an emergency. The after magazine group was flooded and one 5 inch gun was out of action. The after aircraft lift was also out of action.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
INDEFATIGABLE 1st April, 1945	Hit by one Japanese Suicide Plane (Zeke) which carried one 250 kgm direct action fuzed Bomb	1 month	INDEFATIGABLE was operating with the British Pacific Fleet off Okinawa when a suicide plane struck her flight deck, abreast the foremost barrier, at the junction of the deck and the island structure. A bomb carried in the plane exploded in contact with the armoured flight deck and blew a hole 12 ft. by 7 ft. in the base of the island structure and dished the flight deck armour downwards about 3 inches in the vicinity of the bomb burst. A small portion of the flight deck, the sick-bay and briefing room, two radar offices and No.2 R/T office were wrecked by blast and splinters. The foremost barrier stanchion and deck fitting were smashed and the other two barriers were rendered temporarily unserviceable A small fire which started in the roof of the upper hangar, was got under control in 15 minutes. The landing-on of planes was recommenced in 50 minutes after the explosion. Fighting Efficiency - Slightly impaired. The flight deck was temporarily put out of action until the debris from the crashed plane could be cleared away.
ILLUSTRIOUS 6th April, 1945	Hit by one Japanese Suicide Plane (Judy)	Nil	ILLUSTRIOUS was operating with the British Pacific Fleet off Okinawa when her close range armament was brought to bear on a suicide plane attempting to crash on to the ship. Several pieces of the aircraft were seen to fall away and as it crossed the ship, the port wing came off and the plane generally broke up. The starboard wingtip hit the type 272 radar aerial lantern and the aircraft crashed into the sea 50 yards clear of the ship's starboard side, followed closely by an explosion. The radar lantern was the only item damaged. Two aircraft on the flight deck were damaged by blast from the explosion and a heavy fall of water from the splash. Fighting Efficiency - Not impaired. The type 272 radar was put out of action.

AIRCRAFT CARRIERS - 1945

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
FORMIDABLE 4th May, 1945	Hit by one Japanese Suicide Plane (Zeke) which was thought to have carried one 250 kgm S.A.P. Bomb	Nil immediately. See Page 36	FORMIDABLE was operating with the British Pacific Fleet off Sakishima (near Formosa) at 20 knots when a suicide plane crashed on to her flight deck, amidships abreast the island structure. It was considered that a bomb was released just before impact. The armoured flight deck was perforated by a hole 2 feet square and depressed over an area of 24 ft. by 20 ft. to a maximum of 2 ft. An extensive portion of the port side of the island structure was damaged by splinters. The fire curtains between A and B hangars were damaged. The foremost aircraft barrier was distorted and rendered unserviceable. A splinter from the armoured flight deck passed through the hangar, downtakes and centre boiler room and came to rest in an inner bottom oil fuel tank, after having severed several steampipes in the centre boiler room, which had to be temporarily evacuated due to escaping steam. One aircraft on the flight deck was blown overboard and another set on fire by the crashed plane. Eleven other aircraft were damaged beyond repair. The fire was got under control in 20 minutes. All radar sets were temporarily put out of action, mainly by blast and splinter damage to the aerials. Fighting Efficiency - Temporarily impaired. Speed was temporarily reduced to 24 knots by the evacuation of the centre boiler room. All radar sets were temporarily out of action. Aircraft could not be operated until temporary repairs had been made to the flight deck and the safety barrier. These repairs took about 5 hours to complete.
INDOMITABLE 4th May, 1945	Hit by one Japanese Suicide Plane (Zeke or Judy)	Nil	INDOMITABLE was operating with the British Pacific Fleet off Sakishima (near Formosa) when a suicide plane, while diving on to her from her starboard quarter, was repeatedly hit by close range weapons and was on fire when it hit her flight deck a glancing blow abreast the after end of the island structure. It then skidded along the deck, passed over the top of 'B' 4.5 inch director and P.1 pom-pom director, and over the port side. The fore end of the ship was littered with pieces of the damaged aircraft and engine, but P.1 pom-pom director and the aerial array of 'B' 4.5 inch director were only slightly damaged. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
VICTORIOUS 9th May, 1945	Hit by two Japanese Suicide Planes (Zekes) one of which carried a direct action fuzed Bomb	1 Month	VICTORIOUS was operating with the British Pacific Fleet off Sakishima Gunto, near Formosa when she was attacked from her starboard quarter by two suicide planes. The first plane struck the accelerator on the flight deck, between the forward aircraft lift and B.2 Turret, and disintegrated when the bomb it carried detonated. The explosion depressed the armoured flight deck over an area 12 ft. by 12 ft., the deck plating at the edge of the armour was pierced and the frames and bulkheads immediately below, on the upper gallery deck in B.2 turret working space were damaged. Fires were started among debris, flotanets and paintwork on the flight deck and in the turret working spaces by damaged electric circuits, but these were soon brought under control. 'B' group of 2 - 4.5 inch turrets were out of action temporarily by damage and casualties among the guns' crews. The second plane was on fire when it crashed through the after aircraft park. It bounced over the port 40 m.m. twin mounting and its Mk.51 director, and then dived into the sea about 200 yards off the port beam. The Mk. 51 director was destroyed. A minor fire was started on the flight deck by debris from the suicide plane. Six aircraft on the flight deck were damaged; two beyond repair. Fighting Efficiency - Slightly impaired. The aircraft accelerator, 40 m.m. Mk. 51 director and one 4.5 inch gun were put out of action. The ship could have landed aircraft immediately and have been fully operational without the accelerator, in twelve hours. Flying-off operations were commenced in about one hour.

AIRCRAFT CARRIERS - 1945

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
FORMIDABLE 9th May, 1945	Hit by one Japanese Suicide Plane (Zeke or Jill) which carried a direct action fuzed 250 lb. Bomb or Shell	1 Month	FORMIDABLE was operating with the British Pacific Fleet off Formosa at 22 knots, when a suicide plane flew in from astern and crashed on her flight deck slightly to starboard and abreast the after end of the island structure. The bomb or shell which it carried partially detonated on impact with the armoured flight deck. The flight deck was depressed a maximum of $4\frac{1}{2}$ inches over an area of 10 ft. by 10 ft. and a deep beam under was distorted and set down about 2 inches. Blast and splinters damaged the island structure. Six aircraft on the flight deck were wrecked by blast or fire and one was blown on top of P.3 pom-pom. The flight deck fires were extinguished in 25 minutes. Fires in the hangar and torpedo parting space which were started by petrol from the suicide plane were soon brought under control. Blast and splinter damage to radar aerials was temporarily repaired within 48 hours. The after portion of the upper hangar was sprayed as a precautionary measure against fire and ten aircraft were thereby rendered unserviceable. Fighting Efficiency - Not seriously impaired. Two pom-poms were temporarily put out of action. Sixteen aircraft were damaged, six of which were wrecked and of no further operational use.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AURORA 26th Sept., 1939	One glancing blow and several near misses probably delay action fuzed 50 and 250 lbs. Bombs	Nil	AURORA while operating in the North Sea in company with SHEFFIELD was bombed by enemy aircraft. Slight structural damage was caused and also minor damage to the mantel plate of 'B' Turret. Fighting Efficiency - Not appreciably impaired. 'B' Turret able to be trained and elevated.
SHEFFIELD 26th Sept., 1939	Several Near Misses from delay action fuzed 250 and 50 lb. Bombs	Nil	SHEFFIELD while operating in the North Sea in company with AURORA was bombed by enemy aircraft. No structural damage was caused but one asdic set was put out of action and minor damage occurred to machinery and electrical equipment. Fighting Efficiency - Not impaired.
SOUTHAMPTON 16th Oct., 1939	One Direct hit delay action fuzed 1000 lbs. Bomb	3 days (temporary repairs)	SOUTHAMPTON while at anchor in the Firth of Forth was bombed by enemy aircraft. The bomb struck the corner of the pom-pom magazine, port side 87 station, perforated three decks, passed out through the ship's side, and exploded below the water surface. Structural damage was caused in the path of the bomb and electrical power failed temporarily. Fighting Efficiency - Temporarily impaired. REMARKS see EDINBURGH beneath.
EDINBURGH 16th Oct., 1939	Three Near Miss direct action fuzed 500 lbs. Bombs	Nil	EDINBURGH while at anchor in the Firth of Forth was bombed by enemy aircraft. Two near miss bombs "counter-mined" a third 20 ft. above the water and about 50 ft. from her starboard side (40-60 stations). Minor structural and electrical damage was caused mainly by splinters. Fighting Efficiency - Not impaired. REMARKS Damage to EDINBURGH and to SOUTHAMPTON (See above) emphasised the need for splinter protection to exposed personnel etc. and also the following electrical items:- 1. Breakers to be locked in the 'on' position. 2. Starter handles to L.P. generators to be locked in the 'on' position. 3. Important fuzes to be wired in.

CRUISERS - 1939

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ADVENTURE 13th Nov., 1939	One Magnetic Mine in 10 fathoms. Estimated charge 1500 lbs. T.N.T.	10 months	ADVENTURE was proceeding at 9 knots off Tongue Lightship when an explosion occurred under her bottom in wake of the forward 4.7 inch magazine port side. A hole was blown in the port side of the outer bottom about 20 ft. long and extending from the keel to the 14 ft. waterline, the outer bottom was also extensively buckled on the starboard side of the ship in the same vicinity. Extensive structural damage was confined to the forward magazines in the hold, refrigerating machinery compartment and ammunition lobby on the platform deck and also to the mess spaces on the lower and main decks over. Flooding extended over a length of 110 ft. but no serious damage was sustained by the main machinery and the main armament could have been fired in an emergency. Fighting Efficiency - Impaired. Ship was able to proceed to harbour at 8 knots but would have been unseaworthy in rough weather. W/T and the forward magazine group were out of action. REMARKS:- This incident revealed the need for the following items:- 1. Jumping ladders at all main access and communication hatches. 2. Increased issue of hand torches. 3. Provision to be made for shutting off steam to the siren. 4. Boat crutches to be capable of being withdrawn athwartships. 5. Distribution of the sleeping billets of key ratings. 6. Emergency medical stores to be distributed forward and aft on the upper deck.
BELFAST 21st Nov., 1939 D.N.C.4B/R1	One Magnetic Mine in 18 fathoms Charge 1500 lbs. T.N.T.	23 months Including refit	BELFAST was steaming at 17 knots in the Firth of Forth when an explosion occurred under her bottom below the forward engine room starboard side. Minor structural damage in the engine room but severe structural damage under the bridge to upper deck, upper deck girder etc., the flat keel was also fractured and outer bottom plating buckled, in short, ships back was broken. Only minor flooding occurred. Extensive damage to machinery and armament, all machinery feet were fractured. Fighting Efficiency - Ship was immobilised and all armament was out of action. REMARKS:- The incident revealed the need for the following items:- 1. Modification to the design and/or material of the main and auxiliary machinery to withstand shock. 2. Improved secondary oil lighting and candle lamps for W/T offices. 3. All non-watertight electrical apparatus to be raised 2 ft. above the deck. 4. Modifications to the head and heel fittings to sloping ladders. 5. To avoid sudden changes of inertia of ships cross section.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
EXETER 13th Dec., 1939 D.N.C.4B/R3	Seven Direct Hits and several "Shorts" with 11" delay and direct action fuzed Shells	14 months including temporary repairs before proceeding to U.K.	EXETER during the "Battle of the River Plate", came under shell fire from the German Pocket Battleship, ADMIRAL GRAF SPEE. Hit No.1, struck the shelter deck just abaft 'B' Turret and passed out through the superstructure side without exploding. Hit No.2, struck the front plate of 'B' Turret between the two guns and detonated on impact. 'B' Turret was seriously damaged and put out of action. Splinters caused damage and casualties on the bridge. Hit No.3 struck on or very near, the fluke of the starboard sheet anchor and detonated on impact. The side plating was split and torn and much damage in the paint shop was caused by splinters. Hit No.4 struck the forecastle deck on the middle line just aft of the cable holders and exploded on impact. A hole 10 ft. by 10 ft. was blown in the forecastle deck and splinters penetrated the upper deck. Hit No.5 struck the jacket of the right gun of 'A' Turret, and exploded on impact. 'A' Turret was put out of action although it was found later that the turret could be trained and the left gun used. The forecastle deck was torn and the upper deck damaged by splinters. Hit No.6 passed through the wheelhouse, charthouse, out through the armament office and exploded just forward of the starboard 4 inch H.A. Gun. Damage from splinters was widespread, ammunition in R.U. lockers was ignited, the lower bridge and 25% of the 4 inch armament was put out of action. Hit No.7 passed through the ship's side just under the upper deck abreast 'B' turret, travelled aft through the mess spaces on the lower deck and exploded abreast the E.R.A's mess. Damage from splinters was widespread, the fire main was fractured, communications seriously damaged and the lower deck holed. The 4 inch H.A. magazine and handing room were flooded by water escaping from the fractured fire main. Fire broke out in the mess spaces just aft of 'B' turret support. Splinter Damage. EXETER suffered a great deal of superficial damage from splinters due to shells that burst short. Splinters on the ship's side near the waterline caused a good deal of flooding. Most aerials were carried away and searchlights, signal projectors, rigging etc. were badly damaged. One R.U. Ammunition locker was also ignited by splinters. Fighting Efficiency - Seriously impaired. 'A', 'B' and 'Y' Turrets and 25% of the 4 inch H.A. armament was out of action. Slight loss of speed due to flooding and consequent heel and trim of the ship. REMARKS See under Achilles Page 40.

CRUISERS - 1939

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AJAX 13th Dec., 1939 D.N.C.4B/R3	One Direct Hit and several Shorts with 11" A.P.C. delay action fuzed Shell	7 months including temporary repairs before proceeding to U.K.	AJAX during the "Battle of the River Plate" came under shell fire from the German pocket battleship ADMIRAL GRAF SPEE. The direct hit struck the after superstructure port side, passed thro' 'X' barbette and exploded in the Admiral's cabin, starboard side causing slight structural damage. The shell did not detonate but burst with a mild explosion. Splinter damage caused 'Y' turret to jam. Fighting Efficiency - Impaired. 'X' and 'Y' turret were out of action due to the shell hit. 'B' turret had one gun out of action due to failure of the hoist. REMARKS - see ACHILLES below.
ACHILLES 13th Dec., 1939 D.N.C.4B/R3	Several Shorts with 11 inch direct action fuzed Shell	Nil	ACHILLES during the "Battle of the River Plate" came under shell fire from the German pocket battleship ADMIRAL GRAF SPEE. Splinters from shells bursting short pierced the ship's side above the waterline, bridge screen etc. and also caused other slight damage. Minor damage was sustained in the director control tower but after casualties had been replaced it was able to continue in action. Fighting Efficiency - Not impaired. Gun fire was not efficient until casualties in the D.C.T. were replaced. W/T was out of action temporarily. REMARKS The "Battle of the River Plate" revealed the following items. 1. Increased protection to vital communications required. 2. Additional portable telephones required. 3. Improvement to look-out positions necessary. 4. Need for increased protection for exposed personnel. 5. Remote control of the smoke apparatus required. 6. Square ports to be abolished. 7. Automatic emergency secondary lighting to be introduced. 8. Modifications required to telephone hand sets to prevent "jumping off". 9. Additional portable pumps to be supplied. 10. Fire mains to be modified to provide for easier isolation and repair.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
COVENTRY 1st Jan., 1940	Two Near Misses 250-500 lbs. delay action fuzed Bombs	3 months (including refit and fitting of R.D.F.)	COVENTRY whilst at anchor in Sutton Voe, was attacked by enemy aircraft. Slight structural damage was sustained but there was no splinter damage. The castings of main and auxiliary machinery were cracked and the W/T was damaged. Fighting Efficiency - Impaired. There was a loss of speed due to the machinery damage and the W/T was out of action.
NORFOLK 16th March, 1940 D.N.C.4B/R6	One Direct Hit piercing type 500 lbs. Bomb and two near misses delay action fuzed 500 lbs. Bombs	3 months	NORFOLK whilst at anchor in Scapa Flow was subjected to an air attack. The bomb struck the upper deck just aft of 'Y' turret and passed thro' the upper main lower and platform decks and burst in the inflammable store starboard side of the hold. Flooding extended from 'Y' handing room to fore end of the steering gear compartment. No damage was caused by the near misses. Fighting Efficiency - Impaired. 'X' and 'Y' turrets were out of action. The ship would probably have been unseaworthy in rough weather. REMARKS This incident emphasised the need for the following:- 1. New type of portable pump. 2. Trunking to be fitted to certain compartments. 3. Breaker rooms to be staggered. 4. Stiffening on W.T. doors and hatch coamings to be modified.

CRUISERS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
GLASGOW 9th April, 1940	Two near misses one delay action and one direct action fuzed Bombs	2 days	GLASGOW was operating off the Norwegian coast at 17 knots when she was attacked by enemy dive bombers. Two bombs struck the water about 15 feet off the port side. One burst on contact abreast the bridge and the other exploded underwater further forward. The first bomb caused splinter damage, slight structural damage and minor flooding below the lower deck. The second bomb caused slight structural damage between the stem and the petrol compartment. Some minor flooding also occurred. Fighting Efficiency - Slightly impaired. 'A' turret was temporarily out of action and there was a loss of speed for 30 minutes due to the trim by the bow. REMARKS This incident emphasised the need for the following items 1. Lower deck side scuttles to be blanked. 2. Air test plugs to be fitted in the lower deck hatches. 3. Rapid hardening cement and tongued and grooved deals to be supplied for damage repairs. 4. W.T. sluice valves to be fitted on lower and platform decks where pierced by ventilation trunking. 5. Additional welding equipment to be supplied for damage repairs.
SOUTHAMPTON 9th April, 1940	One near miss size and type unknown Bomb	Nil	SOUTHAMPTON whilst operating off the Norwegian coast was attacked by dive bombers. Only minor damage was sustained. Fighting Efficiency - Slightly impaired. A director was temporarily out of action.
PENELOPE 10th April, 1940	Four near miss size unknown direct action fuzed Bombs	Ship was out of action before the bomb damage was received	PENELOPE struck a submerged rock and grounded near Bode (Norway) on the 9th April, 1940 and sustained extensive damage to the outer bottom. The ship was bombed whilst at anchor after temporary repairs had been carried out. All bombs dropped to port, 15 yards from the ship's side and abreast the 4 inch gun deck causing extensive splinter damage and minor flooding. Fighting Efficiency - Impaired. Ship was already immobilised due to grounding.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
DEVONSHIRE 23rd April, 1940	Near misses, size and number not known direct action fuzed Bombs	Nil	DEVONSHIRE sustained slight structural damage due to shock and splinters, causing minor flooding. Fighting Efficiency - Not impaired.
BERWICK 16th April, 1940	Near misses size and number not known direct action and delay action fuzed Bombs	Nil	BERWICK sustained damage when bombs exploded under her forward engine room and under her after end. Slight structural damage was sustained and minor flooding occurred. Bombs exploding on impact with the water caused splinter damage to the aircraft and to the hangar. Fighting Efficiency - Slightly impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SUFFOLK 17th April, 1940 D.N.C.4B/R13	One Direct hit 1,100 lbs. delay action fuzed. Two Near miss 500 lbs. direct action fuzed One Near miss 500 lbs. delay action fuzed Bombs	10 months	SUFFOLK whilst returning from the bombardment of Stavanger aerodrome, Norway, was attacked by enemy aircraft, 88 bombs being dropped in 33 high level and diving attacks. The direct hit struck the upper deck on the starboard side just forward of 'X' turret and penetrated the upper, main, lower and platform decks. It exploded between the after end of the engine room and the fore end of 'X' shell room. Severe structural and splinter damage was caused in the wake of the explosion and one small hole was blown in the ship's side. Flooding occurred below the lower deck between the forward bulkhead of the after engine room and the after end of 'Y' shell room. Two near misses exploded on impact with the water 15-20 feet from the ship's starboard side just aft of 'X' turret causing severe splinter damage. The ship was flooded aft of the forward engine room up to the main deck level. One near miss exploded underwater 15 feet from the ship's side port abreast the after boiler room, causing the after bulge compartment to become flooded. Fighting Efficiency - Seriously impaired. The immediate effect of the direct hit was to put the after engine room and 'X' and 'Y' turrets out of action. Effect of the near misses were 1. Steering gear put out of action. 2. After end of the ship abandoned and shut down. 3. Speed was reduced to 15 knots. After steaming at 15 knots for 22½ hours the ship was unseaworthy and was beached at Scapa Flow. REMARKS This incident emphasised the following points:- 1. Ship's side lining was found to hinder damage repairs. 2. Side scuttles below the weather deck to be blanked off.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CURACOA 24th April, 1940 D.N.C.4B/R16	One Direct hit 500 lb. delay action fuzed Bomb. Several Near miss 250-500 lbs. delay and direct action fuzed Bombs	4 months	CURACOA whilst acting as the A/A ship supporting operations at Andalsnes, was subjected to repeated bombing attacks. Near misses prior to the direct hit caused minor structural damage and slight leaks in the oil fuel tanks. The direct hit struck the port wing of the lower bridge, perforated the superstructure deck and exploded 2 feet above the forecastle deck. Severe structural damage above the upper deck in the vicinity of the bridge was sustained and all bridge controls and communications were put out of action. Fighting Efficiency - Greatly impaired. Casualties sustained were very heavy. REMARKS Ventilation to H.A.C.P. inadequate and the supply fan should be controlled from within.
AURORA 7th May, 1940	One Direct hit size and type unknown Bomb	4 weeks	AURORA was operating off Norway in company with EFFINGHAM when she was attacked by enemy aircraft and a bomb struck the left gun of 'B' turret. The roof and sides of the turret were displaced and the gun mechanism damaged. Fighting Efficiency - Impaired.
SOUTHAMPTON 25th May, 1940	Near Miss 100-200 lbs. direct action fuzed Bombs	Nil See ¤ Page 47	SOUTHAMPTON was operating off the Norwegian coast near Harstad when she was subjected to an attack by enemy aircraft during which some near misses caused splinter damage above the water line. Fighting Efficiency - Not impaired.
CAIRO 25th May, 1940	Near Miss 100-200 lbs. direct action fuzed Bomb	Nil	CAIRO was attacked by enemy aircraft whilst operating off the Norwegian coast. Near miss bombs caused superficial hull damage and Main W/T and D/F aerials were carried away by splinters. Fighting Efficiency - Slightly impaired.

CRUISERS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SOUTHAMPTON 26th May, 1940	Near miss 100-200 lbs. direct action fuzed Bomb	Nil See * Page 47	SOUTHAMPTON whilst operating off the Norwegian coast near Harstad was subjected to attack by enemy aircraft. Splinters from near miss bombs caused superficial damage to the ship side and the superstructure port. Fighting Efficiency - Not impaired.
CURLEW 26th May, 1940 D.N.C.4B/R126	At least four Near Miss delay action fuzed Bombs	Sunk	CURLEW was providing A/A protection in Lavang Fiord, Norway when she was subjected to several attacks from enemy aircraft. At least four bombs exploded underwater, beneath the machinery spaces. The ship's side was split and opened up 2 ft. for a distance of 30 ft. abaft the engine room. The after engine room was flooded and engines out of action. The glands to the forward engine room were leaking. All electrical power failed, engine and boiler rooms were shut down, ship was anchored and abandoned with the quarter deck awash. CURLEW capsized and sank about two and a half hours after being attacked.
COVENTRY 28th May, 1940	Near miss Number and sizes unknown delay action fuzed Bombs	Nil	COVENTRY during operations off Narvik, was attacked by enemy aircraft. Near miss bombs caused oil fuel tanks to be strained and to leak slightly. Fighting Efficiency - Not impaired.
CAIRO 28th May, 1940	Two Direct hit direct action fuzed Bombs	5 weeks	CAIRO was attacked by enemy aircraft whilst operating off Narvik. Hit No.1 exploded on impact with the pom-pom deck just forward of the bridge structure. The 2 pounder pom-pom was put out of action, the bridge front and deck shattered and communications to the bridge damaged. The fire main, waterpipes and ventilation trunking were damaged by splinters which, also penetrated the forecastle deck. Hit No.2 exploded between the funnels. Splinters pierced the funnels, damaged both 0.5 inch mountings and severed electric cables and communications. Fighting Efficiency - Impaired. One pom-pom and two 0.5 inch mountings were put out of action. Defects to auxiliary machinery in boiler rooms and to steam joints.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SOUTHAMPTON 28th May, 1940	Near Miss 100-200 lbs. direct action fuzed Bomb	10 days *	SOUTHAMPTON was covering landing operations off Narvik when splinters from near miss bombs damaged her side plating and superstructure. One aircraft was put out of action by splinters which perforated the hangar door. Fighting Efficiency - Not impaired apart from the loss of one aircraft.
CALCUTTA 2nd June, 1940	Near Miss Size and type unknown Bomb	Nil	CALCUTTA whilst patrolling off Dunkirk was damaged by a near miss bomb. The gear case and oil cooler discharge pipe were fractured. Fighting Efficiency - Not impaired.
CALYPSO 12th June, 1940	Torpedo Type unknown fired from Submarine	Sunk	CALYPSO was steaming at 15½ knots in the Mediterranean near Crete when an explosion occurred beneath the ship to starboard. Severe structural damage was sustained in the vicinity of the explosion causing 'A' boiler room to flood immediately and 'B' boiler room to flood slowly. Immediate loss of steam prevented any damage control and the ship heeled to starboard. One hour and 33 minutes later the ship heeled further to starboard and sank by the bow in deep water. REMARKS Modifications are required to enable escape hatches to be kept open so that personnel below decks can be assisted to escape.
NEPTUNE 30th June, 1940	Several Near Miss size unknown direct action fuzed Bomb	Nil	NEPTUNE whilst operating off the south coast of Crete was attacked by enemy aircraft and near miss bombs caused widespread splinter damage to the aircraft crane, funnel, H.A. gunshield and boats. The aircraft on the catapult was damaged and jettisoned to prevent fire risk from leaking petrol. Fighting Efficiency - Not impaired apart from the loss of aircraft.
LIVERPOOL Date uncertain probably end of June, 1940	One Direct hit 4.7 inch direct action fuzed Shell	Nil	LIVERPOOL was damaged during an attack on Italian ships in the Mediterranean. The shell hit the armour belt at 180 station starboard, 3 ft. above the waterline, causing minor damage to the armour. Splinters cut the degaussing cable and penetrated two warheads. Fighting Efficiency - Not impaired.

CRUISERS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
GLOUCESTER 8th July, 1940	One Direct hit size and type unknown Bomb	Nil	GLOUCESTER was damaged by a bomb during an attack on Italian Ships. Minor damage was sustained to the bridge structure, forward D.C.T., Evershed system and bridge D.C.T. instruments. Fighting Efficiency - Not seriously impaired.
NEPTUNE 9th July, 1940	Short Calibre unknown direct action fuzed Shell	Nil	NEPTUNE whilst in the Mediterranean off the Calabrian coast sustained splinter damage to the catapult and aircraft from a shell which fell short. The aircraft was jettisoned to prevent fire risk from leaking petrol. Fighting Efficiency - Not impaired apart from loss of aircraft.
SYDNEY (H.M.A.S.) 19th July, 1940	One Direct hit Calibre unknown direct action fuzed Shell	Nil	SYDNEY whilst in action against Italian cruisers in the Mediterranean, suffered a direct hit on the funnel. This made a hole, 3ft. in diameter in the outer and inner casings, and caused minor splinter damage. Heavy fumes were drawn down into the engine room, but were quickly dispersed. Fighting Efficiency - Not impaired.
LIVERPOOL 29th July, 1940	One Direct hit 250 lbs. delay action fuzed Bomb	Nil	LIVERPOOL was operating in the Mediterranean, when she was attacked by enemy aircraft. A bomb struck the bridge front a glancing blow, perforated 'B' Gun deck, and the forecastle deck, and finally came to rest on the upper deck without detonating. Minor damage was sustained to bridge instruments. Fighting Efficiency - Not impaired.
GALATEA 1st Sept., 1940	Mine Probably Magnetic Possibly Acoustic 13 fathoms	1 Week	GALATEA was steaming at 20 knots off Chequer Shoal Buoy, when an explosion occurred 50 yards to port. Minor structural damage and strained rivets were sustained. 'A' Boiler was shut down while a new water gauge was fitted. 6" F.C. Table and U.D. 4" height finder was out of action and the 36" searchlight glasses were broken. Fighting Efficiency - Temporarily impaired. REMARKS. This incident emphasised the following points:- 1. Glass covers to F.C. tables to be made of unsplinterable glass. 2. The system of lagging in the T.S. is unsuitable. Instruments secured to it are unable to withstand shock.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
FIJI 1st Sept., 1940 D.N.C.4B/R46	Torpedo 21" Contact (Probably electrically driven with reduced charge in warhead) 800 - 900 fathoms. Fired from submarine	6 months	FIJI, whilst steaming at 13 knots in the North Sea with a convoy, was struck by a torpedo just abaft the forward bulkhead to the boiler room, port side. The explosion blew a hole in the ship's side, extending 20 ft. below the armour belt, and caused severe structural damage inboard from the lower deck to the keel. The forward boiler room, port wing compartments abreast the forward engine room, small arms magazine; No.1 Transmitter room; Marine and gunner store on the platform deck; and oil fuel tanks A2, B2, A4, B4, X2 and X4 were immediately flooded. Main armament was undamaged, and the ship steamed 500 miles to port at 10 knots. Fighting Efficiency - Severely impaired. Ship could not be steamed at full speed, due to the possible failure of the forward engine room bulkhead, and she was unable to remain in action. REMARKS This incident revealed the need that all W.T. doors to store rooms should open outwards, and all loose floor plates in engine rooms, etc., be clipped down.
GALATEA 9th Sept., 1940	One Mine non-contact, type uncertain, possibly Acoustic $7\frac{1}{2}$ fathoms	4 months including refit	GALATEA was proceeding at 20 knots, when an explosion occurred about 40 yards to starboard, and just forward of 'A' Turret. Slight damage was caused to the hull plating and the internal structure. Minor flooding at the far end was controlled. There was a temporary breakdown of the ring main breakers. The sliding feet of the port and starboard L.P. turbines (forward engine room) were fractured, but these defects were not noticed at the time of the explosion, and the main engines were able to run normally. Fighting Efficiency - Temporarily impaired. The efficiency of the 6" T.S. was reduced, and the 4" H.A.C.S. was temporarily out of action. REMARKS This incident revealed the unsuitable lagging in the T.S., and the fact that instruments secured to this lagging are unable to withstand shock.

CRUISERS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
KENT 17th Sept., 1940 D.N.C.4B/R61	One Torpedo Contact dropped by aircraft 300 fathoms	12 months	KENT was attacked by enemy aircraft whilst in action off Bardia. The torpedo struck the ship on the starboard side just abaft 'Y' turret and 10 ft. below the water line. An irregular hole 35 ft. by 30 ft. was blown in the side plating and severe structural damage was sustained inboard from the keel to the upper deck. The 8" magazine group and other compartments aft below the lower deck were immediately flooded. A small fire broke out in the warrant officer's flat and two cabins were burnt out, casualties being caused by Carbon Monoxide poisoning. Although the main engines and armament were undamaged, the starboard inner shaft and "A" bracket were missing. All lighting was lost at the after end. Fighting Efficiency - Vessel immobilised. 'X' and 'Y' turrets were put out of action, due to flooding. Both steering motors were out of action and the rudder was jammed. The vessel was towed to Alexandria. REMARKS This incident emphasised the following points:- 1. Necessity for a pom-pom director at night. 2. Portable pumps should have terminal connections for ready fitting of cables with loose ends, etc. 3. Steering motors should be watertight. 4. Every bulkhead on every deck should have emergency through terminals. 5. The valve spindle on the cross connection valves between the steering motor sumps should be extended so as to provide a secondary working position on the lower deck.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SUSSEX 18th Sept., 1940 D.N.C.4B/R53	One Direct hit approx. 250 kgm piercing type delay action fuzed Bomb	21 months	SUSSEX whilst lying in York Hill Basin, Clydeside, after refitting, was hit by a bomb dropped by enemy aircraft, during an air raid on the Glasgow area. The bomb struck the upper deck, starboard, abreast the mainmast, it penetrated the main, lower and platform decks and exploded in the starboard thrust block compartment. Severe structural and splinter damage was sustained in wake of the explosion. A serious fire broke out in the after engine room and this spread to the forward engine room and eventually to all compartments between stations 162 and 264. Main engines and all electrical and armament material abaft 162 bulkhead was seriously damaged by fire and flooding. The after end of the ship was flooded by fire fighting appliance, and the ship heeled 23° to starboard and grounded aft. Fighting Efficiency - Severely impaired. If SUSSEX had been at sea and the fire allowed to reach the serious state that it did she would have been lost. If the vessel had been "with the fleet" the fire could most probably have been confined to the after engine room and a few compartments abaft it below the lower deck. Thus the effect would have been:- 1. A reduction of speed due to the after engine room being out of action. 2. 'X' and 'Y' guns out of action due to the compulsory flooding of the magazine groups.
DRAGON 23rd Sept., 1940 D.N.C.4B/215	'Shorts' calibre and type unknown Shell	Nil	DRAGON while in action off Dakar was showered with splinters by a "shot" from a large calibre gun. No major damage was sustained but splinters from shorts from small calibre guns perforated the shell plating forward and caused minor flooding. A minor cordite fire was started at No.1 Gun and fires were also started in the paint store and the boy's mess deck. Fighting Efficiency - Not seriously impaired. Speed temporarily reduced to 10 knots to effect repairs and reduce flooding through splinter holes.

CRUISERS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CUMBERLAND 23rd Sept., 1940 D.N.C.4B/215	One Direct hit 11 inch delay action fuzed. (Very short delay) Shell	13 days	CUMBERLAND during the operations off Dakar, was struck by a shell at 159 station, port, 6 inches above the armour belt. The shell was deflected upwards by the protective deck and burst 11 ft. 6 ins. inboard. Minor structural damage was caused in the vicinity of the explosion, and a hole (3 ft. in diameter) was blown in the protective deck. Extensive damage to pipe lines, gunnery and electrical equipment by splinters. Fighting Efficiency - Seriously impaired. Vessel was momentarily immobilised, due to main breaker coming off the board. Subsequent effect (Main damage located after about 6 hrs. and temporary repairs effected):- 1. Continued loss of feed water caused eventual stoppage of main engines, and after dynamos. 2. Lack of ventilation caused abandonment of forward engine room and temporary abandonment of after engine room. 3. 4 inch magazine was flooded as a precautionary measure.
AUSTRALIA (H.M.A.S.) 25th Sept.,1940 D.N.C.4B/215	Two Direct hits delay action fuzed Shell	Nil	AUSTRALIA whilst in action with two French cruisers of the GLOIRE class, was hit by two shells. Hit No.1 perforated the ship's side at 194 station, port, about 4 ft. above the lower deck, and burst on the protective deck. Minor structural damage was sustained in the vicinity of the burst. Hit No.2 perforated the weather deck at 214 station, and burst 12 ft. inboard. Minor structural damage was sustained in the vicinity of the burst. Fighting Efficiency - Slightly impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION.	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AJAX 12th Oct., 1940 D.N.C.4B/124	Seven Direct hits Medium calibre. Direct action fuzed Shells	Nil	AJAX while in action in the Mediterranean with Italian destroyers, was damaged by shell-fire. Hit No.1 struck the lower bridge port, and caused minor damage in the plotting office and R.C.O. Electrical circuits were cut by splinters. Hit No.2 struck just beneath the lower bridge port, the S.D.O. was wrecked and the W/T type 279 put out of action, due to cut electric leads. Hit No.3 struck the ship's side, abreast the main central store, port, lower deck. A hole, 2 ft. in diameter was blown in the ship's side, and fittings in the store damaged by blast. The explosion started a fire which damaged electric leads, etc. Hit No.4 struck the armour belt abreast "C" boiler room, 2 ft. below the upper deck, port, only splinter damage to the torpedo tubes was sustained. Hit No.5 struck the after davit of the port whaler, the whaler was destroyed, P.1 4 inch gun, funnel, vent trunks, and adjacent fittings pierced by splinters. Hit No.6 struck the ship's side abreast the gunners armament store, port. A hole, 2 ft. in diameter, was blown in the ship's side and the stores damaged by the subsequent flooding. Hit No.7 struck the ship's side, port, abreast the F.W. tank, aft, just below the lower deck. A hole, 2 ft. 6 ins. in diameter was blown in the side plating, but only minor splinter damage was sustained. Fighting Efficiency - Impaired. One 4 inch gun damaged, Radar, plotting office, and R.C.O. were put out of action. REMARKS The incident emphasised the following requirements:- 1. Ample supply of cement should be carried to effect temporary repairs. 2. Need for an increased supply of suction hoses. 3. Miners headlamps are more serviceable than hand torches. 4. A number of steel plates cut to size to be carried, for rapid patching of shell holes, etc.

CRUISERS - 1940

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
LIVERPOOL 14th Oct., 1940 D.N.C.4B/R82	One Torpedo Contact dropped by aircraft	12 months, including 4 months permanent repairs in U.S.A.	LIVERPOOL was attacked by enemy aircraft whilst proceeding with the fleet to Alexandria. The torpedo struck the fore end, and severe structural damage was caused in the vicinity of the explosion. The petrol tank was damaged and petrol vapour pervaded the fore end. The petrol vapour was ignited by a spark from a short circuit, and the resultant explosion severely damaged the fore end, and blew off the roof of 'A' turret. Severe structural damage was sustained as far aft as 'B' turret. The damaged bow caused the ship to steer badly when towed stern first, but it eventually broke off just forward of 'A' turret, whilst the ship was being towed to Alexandria. Fighting Efficiency - Seriously impaired. 'A' and 'B' turrets were out of action. The ship was unable to proceed under power, except astern. REMARKS As a result of this incident an amendment of Damage Control Handbook (O.V.6331/39) Page 5 Para. 36, was issued. When petrol fumes are present, consideration should be given to the need for switching off fans and damaged electric circuits in the vicinity, to guard against further explosion. A.F.O.P402/41.
BERWICK 27th Nov., 1940 D.N.C.4B/R59	Two Direct hits 8" delay action fuzed Shells	20 days temporary repairs See Page 56	BERWICK was damaged by shell fire whilst in action with two battleships (LITTORIO Class) Cruisers, and Destroyers in the Mediterranean. 1st Shell struck and perforated 'Y' turret support, and exploded 4' away. Minor structural damage was sustained in the vicinity of the burst. A small fire was started in 'Y' turret support. 2nd Shell struck the upper deck at 237 station port, perforated the main and lower decks and burst between the gun room and 'Y' shell handing room. Minor structural damage was caused in way of the burst. A small fire started in the oilskin store. Fighting Efficiency - Not seriously impaired. 'Y' turret was out of action. (BERWICK steamed at full speed throughout the engagement)

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
GLASGOW 3rd Dec., 1940 D.N.C.4B/R65	Two Contact Torpedoes dropped by aircraft	9 months	GLASGOW was attacked whilst lying at anchor in Suda Bay. At 1540 a torpedo struck the starboard side at about 9 station. A hole was blown in the side plating port and starboard 22 ft. x 22 ft. and severe structural damage was sustained inboard. Minor damage was caused aft to 16 bulkhead. A minor fire occurred in the battery room forward. Immediate flooding took place forward of 14 bulkhead. At 1541 a torpedo struck the starboard side about 238 station, just above the keel. A hole, about 22 ft. x 22 ft. was blown in the outer bottom on the port and starboard sides. Extensive internal damage extended from 227 to 245 stations, minor damage to 227 station. Immediate flooding occurred from 227 to 245 stations. The main machinery was undamaged. Minor damage occurred to electrical equipment. Fighting Efficiency - Seriously impaired. 'Y' turret was not safe to fire. The steering gear was put temporarily out of action and the two inner shafts were seriously damaged and jammed. Eventually the ship steamed to Alexandria at 16 knots. The ship's back was broken. REMARKS The ship's report contained the following proposals:- Necessity for longer electric leads on portable pumps. Need for increased supply of suction hoses. Need for larger strum boxes with coarser mesh on fixed suctions, and all pumps that can be used on the main suction line should have large and readily accessible fine mesh suction strainers.
COVENTRY 13th Dec., 1940	One Contact Torpedo fired from Submarine	See later action Page 62	COVENTRY was proceeding in the Mediterranean when she was struck by a torpedo at the fore end. The fore end of the ship was missing below the platform deck from the stern to 10 bulkhead. Serious damage was sustained to structure between the platform and upper decks back to 17 bulkhead. The fore end was flooded. The main engines and armament were undamaged. Fighting Efficiency - Impaired. The ship steamed to Alexandria at 10 knots.

CRUISERS - 1940/41

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
BERWICK 25th Dec., 1940 D.N.C.4B/R59	Four Direct hits delay action fuzed Shells	6 months including damage received 27th Nov., 1940. See Page 54	BERWICK was damaged by shell fire during an action with a German cruiser of the HIPPER class in the Atlantic N.W. of the Azores. 1st Shell struck the starboard side of 'X' turret, perforated the gunhouse deck and revolving structure and emerged through the gun support, port side, and passed overboard without detonating. 2nd Shell struck the side plating starboard at 71 station, it pierced the platform deck, struck 4 inch N.C. longitudinal bulkhead, was deflected through 100°, perforated No.7 oil fuel tank and penetrated 81 bulkhead, but did not explode. Immediate flooding of spaces 69-81 lower deck and 7 and 10 oil fuel tanks occurred. 3rd Shell struck the starboard side of S.1 4 inch twin mounting perforated the superstructure and upper decks and exploded in the central funnel uptake. Minor damage was sustained in the vicinity of the burst. 4th Shell perforated the upper bulge, struck the $4\frac{1}{2}$ inch C side armour, was deflected downwards and exploded in the bulge. Minor structural damage was sustained. Immediate flooding 183 to 201 stations in double bottoms and 195 to 219 stations upper and lower bulge compartments. Fighting Efficiency - Not seriously impaired. 'X' Turret was jammed and out of action. The main telephone exchange was put out of action. A.4 boiler was closed down due to loss of feed water. REMARKS Ship's report contained the following proposal:- It is considered necessary that valves with hose connections should be fitted on the ship's side, port and starboard, in all main compartments on the lower deck, to provide a ready discharge for all portable pumps.
SOUTHAMPTON 10th Jan., 1941	Near Miss Size and type unknown Bomb	Nil	SOUTHAMPTON was escorting GALLANT to Malta when they were attacked by enemy aircraft. Near Miss bomb caused minor damage to the A/S dome. Fighting Efficiency - Not impaired.
BONAVENTURE 10th Jan., 1941	'Shorts' calibre and type unknown Shell	Nil	BONAVENTURE was involved in an action with two Italian warships in the Mediterranean. Superficial damage was caused by splinters. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SOUTHAMPTON 11th Jan., 1941 D.N.C.4B/R166	Two possibly Three, Direct Hits 250 kgm delay action fuzed Bombs Torpedoed by H.M.S. GLOUCESTER (One torpedo) H.M.S. ORION (four torpedoes)	Sunk	SOUTHAMPTON was attacked while escorting a convoy off Malta. Dive bombers scored hits with bombs to which incendiaries were attached. A bomb or bombs perforated 'X' gun deck, ward and gun room flat and probably burst in the main W/T office, extensive internal damage was sustained and all W.T. doors in the vicinity were shattered. Intensive fire broke out, involving the whole of the after-superstructure and the ward room flat. Many key personnel were killed. 'Y' magazine was flooded but as the flooding arrangments to the 4 inch and 'X' magazine were wrecked these spaces could not be flooded. The bomb hit forward, entered the port hangar, perforated E.R.A's pantry and exploded on the protective deck above 'A' boiler room. Extensive internal damage was sustained and the protective deck split, the superheater pipe was blown off the boiler and the compartment abandoned. Important engine room personnel were killed. Damage and casualties to important personnel prevented effective damage control measures being taken. The fire aft was being successfully fought until 'A' Boiler room was abandoned and caught fire. All water supply and power was lost and both fires got out of hand. SOUTHAMPTON was abandoned and sunk by own forces.
GLOUCESTER 11th Jan., 1941	One Direct hit (did not explode) One Near Miss 250 kgm delay action fuzed Bombs	1 month	GLOUCESTER whilst with a convoy in the Mediterranean, was attacked by enemy aircraft. The direct hit bomb passed through the forward 6 inch D.C.T. into the meteorological office without exploding. Minor structural damage was sustained in the path of the bomb. The D.C.T. was distorted and rangefinder badly damaged, important cables in the D.C.T. were damaged. Minor damage (53-87 stations) was caused by splinters from a near miss bomb. Fighting Efficiency - Slightly impaired. Forward 6 inch D.C.T. out of action.
ADVENTURE 15th Jan., 1941 D.N.C.4B/R50	One Non contact Acoustic Mine (1500 lbs. approx.) 24 fathoms	5½ months	ADVENTURE was returning to Liverpool from Milford Haven when a violent explosion occurred beneath the ship at about mid length. The outer bottom sustained minor damage (140 to 177 stations) and internal structure (104 to 190 stations) received slight damage. The vertical arm of the port 'A' bracket was fractured just above the barrel. The auxiliary machinery castings sustained damage. Minor flooding occurred in the engine room and after trimming tank. Fighting Efficiency - Impaired. Speed was reduced and the ship returned to port in 6 hours at 9 knots. HA/LA director, rangefinders and heightfinders and both main and 2nd W/T sets out of action due to shock.

CRUISERS - 1941

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PERTH (H.M.A.S.) 15th Jan., 1941	One Near Miss size and type unknown Bomb	Nil	PERTH was bombed whilst at Malta. A near miss aft caused minor structural damage in way of oil tanks and surrounding spaces, and minor flooding of 'X' shell room, oil fuel tanks and adjacent compartments. Fighting Efficiency - Impaired. 'Y' turret was out of action due to shock. The ship was able to steam at 25 knots.
AJAX 24th Jan., 1941	Near Miss size and type unknown Bomb	Nil	AJAX sustained minor damage when attacked by enemy aircraft. Three low power generators stripped. Fighting Efficiency - Not impaired.
NEPTUNE 9th Feb., 1941	One Near Miss 250 kgm delay action fuzed Bomb M/Gun attack	2½ months	NEPTUNE was damaged when a near miss bomb burst about 20 ft. to 30 ft. from her port side abreast the mainmast. The ship sustained a severe shaking, and minor damage to oil fuel and after W/T compartments. Superficial damage was caused by M/Gun bullets. Fighting Efficiency - Not impaired.
NEPTUNE 16th Feb., 1941	Near Miss size and type unknown Bomb	Nil (Damaged whilst undergoing repairs)	NEPTUNE was in dry dock at Chatham Dockyard when a bomb exploded on a Compressor House about 150 yards away on the dock side to port of the ship. Superficial damage was caused by splinters to the superstructure and side plating, port. Fighting Efficiency - Not impaired.
BONAVENTURE 23rd March, 1941	One Near Miss size unknown direct action fuzed Bomb	Nil	BONAVENTURE was damaged during an air attack on Grand Harbour, Malta. Superficial damage was caused by splinters from a near miss. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
YORK 26th March, 1941	One Explosive Motor-Boat Contact	Beached See later action on Pages 61, 62 and 63.	YORK was at anchor in Suda Bay (Crete) when she was attacked by enemy 'E' boats. A violent explosion occurred amidships on the starboard side and the ship listed to starboard and settled by the stern. A hole was blown in the side plating 25 ft. long by 11 ft. wide extending upwards from the bilge keel. Severe damage to side plating 133 to 155 stations extended upwards for 25 ft. from 8 ft. below the bilge keel. Internal damage was extensive. 'A' and 'B' boiler rooms and forward engine rooms were immediately flooded, slow flooding occurred in the after engine room and compartments in the vicinity. All steam, lighting and power was lost. Vessel was immobilised, unseaworthy and beached. REMARKS The ship's report contained the following remarks:- The plentiful supply of hand torches proved invaluable. The provision of fixed torches for emergency lighting in machinery spaces proved of great value.
SHEFFIELD 30th March, 1941 D.N.C.4B/R70	One Near Miss 250 kgm delay action fuzed Bomb	5 days temporary repairs. Including refit and damage received 17.3.41 (See Appendix 1 Page 465)	SHEFFIELD, whilst operating in the Western Mediterranean, was dive bombed by a French aircraft. The bomb struck the water 10 to 15 yards abreast of 30 station, port. Minor damage was caused to the hull plating and framing 22 to 25 stations below the waterline. Fighting Efficiency - Not impaired.
BONAVENTURE 31st March, 1941	Two Contact Torpedoes fired from Submarine	Sunk	BONAVENTURE, whilst operating in the Western Mediterranean, was hit by two torpedoes, which both struck on the starboard side, one at the after end of the forward engine room and the other abreast the after engine room. Shock caused failure of all telephone communications. It is possible that an oil fuel fire broke out at the after end of the foremost engine room. Ship rapidly flooded, heeled heavily to starboard and sank by the stern in 5 to 6 minutes.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CAPETOWN 8th April, 1941 D.N.C.4B/R176	One Contact Torpedo fired from 'E' Boat	13 months	CAPETOWN was torpedoed by an 'E'-Boat whilst protecting a convoy off Kuba, Eritrea. The torpedo struck the starboard side at the centre of 'B' boiler room which was flooded immediately. The fore and aft bulkheads of the boiler room suffered minor damage only. All lighting failed immediately and the main and auxiliary machinery stopped. The starboard ring main was fractured. Lighting and power was restored whilst in tow. Fighting Efficiency - Seriously impaired. The ship was temporarily immobilised. Seagoing efficiency was greatly reduced by flooding of 'B' Boiler room. Note:- Vessel taken in tow to Port Sudan (294 miles) REMARKS The ship's report contained the following remarks and proposals:- The value of damage control arrangements was proved. Value of N.C. 5" outfit headlamps was illustrated. Necessity for davits to be fitted with the spars and griping bars necessary to keep all boats stowed in the outboard position during an emergency.
NAIAD 10th April, 1941	No unknown Near Miss 500 kgm, and 250 kgm direct action fuzed Bombs	Nil	NAIAD was damaged by near miss bombs during an air raid on the Tyne Area. Superficial damage to hull and superstructure was caused by splinters. Keeps to sliding feet of turbines and gyro compass were damaged by shock. Glasses to H.A. and L.A. control instruments in T.S. were broken. Fighting Efficiency - Not seriously impaired. REMARKS The modified keeps to sliding feet of turbines were an advantage. Modified shell and cordite stowage in magazines stood up well to shock.
KENT 21st April, 1941	One Direct Hit 50 kgm direct action fuzed Bomb. One Near Miss 50 kgm direct action fuzed Bomb	Nil (Damaged whilst undergoing repairs)	KENT was damaged during an air-raid on Plymouth where vessel was in dry dock undergoing torpedo damage repairs. The direct hit bomb struck the upper deck just abaft 'Y' turret a hole 5 ft. by 5 ft. was blown in the deck and minor structural damage sustained from blast. Extensive but unimportant damage caused by splinters. Near miss bomb burst near the starboard side forward and caused minor splinter damage. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
YORK 22nd April, 1941	Two Near Miss Size and type unknown Bombs	See pages 59, 62 and 63	YORK was further damaged during a dive bombing attack on Suda Bay, Crete. One bomb fell about 75 yards away, and another close to the starboard side. The ship was severely shaken, and the after engine room was flooded in 20 minutes. Note:- The after engine room was cleared of water as a result of salvage operations.
YORK 24th April, 1941	One Near Miss size and type unknown Bomb	See page 59, 62 and 63	YORK was again damaged when a heavy bomb fell close alongside, on the port side, during a further air attack on Suda Bay, Crete. This caused underwater damage which subsequently led to the flooding of 'B' magazine, transmitting station, and No.1 naval store through A4 and A6 oil fuel tanks. On 28th April salvage operations were temporarily abandoned, and orders were given to land certain items of equipment. Preparations were made for destroying the ship with depth charges, if the occasion arose.
GLOUCESTER 30th April, 1941	One Direct Hit size and type unknown Bomb, and probably One Near Miss, size and type unknown Bomb	1 day temporary repairs	GLOUCESTER was damaged by a bomb which struck the upper deck, and penetrated the upper, lower, and platform decks. It then passed out through the port side plating, below the water line, without exploding. Minor structural damage was sustained in the path of the bomb. The watertight compartment 218 to 227 below the platform deck, and No.5 central store were flooded. Possible damage from the near miss included minor damage to the starboard side plating 43 to 63 stations for 12 ft. below the water line. Fighting Efficiency - Not impaired, except for slight reduction in speed, due to flooding.
ADVENTURE 4th May, 1941	No. unknown Near Miss size and type unknown Bombs	Nil (Damaged whilst undergoing repair)	ADVENTURE was damaged during an air raid on Liverpool, where she was undergoing mine damage repairs. Superficial damage was caused by bomb splinters from near misses. Fighting Efficiency - Not impaired.
CORNWALL 8th May, 1941	Two Direct Hits direct action fuzed Shells	1 month	CORNWALL sustained damage from two direct hits above the waterline, whilst in action with an enemy raider. A hole was blown in the side plating 75 to 77 stations starboard, between lower and platform decks. The side plating was also damaged over the area 77 - 79 stations and minor damage was caused to the internal structure. A hole was blown in the side plating 130 to 131 stations starboard from upper deck to 3 ft. below it. Minor damage was sustained to internal structure above the waterline and superficial damage was caused by splinters. One ring main section and some fire control and communication cables were damaged. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
YORK 16th May, 1941	Ten Near Miss size and type unknown Bombs	See pages 59, 61 and 63	YORK was severely shaken, when ten bombs fell nearby during an attack on the harbour by enemy bombers.
COVENTRY 17th May, 1941	One Near Miss size and type unknown Bomb	10½ months (including repairs to damage received 13th Dec.1940 (See Page 55)	COVENTRY received minor damage from a near miss. Fighting Efficiency - Not impaired.
YORK 18th May, 1941	One Direct Hit 250 kgm or probably 500 kgm. Bomb three Near Miss size and type unknown Bombs	See pages 59, 61 and 63	YORK was further damaged during an enemy air attack on the harbour. A direct hit on the roof of 'B' turret completely wrecked the gun house, the back of the turret being blown into, and severely damaging, the bridge structure. A near miss forward lifted 'A' turret off its roller path and split the turret sides. Combined with two other near misses the fore end was severely shaken and damaged. Due to previous bombing, YORK was flooded to the water line between 111 and 203 stations. This was now extended to 14 stations.
YORK 19th May, 1941	No. unknown Near Miss 250 kgm or probably 500 kgm Type unknown Bombs	See pages 59, 61 and 63	YORK was extensively damaged by near miss bombs, when the harbour was attacked by enemy aircraft. The starboard side plating was buckled and damage to the upper deck was increased. Further damage was also caused to internal bulkheads. The vessel was completely flooded between stations 10 and 203.
YORK 20th May, 1941	One Direct Hit 250 kgm or probably 500 kgm. Type unknown Bomb	See pages 59, 61 and 63	YORK received a direct hit on 'Y' turret, when the harbour was again bombed by enemy aircraft, which completely wrecked the gunhouse and the quarter deck abaft the turret was holed and buckled. New flooding to the water level occurred between 203 and 256 stations. YORK was then flooded from 10 to 256 stations, (the aftermast station in the vessel being 262).

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AJAX 21st May, 1941	Near Miss Size and type unknown Bombs	Indeterminate (See later action page 65)	AJAX had her stem fractured and bent over below the waterline. The fore peak was flooded and the port side plating just abaft the collision bulkhead was leaking slightly. Both port shafts were distorted. Fighting Efficiency - Slightly impaired. Speed reduced to 25 knots.
YORK 22nd May, 1941	One Direct Hit size and type unknown Bomb	Ship abandoned. See pages 59, 61 and 62	YORK was further damaged when the harbour was again bombed by enemy aircraft. A direct hit amidships caused superficial damage, no further flooding was possible. The diesels and generators were wrecked, the after funnel set aft 10° and the deck around the torpedo tubes, severely distorted. Note:- On 20th May, the invasion of Crete had commenced. It was decided to abandon YORK as she was beyond all hope of salvage and there was nothing on board of value to the enemy.
FIJI 22nd May, 1941 D.N.C.4B/87	One Direct Hit three Near Miss size and type unknown Bombs	Sunk	FIJI was dive bombed, whilst operating off Crete. First near miss exploded off the port side and damaged the side plating and side scuttles above the waterline. Second near miss exploded abreast the forward engine room, port side. The side plating was blown in, the port crane damaged, and the torpedo tubes were thrown 15 ft. aft. Minor flooding of oil into the forward engine room occurred. All lighting failed, except the emergency lighting in the forward machinery spaces. Third near miss exploded abreast the forward boiler room, port side. The ship heeled 19° to port, and this slowly increased to 25°. The forward engine room and boiler room flooded rapidly, and the speed was greatly reduced. The direct hit passed through the hangar and exploded, probably above the forward boiler room. The heel increased to 30°. The ship was abandoned, and finally capsized about 5 hours after the second near miss.
ORION 22nd May, 1941	Near Miss size and type unknown Bomb	Nil	ORION was damaged by a near miss bomb in a night action off Crete. Superficial damage was caused by splinters. The foremast was weakened due to shock, and some damage was caused to aerials and rigging. Fighting Efficiency - Slightly impaired. The speed was reduced to 25 knots.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NAIAD 22nd May, 1941	No. unknown Near Miss size and type unknown (probably mixed delay and direct action fuzed) Bombs	21 days temporary repairs	NAIAD was damaged whilst operating off Crete. The fore end, below and above the waterline, was extensively damaged by splinters from near misses, and minor internal damage was sustained. The ship was partially flooded forward of 34 bulkhead. Auxiliary machinery castings were fractured. Fighting Efficiency - Slightly impaired. A reduction of speed occurred due to flooding and damage to auxiliary machinery. REMARKS The ship's report contained the following remark:- Damage was confined to the wholly welded portion of the vessel which stood up well under shock.
CARLISLE 22nd May, 1941	One Direct Hit 250 kgm direct action fuzed Bomb One direct hit 50 kgm direct action fuzed Bomb Two Near Miss 250 kgm. Type unknown Bombs	1 month	CARLISLE sustained damage whilst operating off Crete. Direct hit No.1 on left gun of No.2 - 4 inch mounting. Direct hit No.2 struck the after funnel, causing serious damage within 25 ft. radius of the burst. The after funnel was destroyed and extensive splinter damage occurred within 150 ft., including damage to R.D.F. transmitter and power cables. A minor petrol fire started in the starboard waist and R.U. ammunition was ignited. Temporary D/G cables on deck were burnt. Fighting Efficiency - Impaired. No.2 gun was destroyed and the R.D.F. was out of action. The efficiency of .5 inch M/Guns was reduced by 50%.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
GLOUCESTER 22nd May, 1941	At least Four Direct Hits and three Near Miss size and type unknown Bombs	Sunk	GLOUCESTER was dive bombed whilst operating off Crete. The ship sustained at least two hits in the after part of the ship. One passed through 'X' turret barbette and exploded in the gun room flat, and the other blew the D.C.T., after H.A. director and the main topmast overboard. "B" boiler room, compressor room, and the main W/T office were damaged. One direct hit occurred on deck between P.1 and P.2 4 inch guns. Another direct hit penetrated the port pom-pom platform, passed through the hangar, and exploded in the canteen flat. The ship was immobilised and almost stationary. Three near misses burst along the port side. The ship heeled to port with main T.S. and 2nd W/T flooded. Fires were burning in the vicinity of the port pom-pom, the R.U. magazine, and the wardroom flat. The ship was abandoned when the port gunwale was awash and shortly afterwards she capsized to port and sank by the stern.
AJAX 28th May, 1941	Near Miss size and type unknown Bomb	3 months approx. including repairs to damage received on 20th May 1941 (See page 63)	AJAX, during an action at the evacuation of Crete sustained minor damage and an internal fire as a result of a near miss bomb. Details of the damage are not available. Fighting Efficiency - Not seriously impaired.
NORFOLK 28th May, 1941	Four Near Miss 100 kgm delay action fuzed Bombs	Nil	NORFOLK was attacked by an enemy aircraft off the West Coast of Ireland, and a stick of four bombs was dropped off the starboard bow. The starboard side framing was slightly distorted and A.1 oil fuel tank leaking. Fighting Efficiency - Not impaired, except for slight contamination of oil fuel.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ORION 29th May, 1941 D.N.C.4B/R78	Two Direct Hits 500 kgm delay action fuzed. Several Near Miss size and type unknown Bombs	8½ months	ORION was attacked by enemy aircraft during the evacuation of Crete. Near misses off the starboard quarter caused Y1, 2, 3 and 4 and B7 and 9 O.F. tanks to leak while the after 6" magazine was flooded. Leaks caused contamination in A3 and 4 O.F. tanks. A direct hit occurred on the roof of "A" turret, the bomb finally exploding on the after side of roller path. Serious structural damage took place within a radius of 30 ft. from burst, and "A" gunhouse was wrecked. The roof of "A" turret hit "B" guns. A cordite fire occurred in "A" turret and lobby and fires started on lower and upper decks in this vicinity. The forward magazines were flooded as a precautionary measure. Serious damage took place to important electric cables. Another direct hit bomb struck the bridge, perforated the bridge structure, and burst in the lower steering position. Serious structural damage occurred between 53 to 80 stations over full width of the ship between hold and forecastle decks. The crown of 4" H.A. magazine (80 lb. N.C.) was blown down a maximum of 6'. Minor splinter damage was sustained. The failure of all L.P., except local batteries to 'X' and 'Y' turrets occurred. Fires started in the vicinity of the burst, and the switchboard was abandoned, due to intense heat, while 'A' boiler room was temporarily evacuated. Fighting Efficiency - Seriously impaired. 'A' and 'B' turrets were put out of action 'X' and 'Y' turrets could be fired in local control only. The damage control position, all low power, lower control tower, and telemotor leads were destroyed. The 6" transmitting station, 4" H.A.C.P. 4" and after magazine and numerous oil fuel tanks were flooded. REMARKS The ship's report contained the following proposals:- Unit suctions to oil fuel tanks should be restored so as to expedite change over from oil fuel tanks when contaminated with water. Two 50 ton oil fuel transfer pumps should be installed to augment the inadequate pumping arrangements supplied for transferring fuel from small double bottom tanks. Modification necessary to positioning of damage control and lower steering position and telephone exchange. As grouped in ORION this resulted in a large loss of key personnel and destruction of communication and control of the ship due to one hit.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
DIDO 29th May, 1941 D.N.C.4B/R80	One Direct Hit 500 kgm delay action fuzed Bomb. Several near miss size and type unknown Bombs	5 months, including 2½ months permanent damage repairs and refit in U.S.A.	DIDO was attacked by dive bombers during the evacuation of Crete, and a direct hit struck and perforated the roller path of "B" turret, exploding just above the forecastle deck. Severe structural damage was sustained between the lower and forecastle decks 34-48 stations. 'Q' turret trunk was fractured and the roller path distorted. Minor fires started in the cinema projector room, and from cordite in 'B' turret. 'B' and 'Q' magazines were flooded as a precautionary measure. Fumes from the fires were drawn into the forward boiler room and the ship had to alter course to prevent evacuation of the compartment. Minor underwater damage was caused by many near misses. Fighting Efficiency - Not seriously impaired. "B" turret was out of action. Note:- Had "Q" turret been mounted, this would have been out of action due to the damage sustained. This incident confirmed the results of the 5.25 inch mock-up (flash) trial in job 74 (18-5-38)
PERTH (H.M.A.S.) 30th May, 1941	No. unknown Near Miss size and type unknown Bombs	4½ months	PERTH was damaged during the evacuation of Crete. Near miss bombs. The ship was severely shaken by near miss bombs and the structure was generally strained throughout. Extensive weeping of riveted connections of the outer bottom plating and minor flooding by oil fuel occurred. Superficial damage was caused by splinters. Fighting Efficiency - Not seriously impaired. 4 inch and 6 inch fire control tables were out of action due to shock. Endurance was reduced due to contamination of oil fuel.
CALCUTTA 1st June, 1941	Two Direct Hit, size and type unknown Bombs	Sunk	CALCUTTA, during the evacuation of Crete, was hit by two bombs and sunk in a few minutes. No further information is available.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
MANCHESTER 23rd July, 1941 D.N.C.4B/R81	One Contact Torpedo dropped by aircraft	9 months, including 7 months permanent repairs in U.S.A.	MANCHESTER was attacked whilst escorting a convoy in the Mediterranean. The torpedo struck the port side aft, and a hole, 8 ft. in diameter was blown in the outer bottom. External damage was mainly confined to Y4 oil fuel tank. Severe internal damage extended from the hold to the upper deck. The side armour abreast "X" magazine and shell room was distorted. The port outer A bracket was fractured. Extensive damage was sustained by the high and low power control and communication circuits. The after engine room, "X" magazine, after oil fuel tanks, W/T office, and 4 inch magazine were flooded. "X" turret structure was distorted. Fighting Efficiency - Seriously impaired. Speed seriously reduced due to damaged shafting and flooding of the after engine room. "X" turret and main W/T out of action.
HERMIONE 2nd August, 1941	Rammed submarine	5 days	HERMIONE had her hull plating, at the extreme fore-end on the port side, torn for 14 ft., just above the keel. Minor damage to surrounding plating and framing over this area, port and starboard, was sustained. The bow compartments below the platform deck were flooded for 28 ft. Fighting Efficiency - Not seriously impaired.
PHOEBE 27th August, 1941 D.N.C.4B/R160	One Contact Torpedo, dropped by aircraft	8 months, including refit in U.S.A.	PHOEBE was struck by a torpedo from an enemy aircraft, whilst operating in the Mediterranean. The torpedo struck the starboard side 48 to 50 stations and a hole was blown in the outer bottom 28 ft. by 18 ft. garboard to "F" strakes. Serious internal damage was sustained between 35 and 87 stations, from keel to lower decks. Nearly all compartments 34 to 57 stations were flooded to the waterline and H.P. and L.P. cables in the vicinity were seriously damaged. The main machinery was undamaged. Fighting Efficiency - Seriously impaired. T.S. and W/T were out of action due to the damage and flooding. A serious loss of oil fuel occurred.
SYDNEY (H.M.A.S.) 19th Nov., 1941	(i) Several Direct Hit 6 inch Shells (ii) One Contact Torpedo	Sunk	SYDNEY was in action against a German raider off Western Australia, when she received several shell hits on the bridge, and amidships, and was later struck by a torpedo forward, which put the forward guns out of action. Ship was down 6 ft. by the bow, with the bridge and amidships on fire. SYDNEY retired at 5 knots and was last seen burning furiously. She was thought to have sunk just before midnight, but there were no survivors.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
DUNEDIN 24th Nov., 1941	Two Contact Torpedoes Fired from submarine	Sunk	DUNEDIN, whilst proceeding at 16½ knots, was struck by a torpedo abreast the P.O's mess, starboard. A few minutes later, a second torpedo struck the ship, abreast the wardroom, starboard side. DUNEDIN immediately heeled 15° to starboard after the first hit, and this increased to 35° within 5 minutes. The second torpedo tore up the quarter deck, dislodged No.6 6 inch gun, and blew off the port propellor. The vessel heeled over to 90°, capsized and sank about 20 minutes after being struck. REMARKS This incident revealed the following requirements:- 1. Stronger nets and gratings with a smaller mesh spacing should be fitted on carley floats to keep out voracious fish. 2. Flags and staves should be provided for rafts, etc. 3. Some form of support should be fitted to rafts and carley floats to enable injured men to be supported above the water level.
GALATEA 14th Dec., 1941	Three Contact Torpedoes Fired from submarine	Sunk	GALATEA, whilst operating off Alexandria, was struck by three torpedoes on the port side and sank in 3 minutes. No further information is available.
NEPTUNE 19th Dec., 1941	Three, possibly Four Contact Mines	Sunk	NEPTUNE was operating in the Central Mediterranean at a speed of 24 knots, when a mine struck her on the port side. One, or possibly two more mines exploded under the stem, and part of the after structure was blown away. Preparations were being made to be taken in tow when another mine exploded amidships. The ship heeled to port and sank slowly.
PENELOPE 19th Dec., 1941	One Non-Contact Mine 80 fathoms	2 weeks	PENELOPE was operating in the Central Mediterranean at a speed of 24 knots, when an explosion occurred abreast the bridge on the port side, causing minor structural damage. The main and auxiliary machinery was undamaged. Fighting Efficiency - Not impaired.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AURORA 19th Dec., 1941 D.N.C.4B/R207	One Non-Contact Mine Charge 550 lbs. 80 fathoms	13 weeks	AURORA was in the Central Mediterranean proceeding at a speed of 24 knots, when an explosion occurred to port, abreast "B" turret. The port forward oil fuel tanks and store rooms flooded immediately, and slow controlled flooding occurred on the platform deck. The vessel heeled 11° to port, but this was corrected by counterflooding. Extensive buckling of the hull structure was sustained over a length of 120 ft., from the lower deck to the keel. Minor damage was caused to electrical equipment. The shell hoists of "A" and "B" turrets were jammed. Fighting Efficiency - Seriously impaired. The speed was reduced to 10 knots to avoid further damage, but it was later increased to 18 knots. Endurance was reduced due to loss of oil fuel. "A" and "B" shell hoists were out of action. REMARKS This incident emphasised the following points:- 1. Blank scuttle to be fitted with No.4 hose connection for the discharge of portable pumps. 2. Ventilation supply trunking of dynamos to be protected against the entry of water.
ARETHUSA 27th Dec., 1941	One Near Miss Delay action fuzed Bomb	14 weeks including collision damage repairs	ARETHUSA was anchored in Kirkefiord, Lofoten Island, when a near miss bomb dropped 10 yards off her starboard side abreast the after machinery spaces. Only minor structural damage was sustained. The keeps to the sliding feet of the L.P. turbines were bent up. Minor defects were caused to auxiliary machinery castings. Minor damage was sustained by dynamos and electrical gear. The asdic could be used for listening only. R.D.F. temporarily out of action. Fighting Efficiency - Slightly impaired. Ship did 28 knots on return passage to Scapa Flow.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
KENYA 27th Dec., 1941	Three Direct Hit 5.1 inch or possibly 4.7 inch direct action fuzed Shells	Nil	KENYA, whilst operating off the Norwegian coast, came under shellfire from the Rugsundo battery. 1st Hit. This shell fell short and ricochetted to burst in contact with the ship's side port, about 10 ft. above the waterline, abreast the bridge. Hole 3 ft. by 4½ ft. in the side plating just below the upper deck. Minor damage was caused internally by splinters. Electrical leads to various services were cut and lighting temporarily lost in vicinity of burst. D.G. Cable was cut. 2nd Direct Hit. Abreast 'Y' shell handing room port side. Burst on the waterline but did not perforate the armour (140 lbs.). Minor damage caused to armour belt and internal structure in vicinity of the burst. 3rd Direct Hit. Abreast No.6 cable passage port side. Burst at platform deck level, did not perforate the armour (130 lbs.). Minor damage to armour belt and internal structure in the vicinity of the burst. Slight leak from oil fuel tank below. Fighting Efficiency - Not impaired.
NAIAD 19th Jan., 1942	Near Miss 500 lbs. Direct action fuzed Bomb	Nil	NAIAD, whilst proceeding south of Crete at a speed of 21 to 28 knots, was attacked by enemy aircraft. A stick of bombs was dropped in a shallow dive bombing attack and fell parallel to the port side. Superficial damage was caused by splinters to the superstructure and hull above the waterline, from fore end of bridge to just abaft 'Y' turret. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CLEOPATRA 11th Feb., 1942	Two Near Miss 500 lbs. direct action fuzed Bombs One Direct Hit 1000 lb. A.P. Bomb possibly rocket assisted	1 Month	CLEOPATRA was dive bombed whilst approaching Malta. 1st Near Miss, 50 yards, abreast port torpedo tubes. Serious splinter damage to P.2 searchlight, circuits of after H.A. director, training gear of port torpedo tubes and port pom-pom. Port R.U. pom-pom magazine pierced, one round exploded and others damaged. Two cased warheads stowed on upper deck set on fire, later jettisoned. 2nd Near Miss exploded in mid-air, port side, possibly by close range weapons. Forward searchlights and H.A. director damaged and circuits cut. Direct Hit starboard side of forecastle deck. Bomb perforated 19 bulkhead, lower deck, watertight door of S.A. magazine and passed out through garboard strake, hole 4½ ft. by 3 ft. just forward of 24 bulkhead. Exploded underwater and caused minor damage to keel for 10 ft. Central store and S.A. magazine flooded. 'A' magazine, A/S compartment and firework magazine partially flooded. 260, 5.25 inch charges in transit cases were stowed in S.A. magazine. Two appear to have exploded and four others burned. Flooding possibly put out any fire started. Fighting Efficiency - Seriously impaired. Both H.A. directors, searchlights, port torpedo tubes and pom-pom out of action. Efficiency of close range weapons reduced due to flooded magazine.
DURBAN 11/12th Feb., 1942	Two Direct Hit direct action fuzed Bombs Near Miss direct action fuzed Bombs	14 weeks Repaired in U.S.A.	DURBAN was bombed by Japanese aircraft during the evacuation of Singapore. Direct Hit starboard side of blast screen to No.2 gun deck. A large hole was made in the deck, and the forecastle deck was split and made non-watertight. Extensive splinter damage in the vicinity, No.2 gun mounting and barrel and U.B.3 height finder perforated by splinters. Direct Hit on upper deck abreast degaussing compartment. Large hole in the deck and severe damage to No.4 gun deck over. Extensive splinter damage sustained. Magazine cooling compartment, degaussing control room, all 6 inch and 4 inch H/A director control and communication circuits in vicinity of the burst pierced by splinters. Starboard after torpedo tubes holed and the mounting displaced by blast. Many near misses off port side. Extensive splinter damage to hull and superstructure above waterline. No.1 searchlight hit, W/T aerials brought down. Stem casting fractured. Fighting Efficiency - Seriously impaired. No.2 6 inch gun, starboard Lewis guns, U.B.3 height finder, magazine cooling and degaussing machinery, after torpedo tubes, W/T and all 6 inch and 4 inch H/A director control circuits out of action by splinter damage.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
EXETER 25th Feb., 1942	Near Miss size and type unknown Bombs	Nil	EXETER was attacked whilst at Tanjong Priok Harbour. Minor structural damage was sustained. Fighting Efficiency - Not impaired.
HOBART (H.M.A.S.) 25th Feb., 1942	Near Miss 250 lbs. mixed direct and delay action fuzed Bombs	Nil	HOBART was attacked whilst at Tanjong Priok Harbour. Extensive but not serious damage caused by splinter to hull and superstructure. Fighting Efficiency - Not impaired.
HOBART (H.M.A.S.) 27th Feb., 1942	Near Miss direct action fuzed Bombs	Nil	HOBART was attacked whilst returning to Tanjong Priok. Many near misses, nearest 20 yards away. Extensive but not serious splinter damage sustained to hull and superstructure. Fighting Efficiency - Not impaired.
EXETER 27th Feb., 1942	One Direct Hit. One Near Miss 6 inch delay action fuzed Shells	Indeterminate See Page 74	EXETER was damaged whilst in action with a Japanese force off Sourabaya. Direct hit in the after boiler room. The near miss under the stern damaged the steering gear and propeller and caused some flooding. Fighting Efficiency - Seriously impaired. EXETER retired from action at 16 knots.
PERTH 28th Feb. - 1st March, 1942	(i) Three Contact Torpedoes fired from destroyer (ii) Several Direct Hit size and type unknown Shells	Sunk	PERTH was sunk during an action with a Japanese convoy in the East Indies. Ship was first hit by a shell which passed through forward funnel before exploding. From then on there were numerous shell hits and one torpedo struck the starboard side forward of 'A' turret. 10 minutes later a second torpedo hit the starboard side abreast the forward engine room. PERTH continued to be hit by shell and a third torpedo hit aft abreast 'X' turret. 55 minutes after the first attack. Ship sank 65 minutes after the first shell hit.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
EXETER 1st March, 1942	(i) One Direct Hit 8 inch type unknown Shell (ii) One Contact Torpedo fired from Destroyer	Sunk	EXETER left Sourabaya for Sunda Strait after temporary repairs to damage received on 27th February, 1942. At 1120 a shell exploded in the forward boiler room and started a serious fire which necessitated this compartment being abandoned. Steam power was lost and ship immobilised. Ship was abandoned with a heavy list to port. Ten minutes later a large explosion, probably a torpedo, occurred amidships on the starboard side. EXETER quickly rolled over to starboard and sank at 1150.
SHEFFIELD 4th March, 1942 D.N.C.4B/R105	One Contact Mine	17 weeks including refit	SHEFFIELD was proceeding off Iceland at 12 knots when an explosion occurred under the port quarter. A hole 22 ft. by 22 ft. was blown in the outer bottom port side and severe structural damage sustained between keel and upper deck for 35 ft. from the port side to the middle line. All compartments in the vicinity were immediately flooded up to the waterline. After capstan machinery was lifted and damaged. Electrical circuits in the vicinity of the damage were destroyed putting the steering gear and 'X' and 'Y' turret pumps temporarily out of action. Fighting Efficiency - Seriously impaired. Speed reduced to 6 knots but greater speed was possible in an emergency at the risk of further flooding and damage. 'X' and 'Y' turrets temporarily out of action. 'Y' Shell room out of action.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NAIAD 11th March, 1942 D.N.C.4B/R163	One Contact Torpedo fired from Submarine	Sunk	NAIAD was proceeding at 18 knots in the Eastern Mediterranean when a torpedo struck the starboard side abreast the after end of the forward engine room, 99 bulkhead. Ship listed to 10° immediately and this list steadily increased till ship sank 35 minutes later. The rapid heel and failure of power and light prevented adequate steps to establish a damage boundary or counter flood. Internal lighting and communication systems failed rapidly. The armoured W.T. door to 117 bulkhead was possibly open, allowing further flooding aft, extent not known. Sinking was due to loss of stability upon flooding of two main machinery spaces, partial or complete flooding of a third, the presence of a considerable quantity of free water on the lower deck, 83 to 135 bulkheads and unsymmetrical flooding abreast the explosion. REMARKS This incident emphasised the need for the following items:- 1. Vertical escape trunks to W.T. compartments should be fitted when access is by W.T. door only. 2. Two diesel generators should be fitted well away from main machinery spaces to provide emergency power. 3. Dogs on W.T. doors and hatches should work one way only, height of wedge being increased to prevent dogs overriding and becoming jammed. 4. Design of flotanets should be improved. 5. Carley floats should be stowed on sloping ramps to facilitate launching and space provided to be kept clear.
CLEOPATRA 22nd March, 1942	One Direct Hit 6 inch direct action fuzed Shell	Nil	CLEOPATRA received a direct hit on the starboard side of the bridge about 2 ft. above the deck. Starboard A/A lookout position wrecked. Other minor structural and splinter damage. Starboard A.D.O's sight, starshell deflector calculator and associated electrical equipment wrecked. Other minor damage to electrical circuits, rigging and aerials on bridge in vicinity of burst. Fighting Efficiency - Slightly impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PENELOPE 26th March, 1942 D.N.C.4B/R231	Two Near Miss 250 lbs. and 500 lbs. direct action fuzed Bombs	2 weeks temporary repairs See Page 80	PENELOPE, lying at Hamilton Wharf, was often the main target when the Grand Harbour, Malta, was subjected to many dive bombing attacks over the period 25th March to 8th April, 1942, and numerous near miss bombs caused minor damage which is not described in the following. 500 lbs. near miss, burst under forecastle abreast 'A' turret, port side keel and adjoining strakes fractured and set up over a length of 40 ft. to maximum of 2 ft. Hull structure buckled and set inboard over a length of 65 ft. port and starboard. All decks lifted and most watertight doors strained. Forward magazines flooded. Practically all electrical power lost forward of the bridge. H.A. director and D.C.T. distorted and difficult to train 'A' turret, unable to train due to buckled decks. 250 lbs. near miss abreast 'Y' turret, port side. Severe blast damage to superstructure. Minor structural damage inboard. Most oil fuel tanks, all magazine and shell rooms with the exception of 'Y' flooded. No serious damage to main or auxiliary machinery. Fighting Efficiency - Seriously impaired. 'A' and 'B' turrets out of action. 6 inch A.F.C. table distorted and out of action. Type 284 and 285 R.D.F. sets out of action. Endurance seriously reduced due to loss of oil fuel.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
TRINIDAD 29th March, 1942	Two Direct Hit 5 inch direct action fuzed Shells	Indeterminate See Page 81	TRINIDAD, whilst escorting a convoy off North Russia, came into action with a German Destroyer (NARVIK Class). She was steaming at about 30 knots during the engagement. Two direct hits holed the port side about lower deck level, one abaft and the other just forward of 'Y' turret. Minor splinter damage was caused and the firemain was fractured. Minor flooding occurred into breaker room. Electric cables to breaker room, 'Y' turret shell hoist motor and telephones cut. Fighting Efficiency - Not impaired. Note:- TRINIDAD was also damaged by her own torpedo - For details see Page 465. REMARKS In later vessels and new construction the following actions are being taken wherever possible:- 1. Ventilation trunking to main switchboard room to be closed to prevent flooding. 2. New position of switchboard room to obtain better protection. 3. Disposition of main switchboard room, D.C.H.Q. and secondary electrical position to be adjusted. 4. Damage control communications to be improved and independent of electrical power. 5. Supply of floodlights, headlamps, etc., to be speeded up. Limited supply proved invaluable. The following are under consideration:- 1. Increase rating of emergency fuses in the M.S.S. and emergency terminal boxes. 2. Use of crane supply cables as an emergency supply to the upper deck.
PENELOPE 4th April, 1942 D.N.C.4B/R231	One Near Miss 500 lbs. direct action fuzed Bomb	Indeterminate Damaged whilst undergoing repairs. See Pages 76 and 80	PENELOPE was at Malta in No.4 dry dock with about 11 ft. of water in the dock. A direct hit occurred on the port after brow, the bomb exploding just below. Hundreds of small splinter holes were made above and below waterline on port side aft. A minor fire started in captain's store and in port after cabins. The port outer shaft was punctured by splinters and the propellers damaged. Fighting Efficiency - Not seriously impaired.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
DORSETSHIRE 5th April, 1942 D.N.C.4B/R158	Ten Direct Hit. Several Near Miss 250-500 lbs. mixed delay and direct action fuzed Bombs	Sunk	DORSETSHIRE, whilst proceeding from Colombo to Addu Atoll at 27 knots, was dive bombed by enemy aircraft. Direct Hit on the quarter deck put the steering gear out of action. Direct Hit on the catapult wrecked both W/T offices. Direct Hit port side amidships put all the A.A. armament on the port side, with the exception of the pom-pom, out of action. Direct Hit through the base of the foremost funnel put 'A' boiler room and S.1 H.A. mounting out of action. Direct Hit on the quarter deck put 'X' turret out of action and flooded the magazine. Direct Hit through the base of the after funnel caused the H.A. Magazine to explode, and put both pom-poms out of action. The ship heeled heavily to port within five minutes of the first attack. Serious fires occurred on the upper and stoker's mess deck. All communications, W/T and A.A. armament except the .5 inch machine guns were out of action. The ship sustained damage from several near misses during the attack, and later sustained four more direct hits. The vessel lost speed, heeled heavily to port, turned over on her side, and sank, stern first, about 8 minutes after the first attack.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CORNWALL 5th April, 1942 D.N.C.4B/158	Nine Direct Hits. Six Near Miss 250-500 lbs. mixed delay and direct action fuzed Bombs. One Direct Hit direct action fuzed Oil Bomb	Sunk	CORNWALL was dive bombed by enemy aircraft whilst proceeding at 27 knots from Colombo to Addu Atoll. Near Miss abreast the bridge, port side, flooded the port bulges, wrecked the L.P. room, and dislocated all electric power. The steering motors also failed. Direct Hit between the forward and centre funnel partially wrecked 'A' boiler room fan flat. Near Miss abreast the starboard hangar exploded close to the after engine room, as a result of which the engine room became flooded. Direct Hit, port side, between 'X' and 'Y' turrets. Direct Hit in neighbourhood of the dynamo room. No.1 and No.2 dynamos were put out of action and a fire started. Direct Hit exploded on the starboard P.V. and splinters pierced 'B' barbette. Near Miss abreast foremast, starboard side. The main steam pipe joint leaked, and the boiler room was evacuated due to flooding and escaping steam. Direct Hit in vicinity of main switchboard room, starboard side. Severe damage was caused and the compartment was evacuated due to flooding. Direct Hit in the sick bay flat caused a fire, and many important personnel were killed. Direct Hit on the waterline abreast hangar, starboard side, burst in the forward engine room. The main steam pipe was cut, and a fire started. The compartment was evacuated. Direct Hit in the recreation space. Killed first aid parties. Near Miss under the fore end, port side. "B" boiler room was open to the sea, and all boilers were shut down temporarily. Near Miss port side of "B" boiler room caused the compartment to be evacuated, due to flooding. Direct Hit with an oil bomb on S.1 H.A. mounting. Direct Hit on quarter deck killed important personnel. Near Miss abreast the catapult, port side, caused bulges in the vicinity to be flooded. Power and circuits to all armament failed shortly after the hits. In less than five minutes, all power, main W/T and telephones were out of action. Both boiler rooms and engine rooms flooded rapidly. The port gunwale was awash, and the starboard outer propellor was breaking surface. Vessel heeled 70° to port and sank by the bows twelve minutes after the first attack.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PENELOPE 8th April, 1942 D.N.C.4B/R231	Near Miss 500 lbs. direct action fuzed Bombs	5 months repaired in U.S.A. See also Pages 76 and 77	PENELOPE was undocking from No.4 dock at Malta when a direct hit on the starboard brow burst ten yards from the ship abreast the refrigerator compartment. This burst caused hundreds of splinter holes above and below the waterline on the starboard side forward. Later, when PENELOPE was undocked and lying alongside Canteen Wharf, sticks of bombs were dropped parallel to the port side and ten yards off the port quarter. Further minor damage was caused by splinters to the plating above the waterline. Fighting Efficiency - Further impaired. PENELOPE put to sea later in the day en route for Gibraltar. Speed was restricted to 20 knots, but was later worked up to 27 knots.
EDINBURGH 30th April - 2nd May, 1942	Three Contact Torpedoes fired from submarine. One 21 inch Torpedo fired by own forces	Sunk	EDINBURGH, whilst proceeding off North Russia, at 19 knots, was struck by two torpedoes. There was an immediate list to starboard. 1st torpedo struck abreast the foremast, starboard side, and caused the immediate flooding, up to the waterline, of all compartments in the vicinity. 2nd torpedo hit the starboard side aft. The hull in way of the steering compartments was destroyed, and the starboard inner 'A' bracket was carried away. Later the stern abaft 'Y' turret broke off. The ship settled 7 feet by the bow. 'Y' turret was jammed and out of action. Combined damage put all turrets temporarily out of action, but they were later in local control. Ship was taken in tow, but later proceeded under her own power at 2 knots, steered by main engines. The speed was increased to 8 knots and the ship was turning in circles while engaging enemy destroyers, when she was torpedoed again. 3rd torpedo abreast A.E. of hangar, port side, caused flooding of all compartments in the vicinity not already flooded by the first hit. 'A' boiler room was evacuated due to flooding. The ring main was cut and lighting failed in the forward section of the ship. The vessel was out of control and was abandoned. She was then torpedoed by FORESIGHT. REMARKS When steam pressure is seen to be falling, the main engine manoeuvring valves should be closed to keep auxiliaries going, and to facilitate the recovery of propulsive power.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
TRINIDAD 14th - 15th May, 1942	(i) One Direct Hit One Near Miss delay action fuzed Bombs (ii) Three 21" Torpedoes fired by own forces	Sunk See Page 77	TRINIDAD, whilst proceeding from Kola Inlet to Hvalfjord at 20 knots, was attacked by enemy aircraft. A direct hit penetrated decks between the bridge and 'B' turret and burst on or near the lower deck, 53 station just forward of the torpedo damage (29th March, 1942). Holes 20 ft. by 30 ft. were blown in the forecastle deck and upper deck, and considerable blast damage was sustained in the superstructure. The port side of 'B' Gun deck was blown away. A serious fire started and spread between decks. The fire could not be fought effectually due to the speed which was necessary to avoid torpedo attacks. The steering position and bridge were abandoned due to fire and smoke. Shoring to torpedo damage and residue oil fuel increased the intensity of the fire. The vessel stopped at 2315. Near Miss, starboard side of bridge, burst under water abreast 53 bulkhead, making a large hole in the ship's side and blowing in the temporary patch over the torpedo damage. 'B' barbette was split between the forecastle and upper decks. 'B' magazine, handing room, and adjacent compartments flooded immediately, and 'B' shell room flooded slowly. The combined damage of both bombs put the temporary D.C.H., No.2 transmitter room and communications out of action and destroyed the forward section of the fire main. All L.P. and H.P. forward of 71 bulkhead failed. There was no damage to the main machinery spaces. An immediate 14° heel to starboard was corrected to 11° by counter flooding, but gradually increased to 14° when the vessel was abandoned. The fire was out of control and the vessel was sunk by torpedoes from own forces at 0120/15th. REMARKS This incident emphasised the need for the following:- 1. Reduction in the use of inflammable materials between decks. Trials are in hand to ascertain alternative materials less productive of smoke. 2. Strengthening of W/T doors and clips. 3. Increase in the supply of breathing apparatus.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
LIVERPOOL 14th June, 1942 D.N.C.4B/R120	(i) One 17.7 inch - 440 lbs. Contact Torpedo (Italian) dropped by aircraft. (ii) Two Near Miss 100 kgm delay action fuzed Bombs (iii) Cannon Fire	13 months including refit	LIVERPOOL was escorting a Malta Convoy and steaming at 21 knots, when she was struck by a torpedo abreast the after engine room at 165 station starboard. A hole, 24 ft. by 19 ft. extending from the 3rd to above the 6th longitudinal, was blown in the outer bottom and severe damage was caused from the 1st longitudinal to just above the platform deck for a length of 60 feet. The lower deck was bulged up 3 ft. The after boiler and engine rooms, starboard oil fuel tanks and compartments up to the lower deck flooded immediately and controlled flooding took place in the engine room. An immediate 7 degree heel to starboard was corrected slightly by flooding 'A' and 'B' magazine and shell rooms. The after engine room was wrecked and the starboard outer and both inner shafts were put out of action. The steering gear jammed. 'X' and 'Y' turrets were unable to train due to loss of power. Whilst in tow LIVERPOOL was dive bombed and two near misses dropped to starboard within 15 ft. of the ship. The list increased to $9\frac{1}{2}$ degrees and the ship settled by the stern. Fighting Efficiency - Seriously impaired. The ship could only proceed at 3 knots, on the port outer shaft. Due to loss of power the steering gear, after 6 inch group, after H.A. director and 4 inch shell hoists were temporarily out of action. The W/T, R.D.F. and main armament were out of action. Near misses put three guns of the starboard pom-pom out of action and damaged the H.A. tables. The efficiency of the 4 inch armament was reduced due to an oil fuel leak in the magazine. Two Oerlikon guns were put out of action by cannon shells. REMARKS This incident emphasised the need for:- 1. Suitable adaptors, for pumping out oil fuel tanks filled with water, to be supplied (C.A.F.O.1965/42). 2. Suction systems of new construction ships to be modified. 3. Steam or hydraulic ejectors to be fitted to bathroom drains near the waterline. 4. Rapid flooding arrangements to be fitted where size and position of spaces afford the possibility of substantial correction of heel. 5. Strainers fitted over hose connections on suction system to be redesigned to enable the connection to be tightened. The experience of LIVERPOOL demonstrated the great value of door sills.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NEWCASTLE 15th June, 1942 D.N.C.4B/R233	One Contact Torpedo fired by E-Boat	5 months repaired in U.S.A.	NEWCASTLE was proceeding at 15 knots in the Mediterranean, when she was struck by a torpedo on the starboard side abreast the cable locker. A hole 30 ft. by 12 ft. was blown in the hull plating, and adjacent plating was distorted. The forward end of the lower deck was torn up on the starboard side. Internal structure was seriously damaged and starboard cable locker destroyed. The petrol compartment and the main central store was flooded. No major damage occurred to machinery or armament. Fighting Efficiency - Seriously impaired. The ship was only able to proceed at reduced speed, and the S.A. gear was out of action.
CAIRO 15th June, 1942 D.N.C.4B/R220	(i) Two Direct Hit 6 inch direct action fuzed Shells (ii) Six possibly Seven "Shorts" 6 inch mixed direct and delay action fuzed Shells	6 days	CAIRO, whilst in action, with Italian cruisers and a destroyer, was damaged by shell fire. Direct hit occurred at 144 station starboard, 10 ft. below the waterline. The shell entered an oil fuel tank, but did not explode, causing a hole in the outer bottom 20" by 14" and in the inner bottom 5" by 3". Minor controlled flooding took place and leaks occurred in several oil fuel tanks. No.3 Dynamo was put out of action. Direct hit was made on a stanchion at 60 station starboard. Minor splinter damage occurred to the upper deck and to the superstructure in the vicinity of the burst. Shorts, two fell 20 ft. abreast the forward S.A. magazine, starboard. The outer bottom was dented by splinters and dished below the waterline. Short on the port bow, abreast 40 station, caused minor indentations to hull by splinters. Shorts. Three or four, about 20 ft. off starboard quarter caused minor damage by splinters to hull above the waterline. Fighting Efficiency - Slightly impaired. Endurance was reduced due to leakage of oil fuel tanks.
ARETHUSA 15th June, 1942	Near Miss size and type unknown Bombs	Nil	ARETHUSA, whilst escorting a convoy to Malta sustained minor damage from near misses. Fighting Efficiency - Not impaired.
BIRMINGHAM 15th June, 1942	One Near Miss size and type unknown Bomb	Nil	BIRMINGHAM, whilst escorting a convoy to Malta, was damaged by a near miss bomb. Damage was sustained to the armament, and 2 6" guns were put, temporarily, out of action. Fighting Efficiency - Temporarily seriously impaired.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
HERMIONE 16th June, 1942 D.N.C.4B/R167	One Contact Torpedo fired from Submarine	Sunk	HERMIONE was struck by a torpedo whilst escorting a convoy south of Crete, ship was steaming at 13 knots when explosion occurred. A torpedo struck abreast the after engine and boiler room, about 117 station starboard. Vessel listed 22 degrees to starboard within one minute. The list steadily increase until she was on her beam ends. Immediate flooding of 'B' engine room took place quickly, followed by the flooding of 'B' boiler room, 'X' magazine and forward engine room. Extensive flooding occurred amidships above the lower deck. Extensive structural damage abreast the explosion was caused and the starboard torpedo tubes were thrown across the deck. All electric power to the after section of the ship failed immediately, but the forward section remained on and all secondary lighting functioned correctly. HERMIONE hung on her beam ends about three quarters submerged and trimmed by the bow for 7 minutes, then suddenly turned over and sank by the stern 21 minutes after torpedo struck.
CANBERRA (H.M.A.S.) 9th Aug., 1942 D.N.C.4B/R189	Twenty seven possibly more Direct Hits 5 inch possibly 5.5 inch mixed delay and direct action fuzed Shell	Sunk	CANBERRA was attacked by enemy cruisers or heavy destroyers whilst patrolling off Tulagi during American landings on the Solomons. First salvo burst in the plotting office, port torpedo space and 4 inch gun deck and the aircraft was set ablaze. Second salvo put the ship out of action, shells burst in 'A' and 'B' boiler room fan flats and in both boiler rooms and large fires were started. Hits were also registered on 'A' barbette, after end of torpedo men's mess, 'A' and 'B' turret supports, stokers mess, seamen's lower mess, torpedo control platform, preparing room, regulating office flat (Put D.C.H.Q. out of action), 4 inch flat, regulating office, upper bulge, after engine room, after director, 'X' turret, cypher office, and one in 'Y' shell handing room, which did not explode. Starboard hits were in sick bay dispensary, and starboard pom-pom magazine, where a small fire was started, later becoming out of control. About 27 hits were registered within 2 or 3 minutes. CANBERRA was on fire forward and aft, with a 7 degree list to starboard and R.U. ammunition on the upper deck exploded. All lighting, power and fire main pressure failed. The list increased to 30 degrees in 5 hours. The fires finally got out of control and the ship was abandoned about 5 hours after first salvo. CANBERRA was sunk by American forces - 2 hours after being abandoned.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
KENYA 12th Aug., 1942 D.N.C.4B/R122	One Contact Torpedo fired from Submarine	5 months including refit	KENYA was torpedoed whilst escorting a convoy to Malta, at 14 knots. The torpedo hit near the stem and the forefoot, and structure between the keel and lower deck, forward of, and including No.6 bulkhead, was destroyed. Severe structural damage extended aft to No.11 bulkhead from keel to upper deck. Flooding of all compartments to the waterline occurred forward of station 14. The echo sounding gear was out of action due to shock. Fighting Efficiency - Not seriously impaired. The ship steamed at 25 knots after damage, but high speed was only possible in ideal weather.
CAIRO 12th Aug., 1942	(i) One Contact Torpedo fired from Submarine. (ii) One Torpedo, fired by own forces	Sunk	CAIRO, whilst proceeding in the Mediterranean at 8 knots, was struck by a torpedo on the port side aft. The ship immediately lost way and settled by the stern with a slight heel to starboard. The stern, including the after 4 inch mounting, was blown off, and the upper deck was awash to the after superstructure. Extensive flooding occurred abaft the machinery spaces. The starboard engine was unserviceable, and the port propellor was lost. The ship was abandoned and sunk by own forces 1 hour 24 minutes after being hit.
NIGERIA 12th Aug., 1942 D.N.C.4B/R164	One Contact Torpedo fired from Submarine	10½ months Repaired in U.S.A.	NIGERIA, whilst proceeding at 14 knots in the Mediterranean, was struck by a torpedo on the port side, abreast the foremast, and below the platform deck. Severe structural damage was sustained between the keel and upper deck, port side for a length of 40 ft. The side armour was severely damaged on the port side. All compartments in the vicinity of the explosion, including the forward boiler room, flooded to lower deck level. An immediate heel to port of 15° increased to 17° in 3 minutes, and was corrected to 4° by counterflooding. All electrical power failed, and the steering gear was jammed amidships. A minor fire started near the E.R.A's mess. Fighting Efficiency - Seriously impaired. The forward unit was out of action due to flooding of the forward boiler room. A speed of 16 knots was maintained by two outer shafts. The lower steering position, 6 inch T.S., switchboard and telephone exchange, No.1 and 2 transmitter rooms, No.2 and 4 breaker rooms, forward H.A.C.P., No.1 and 2 L.P. rooms, and D.C.H.Q. were all put out of action. 6 inch and 4 inch armament was workable in local control only.

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SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
MANCHESTER 13th Aug., 1942	(i) One Contact Torpedo fired from E-Boat (ii) Scuttling Charges	Sunk	MANCHESTER, whilst escorting a convoy to Malta, was struck by a torpedo abreast the after engine room on the starboard side. The ship was immobilised with a 12° heel to starboard. The after engine room, and adjacent compartments, including the oil fuel tanks and 4 inch magazine, flooded immediately. Two dynamos were put out of action and only the port outer shaft was in operation. Emergency power was supplied and heel reduced to 5° by counterflooding. MANCHESTER was abandoned while still immobilised, and was finally sunk with the aid of scuttling charges.
KENYA 14th Aug., 1942 D.N.C.4B/R122	One Near Miss size and type unknown Bomb	Nil See Page 85	KENYA, whilst escorting a convoy to Malta, was struck by a bomb, which glanced off the side armour just below the upper deck, port side, and exploded under water. Severe shock was felt within the ship, but no serious failures occurred. Minor damage was sustained by the electrical equipment, and echo sounding gear was put out of action. Fighting Efficiency - Not impaired. Note:- KENYA was already damaged by torpedo (See page 85).
COVENTRY 14th Sept., 1942	(i) Three or Four Direct Hit delay action fuzed Bombs. (ii) Shellfire, depth-charges and finally a torpedo all fired by own forces.	Sunk	COVENTRY, whilst in action during landings at Tobruk, received three or four direct bomb hits, and also sustained damage by machine gun and cannon fire. 1st direct hit occurred on bows, forward of No.1 gun. Fore end structure above the waterline was wrecked, and serious fires started. The forward 4 inch magazine was flooded as a precautionary measure, but the flooding of the pom-pom magazine was not possible, due to wreckage and fires. 2nd and probably 3rd direct hit on forecastle deck, exploded under the bridge. The bridge structure, flag deck, and radar receiving office were wrecked. Fires started in vicinity of the bridge and all communications were severed. 4th direct hit occurred abaft the after funnel and exploded in the forward boiler room. The boiler room and deck over it was wrecked, and the radar transmitting office was put out of action. The ship was stopped to effect temporary repairs, but was later able to proceed slowly on one engine with the forward boiler room and steering gear out of action. COVENTRY was on fire forward and aft, and was abandoned in order to avoid possible loss or damage to other units, finally being sunk by torpedo from ZULU, following gunfire and depth charges fired by own forces.
CLEOPATRA 30th Sept., 1942	One Near Miss size and type unknown Bomb	Nil	CLEOPATRA was attacked by a torpedo bomber in the Mediterranean. A near miss caused superficial damage to the superstructure. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PHOEBE 23rd Oct., 1942	One Contact Torpedo fired from Submarine	8 months repaired in U.S.A.	PHOEBE, whilst operating off the west coast of Africa, was struck, on the port side abreast "Q" magazine about 4 feet below the platform deck, by a torpedo. A hole 40 ft. by 30 ft. deep was caused from keel to above the lower deck, and over full length of, and just forward of "Q" magazine. The shell plating from keel to lower deck and for 70 ft. between the fore bulkhead of Nos. 5 and 6 oil fuel tanks to fore bulkhead of "B" magazine and shell room was blown inboard. "Q" magazine and structure in immediate vicinity of hole was wrecked. Serious damage occurred inboard, over area of the ruptured side structure. A length of 70 ft. from keel to between upper and lower deck flooded immediately. Controlled flooding occurred in No.1 L.P. room, "A" magazine, and shell room, S.A. magazine, No.1 transmitting station, and compressor room. The ship heeled 6° to port, which was brought to 4° to starboard by counterflooding. Fighting Efficiency - Seriously impaired. Speed was reduced to 6 knots. "B" mounting was out of action, "A" mounting could not be fired due to weakened structure. All low power equipment was out of action, except navigational compass repeater and main telephone exchange. The following were flooded, and out of action:- 5 forward oil fuel tanks; "B" and "Q" magazines and shell rooms; pom-pom and warhead magazines; Nos.1 and 2 L.P. rooms; Nos. 1 and 2 transmitting stations; and main switchboard room. REMARKS As a result of this incident, the following lessons were learned. 1. A second welding set to be provided for cruisers vide A.F.O.3849/43. 2. Pattern 17069 floodlights to be fitted with a shock resisting lamp holder.
AURORA 8th Nov., 1942	One "Short" 5.1 inch delay action fuzed Shell	Nil	AURORA, whilst in action with enemy destroyers, was steaming at 20 knots, when a shell exploded underwater about 6 ft. from the port outer propeller. The ship's side plating and framing in the vicinity of the burst at platform deck level was buckled over an area of 8 ft. x 4 ft. Platform deck over W.T.C. split for 8" x 4" and the plating was distorted. Minor controlled flooding took place into W.T.C. (Stations 154-162). Fighting Efficiency - Not impaired.

CRUISERS - 1942

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ARETHUSA 18th Nov., 1942 D.N.C.4B/R212	One Contact Torpedo dropped by aircraft	12½ months Repaired in U.S.A.	ARETHUSA was proceeding at 18 knots in the Mediterranean when a torpedo struck the port side abreast 'B' turret just below the platform deck. A hole 53 ft. by 35 ft. was blown in the ship's side also large holes in the platform, lower, upper and forecastle decks. Serious structural damage was sustained from abreast 'A' turret to the bridge and from the keel to the forecastle deck. Ship was flooded to the waterline for 100 ft. forward of the after end of the bridge including No.2 L.P. room, lower steering position, four oil fuel tanks, 4 inch H.A. magazine and forward 6 inch magazines and shell rooms. An immediate list of 15 degrees to port was corrected by transference of oil fuel etc. A serious fire developed above the upper deck which enveloped the ship from abreast 'A' turret up to and including the bridge. The bridge was evacuated and as the lower steering position was flooded, the ship was conned from aft. Lighting and power forward of the forward boiler room and all telephonic communications failed. Fighting Efficiency - Seriously impaired. 'A' and 'B' mountings out of action. Speed reduced to 8 knots in fair weather. Under heavy weather conditions slow astern only could be used. Forward oil fuel tanks, low power rooms, H.A.C.P., forward magazine group degaussing gear and gyro compasses flooded and out of action. REMARKS The following actions were taken as a result of this incident:- 1. A.F.O.3320/43 issued to ensure that eyeplates and other facilities are available about the ship, particularly over hatches and ladderways, for the ready transport of portable pumps. 2. Breeching pieces to be supplied on the basis of one per main fire party. 3. Desirable to increase the transfer facilities of oil fuel. 4. An improved form of shock absorbing binnacle required for gyro compasses. Non-magnetic steel to be employed wherever possible at the emergency conning position and provision made for mounting the spare magnetic compass there. A form of inverted shock mounting for gyro compass approved vide A.F.O.3836/43. 5. Desirable to provide a fire resisting textile bag for hammock stowage. 6. Tube levers for tightening watertight doors supplied vide C.A.F.O.229/43.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
DELHI 20th Nov., 1942 D.N.C.4B/R221	One Direct Hit 500 kgm direct or very short delay action fuzed Bomb	4½ months including refit	DELHI was proceeding at 14½ knots in Algiers Bay, when a bomb struck the quarter deck, about 10 ft. from the stern, and exploded about 6 ft. below the upper deck. The ship's structure for 26 ft., station 221 to stern, and from upper deck to just above the waterline was blown away or wrecked. Serious damage was confined to above turtle deck and for 25 ft. forward to bulkhead 207. The watertight compartment above the turtle deck was open to the sea. Minor controlled flooding of steering compartment and watertight compartment below occurred. Steaming and steering equipment was intact. Minor fires started in after cabin flat. Six depth charges on quarter deck were blown overboard, but it was thought that they did not explode. Fighting Efficiency - Impaired. Ship remained on patrol. After 5 inch mounting was out of action, due to weakened ship's structure. Speed was reduced to 16½ knots, and helm limited to 18°.
ARGONAUT 14th Dec., 1942 D.N.C.4B/R229	Two Contact Torpedoes fired from Submarine	10½ months Repaired in U.S.A.	ARGONAUT was proceeding west of Galita Island at a speed of 25 knots, when two torpedoes struck the starboard side. Hit No.1 was at station 7 about 3 ft. above keel. The fore end structure for 28 ft. was blown away or wrecked, and abaft this for 16 ft. crumpled backwards and forced to port, all below lower deck. Hit No.2 was aft in W.T.C. below steering compartment about 8 ft. below waterline. Structure for 56 ft. (abaft cut up) was blown away or wrecked. Minor damage occurred as far as abreast 'X' mounting. Compartments forward of bulkhead 16 and aft of cut up were open to the sea. After fresh water tanks, palm compartments, port oil fuel tanks and provision room were flooded. Minor controlled flooding aft of 'Y' magazine and shell room and middle line compartments on platform deck occurred. Ship heeled 7½° to port, and this was corrected by counterflooding. Both inner shafts were bent and 'A' brackets wrecked. 'X' and 'Y' mountings were stiff to train by hand. Remote power control gear for 'X' mounting was flooded. Fighting Efficiency - Seriously impaired. Speed was reduced to 8 knots due to loss of inner shafts and the affect of the wreckage. Manoeuvrable by propellors only, steering gear and rudder were missing. 'Y' turret was out of action due to the danger of aggravating structural damage. REMARKS 1. Supply of heel and trim recorders under consideration, and designs of instruments are being tried on service A.F.O.1339/43 provided for supply and fitting of a heel indicator in the primary and secondary D.C.H.Q's in new construction cruisers and larger ships, and directs that existing ships should report deficiencies through their administrative authorities. 2. Hose connections in strum boxes should be more readily accessible vide A.F.O.401/43.

CRUISERS - 1943

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AJAX 1st Jan., 1943 D.N.C.4B/R228	One Direct Hit 500 kgm delay action fuzed Bomb	9½ months Repaired in U.S.A.	AJAX was damaged during an air attack on Bone Harbour. The direct hit at the base of the funnel passed through B2 boiler and exploded at the fore end of the middle boiler room, between the inner and outer bottoms, which were holed for approximately 12 ft. x 16 ft. The forward bulkhead of the middle boiler room was torn and buckled on the port side, below the lower deck. Minor damage occurred to the after bulkhead and the lower deck, port side, over the middle boiler room, was badly buckled. Extensive splinter damage took place in the middle boiler room and the main steam pipe, ring main and pneumatic tube installations were cut. The two forward boiler rooms, double bottom and wing compartments, in the vicinity of the burst, flooded immediately, and minor flooding occurred in the dynamo room, platform deck, and the after boiler room. The ship heeled $6\frac{1}{2}^{o}$ to port in one hour. B2 boiler was wrecked, B1 boiler was seriously damaged, and the auxiliary machinery in the middle boiler room was extensively damaged. Minor damage occurred to boilers in forward boiler room, by shock. Serious damage was caused to electrical installations and communications. Power failed, temporarily, due to loss of steam. Fighting Efficiency - Seriously impaired. Speed was reduced to 8 to 11 knots, due to two boiler rooms being out of action, and the strained ship's structure in the vicinity of the middle boiler room. The 4 inch and 6 inch guns were out of action. Electrical power was reduced by 50%. REMARKS 1. The design of Admiralty Pattern 54 hand torches to be modified. Starboard auxiliary saturated steam range to be isolated from either side of the after bulkhead of 'B' boiler room. 2. Oil fuel for diesel generators to be stowed as close as possible to the generators, preferably in the same main watertight subdivision vide A.F.O.6019/43.
ACHILLES (H.M.N.Z.S.) 5th Jan., 1943 D.N.C.4B/R249	One Direct Hit 250 or 500 lbs. delay action fuzed Bomb	Temporary repairs carried out immediately. Permanent repairs done during refit and modernisation	ACHILLES was attacked by Japanese aircraft, while operating south of Guadalcanal. The bomb struck and perforated the roof of 'X' turret and detonated over the muzzle end of the right gun cradle. Both the roof and the right side of the turret were blown away, and the left side, and rear plates were distorted. The front plate was blown outwards. Damage was confined to the turret structure. The right gun was dented by the bomb, but the left gun was undamaged. The breech mechanism of both guns was unaffected. Fighting Efficiency - Slightly impaired. 'X' turret was out of action. The Oerlikon gun mounted on 'X' turret was blown overboard. Two main aerials were carried away.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PENELOPE 1st June, 1943	One Direct Hit 5.97 inch direct action fuzed Shell	Nil	PENELOPE, whilst bombarding coastal batteries off Pantelleria Harbour, was damaged by a direct hit with a shell. The shell struck a paravane during its flight, and exploded on impact with 'B' gun deck above the seamen's heads. A hole, 3 ft. in diameter was blown in 'B' gun deck, and minor splinter damage was sustained by surrounding structure below the point of burst. Minor electric circuits were cut and the radar type 271 put out of action for 20 minutes. Fighting Efficiency - Not impaired.
LEANDER (H.M.N.Z.S.) 13th July, 1943 D.N.C.4B/R282	One Contact Torpedo fired from Submarine	25 months Repaired in U.S.A.	LEANDER, whilst operating in the Solomon Island area, was struck by a torpedo on the port side just below the side armour and abaft the forward bulkhead of the forward boiler room. The ship's side was holed for 30 ft. by 20 ft. and seriously distorted for 50 ft. by 50 ft. The forward bulkhead of the forward boiler room was destroyed below the platform deck to within 8 ft. of the middle line. The bulkhead between the two forward boiler rooms was strained and leaking, the platform deck and hold was destroyed in the vicinity of the hit. Five forward oil fuel tanks were wrecked and three side armour plates damaged. The forward boiler room, main switchboard room, forward dynamo room, 6 inch transmitting station, No.1 L.P. room and five oil fuel tanks flooded immediately. The forward boiler room was wrecked and the middle boiler room was partially flooded. Auxiliary machinery in the middle boiler room was seriously damaged, and all three H.P. air compressors were damaged by shock. The main switchboard was destroyed and both forward dynamos put out of action. Important H.P. and L.P. electrical cables were damaged. The port torpedo tubes and mounting were displaced and all training gear destroyed. Fighting Efficiency - Seriously impaired. Forward boiler room and fire oil fuel tanks were wrecked. Middle boiler room was put out of action from partial flooding and blast damage. Main switchboard, forward dynamo room, 6 inch T.S. and No.1 L.P. room were flooded and out of action.

CRUISERS - 1943

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CLEOPATRA 16th July, 1943 D.N.C.4B/R283	One probably Non Contact Torpedo fired from Submarine	15 months Repaired in U.S.A.	CLEOPATRA, whilst patrolling off Sicily at 26 knots, was damaged by an explosion on the starboard side in the vicinity of the bulkhead between the forward engine room and the forward boiler room, at about bilge keel level. A hole was blown in the outer bottom 30 ft. by 20 ft., and the surrounding plating forced inboard over a length of 80 ft. The bulkhead between the forward engine and boiler rooms was destroyed. The lower deck over the engine room was blown upwards and the upper deck over the engine and boiler rooms was set up 9 inches. The keel hogged 6 inches in a length of 50 ft. Five side armour plates were displaced. Flooding of the forward engine room and boiler room, H.A.C.P., No.3 L.P. room and starboard forward cable passage occurred immediately while slow flooding of the port cable passage took place. Some of the forward oil fuel tanks were contaminated. The ship listed 6 degrees to starboard. The machinery in the forward engine and boiler rooms was extensively damaged. All electrical equipment in the starboard cable passage was destroyed or severely damaged. Lighting and power in and forward of the forward machinery spaces, and all low power failed. Communications between bridge, main steering position, and engine room failed. A minor fire started in the workshop flat over the forward engine room. Fighting Efficiency - Seriously impaired. Forward engine and boiler room out of action. Ship able to steam at 10 to 11 knots on after unit. All guns in local control. All radar equipment, H.A.C.P., No.3 L.P. room and both gyros out of action.
HOBART (H.M.A.S.) 20th July, 1943	One Torpedo fired from Submarine	17 months, including modernisation	HOBART was operating in the Coral Sea, north east of Australia, when she was struck by a torpedo on the port side abaft 'Y' turret about 4 ft. below the waterline. The stern structure, port side, abaft 'X' turret, was wrecked or seriously damaged. Severe buckling and fractures occurred on the starboard side. The ship was open to the sea in the vicinity of 'Y' magazine group. Serious damage was sustained by 'Y' turret, and in the ammunition lobby, shell room, hoists and handing room. Fighting Efficiency - Seriously impaired. 'Y' turret out of action.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NEWFOUNDLAND 23rd July, 1943 D.N.C.4B/R288	One Contact Torpedo fired from Submarine	9 months Repaired in U.S.A.	NEWFOUNDLAND, whilst proceeding at 25 knots en route from Augusta to Malta, was struck by a torpedo. Torpedo struck right aft, probably on the rudder, the stern structure for 24 ft. below the upper deck was blown upwards and outwards. Protective plating to the steering compartment abaft the rudder post was partly blown away, and the upper deck badly buckled. Forward of this to the cut up, the stern structure was buckled and distorted. The after steering compartment, hold W.T. compartments, and fresh water tanks and store rooms above immediately flooded. Minor flooding occurred in the forward steering compartment, spirit room, and W.T. compartments below, and flour store. The rudder was blown away, and the after steering gear was wrecked. All communications, power and lighting, in and abaft the after steering compartment, were wrecked. Fighting Efficiency - Not seriously impaired. Ship was able to proceed on main engines at 25 knots. Rudder and steering gear were out of action.

CRUISERS - 1943

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
UGANDA 13th Sept., 1943 D.N.C.4B/R293	One Direct Hit with Radio Corrected Bomb P.C. 1400 kgm type F.X. delay action fuzed	13½ months Repaired in U.S.A.	UGANDA was at anchor in Salerno Bay, when a bomb struck the after 4 inch H.A.C.S., passed through the ship, and burst under the starboard side at after end of after engine room. A hole was made in the starboard side 20 ft. x 17 ft., with the plating forced inboard from keel to platform deck over a length of 75 ft. The keel was set up over 50 ft. to a maximum height of 11 inches, and the inner bottom was destroyed for 8 ft., and severely distorted for over 80 ft. The platform deck was blown upwards over a length of 30 ft., while the lower deck was bulged upwards over 80 ft. The after engine room, most after oil fuel tanks, starboard gland spaces, No.2 transmitter, radar power, No.3 L.P. and gyro compass rooms flooded immediately. Leakage into the H.P. compressor room, port forward shaft passage and after gland space was controlled. A heel of 7½° to starboard was corrected by counterflooding. The starboard inner H.P. and L.P. turbines, thrust block, condenser, forced lubrication pumps and evaporator were wrecked; the port unit was damaged; the starboard shafts were badly distorted; and the after boiler room was isolated. All electrical power failed temporarily. Power to after pom-pom and director and radar sets was permanently lost. The after 4 inch H.A.C.S. was damaged. The after gyro compass was destroyed. Fighting Efficiency - Seriously impaired. Speed was reduced to 8 knots, with three shafts out of action. 'Y' turret was out of action, due to weakened condition of structure in the vicinity. the after pom-pom and director and 4 inch H.A.C.S., were out of action. REMARKS 1. An improved type of stowage clip for telephone handsets is now fitted A.F.O.6172/44 refers. 2. Approved for "through bulkhead" emergency terminals to be replaced by bracket terminals, where permanent emergency cables are run through bathrooms and other damp compartments A.F.O.2056/46 refers.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SIRIUS 18th Sept., 1943	One Near Miss 250 kgm Bomb	Nil	SIRIUS received a near miss from a bomb which detonated abreast the bridge about 30 ft. from the starboard side. Severe temporary electrical defects were caused by shock but most of these were made good within a few hours. No.1 H.P. dynamo had to be stopped due to failure of the corrosion piece and consequent leakage. This caused the failure of the low power machine in No.1 L.P. room which in turn put the transmitting station out of action. No.3 H.P. dynamo was overloaded and the second low power machine which was fed by this dynamo "came off" the board. Shock damage affected the forward gyro compass and cross levelling gyro in the transmitting station. Fighting Efficiency - Temporarily impaired.
PENELOPE 7th Oct., 1943 D.N.C.4B/R275	(i) One Direct Hit 250 kgm Bomb which did not detonate. (ii) Two Near Miss direct action fuzed Bombs	3 weeks (Partial repair of damage)	PENELOPE, while operating off the west coast of Crete, received a direct hit on the upper deck, port side, abreast 'Y' turret, which travelled diagonally forward, perforated the lower and platform decks, and broke up on the port outer shaft. The holes in the decks were 4 ft. by 2 ft. Immediate flooding to waterline of one after oil fuel tank (Y2), port inner gland compartment, provision room and No.4 breaker room occurred with minor controlled flooding in the after engine room. An immediate 4 degree list to port was corrected by counterflooding of one after oil fuel tank. The port outer shaft was bent and deeply grooved just abaft the stern tube. A near miss detonated about 25 ft. to port abreast 'Y' turret. Serious splinter damage was caused which extended from abreast the mainmast to 'Y' turret and from 4 ft. to 24 ft. above the waterline. Less serious damage extended from the after boiler room to the steering compartment and from the keel to upper deck. The damage involved lighting, ventilation and H.A. fire control cables, 4 inch guns and circuits, after H.A.C.S., 6 inch barrage director and the radar warning equipment. Minor fires were caused by splinters in bedding and clothing. A near miss also occurred 75 yards to port abreast the foremast and resulted in minor splinter damage to bridge structure, foremast and associated electric cables. Fighting Efficiency - Seriously impaired. Temporary reduction of speed due to contaminated oil fuel. Supply to main W/T failed owing to flooded breaker room. The after H.A. and 6 inch barrage directors and all 4 inch guns were out of action owing to splinter damage. Radar warning equipment was temporarily out of action. REMARKS Approved to fit a settling and sullage tank system to deal with contamination of oil fuel by sea water - C.A.F.O.1485/44 refers.

CRUISERS - 1943

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
CARLISLE 9th Oct., 1943 D.N.C.4B/292	(i) One possibly two Direct Hit direct action fuzed Bombs Two Direct Hit delay action fuzed Bombs. Two Near Miss direct action fuzed Bombs (ii) Cannon Fire	5 months including conversion to Base Ship	CARLISLE, while operating at a speed of 12 knots south of Scarpanto Strait, received a direct hit (possibly 2) on or near No.4 - 4 inch gun, which was wrecked. The upper deck was holed and distorted by blast and splinters. Two further direct hits, one just forward of and one just abaft No.4 gun, perforated upper, lower and platform decks and the outer bottom, exploding beneath the ship. These hits blew in the starboard side plating and framing abreast after oil fuel tanks and steering compartment. Minor buckling occurred on the port side. A whipping buckle abreast the after boiler room flooded the reserve feed tanks. The stern casting was fractured. Most after end compartments including the after (No.4) magazine, oil fuel tanks and steering compartment flooded to the waterline. Leakage into other compartment, including the after engine room bilges, was controlled. Two near misses on the starboard side, one abreast No.3 gun and the other abreast the after boiler room, caused extensive splinter damage to topsides. Starboard tail shaft and propeller were missing and the port shaft bracket was buckled out of alignment. Electrical installations aft were put out of action and the ventilation system to machinery spaces failed temporarily. A cordite fire in the vicinity of No.4 gun, and other minor fires, were started by splinters. H.A. directors and W/T equipment were seriously damaged by shock, splinters and cannon fire. Fighting Efficiency - Seriously impaired. Ship was immobilised due to loss of starboard propeller and jamming of steering gear. Nos. 1 and 3 guns were in local control, No.2 gun was out of action and No.4 gun wrecked. The H.A. directors were also out of action.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SIRIUS 17th Oct., 1943 D.N.C.4B/R291	One Direct Hit 250 kgm direct action fuzed Bomb Four Near Miss with similar Bombs	4½ months	SIRIUS, while operating at a speed of 21 knots near Scarpanto Strait received a direct hit which struck the quarter deck abaft 'Y' gun, blew a hole 20 ft. diameter in the upper deck and a smaller hole in lower deck. Blast and splinters damaged the lower deck spaces and surrounding structure. There was no flooding from the sea, but the after fresh water tank was damaged and slowly flooded the watertight compartment under the steering compartment and adjacent store rooms. Fires were started in and around after oerlikon R.U. lockers on quarter deck, and amongst debris on lower deck. 'Y' gun house and the right and left hand gun of 'X' turret were damaged by splinters. The after Oerlikon gun was destroyed. 4 near misses detonated off the port side, amidships, causing splinter damage to ship's side and superstructure, and minor damage to internal fittings and electrical equipment. 'C' port torpedo tube, main aerials and radar sets were put out of action by splinters. Fighting Efficiency - Seriously impaired. 'Y' turret, the quarter deck Oerlikon, 'C' port torpedo tube, and several radar sets were out of action. W/T equipment temporarily failed. REMARKS Under consideration to supply small portable oxy-acetylene burning plants for damage control purposes.
CHARYBDIS 23rd Oct., 1943	Two Contact Torpedoes fired from E-Boat	Sunk	CHARYBDIS, whilst on patrol off the French coast in company with LIMBOURNE, was struck by two torpedoes. 1st Torpedo hit the port side near the after boiler room, and the ship rapidly took a list of 20 degrees to port, which continued to increase slowly. 2nd Torpedo hit the port side near the after engine room 10 minutes later. This hit caused extensive structural damage and excessive hogging and working of the decks. The upper deck was blown upwards and the after director displaced. All electrical power failed. List to port increased rapidly and the upper deck was soon awash abaft the break of forecastle. Within five minutes of the second hit the list had reached 50 degrees, and it continued to increase as the ship settled by the stern. The ship suddenly trimmed by the stern, until almost vertical, and remained in this position 2/3rds submerged for about ½ hour, before sinking.

CRUISERS - 1943

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AURORA 30th Oct., 1943 D.N.C.4B/R284	One Direct Hit with 500 kgm direct action fuzed Bomb	5½ months including re-tubing of superheaters	AURORA was operating in Turkish territorial waters when a bomb struck just abaft the after funnel on after conning position. The after conning position was destroyed and P1 - 4 inch mounting was wrecked. Blast and splinters caused damage on and above the 4 inch gun deck, mainly on the port side, abaft the after funnel. P1 and 2 and S1 - 4 inch mountings, both funnels, 7 ready-use lockers on gun deck, the port pom-pom, 3 Oerlikons, certain electrical circuits to the 4 inch guns, the after H.A. director, the port torpedo tubes, various radar sets and the mainmast and main aerials were all affected. Minor damage occurred on the upper deck. A fire on the 4 inch gun deck was caused by exploding ready-use ammunition and burning cordite. A minor fire occurred in upper deck spaces. Fighting Efficiency - Seriously impaired. All 4 inch guns were out of action due to damage and heavy casualties to the guns' crews. 'Y' turret was temporarily out of action due to loss of power. The after H.A. director, H.A.C.P., port pom-pom, 3 Oerlikons and some radar sets were out of action. Speed was reduced to 22 knots to avoid collapse of the after funnel.
BIRMINGHAM 28th Nov., 1943 D.N.C.4B/R286	One Torpedo fired from Submarine	12 months Repaired in U.S.A.	BIRMINGHAM was on passage from Gibraltar to the Levant at a speed of 23 knots, when an explosion occurred forward of 'A' gun abreast the asdic compartment, port side, at approximately keel level. The keel and bottom structure for a length of 45 ft. was blown up into the ship; bottom plating was ruptured for 25 ft. up the port side and 18 ft. up the starboard side. All structure below lower deck and immediately above explosion was destroyed with extensive buckling up to the forecastle deck. The bow dropped 34 inches. Immediate flooding occurred in the forward magazine group and adjacent compartments, including the petrol and asdic compartments, one oil fuel tank and the compressor room. Controlled flooding in one oil fuel tank, ammunition lobby and lower mess spaces also occurred. The ship listed 8 degrees to port, corrected to 6 degrees by counterflooding and transference of fuel. Failure of electrical power at fore end put the forward ventilation system out of action. Fixed structure and roller path of 'A' turret were distorted. 'A' shell room was wrecked. The roller path of 'Y' turret was distorted by whipping. W/T transmission failed temporarily owing to the collapse of some main aerials. Radar equipment was damaged and the power room flooded. The asdic compartment was wrecked. The damage control party were overcome by toxic fumes, presumably from the explosion. Fighting Efficiency - Seriously impaired. 'A' turret and asdic gear were out of action and the forward magazine group was flooded. Endurance was reduced by the loss of oil fuel and maximum speed was 20 knots owing to the damaged bow. The efficiency of W/T and radar equipment was seriously reduced.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
NORFOLK 26th Dec., 1943 D.N.C.6/R298	Two Direct Hit 11 inch delay action fuzed Shells	10 months including refit	NORFOLK was damaged by shell fire during a gun action with the SCHARNHORST off the North West of Norway. Hit No.1 was on the starboard side just forward of the forward engine room and above main deck level. The shell struck the main deck about 12 ft. from the ship's side, and ploughed across it for 36 ft. making a gash about 12 inches wide, was then diverted downwards making a hole 6 ft. by 4 ft. in the deck, perforated the port after fan chamber and finally detonated in the port main central store, lower deck, close to the ship's side. Minor splinter damage resulted from the burst and extensive damage on the main deck cabin flat and lower deck machine shop flat was caused by structural splinters in the path of the shell. The oil fuel filling line, firemain, breathing pipes and other services were also cut. Minor controlled flooding in main central store resulted from splinter holes in the ship's side and workshop flat, and in forward engine room from oil fuel and water from the cut firemain and fuel pipes. Minor fires occurred in cabins, on port side in the main central store and in the engineer's spare gear store. Splinter damage affected important circuits of main and 2nd W/T sets and radar equipment. Hit No.2 was on the barbette of 'X' turret just above the roller path. The shell perforated the barbette and roller path, passed through the revolving structure, emerged just below the roller path on the opposite side and passed overboard without detonating. A minor fire in 'X' gunhouse was caused by broken oil pipes. 'X' magazine was flooded as a precautionary measure. Fighting Efficiency - Impaired. 'X' turret was out of action and magazine flooded. The ship was able to continue in action at full speed.
GLASGOW 28th Dec., 1943	"Shorts" Shell	8 days	GLASGOW, whilst in action against German destroyers (ELBING and NARVIK classes) in the Bay of Biscay, sustained minor damage to structure, principally caused by splinters from "shorts". Fighting Efficiency - Very slightly impaired.

CRUISERS - 1943/44

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ENTERPRISE (H.M.C.S.) 28th Dec., 1943	"Shorts" Shell	5 days	ENTERPRISE, whilst in action with German Destroyers (ELBING and NARVIK classes) in the Bay of Biscay, sustained minor damage to structure, principally caused by splinters from "shorts". Fighting Efficiency - Very slightly impaired.
SPARTAN 29th Jan., 1944 D.N.C.6/R322	One Direct Hit with Radio Controlled Glider Bomb type H.S.293 delay action fuzed.	Sunk	SPARTAN, while anchored off Anzio, was hit just abaft the after funnel by a bomb which detonated probably high up in the compartments abreast the port side of after boiler room. A large hole was blown in the upper deck, abreast the port torpedo tubes, also in ship's port side below upper deck. The main mast collapsed to port. The after boiler room and adjacent port wing spaces flooded immediately. Ship heeled 5-10 degrees to port, with lower deck at side below waterline, rapid flooding of port wing spaces above both engine rooms and after boiler room ensued. The emergency bulkhead valve between forward engine and boiler rooms closed through shock, this resulted in ship losing all steam and electrical power. The port torpedo tubes were demolished and the starboard tubes were shifted bodily 2 ft. A serious fire developed in after superstructure. The warheads in port torpedo tubes and ammunition in port pom-pom ready use magazine caught fire. A fire in 'Y' turret was caused by a splinter. Smoke and steam impeded damage control work. Nine minutes later the after engine room and lower deck flats above after machinery spaces were evacuated. 'X' and 'Y' magazines were flooded, ten minutes later, in view of fire danger. Ship heeled 15° to port. Steam was restored to forward engine room 5 minutes later. It was impossible to obtain electrical power due to flooded supply switchgear. Just over an hour after the hit, the ship was abandoned. Ship on beam ends, settled about 10 minutes later in 5 to 6 fathoms of water. REMARKS In order to eliminate the possibility of shock operating the levers of emergency bulkhead valves, a simple locking device has been fitted - C.A.F.O.116/45 refers.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
PENELOPE 18th Feb., 1944	Two Contact Torpedoes fired by Submarine	Sunk	PENELOPE was proceeding unescorted from Naples to Anzio at a speed of 26 knots, when a torpedo struck the starboard side, well below the waterline, just abaft the after engine room in vicinity of after oil fuel tanks. Flooding probably extended from after engine room to fore end of steering compartment, including after engine room, oil fuel tanks, centre cabin flat and wardroom flat and compartments below. A heel of 9° to starboard and trim by the stern were assumed, speed was gradually lost and the ship turned a complete circle to starboard. 16 minutes later when the ship had practically stopped, a 2nd torpedo struck the starboard side, well below the waterline, in the vicinity of the after boiler room. The after boiler room and probably the forward engine room flooded immediately. PENELOPE heeled heavily to starboard and sank in less than one minute after the second hit.
EMERALD 6th June, 1944	One Near Miss Bomb	5 days	EMERALD, whilst operating off the Normandy beaches, received a near miss which caused minor structural damage and leaks in one oil fuel tank. Fighting Efficiency - Very slightly impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
SCYLLA 23rd June, 1944 D.N.C.6/R323	One Ground Mine in nine fathoms. Charge about 1500 lbs.	Indeterminate (Repairs not completed)	SCYLLA was operating off the coast of Normandy at 15 knots when an explosion occurred under the starboard side of the after engine room. The outer bottom plating (starboard) was buckled and corrugated to a maximum depth of 6 inches abreast the after boiler room, engine room and magazine groups, over about a length of 160 ft. Slight buckling occurred on the port side. Internal structure over this area was somewhat buckled and distorted, principally on the starboard side. Slow controlled flooding occurred in the forward and after engine rooms, and in one after oil fuel tank. Leaks occurred in 'Y' magazine and the gland compartment. A heel to starboard of $1\frac{1}{2}^{o}$ was corrected by the transference of oil fuel. Shock caused extensive damage to main machinery castings, and to auxiliary machinery. All L.P. turbine castings were extensively fractured, putting the main engines out of action. The main bearers in the after engine room were distorted and the engines thrown out of alignment. The fixed and sliding feet of turbines were damaged or fractured to a varying extent. Shock also damaged the dynamos and the port and starboard plummer block pedestals in the after engine room. All the keeps to fixed and sliding feet of boilers were bent. Temporary failure of electrical power occurred. The torpedo tubes jumped off their roller paths. Extensive shock damage to W/T and radar equipment was also reported. Fighting Efficiency - Seriously impaired. The ship was able to steam at a slow speed on port outer turbine after 5 hours of repair work. After control position, pom-pom director, both sets of torpedo tubes, both gyro compasses, most radar sets, the forward rangefinder, and 50% of W/T equipment were out of action.
ARETHUSA 24th June, 1944	One Near Miss 250 kgm delay action fuzed Bomb	See next incident	ARETHUSA was at anchor in Seine Bay, when a near miss detonated under water about 25 yards off the port side abreast the after boiler room. No structural damage was caused. Minor shock damage to the master gyro compass and brickwork of all boilers occurred. Keeps to the sliding feet of port H.P. turbines were bent; base of turbo-generator was fractured, but the machine continued to function after damage. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ARETHUSA 25th June, 1944	One Near Miss delay action fuzed Mine or Bomb, in 9 fathoms	4½ months, including damage received on 24th June 1944	ARETHUSA was at anchor in Seine Bay, when a near miss exploded about 10 yards astern, after 2 minutes delay, beneath the ship and under 'Y' turret. The hull structure was slightly buckled and some rivets were strained and leaking. Minor controlled flooding occurred in 'Y' magazine, inflammable store, steering compartment and some adjacent watertight compartments. All keeps of sliding feet on L.P. turbines and starboard inner cruising turbine were bent, and the feet of the forward steering unit were fractured. Starboard inner shaft was slightly out of alignment and stiff to turn. 'Y' turret guns jumped in their slides and holding down bolts of the trunnion caps were stretched. Holding down bolts of the after twin Oerlikon on 'Y' turret were fractured. The roller path of H.A. director was damaged. Shock damaged the radar equipment and after gyro compass. Fighting Efficiency - Impaired. The starboard inner shaft was put out of action. 'Y' turret, after H.A. director, twin Oerlikon, the gyro compass, and some radar sets were also put out of action.
GLASGOW 25th June, 1944	(i) Two Direct Hit direct action fuzed Shells (Probably 9.6 inch) (ii) One "Short" direct action fuzed Shell	12 months, including refit and modernisation	GLASGOW was attacked by shore batteries whilst bombarding Cherbourg. Direct Hit No.1 on port side of the hangar caused a hole in the hangar side, 7 ft. x 6 ft. and splinter damage to hangar structure near the burst. Direct Hit No.2 struck and exploded on a port side carley float at forecastle deck level, abreast the after H.A. director control tower. Splinters damaged the superstructure, forecastle deck, radar office, and supports to the after H.A. director control tower. Extensive splinter damage occurred to the lighting circuits and leads to the forward 2 pdr. pom-pom. The after H.A. director was jammed. Minor fires started near the carley floats. A "short" burst close to the stern on the port side, causing splinter damage to the stern contour plate and port side plating aft. Fighting Efficiency - Slightly impaired. The after H.A. director was jammed, and temporarily out of action. The after pom-pom was temporarily in local control. Emergency repairs to the damage were completed in about half an hour.

CRUISERS - 1944

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ARGONAUT 30th June, 1944	One Direct Hit 155 mm Shell which did not detonate	Nil	ARGONAUT was at anchor during the bombardment of Normandy beaches, when she was struck by a shell on the starboard side of the quarter deck. The shell passed down through a cabin and out of the ship's side, about 8 ft. above the waterline without detonating. Minor damage occurred in the path of the shell, the hole in the ship's side being 16 inches by 8 inches. Several minor electrical cables were cut. Fighting Efficiency - Not impaired.
FROBISHER 9th Aug., 1944 D.N.C.6/R321	One Contact Torpedo, possibly of "Slow Worm" type fired from submarine	8 months, including conversion to training ship.	FROBISHER was at anchor off the Normandy coast, when a torpedo struck the fore end, about 40 ft. from the bow, and 7 ft. above keel on the port side, near the cable lockers. A hole in the port side 15 ft. long by 10 ft. deep was caused, with surrounding plating forced inboard. A hole in the starboard side 9 ft. long by 6 ft. deep was also made, with the surrounding plating forced outboard. Serious structural damage extended from keel to upper deck over a length of 60 ft. Minor damage extended to the forecastle deck. The fore end, including two of the forward oil fuel tanks was open to the sea, and flooded to the waterline for about 80 ft. This caused minor flooding on the lower deck. Capstan machinery was thrown out of alignment, and could only be worked by hand. The forward 7.5 inch gun (in state of semi preservation) and rangefinder were damaged. Fighting Efficiency - Seriously impaired. Speed was reduced to 15 knots to avoid aggravation of the structural damage forward. Endurance was reduced by the flooding of the forward oil fuel tanks.
AURORA August 1944	One "Short" direct action fuzed Shell	2 days, (partial repair of damage)	AURORA was operating in the Mediterranean, when a shell detonated under water, just forward of the inner port propeller, about platform deck level. Shell plating and platform deck plating close to the ship's side were severely distorted, over a length of 7 ft. The after fresh water tanks were contaminated by leaks. Fighting Efficiency - Slightly impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AUSTRALIA (H.M.A.S.) 21st Oct., 1944	Hit by one Japanese suicide plane (VAL)	Not known	AUSTRALIA, while operating off Leyte in the Philippines, was attacked from astern by a suicide plane. The wing of the plane struck the foremast, which diverted the aircraft over the side, where it crashed into the sea. Fierce petrol fires started, followed by many explosions. There were numerous casualties, particularly to bridge personnel. Fighting Efficiency - Seriously impaired. The ship was temporarily out of action as a fighting unit.
AUSTRALIA (H.M.A.S.) 5th Jan., 1945	Hit by one Japanese suicide plane (KATE or ZEKE), which was thought to have carried a small Bomb	Nil immediately See Page 107	AUSTRALIA, while operating with an American Task force in the Lingayen Gulf, was attacked from the starboard side by a suicide plane, which struck the top of No.2 funnel and the aircraft crane, and then dived to hit the port side of the upper deck, about 8 ft. inboard, and immediately abaft P.2 - 4 inch mounting. A large explosion followed. The upper deck plating was holed and set down in the vicinity of the crash, the funnel structure was severely strained, the top plating torn, and the crane jib broken. Extensive, but not serious, splinter damage to superstructure, crane, funnels, waste steam pipes, and R.U. ammunition lockers occurred. A petrol fire started in the vicinity of the crane and P.2 mounting, but it was soon brought under control. Electrical circuits, radar and W/T aerials suffered minor damage. P.2 - 4 inch mounting and two bofors mountings were damaged by blast and splinters. Fighting Efficiency - Impaired. One 4 inch and two bofors mountings were temporarily out of action. The efficiency of the A/A armament was seriously reduced, due to heavy casualties to gun crews and supply parties. Scratch crews for A/A armament were later formed at the expense of the efficiency of main armament.

CRUISERS - 1945

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AUSTRALIA (H.M.A.S.) 6th Jan., 1945	Hit by one Japanese suicide plane (VAL), which probably carried a Bomb	Nil immediately See Page 107	AUSTRALIA, while operating with an American Task force in the Lingayen Gulf, was attacked from the starboard quarter by a suicide plane. The plane struck the gunshield of S.2 - 4 inch mounting, hit the upper deck about 18 ft. inboard, and then crashed into the base of No.2 funnel. A large explosion followed. The upper deck was holed and set down in the vicinity of the crash, and the casing and uptake of No.2 funnel were blown in, and extensively damaged. The funnels and superstructure were damaged by splinters. Some damage was sustained by the radar and W/T equipment, but the sets were again operational after temporary repairs. S.2 - 4 inch mounting was seriously damaged, and all controls to it were destroyed. Smoke and flames from a large petrol fire, in the vicinity of the crash, necessitated shutting down the fans to 'A' boiler room, and the temporary evacuation of this compartment. This fire and also a small electrical fire between decks was soon got under control. Fighting Efficiency - Seriously impaired. (With damage incurred in previous attack). S.2 - 4 inch mounting was temporarily out of action. Due to heavy casualties to guns' crews of 4 inch and close range armament, from this and previous suicide crash, it was only possible to man one 4 inch gun either side. Close range armament had to be manned with scratch crews.
AUSTRALIA (H.M.A.S.) 8th Jan., 1945	Hit by two Japanese suicide planes. (DINAHS) The second plane was thought to have carried a Bomb	Nil immediately See next incident	AUSTRALIA was attacked from the port quarter by two suicide planes. The first plane was attacked by patrolling aircraft and gunfire from AUSTRALIA, and was shot down into the sea about 20 yards from the ship. Part of the plane ricochetted and struck the port side abreast the Captain's cabin, just below upper deck level. The only damage was a large indentation in the side plating and one side scuttle broken. The second plane, attacking from the same quarter, was shot down close to the ship and struck the port side below the bridge at the waterline. The plane was thought to have carried a bomb, which exploded on contact with the ship's side. A hole 12 ft. by 8 ft. was blown in the side plating. A provision room, one oil fuel tank, and a bulge compartment were flooded, and the ship developed a 5° heel to port. Slow flooding extended to adjacent compartments, but was controlled when counterflooding reduced the heel. Fighting Efficiency - Further impaired. The ship would not have been suitable for high speed steaming. As a precautionary measure against further structural damage, speed was limited to 15 knots, and a decision was made not to fire the forward 8 inch guns on a port bearing.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
AUSTRALIA (H.M.A.S.) 9th Jan., 1945	Hit by One Japanese Suicide Plane (TONY)	6½ months, including refit	AUSTRALIA was attacked by a suicide plane, which attempted to crash on the bridge, but missed and the wing tip struck a mast strut, which swung the plane on to the foremost funnel, and then over the side into the sea. The main damage occurred to the funnel, the top third of which was folded over, completely blocking the escape of all funnel gases. This necessitated the temporary shutting down of two boilers in 'A' boiler room. The whole of the funnel structure was badly strained. Radar and W/T aerials were damaged, but these were quickly repaired. Fighting Efficiency - Temporarily impaired. Both boilers that had been temporarily shut down were able to be flashed up again when a hole was cut through both casings, at the top of the funnel, to allow the escape of smoke and waste gases.
DIADEM 28th Jan., 1945	One Direct Hit 5.9 inch direct action fuzed Shell	5 weeks including weather damage and outstanding defects	DIADEM when in action against 3 German NARVIK class destroyers off the Norwegian coast, in company with MAURITIUS received a direct hit which exploded on contact with the forecastle deck just abaft the funnel. The forecastle deck was holed in the vicinity of the burst and the structure of the smith's and shipwright's workshops and torpedo parting space was damaged by blast and splinters. The cables and fittings of the type 282 radar of the port pom-pom and the supply cables to No.3 P and S Oerlikon mountings were damaged by splinters. Fighting Efficiency - Slightly impaired. No.3 P and S Oerlikon mountings could only be worked by hand and the port and starboard pom-poms were without radar control.
MAURITIUS 28th Jan., 1945	One Direct Hit 5.9 inch direct action fuzed Shell	Nil	MAURITIUS, when in action against 3 German NARVIK Class destroyers off the Norwegian coast, in company with DIADEM, received a direct hit which exploded on contact with the ship's side, about 13 ft. above the waterline and abreast 'B' turret. A hole 5 ft. by 4 ft. was blown in the side plating, and the firemain, H.P. air line, electric leads, hot water and steam heating pipes were damaged by splinters. A small fire in a hammock stowage was quickly extinguished. Fighting Efficiency - Not impaired. With adverse weather conditions her sea-going efficiency would have been impaired due to the hole in side plating.

CRUISERS - 1945

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
DELHI 12th Feb., 1945	One Explosive Motor Boat probably Italian. Detonation not in contact with ship	Indeterminate (Ship placed in reserve)	DELHI was berthed alongside a wrecked merchant ship in Split Harbour, (Yugoslavia), and screened at the after end by an L.C.F., when an explosive motor boat hit the L.C.F. and blew up. The explosion was about 45 ft. from the port after quarter of DELHI. The stern plating and framing was slightly buckled and the stern contour plate fractured below waterline. The rudder gudgeon casting was fractured, the steering gear stiff to operate at extreme angles, and the lower supports of both 'A' brackets were strained. Leakage occurred into one after oil fuel tank. Shock caused damage to type 271 radar aerial lantern, and temporary failure of power at the after end due to tripping of the after turbo generator and No.2 reciprocating dynamo. Some minor damage was caused by the L.C.F. being thrown against DELHI. Fighting Efficiency - Slightly impaired.
SUSSEX 26th July, 1945	Hit by One Japanese Suicide Plane (VAL)	Nil	SUSSEX was operating with the Eastern Fleet, preparatory to the invasion of Malaya when a suicide plane attacked her from the starboard beam at deck level. It was engaged by the ship's close range armament and burst into flames before crashing into the starboard side, about 3 ft. above the lower deck and abreast the mainmast. The side plating and framing were buckled and set in a maximum distance of 10 inches over a length of 8 ft. and plate laps were opened up. No fires or flooding occurred and damage to some naval stores, stowed in the compartment abreast the hit, was slight. Fighting Efficiency - Not impaired.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
TERROR 22nd Feb., 1941	Three Near Miss size unknown (Probably 250 kgm) delay action fuzed Bombs	Nil	TERROR was attacked by dive bombers whilst in Benghazi Harbour, and three bombs exploded just clear of the port bulge abreast the 15 inch turret. The force of the explosion was severe and caused extensive internal damage and flooding. Fighting Efficiency - Seriously impaired. 15 inch transmitting station was temporarily out of action. The speed was reduced, due to flooding, and the seaworthiness was impaired. Note. Ten minutes after leaving Benghazi three dive bombers attacked TERROR, but the bombs fell 200 yards clear. Two hours later, two acoustic mines exploded 200 yards off the port beam. TERROR received a severe shaking, but received no apparent structural damage from these explosions.
TERROR 23rd-24th Feb., 1941	Number unknown Near Miss size unknown delay action fuzed Bombs	Vessel was abandoned and sunk	TERROR, when 15 miles off Derna, was attacked by dive bombers, the last bomb of the 3rd stick fell close to the starboard side abreast the bridge. The effect of these explosions was violent, and caused serious structural damage including severe buckling of upper deck abaft 15 inch turret. All lighting and power was lost. The boiler room was abandoned due to fire and flooding and all steam supply was lost. Severe flooding could not be controlled, and TERROR settled slowly with a heavy heel to starboard. The vessel was abandoned with 4 ft. of freeboard forward. In order to increase the rate of sinking, the Commanding Officer of TERROR ordered depth charges set to 50 ft. to be dropped close to the starboard side. TERROR heeled slowly to starboard, capsized and sank. REMARKS As a result of this incident EREBUS was supplied with an additional diesel dynamo. All practicable measures to ensure pumping capacity being available after severe damage, have been taken in ROBERTS and ABERCROMBIE.
MARSHAL SOULT (Late Monitor Depot ship) 10th March, 1941 D.N.C.4B/R66	One Direct Hit size unknown direct action fuzed Bomb	Nil	MARSHAL SOULT, was berthed in No.3 basin during an air raid on Portsmouth when a bomb burst on impact with the forecastle deck edge starboard side at the fore end. A large hole was blown in the forecastle deck and minor splinter damage sustained by the structure in the vicinity of the explosion. Fighting Efficiency - Not impaired. Vessel was not a fighting unit.

MONITORS - 1942

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ROBERTS 11th Nov., 1942 D.N.C.4B/R241	Two Direct Hit One Near Miss probably 500 kgm delay action fuzed Bomb	6 months	ROBERTS, whilst on patrol duties in the anchorage off Bougie, was attacked by enemy aircraft. A direct hit on the top edge of the sloping armour on the port bulge abreast the port engine room burst on impact. The armour was dished 10 inches over an area 10 ft. by 4 ft. A hole 7 ft. by 6 ft. was blown in the side plating and one 2 ft. by 2 ft. in the upper deck. The W.O's mess and ship's office were wrecked. Two compartments of the port bulge inner air space were flooded. A fire was started in the ship's office. A direct hit which passed through the provision issue room, burst on the starboard side of the upper deck, just abaft the funnel. The main deck armour was set down and a hole 12 ft. by 8 ft. blown in the upper deck, compartments in the vicinity of the burst were wrecked. Splinter damage was sustained to the fire main, oil fuel filling line, fresh water and steam heating systems. Two fires were started on the main deck. Both engine room ventilation fans were wrecked and exhaust fans stopped. The engine room was temporarily abandoned. A near miss 20 to 30 ft. abreast the port boiler room caused minor damage to the side structure in the vicinity of the burst. Two compartments of the port bulge outer air space were flooded. The ship heeled 3 degrees to port. Severe damage was sustained to important electrical cables and equipment between main and upper decks in way of the machinery spaces, due to the direct hits. Fighting Efficiency - Seriously impaired. The ship was temporarily immobilised due to both engine rooms becoming untenable. Types 285 and 281 radar were out of action. REMARKS 1. Air escape pipes from the feed tanks to be modified so that they terminate at the engine room deckhead below the armour deck. 2. All rising mains from the firemain to have valves fitted below the armour deck.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ABERCROMBIE 9th Sept., 1943 D.N.C.4B/R296	One Contact Mine in 75 fathoms. Probable charge 500 lbs.	11 months (Partial repair of damage)	ABERCROMBIE was performing bombardment duties in Salerno Bay, at a speed of less than two knots, when an explosion occurred abreast the bridge, under the starboard bulge. Major structural damage was confined to outboard of the longitudinal protective bulkhead. The shell plating was holed over a length of 20 ft., and girth 12 ft. outboard from the protective bulkhead. Damage to the bulge structure extended over 130 ft. of the length of which 90 ft. was seriously damaged. The longitudinal protective bulkhead was bulged inboard a maximum of 9", and the sloping bulge armour was displaced abreast the explosion. Bulge compartments over 115 ft. length flooded immediately. Flooding inboard of the protective bulkhead was of minor importance only. A heel of 10° to starboard was corrected by counterflooding. There was no major damage to machinery or electrical equipment. Some lighting failed due to broken lamp bulbs. The 15 inch director control tower was unseated and damaged. Minor shock damage involved W/T and radar equipment. Fighting Efficiency - Seriously impaired. The 15 inch director control tower and type 281 radar were out of action. The 15 inch guns could only have been fired in an emergency owing to the danger of aggravating the structural damage. REMARKS 1. Approved to fit a Lower Power air system, independent of the existing High Power system, and to supply pneumatic tools. 2. Approved to supply MONITORS with one portable electric welding set.

MONITORS - 1944

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
ABERCROMBIE 21st Aug., 1944	Two Contact Moored Mines in 70 fathoms probably type G.R. Charge 90 lbs.	10½ months	ABERCROMBIE was exercising near Malta, when an explosion occurred at the fore end on the starboard side between the hold and lower deck. The engines were put to "stop". The ship's side was split 4 ft. long by 16 ft. deep, and the plating was set in a maximum of 5 ft. The surrounding plating was buckled and corrugated from the garboard strake to the lower deck over a length of 32 ft. The fore end flooded for 40 ft. from the hold to above the lower deck level. A heel to starboard of 4½° was reduced to 2° by counterflooding and transference of oil fuel and weights. Shock damaged the capstan and the refrigerating machinery. Ten minutes later a 2nd mine exploded under the bottom just abaft the mainmast in the vicinity of the cut up. A hole was made in the bottom plating 10 ft. long by 7 ft. wide; and the keel and cut up were destroyed for 14 ft. Plating and longitudinals were set upwards 4 to 6 ft. over a distance of 30 ft. and heavy buckling occurred between the 2nd longitudinal on the port side, and the 3rd longitudinal on the starboard side. The starboard 'A' bracket was torn from the hull. Flooding extended for 52 ft. from the keel to the lower deck level including the steering compartment, after shaft passages, and No.4 pom-pom magazine. Controlled flooding occurred in the forward shaft passages and metadyne compartment. The ship settled by the stern with a slight heel to starboard, which was reduced to 1° by transference of oil fuel and weights. The starboard after plummer block was fractured and the seating of the port block was distorted. The port and starboard tail and intermediate shafts were bent. Radar sets and gyro compasses were damaged by shock. Fighting Efficiency - Seriously impaired. The ship was immobilised due to bent shafts and the loss of steering gear, and had to be taken in tow. The gyro compasses were out of action.
EREBUS 5th Sept., 1944	One Direct Hit Shell	2 days temporary repairs. See next incident	EREBUS was bombarding Le Havre when a shell struck the fore end of her port bulge, passed through the bulge compartment and fractured the main suction pipe. The bulge compartment and those compartments immediately inboard within the damaged area, including the small arms magazine, were flooded. This caused the ship to list 3½ degrees to port and it was not temporarily possible to correct the heel by pumping out, because of the damaged suction pipe. Fighting Efficiency - Impaired. Bombardment with the 15 inch gun was discontinued due to risk of causing further structural damage to the bulkheads of the flooded compartments.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
EREBUS 8th Sept., 1944	One Direct Hit Shell	2 weeks including repairs of damage received 5th Sept., 1944	EREBUS was bombarding Le Havre when a shell struck her port bulge, abreast the engine room in the vicinity of the bilge keel. The shell made a hole 15 ins. by 18 ins. in the bulge plating and the bilge keel in the vicinity was badly buckled. The bulge compartment was open to the sea and water leaked into an adjacent compartment through the damaged structure, but the flooding was kept under control. Fighting Efficiency - Not impaired. The ship continued her assigned bombarding duties and remained operational until the immediate task was completed.

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
MOHAWK 16th Oct., 1939	Two Near Miss size unknown probably direct action or very short delay action fuzed Bombs	2 months	MOHAWK, while escorting a convoy 1½ miles from May Island, was attacked by aircraft. Both bombs fell about 45 ft. to starboard, one abreast the break of forecastle and the other abreast the torpedo tubes. Damage caused by splinters was considerable but structural damage was not serious. Fighting Efficiency - Impaired. Loss of personnel occurred and director and H.A. rangefinder together with practically all control and gun circuits were put out of action. REMARKS This incident emphasised the need for splinter protection to exposed personnel and to vital communications.
BLANCHE 13th Nov., 1939	One Magnetic Mine in 30 fathoms estimated charge 1,500 lbs. T.N.T.	Sunk	BLANCHE was on anti-submarine patrol with ADVENTURE in the North Sea when an explosion occurred aft, under the port side abreast 'Y' 4.7" gun. Structural damage occurred aft and the ship's back was broken just abaft the engine room. Initial flooding below Lower Deck aft spread to cabin flat and engine room. Ship listed to port and finally capsized and sank. REMARKS This incident emphasised the importance of keeping watertight as many compartments as possible in the after end of damaged destroyers. This and similar cases led to the issue of Appendix III of the Damage Control Handbook (O.U.6331/39).
GIPSY 21st Nov., 1939	One Magnetic Mine in approx. 30 ft. estimated charge 1,500 lbs. T.N.T.	Sunk	GIPSY was proceeding to sea from Harwich when an explosion occurred between Nos. 2 and 3 boiler rooms. The ship's back was broken and she sank almost immediately. The midship portion grounded while the ends remained buoyant for a time until they slowly settled down.

DESTROYERS - 1939/40

SHIP DATE OF INCIDENT	NATURE OF ATTACK	TIME OUT OF ACTION	BRIEF ACCOUNT OF DAMAGE AND LESSONS LEARNED
JERSEY 7th Dec., 1939	One Contact Torpedo 13 fathoms Note:- Torpedo surfaced and struck ship at waterline, fired from submarine	10 months	JERSEY, while proceeding with JUNO at 13 knots off Cromer Knoll was struck on the port side abaft gearing room. Severe structural damage was sustained in the neighbourhood of the explosion, the hole in the ship's side extending from upper deck to bilge keel. Flooding and minor fire damage occurred from the after engine room bulkhead to the after cut-up. Fighting Efficiency - Seriously impaired. The main engines were immobilised and the after torpedo tubes were blown overboard. The ship was towed to port.
KELLY 14th Dec., 1939 D.N.C.4B/R4	One Moored Mine 47 fathoms	10 weeks	KELLY, was operating 13½ miles North of Tyne Breakwater Head, when an explosion occurred in wake of starboard propeller about 6 ft. abaft the stern. The side plating, port and starboard, was corrugated from stern to the cut up, but not punctured. Minor damage occurred to bulkheads in this vicinity with minor flooding. Fighting Efficiency - Seriously impaired. Gunnery efficiency unimpaired. The steering gear was out of action, the stern distorted and the shaft brackets lifted. The ship could have steamed with difficulty at slow speed. REMARKS This incident demonstrated the weakness of lightening holes in brackets and frames. No weakness was apparent in the longitudinal strength of the ship.
GRENVILLE 19th Jan., 1940	One Mine probably Magnetic 20 fathoms	Sunk	GRENVILLE was operating off the Dutch Coast when an explosion occurred. The ship was blown in two and within two minutes the separate portions were almost vertical with the bows 60 ft. out of the water and the stern nearly awash.
EXMOUTH 21st Jan., 1940	Probably Torpedo fired from submarine	Sunk	EXMOUTH was operating in the Moray Firth when an explosion occurred and the vessel sank.