

U.S.S. STERETT (DD407)

Gunfire Damage

Battle of Guadalcanal

13 November, 1942

Class.....Destroyer(DD407)	Length (D.W.L.).....333'-9"
Launched....27 October,1938	Beam (D.W.L.).....35'
Displacement.....1500 Tons (Standard)	Draft (D.W.L.).....10'-8"

References:

- (a) C.O. STERETT ltr. DD407/A16-3(030) of 6 December, 1942 (War Damage Report).
- (b) NYMI report of war damage, (undated).

CONTENTS

<u>Section</u>	<u>Page</u>
I - Summary	1
II - Narrative	1
III - Discussion	4
A. Projectiles	4
B. Material Damage	4
C. Fires	5
D. Ammunition	5
E. Flooding	6
F. Conclusions	7

PLATE

I - Gunfire Damage

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LIST OF PHOTOGRAPHS

- No.
1. Outboard port profile showing location of projectile hits.
 2. Hits No. 1 and No. 4 first platform crew's quarters C-203-LM looking to port shell.
 3. Hits No. 1 and No. 4 first platform crew's quarters C-203-LM looking to aft and starboard shell.
 4. Hits No. 1 and No. 4 first platform crew's quarters C-203-LM looking aft to handling room bulkhead 163.
 5. Hits No. 1 and No. 4 first platform crew's quarters C-203-LM looking to starboard.
 6. Hits No. 1 and No. 4 first platform ammunition handling room C-205-LM looking to starboard.
 7. Hits No. 1 and No. 4 first platform crew's quarters C-203-LM.
 8. Hit No. 5 main deck port side after deck house looking aft to frame 148.
 9. Hits No. 5 and No. 6 main deck handling room C-102-ML after deck house.
 10. Hits No. 5 and No. 6 main deck handling room C-102-ML looking to port.
 11. Hit No. 6 main deck passage C-105-L after deck house.
 12. Hit No. 6 main deck 5" ready service stowage.
 13. Hits Nos. 5, 6, 7 and 8 after deck house port side looking inboard.
 14. Hit No. 8 gun No. 3 top of after deck house looking forward and to port.
 15. Hits No. 9 and No. 10 main deck, 20mm clipping room, starboard torpedo tubes.

No.

16. Hits Nos. 9, 10 and 11 main deck looking aft and to starboard, 20mm clipping room, torpedo tubes looking aft and to starboard.

17. Hit No. 11 main deck port torpedo tube.

SUMMARY

1. On 13 November, 1942, USS STERETT, as a member of a task force consisting of five cruisers and eight destroyers, engaged an enemy surface force of battleships, cruisers and destroyers in a night action near Savo and Guadalcanal Islands, Solomon group. During the period of action, STERETT was between two enemy columns at ranges from 1,000 to 4,000 yards and received eleven direct projectile hits. All hits were above the waterline resulting in considerable, although not vital, damage and starting numerous fires. Damage control measures were promptly and efficiently executed, and although the Commanding Officer estimated that the fighting efficiency was reduced 80 per cent, STERETT continued in action until other vessels commenced retiring. After temporary repairs from tenders, STERETT proceeded to the mainland where final repairs, together with some alterations, were completed on 8 February, 1943.

2. The STERETT incurred no direct damage in machinery spaces, nonetheless, the resistance to gunfire damage was remarkable and is typical of the ruggedness of modern U.S. destroyers.

NARRATIVE

(Plate I, Photos 1 to 17 inclusive)

3. This report is based on the very complete data contained in the references. Photographs were furnished by the Navy Yard, Mare Island. The plate was prepared by the Bureau of Ships.

4. On the night of 12 November, 1942, STERETT, as a member of a task force including the cruisers ATLANTA, SAN FRANCISCO, PORTLAND, HELENA and JUNEAU and the destroyers AARON WARD, BARTON, MONSSEN, CUSHING, LAFFEY, O'BANNON and FLETCHER, proceeded through Lengo Channel toward Savo Island to engage an enemy surface force.

5. Force speed was 18 knots. The sky was overcast, the moon had set and the night was dark. A slight sea was running and the wind was estimated to have been 10 knots from the southeast. Visibility was considered fair at about 4,000 yards for ships and 15,000 yards for prominent land objects.

6. STERETT was at general quarters with condition ABLE set. At 0130, 13 November, 1942, enemy forces were located by radar. While not immediately determined, estimates of the enemy force engaged indicated four main groups composed of a total of three battleships, two heavy cruisers, three light cruisers and eleven or twelve destroyers.

7. At 0149 STERETT commenced firing with a range of 4,000 yards on the starboard bow. During the following period of action, which lasted about forty minutes, targets at ranges from 1,000 to 4,000 yards were fired on from both the starboard and port sides. Ninety rounds of 5" ammunition and six torpedoes were expended.

8. All hits were received on the port side above the waterline, located roughly in two groups: one amidships and the other aft. All projectiles were believed to have been of the common type and fired from ranges of 3,000 to 4,000 yards with relative bearings from 230° to 300°. Hit No. 1 was received at 0151, hit No. 2 at 0205 and hits Nos. 3 through 11 were received at 0227.

9. Hit No. 1 (Photos 2 to 7 inclusive), estimated to have been a 4" projectile, pierced the 10 pound port shell plating abaft web frame 159 about five feet below the main deck. Because of delayed action or a faulty fuze, this projectile failed to detonate. It passed through bunks and lockers in the crew's quarters (compartment C-203-LM) and bulkheads bounding the ready stowage of gun No. 4 handling room, finally exiting through the starboard shell at frame 164 about one foot below the main deck. Several minor fires were started. Fragmentation of damaged structures shattered ventilation piping and equipment. Electrical circuits sustained extensive damage from fragments and subsequent fires. An entire group of cables on the starboard overhead, including the starboard steering motor cable and various communication and power circuits, were either severed or so badly torn and burned that they could not be used. Steering control was shifted to the port steering motor cable; however, the rudder jammed momentarily, necessitating steering by the engines.

10. Hits Nos. 2 and 3, estimated to have been 6" projectiles with instantaneous fuzes, struck the foremast at points four feet below and three feet above the yardarm respectively. A hole six inches in diameter was gouged out of the forward half of the 10" steel pipe mast and a dent was made on the forward edge. Fragments severed the stays and the ladder and demolished the emergency recognition lights, S.C. radar antenna and TBS transmitting antenna.

11. Hit No. 4 (Photos 2 to 7 inclusive), estimated to have been a 4" projectile, pierced the port shell plating between frames 158 and 159 about two feet six inches below the main deck. It then passed through bunks and lockers in crew's quarters (C-203-LM), shattered the centerline support and archways of gun No. 4 handling room bulkhead at frame 163, continued on, piercing the starboard handling room bulkhead at frame 165 and finally expending itself with the distortion of the starboard plating and stiffeners on bulkhead 167. Fragments made several small holes in the starboard shell in the vicinity of frame 167. Detonation was of low order and caused minor fragment damage; however, large splinters from the fragmentation of the handling room archway and other structures flew in almost every direction, some piercing the starboard shell at frame 165 three feet above the waterline. Fragments also pierced the handling room bulkhead and power panels at the bottom of gun No. 4 center column and severed gun No. 4 power cables and the degaussing cable. Ammunition hoist equipment of gun No. 4 was also damaged by fragments. Fragments struck six ready service powder tanks and ignited the powder causing a bad fire.

12. In extinguishing this fire, using portable CO₂ extinguishers and water, compartment C-203-LM was flooded to a depth of eight inches. After magazines and lower handling rooms were flooded by operating the sprinkling system.

13. Hits Nos. 5, 6 and 7 (Photos 8 to 13 inclusive), estimated to have been of medium caliber, were received on the port side of the after deck house at about the same time and within a small area. Each projectile detonated upon impact and the resulting damage was confined mainly to compartment C-102-LM and structures immediately adjacent. Hit No. 5 blew a hole about 15 inches in diameter between frames 147 and 148 three feet above the main deck; hit No. 6 formed a hole about six inches in diameter between frames 149 and 150 some five feet above the main deck. Hit No. 7 shattered the coaming and deck plating of the after deck house. The force of these explosions and fragments tore large pieces from the handling room doorway frame, pierced the center gun column and projectile hoist and severed power cables. Fragments also penetrated and buckled deck longitudinals and bulkheads of the handling room and other structures as far as 15 feet from the point of impact. Several ready service powder tanks were pierced by fragments and ignited causing a severe fire. The shield and roller path of gun No. 3 were damaged by fragments.

14. Hit No. 8 (Photos 13 and 14), estimated to have been a 4" projectile, pierced the left after end of the shield on gun No. 3, passing on through the right side without detonating.

15. Hits Nos. 9, 10 and 11 (Photos 15, 16 and 17), estimated by the Commanding Officer to have been 5" projectiles, detonated upon impact. The first struck the lower port corner of the 20mm clipping room amidships on the main deck, the second apparently hit the officer of the deck's desk on the after bulkhead of the same clipping room and the third detonated at the after end of the left barrel of the port torpedo tubes. From photographs of structures in this area, however, it is not very clear as to the individual damage from each separate projectile, and it is conjectural as to whether there were three hits or only two. The resulting damage will be treated collectively. A hole approximately 14 inches in diameter was blown in the port bulkhead of the clipping room and sections of the after and starboard bulkheads were holed. Fragments, which spread in all directions, severed sprinkling pipes and caused 20mm ammunition to explode starting fires which resulted in the distortion of the entire clipping room. The desk and shield were demolished. The loading door of the left barrel of the port torpedo nest, which was empty at the time, was penetrated resulting in a hole about five inches in diameter. Fragments pierced the side walls and cracked the roller path shield of this tube. The starboard torpedo nest was damaged by fragments as follows: the side wall of barrel No. 4 was pierced and dented; the air flask of the torpedo in No. 4 tube was penetrated; the depth setting mechanism was shattered; a hole was cut in the training shaft housing; the teeth of the training arc were broken off and the roller path shield carried away; the trainer's seat was shattered; the saddle was damaged; the main indicator rod distorted and the firing buzzer cables carried away.

16. At 0230, after having been separated from the remainder of the force and with both after guns disabled, a bad fire aft and unable to fire the two torpedoes remaining in the starboard nest, STERETT retired at flank speed toward Lengo Channel. Speed was reduced from time to time in order to facilitate extinguishing fires.

17. Boilers Nos. 1 and 2 were subsequently secured due to the failure of a fire main in the forward fire room. This resulted in the loss of cooling water to the lubricating system of the forced draft blowers and loss of ventilation blowers as discussed in paragraph 22.

18. After temporary repairs from tenders, STERETT proceeded to Navy Yard, Mare Island, arriving there 12 December, 1942. She was placed back in service on 8 February, 1943 with all battle damage repaired and many authorized alterations completed.

DISCUSSION

(Plate I, Photos 1 to 17 inclusive)

A. Projectiles .

19. Although the seriousness of eleven projectile hits is apparent, STERETT was probably fortunate in not being subjected to even more direct hits as the ship was between two columns of enemy ships and yet received hits only on the port side. It was observed that many projectiles fell over or short and astern. Fragments from several near misses probably caused some minor damage. The relatively short range undoubtedly accounted for the fact that no hits were received below the waterline. The small angles of fall resulting from short ranges almost always cause the projectiles to ricochet. For example, hit No. 1 was undoubtedly a short which ricocheted.

20. Projectiles were estimated to be from 4" to 6" common with instantaneous action fuzes. Two projectiles passed through the ship without detonating and one detonated with a delayed action, presumably due to faulty fuzes. Detonation in each case was of high order with the exception of hit No. 4 which had a delayed action low order detonation.

B. Material Damage

21. Damage to structure and fittings, while considerable, was not vital with the single exception noted in paragraph 22. The power plant remained intact. The fighting efficiency was appreciably reduced with guns Nos. 3 and 4 out of commission, all ammunition in the after magazines damaged by flooding and the two remaining torpedoes inoperative.

22. It is interesting to note how indirect damage, although remote from the main damaged areas, can materially affect the operation of a ship. In this case, a welded branch connection on the fire main in No. 1 fireroom ruptured from shock, permitting water to spray on the electrical auxiliaries connection panel shorting out ventilation blowers and making the fireroom extremely hot and almost untenable. This rupture also resulted in the reduction of cooling water available for the lubricating system on the forced draft blowers. This made it necessary to slow down the blowers and consequently reduced the efficiency of boilers 1 and 2. Operation of these boilers was continued during action, but they were secured immediately afterward. A temporary fire

main jumper was immediately rigged and used until such time as the main could be rewelded.

23. After the starboard steering gear cable was severed by hit No. 1, there was a slight delay in shifting to the port cable during which interim the rudder jammed, making it necessary to steer by the engines. It was noted that the emergency power cable to the steering motors was also severed. Shortly after retiring from action, it was reported that the rudder jammed again making it necessary to back the engines to avoid going ashore on Guadalcanal Island. No information is available as to the cause of this trouble, but it is assumed that power may have been momentarily interrupted while repair parties were working on damaged circuits.

C. Fires

24. As a result of hit No. 1, several minor fires were started in compartment C-203-LM; and while information is not available as to what was burning, it is assumed that personal gear in lockers and bedding were ignited by hot structural fragments. Before damaged electrical circuits were deenergized, it is probable that there were several electrical fires. All fires from this first hit, however, were extinguished before hit No. 4 was received in the same compartment 14 minutes later and which resulted in additional fires. These latter fires were very persistent and most difficult to extinguish inasmuch as they were aggravated by the ignition of six 5" ready service powder charges.

25. Prompt application of water from hose lines and sprinkling pipes undoubtedly prevented the ignition of additional ready service powder and projectiles. Some ready service powder which had been subjected to considerable heat was thrown overboard. Although there were no fires in handling rooms and magazines below the first platform deck, these compartments were deliberately flooded by the sprinkling system. Compartments C-203-LM and C-205-LM were flooded to a depth of eight inches by water from fire fighting and from sea water shipped through projectile holes in the shell plating.

D. Ammunition.

26. In reference (a) it was stated that fragments from hit No. 4 caused five or six charges of 5" ready service powder to explode and fragments from hit No. 6 caused six charges to ignite and burn with an intense flame. The question of whether any charges actually exploded is conjectural, but after studying photographs (photos 11 and 12) of the damaged areas, it is believed that the manner in which the powder was ignited is consistent with predictions made by the Bureau of Ordnance. In tests conducted by that Bureau it was found that under certain conditions the direct impact of high velocity fragments is quite capable of igniting 5" charges in ready service boxes.

27. Some charges of 5" powder in handling room C-205-LM were ignited by structural fragments resulting from hit No. 4. It was apparent that the charges in these tanks burned with an intense flame but there were no indications of an explosion. In the ready service stowage compartment for No. 3 gun in the after deck house, a relatively confined space, six powder charges were ignited by projectile fragments and burned with such violence that aluminum bulkhead 154 was somewhat distorted. The steel bulkhead at frame 152-3/4, however, was not distorted which would indicate that the resulting explosions, if the violent fires can be classed as such, were of a minor character.

28. The comparatively small number of charges that burned would indicate that very few, if any, charges ignited from the ensuing fires. Prompt application of water undoubtedly prevented the ignition of additional powder. No mention was made of any 5" projectiles being struck by fragments. Fragments did cause some 22mm cartridges to explode.

29. The charged air flask in the No. 4 tube of the starboard torpedo nest was pierced by fragments, (Photos Nos. 15 and 16). Reference (a) reported this fact but did not give any information as to the reaction of the air flask. Upon referring to the photographs, it is apparent that there was no resulting explosive reaction as might have been expected. The two holes shown in the tube apparently have been enlarged somewhat, presumably by the ship's company in smoothing the jagged edges to permit removal of the torpedo.

30. The Bureau of Ordnance, in Bulletin No. 2-43 of 30 June, 1943, predicted that charged air flasks can be expected to explode when struck by projectiles larger than .50 caliber. Tests conducted by that Bureau by firing a 1.1 inert projectile into a fully charged Mark XII forged air flask fitted with a warhead and loaded in a Mark III torpedo tube, resulted in the flask exploding and completely shattering. The warhead was not detonated. Similar tests on Mark XIII welded air flasks produced comparable results. On the other hand, tests conducted in 1936 with .50 caliber projectiles against a Mark XI air flask resulted in penetration without explosion.

31. It is apparent in this case that the holes made in the flask were relatively small and that the air bled off slowly.

E. Flooding.

32. Whether or not to flood magazines is one of the most difficult damage control decisions to make, particularly in the heat of action. In retrospect and without implying any criticism, in this case it appears that flooding of the after magazines might have been avoided. With the limited information available to the Bureau, it seems that a good criterion would have been whether decks and bulkheads bounding the magazines had become dangerously warm. The partial flooding of C-203-LM and C-205-LM by water used in combating the fires, probably acted as an insulating medium to keep boundary temperatures sufficiently low so that the magazines were not endangered. As a precautionary measure,

it probably would have been sufficient to sprinkle the magazines for a period just long enough to obtain an adequate cooling effect.

33. Flooding on this ship, most of which was deliberate, was not in itself serious. With additional damage, however, which might have occurred before flooded spaces could be unwatered, this amount of added weight (approximately 12 tons on the first platform deck in C-203-LM and C-205-LM and 123 tons in the after magazines), with a corresponding loss of reserve buoyancy and a reduction in transverse stability by free surface, could have been a serious problem.

F. Conclusions

34. Some difficulty and delay were experienced in opening the group valves for sprinkling the after magazines because of the fire in the after deck house, compartment C-102-ML, where the remote controls are located. The suggestion was made by the Commanding Officer that the controls, which are manually operated, be relocated outside this space or perhaps in a recessed enclosure accessible from the exterior. After careful consideration, the Bureau concluded that it was not practical to make this change for the following reasons: first, war experience has demonstrated that on destroyers, exterior walkways are just as apt to be unaccessible from fire as interior spaces; and second, there would be less protection against fragments if located on a weather deck.

35. The ability of this ship to absorb eleven projectile hits and combat severe fires and then retire at a relatively high speed, can be attributed to the advanced state of training and zeal of the damage control personnel and to the ruggedness of modern destroyers. The initial damage, although not vital, could have developed easily into more serious circumstances without prompt and efficient damage control measures.