

SECTION XIII

U.S.S. GROWLER (SS215)

Collision and Machine Gun Strafing Damage

Off New Britain, Bismarck Archipelago

7 February 1943

Class.....SS212  
Builder..... Electric Boat Co., Groton, Conn.  
Commissioned..... 20 March 1942  
Length (Overall)..... 311 ft. 9 in.  
Beam (Extreme)..... 27 ft. 3-3/4 in.  
Submergence Depth (Designed Maximum)(Axis)..... 300 ft.  
Displacements  
    Standard..... 1525 tons  
    Emergency Diving Trim..... 2050 tons  
    Submerged..... 2415 tons  
Draft (Mean, Emergency Diving Trim)..... 16 ft. 10 in.  
Type of Propulsion..... Diesel Electric Reduction Drive  
Main Engines (4)..... General Motors Model 16-248  
Main Motors (4) and Generators (4)..... General Electric Co.

References:

- (a) C.O. GROWLER conf. ltr. C-SS215/A16-3, Serial No. 0153 of 17 February 1943 (Report of War Patrol Number Four).
- (b) CTF 42 conf. ltr. FF12-15(42)/A16-3/00-jm, Serial No. 057 of 18 February 1943 (Comments on C.O. GROWLER Report of War Patrol Number Four).
- (c) ComSubRon Eight Conf. ltr. FC5-8/S11/L11, Serial No. 054 of 25 May 1943 (Repairs to GROWLER Battle Damage).

Photographs Nos. 13-1 through 13-8 (furnished by Commander Submarine Squadron Eight).

13-1. On 7 February 1943, while on her fourth war patrol, GROWLER underwent the unique experience of ramming and possibly sinking a large enemy patrol frigate. Damage to GROWLER due to the collision and subsequent close quarter enemy machine gun fire was not sufficiently serious to prevent her from making a submerged escape and returning to base in a seaworthy condition. This report is based on the information contained in the references and on interviews with various officers attached to GROWLER. The Photographs were furnished by Commander Submarine Squadron Eight.

13-2. GROWLER arrived at Brisbane, Australia, on 10 December 1942 from her third war patrol. Normal refit was undertaken by FULTON (AS11) and completed on 31 December. On 1 January 1943 GROWLER departed Brisbane for her fourth war patrol and on 11 January reached her assigned patrol area in the waters adjacent to New Britain and New Ireland Islands in the Bismarck Archipelago.

13-3. Although many contacts were made with enemy shipping during her first few days on station, GROWLER was able to close to attack position only once. This occurred on 16 January when she sank a medium-sized freighter northwest of Watom Island with two torpedo hits during a daylight periscope attack. On 20 January GROWLER shifted her patrol area to cover the western approaches to Rabaul and on 30 January damaged a medium-sized freighter near Mussau Island by one torpedo hit during a night surface attack.

13-4. On 2 February GROWLER started patrolling toward Rabaul. On the night of 4-5 February, when south of Steffen Strait, radar contact was established with an enemy convoy and GROWLER commenced a surface chase. However, with range closed to about 5000 yards, she was detected, subjected to medium caliber gun fire and forced to submerge. Shortly afterwards, two fairly close depth charge attacks of four charges each were delivered by one of the convoy's escorts, the second of which partially blew out the gasket to the No. 1 MBT boiler type manhole cover in the deck of the forward torpedo room.

13-5. Water entered in considerable volume through this opening but not in sufficient quantity to seriously affect depth control and GROWLER managed to lose the enemy escorts about one-half hour later. The leak grew steadily worse, however, and by one hour after the initial attack, water was entering the forward torpedo room at an estimated rate of over 1000 gallons per hour. The drain pump was run continuously on the torpedo room bilges and this sufficed to keep the water level within the compartment under control. An effort was also made to close off the manhole by using a sheet rubber gasket backed by deck plates held in place by shores and two jacks. This measure did not stop the leak but was reported to have prevented it from becoming more serious. Surfacing during daylight hours for repairs was not considered feasible due to the close proximity of the searching enemy anti-submarine vessels and, although diving trim control was poor, GROWLER remained submerged. Upon surfacing after dark, repairs were quickly effected by placing the forward

torpedo room under 7 pounds per square inch air pressure and renewing the manhole gasket. A test dive was then made and the new gasket was found to be satisfactory.<sup>1</sup>

13-6. During 5-6 February GROWLER remained on submerged patrol off Watom Island. At 2200 6 February orders were received to shift station and GROWLER proceeded to her new area on the surface at 17 knots. At 0110 7 February, while in a position about 50 miles off the northwestern end of New Britain Island, lat. 3° 34'S., long. 151° 09'E., GROWLER established contact with a large Japanese converted patrol frigate. Visibility was poor and limited to about 2000 yards. The enemy ship was just barely discernible off the starboard bow and was proceeding on opposite course. GROWLER immediately turned away, made her tubes ready and then headed directly toward the frigate for a surface torpedo attack.

13-7. When GROWLER was almost in firing position, with radar range of 2000 yards and track angle 130° starboard to the target, the enemy frigate sighted her, immediately reversed course and closed to make a counterattack. This maneuver was apparently not immediately discerned by the bridge on GROWLER although the fire control party in the conning tower is reported to have given accurate radar ranges and to have had the TDC solution. At 0134, after range to the enemy vessel as indicated by TDC track and radar was too close to permit torpedo fire, the bridge gave the order "Left full rudder" and sounded the collision alarm. At 0135, while swinging with left rudder and at speed 17 knots, GROWLER rammed the enemy frigate head on, striking midway between her bow and bridge.

13-8. The impact of collision was terrific, heeling GROWLER to about 50 degrees and knocking most of the crew off their feet. Immediately afterwards, the enemy opened fire on GROWLER's bridge with one or more 13mm machine guns<sup>2</sup> at point blank range and on GROWLER the order was given "Clear the bridge". Four of the seven men present on the bridge descended into the conning tower. Two of these men were wounded and had to be helped through the upper hatch. After approximately 30 seconds had elapsed since the last man had come below and still no one else had appeared at the hatch, the diving alarm was sounded, upper conning tower hatch was secured and GROWLER submerged. The enemy continued strafing the bridge with machine gun fire until it was under water. It is believed that the three men remaining topside, the Commanding Officer, the assistant Officer of the Deck and a lookout, were killed or seriously wounded by the enemy fire before GROWLER submerged and for that reason were unable to clear the bridge.

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<sup>1</sup> As a result of GROWLER's experience and reports of similar casualties from other submarines, the Bureau authorized by ShipAlt SS167 of 12 March 1943 the replacement with welded blanks of the forward and after ballast tank boiler type manhole covers as installed in the torpedo room decks on SS175-284. On SS285 and subsequent submarines, such ballast tank accesses were omitted from the design.

<sup>2</sup> Recovered projectiles were measured and found to be 13mm.

13-9. Damage to GROWLER can be conveniently divided into two categories: (a) damage due to the collision and (b) damage due either directly or indirectly to the enemy machine gun fire. Damage due to collision was limited to the extreme forward portion of the ship. The entire bow structure forward of frame 10, a length of about 25 feet, was either crumpled or considerably distorted and forward of frame 4 was bent about 90 degrees to port (Photos 13-1 and 13-2). This structure consists only of the relatively light plating and framing of the bow buoyancy tank (10-pound MS). Deck plating back to frame 12 was wrinkled and torn. Bulkhead No. 10 was dished in only about 3/4 inch at the centerline in way of the torpedo tube nest but above the tubes was distorted somewhat more extensively (Photo 13-3). Grease lines, bow buoyancy tank vent valves and operating gear, and the torpedo tube shutters and operating gear were completely wrecked. On subsequent docking, it was found that No. 3 torpedo tube shutter had jammed into No. 3 tube outer door gasket groove but that no damage had occurred to any of the forward torpedo tubes proper. The bow planes operated without difficulty and were undamaged with the exception of slight misalignment of the tilting shaft. Depth control was reported as being somewhat difficult after the collision and during the return trip to base. This is attributable to the protruding structure of the damaged bow (Photos 13-1 and 13-2) which acted as both a fixed plane and "plow" at maximum lever-arm distance from the turning center of the boat and also blanked off normal flow of water to the port bow plane, thereby considerably altering its planing effect.

13-10. Direct materiel damage due to the enemy machine gun fire was in itself relatively minor but the indirect damage caused by resultant flooding became quite serious. Although the bridge and conning tower fairwater were hit in numerous places<sup>1</sup> (Photo 13-4), fortunately only one projectile pierced the pressure hull. This penetrated the bronze upper conning tower hatch while it was in the open position prior to diving and tore a hole about 1/2 inch wide and 3/4 inch long (Photo 13-5). Two other projectiles struck the No. 1 periscope shear pipe structure in the bridge "covered wagon", jamming the periscope so that it could neither be trained, raised or lowered but caused no damage to the periscope tube itself (Photo 13-6). Electrical cables on the bridge for the collision alarm, 1MC, sidelights, target bearing transmitters and bridge steering repeaters were shot away. On submerging, water entered the conning tower in large volume through the sheathing of these punctured cables<sup>2</sup> in addition to the hatch bullet hole. Although the leaks were observed as soon as GROWLER's conning tower went under, no attempt was made to surface due to the presence of the enemy vessel above nor was the conning tower abandoned. Efforts were made to plug the leaks but were largely unsuccessful. Depth was maintained at 150 feet in spite of the flooding and the subsequent detonations of two depth charges which were not close and did no damage.

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1 The conning tower fairwater and bridge plating on GROWLER were but 5-pound and 7-1/2 pound weight MS. As a result of this and other actions, the installation of 25-pound and 30-pound STS plating for the protection of bridge personnel was authorized by ShipAlt SS177 of 16 April 1943 for all fleet type submarines subsequent to SS197.

2 For further discussion of cable sheathing leaks, see paragraph 19-12.

13-11. Water overflowed from the conning tower bilges to the control room deck, where it reached a depth of about 6 inches, and further drained to the pump room bilges where it accumulated to a depth of several feet. Both the trim and drain pumps were continuously operated in an effort to control the flooding. Most of the electrical circuits in the conning tower, control room and pump room grounded out or received minor damage from salt water spray or direct flooding. All gyro, I.C., lighting and heater circuits, and the majority of the electrical panels in these spaces were completely disabled. The ST radar range indicator unit in the conning tower was flooded out. In the pump room many auxiliaries were grounded and, as a result of these short-circuits, a small fire broke out in the No. 2 auxiliary power panel aft in the maneuvering room. This was promptly smothered by CO2 fire extinguishers and all circuits were temporarily pulled with the exception of the field circuits for the main generators. Several small hydraulic and air piping and fitting leaks developed in various places as a result of the collision impact, but these were not serious and were either tightened up, isolated, or left as is.

13-12. At 0145, the JK-QC sound gear, which had been temporarily deranged (reason not reported), was placed back in commission. However, no contact could be established with the Japanese patrol vessel. Since the light hull of the enemy ship must have been opened to the sea over a considerable area as a result of being rammed by GROWLER, it is quite possible that she might either have sunk or become completely immobilized by this time due to progressive flooding.<sup>1</sup>

13-13. At 0201, after approximately one-half hour of submerged running since the collision had occurred, and still not having obtained any sound contacts with the enemy vessel, a battle surface was made. No ships were in sight so GROWLER cleared the area by a surface run to the westward. Topside and internal damage was then surveyed and emergency repairs made where possible. The conning tower hatch leak was plugged with a bolt and lead washers. At dawn the ship submerged once more and remained down until evening. Leaks in the conning tower were still very bad but were under control. A canvas chute was rigged from the conning tower lower hatch through the control room hatch to the pump room bilges and this proved adequate to prevent further water damage. At 1848 GROWLER again surfaced, continued with repair work, and sent a report to Commander Task Force 42 stating that a return to base was being made via the designated emergency routing. During this period the No. 2 periscope, No. 1 high pressure air compressor, No. 1 low pressure air compressor, and refrigeration and air conditioning units were placed in operating condition and grounds cleared. All remaining leaks were effectively stopped. Diving control was reported as still being somewhat difficult.

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<sup>1</sup> Japanese records obtained upon the termination of World War II contain no mention of any anti-submarine attack or the sinking of any Japanese ship which could conceivably have corresponded to this action of GROWLER. Japanese records were notoriously inaccurate and incomplete, however, and it is entirely possible that the enemy patrol vessel may have been sunk and yet never reported as sunk or even overdue to any central Japanese agency.

13-14. GROWLER made the return trip back to base by running submerged during daylight hours while in enemy patrolled waters and running surfaced at night. She arrived alongside FULTON (AS11) at Brisbane, Australia, on 17 February 1943.

13-15. After a survey of the damage it was considered both possible and desirable to undertake complete repairs with local facilities, provided damage to the forward torpedo tubes was not extensive. A drydock examination disclosed that the tubes were undamaged and in correct alignment, with the exception of the previously mentioned damage to muzzle door operating gear and shutters. The Evans Deakin Company of Brisbane undertook replacement of the damaged bow structure, prefabricating and installing the new bow in two horizontal sections (Photo 13-7). Fittings were salvaged from the damaged structure where possible. The work was accomplished in the Moreton graving dock, Brisbane. FULTON undertook all other battle damage repairs and in addition gave the ship a regular refit. All work was completed and GROWLER was returned to service on 4 May 1943.

13-16. GROWLER's experience illustrates that, should the tactical situation so require, it is possible for modern fleet type submarines to successfully ram light-hulled vessels such as destroyers or patrol craft without necessarily destroying their own watertight integrity, seaworthiness and ability to conduct submerged operations.<sup>1</sup> This is principally attributable to the 30 odd feet of non-watertight bow structure ahead of the forwardmost pressure hull bulkheads, in this case the forward and after bulkheads of the forward trim tank. This bow structure effectively cushions collision shock by absorbing the damage in a non-vital area while depleting the relative momentum of the two ships involved, and tends to prevent serious injury to pressure hull structure farther aft.

13-17. GROWLER's experience also demonstrates the extreme vulnerability of unarmored submarines, when surfaced, to even small caliber projectiles, as from aircraft strafing or light machine gun fire from surface vessels. It was fortunate for GROWLER that the enemy machine gun fire was directed at her bridge instead of her pressure hull or conning tower. Had the latter been the case, the resulting numerous small holes might have prevented GROWLER from

<sup>1</sup> Another excellent example is the collision between ARGONAUT (SS475) and HONOLULU (CL48) on 8 January 1946 off the U.S. east coast. The angle of collision was about 30 degrees, ARGONAUT's bow striking about 75 feet aft of the stem on HONOLULU's starboard bow. Although both ships started backing down just prior to the collision, the relative speed of the two ships at the instant of initial contact is believed to have been in excess of 20 knots. Damage to ARGONAUT was very similar to but more severe than that which occurred to GROWLER. The bow forward of frame 11 was completely crumpled and bent 90 degrees to starboard. Minor damage was sustained to plating, framing and the vertical keel between frames 11 and 16 (MBT No. 1) but no damage occurred to the forwardmost pressure bulkhead at frame 16. The outboard and intermediate sections of all forward torpedo tubes were bent to starboard. No internal flooding whatever occurred on ARGONAUT and she remained seaworthy and could have submerged had the occasion required.

making a submerged escape after the ramming and in that case the enemy frigate very probably would have completed her destruction. Even presuming GROWLER were to escape the enemy ship on the surface, multiple small holes in the pressure hull and external tanks might still have caused her loss, either by direct flooding or by preventing submergence if again attacked while making the surface run back to base through enemy controlled waters. Ballistic data shows that U.S. 50 caliber AP (M2) and Japanese 13mm AP projectiles, when fired from within 500 yards range at 0° obliquity, will penetrate both the outer and inner hull of a submarine, assuming the plating to be 3/8-inch and 7/8-inch medium and high tensile steel, respectively. Even when fired at 30° obliquity, and assuming the projectiles tumble after penetrating the outer hull so as to strike the inner hull lengthwise, the 50 caliber and 13mm AP projectiles will pierce both hulls within a range of at least 100 yards.

13-18. After completing six more patrols, GROWLER was lost in action with all hands on 8 November 1944 while attacking a Japanese convoy in the central Philippines area during her eleventh patrol. Information furnished by HAKE (SS256) and HARDHEAD (SS365), both of whom were operating with GROWLER at the time, indicates that the loss possibly occurred either as a result of enemy depth charging or the malfunctioning of one of GROWLER's own torpedoes. During her first ten patrols GROWLER sank 17 ships for a total tonnage of 74,900, and damaged 7 ships for 34,100 tons.