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TECHNICAL REPORT

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BIKINI SCIENTIFIC RESURVEY

REPORT OF THE DIRECTOR OF SHIP MATERIAL

Classification (Changed) to UNCLASSIFIED
By Authority of Dpt. of Sec. memo. 8 Apr 1944
By Colonel to 14 Apr 1944

U.S.S. PILOTFISH (S.S.-386)

[redacted]

Annex II

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ANNEXES: PILOTFISH

A. Drawings Showing Location of Damage

B. Photographs

C. Divers' Reports

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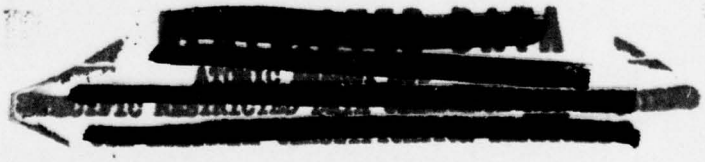

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PILOTFISH (SS-386)

4.031 Ship Characteristics

Pilotfish was built at Portsmouth Naval Shipyard, was of heavy hull construction, and was commissioned 16 December 1943. Ship characteristics are as follows:

A. Hull

Length Overall	311 ft. 9 in.
Length Between Perpendiculars	307 ft. 0 in.
Beam (extreme)	27 ft. 3 in.
Beam (molded)	27 ft. 1 3/4 in.
Drafts (at time of test)	Submerged
Standard Displacement	1,525 tons
Displacement (at time of test)	2,405 tons

B. Propulsion

Main Engines	4 Fairbanks-Morse, Type 38D8
Auxiliary Engine	Fairbanks-Morse, 7 Cyl, Type 38D5
Main Motors and Generators	Elliot
Main Storage Batteries	Exide
Main Controls	Westinghouse
Reduction Gears	Westinghouse
Diesel-electric Drive	

PILOTFISH: GENERAL DESCRIPTION OF DAMAGE

4.032 Target Condition at Time of Inspection

Pilotfish was found sunk in about 29 fathoms of water, with the hulk buried in the bottom to about 12 ft. to 15 ft., at Latitude 11°-35'-11" N., and Longitude 165°-30'-42" E. The vessel had a starboard list of about 27°, and had no apparent trim.

Nothing definite as to the exact amount of flooding was discovered. It is believed, however, that she is flooded throughout, with the possible exception of the after torpedo room. Flooding was from general failure of ballast tanks, pressure hull piping, valves, and other fittings and accesses. Failure appeared general throughout, with no apparent emphasis on any single type.

Structural damage was very heavy throughout the vessel, with the maximum occurring forward of midship, and diminishing aft. There were several major failures of plating and scantlings in the pressure hull itself. The most serious of these were as follows: (a) aft of the starboard bow plane, a hole in the forward torpedo room about 4 ft. high and 3 ft. wide following a longitudinal dent about 10 ft. long, 4 ft. high and about 4 ft. deep at the trailing edge of the starboard bow plane; and (b) a longitudinal wrinkle just to starboard of the centerline, about 18 in. deep and 18 in. wide with a 6-inch raised section down the center of the dent extending from about frame 47 to about frame 43 and torn free of T frames through welding failure.

General longitudinal and transverse indentations were found throughout the pressure hull and ballast tanks. These included dishing of shell and bending of frames and bulkheads. Several cracks were found in the ballast tanks. The ballast tanks as a whole appear to have been flattened on the sides as a result of the blast. Perhaps the reason less damage was noted in the after section of the pressure hull is that it was covered with deep sand and rocks and much of it was not visible.

Serious damage was done to the superstructure in general, shifting its position to such an extent that few salvage connections could be made, and the after battery and after engine-room hatches could not be opened. The shifting was to starboard from the bow aft to a point somewhere between the after battery and after engine-room hatches, and then shifted to port. At the bow and stern, no appreciable changes were noted. There were several deep dents in the superstructure, and several plates were missing.

Judging by the extent of shock damage to instruments on the bridge, it is doubtful that either the machinery or the electrical gear, including radio and radar equipment, would have operated satisfactorily if at all, subsequent to the explosion. The shears appeared slightly warped, rendering periscopes and radar antennae inoperable. The SD radar and mast were missing and could not be seen in the shear.

4.033 Forces Evidenced and Effects Noted

There is ample evidence to show that Pilotfish suffered heavily from both shock and pressure. The structural damage described in Section 4.031 indicated that the vessel was subjected to very high pressure or pressures. All pressure damage found appeared to be resultant from positive pressure.

Shock was very definitely evidenced in the reaction of bridge instruments: the gyro repeater was knocked from its base and was hanging over the inboard side of the bridge, and the 1 MC as well as the forward TBT were knocked from their foundations. The loss of the SD radar antenna and mast out of their shear also indicates that the ship suffered severe shock. The apparent warping of the shears is further evidence of the same sort.

Bent and ruptured plating in the conning tower fairwater could have been caused by either shock or pressure, or both. There was no evidence of any heat effects, explosions, or other similar results.

4.034 Effect of Damage

On machinery, electrical equipment and ship control. No definite information was obtained concerning machinery, electrical equipment, or ship control, but it is considered highly improbable that any installations could have been operated satisfactorily if at all. It is thought likely that immediate initial flooding occurred throughout most of the vessel and that any equipment surviving shock would have been flooded out.

On gunnery and fire control. It is doubtful that guns could have been trained or elevated. It also is presumed that fire control, either by means of periscopes or radar, was destroyed by shock. All torpedo shutters inspected were cracked or warped to such an extent that torpedoes could not have been fired. It also is believed that the torpedo tubes themselves probably were bent and out of line.

4.035 General Summary of Observers' Impressions and Conclusions

Undoubtedly Pilotfish became a complete loss in every phase of her structure and operational ability immediately. Damage appears to be uniform throughout, without any one type of failure predominating. It is believed that an attempt to raise Pilotfish would be time-consuming and costly, and that little information in addition to what is known would be obtained.

4.036 Preliminary Recommendations

From the analysis of Pilotfish damage it appears doubtful that any vessel of the size in question could be built to withstand the shock and pressure that was encountered.

PILOTFISH: DETAILED DESCRIPTION OF DAMAGE

4.037 Foreword

Overall condition. The overall condition of Pilotfish is very bad, with serious failures having occurred throughout the ship in the pressure hull, outer hull, piping, closures, and miscellaneous fittings. The destruction is so complete that no one type or section of damage could be established as the cause of ship's loss.

Area of major damage. Major damage was found throughout the exterior of the hulk. From all indications it was as serious to starboard as to port, but, because of the heavy list, most of the starboard side was not visible. It was noted, however, that damage forward appeared to be somewhat more intense than damage aft. There is no one specific area however, that can be established as the center of major damage.

4.038 Superstructure

The superstructure of Pilotfish, although not as thoroughly damaged as it was originally believed to be, suffered heavily as a result of the blast. Measurements at hatches, which are believed to be about in their original positions, showed an athwartship displacement both to starboard and to port that may indicate a twist in the hull girder. At the bow and stern, shifting of the superstructure either to port or to starboard, if present, was of such a minor nature that it could not be detected.

At the forward torpedo room hatch the superstructure was found shifted to starboard from 4 to 6 in. At the after battery hatch the displacement to starboard had increased to from 10 in. to 12 in, while at the after engine-room hatch, the deck appears to have shifted to port from 6 in. to 8 in. It is interesting to note that a heavy dent in the outer hull, port side, occurs at about frame 85, extends across the ship in a deep wrinkle in the superstructure, and terminates in a long vertical crack in the outer shell starting at the pressure hull on the starboard side. This gives rise to belief that there may be a twist in the hull girder causing part of the shifting of the superstructure.

As nearly as could be determined the conning tower fairwater also shifted to starboard, to such an extent that one of the cigarette deck beams was so far over the conning tower hatch that it could not be opened.

In general, the metal superstructure deck aft remained in fair condition, although a few miscellaneous plates were missing. There was minor dishing and tearing throughout, and several transverse wrinkles were found, the deepest being about 8 in. deep and approximately at frames 85 and 98. The section from frame 121 to frame 125 was missing. The metal deck forward was in similar condition, but showed no deep athwartship dents. The wood decking apparently suffered considerably more. It was heavily ripped and broken, both on the superstructure and cigarette decks.

The side superstructure was found buckled, torn, and ripped generally wherever damage was found in the metal deck. Otherwise, the sides appeared in a fair to good condition. Beneath the deck forward, the stanchions supporting the superstructure deck were bent to starboard, and many were broken. The after torpedo skid was missing, while the one forward was found to be open.

The conning tower fairwater plating was found to be buckled and ripped, and stanchions, life lines and rails throughout were bent and damaged. Most salvage fittings were displaced, and connections to them could not have been made without removing the surrounding decking. A few had been torn loose from the hull.

4.039 Guns, Gun Mounts, and Directors

Little detailed information could be obtained about guns, but the 20 mm. gun on the cigarette deck appeared to have a slight bend in the barrel. Radar antennae were in general destroyed, and the warping of the shears would preclude any use of periscopes, SJ radar, or SD radar. The SD radar and mast were missing from their shear.

4.040 Torpedo Tubes and Appurtenances

It is presumed that torpedo tubes would have been inoperable after the blast. Heavy damage in warping and cracking of tube shutters was found both port and starboard forward. It is further believed that in view of the hole in the starboard side at about frame 21, and the general denting of the pressure hull, that all six forward tubes probably were out of alignment. The after shutters, with the exception of the top edges of No. 7 and No. 8 are buried; no information was obtained about them. In view of pressure hull damage in their vicinity, however, it is surmised that the four after torpedo tubes also are out of alignment.

4.041 Exterior Hull above Waterline

The hull (including pressure hull and tanks) was severely damaged throughout. The most common effect discovered was a flattening along both sides, as if the boat had been squeezed. In addition to this deformation, deep transverse and longitudinal indentations were found port and starboard. Several holes and cracks were located in the upper hull.

Most of the damage to tanks was observed on the port side, since the starboard side was buried along most of its length almost to the superstructure side plating. The after pressure hull was in general covered with a deep layer of sand and rock, so that only large dents were visible. However, enough heavy damage to the starboard tanks and the after pressure hull was located to suggest that damage was almost as severe as that found on the port side and forward.

The largest hole and deepest indentation was found in the forward torpedo room on the starboard side. Here, from just above the waterline at about frame 27, a longitudinal dent ran forward to about frame 21, increasing in size

progressively. Just aft of frame 21 the dent was about 4 ft. deep and 3 to 4 ft. high. Frames between frames 27 and 21 had been distorted with the shell. At about frame 21, a large rupture occurred at the end of the aforementioned dent. The top was rolled in, and the plating was torn along a vertical butt weld for about 8 in., the tear then ran forward for about 10 or 12 in. and formed an arc. The size of the opening produced was about 4 ft. deep, 3 to 4 ft. high, and 2 to 3 ft. wide. It was indented to such an extent that the top starboard tube was within easy reach of divers. Visibility was very poor in this section, and dimensions were in general determined by feeling rather than by sight.

To starboard of the No. 1 gun platform, another extensive longitudinal dent was found. It ran from about frame 42 to about frame 47, and the pressure hull was torn away from "T" frames 45, 44, and 43. Frame 46 was heavily indented with the hull, and frame 43 also showed some distortion. The dent was some 18 in. deep by about 18 in. wide, with a raised section along the center about 6 in. high and rounded on top as if it had been pinched; this section of the dent ran under frames 44 and 45. No cracks were found in this general area despite presence of the heavy dent.

In addition to the general longitudinal and transverse dishing along the sides of the vessel, a dent about 18 in. deep was found in the port side from about frame 24 to about frame 36, with a crack $\frac{1}{2}$ in. wide from the dent to the superstructure at about frame 20. The dent in question was located above the bottom and about 5 ft. to 6 ft. below the superstructure. A vertical crack about 4 in wide and about 3 ft. to 4 ft. high was found at about frame 10 in. the bow buoyancy tank.

The most serious damage located aft appeared at about frame 85 and went entirely around the visible section of the boat. On the port side the plating of ballast tanks 6B and 6D was pushed in about 8 in. around bulkhead 85 over the entire visible area. A deep dent some 6 in. to 8 in. deep and about 4 in. wide ran across the superstructure. This is in way of the forward engine room exhaust, and the deck damage was so severe that the pressure hull could not be inspected. The dent followed around bulkhead 85 on the starboard side, and the shell in ballast tanks 6A and 6C was found to be cracked in this location. The other crack in pressure plating was found at about frame 126 to 127, starboard, and immediately forward, and to starboard of the after trim tank manhole.

4.042 Compartments

No detailed inspection of compartments except from the exterior could be made at the time of the resurvey with the exception of closures. An attempt was made to open all hatches and doors, both access and loading, to inspect seats, gaskets, retainer rings, and operability. The shifting of the superstructure deck precluded opening the after battery, after engine room, and conning tower hatches, and the control room and forward escape access trunk doors. The after torpedo room hatch was the only one opened successfully, and it was found to be in good condition, including the retainer ring and screws and the gasket. With the exception of a small portion of the after edge of the seat, chalk marks were easily visible from the last chalk test. A small amount of very thin marine growth was found on the after edge of the seat, indicating the presence of a leak. When the hatch was open, a small amount of oil came out. The after torpedo loading hatch could not be opened. The dogs were freed and a pry bar applied. Bubbles came up whenever both divers pried on the bar. This indicated the possibility that this hatch and the depth-charge hatch had held, and that the room was not completely flooded.

The conning tower hatch was opened about an inch, and the gasket and retainer ring were felt and reported to be in good condition. The hatch was, however, apparently frozen or distorted to such an extent that it could not be opened to the deck level. A large quantity of oil came out, indicating that the compartment within was flooded. The starboard shifting of the conning tower fairwater prevented access for a diver and any attempt to open the control room escape trunk door.

The forward torpedo loading hatch and the escape hatch and door were either frozen or jammed, and could not be opened. It was interesting to note, however, that after divers had been at the hole in the forward torpedo room, and air had accumulated therein, no bubbles were noted until the dogs on the loading hatch were loosened. When the dogs were loosened a considerable quantity of bubbles came out, indicating that this hatch as well as the depth charge cover were tight and well seated.

4.043 The Underwater Hull

The underwater hull was buried except for a section of the port side, which showed major transverse and longitudinal indentation through and between frames.

4.044 Tanks

All tanks inspected were viewed from the exterior. They suffered the same damage as that described in Section 4.031, and were presumed not to be watertight.

4.045 Flooding

Flooding, it is believed, was general throughout the vessel, and was caused by many failures both in structure and in fittings.

4.046 Ventilation

Ventilation was destroyed. The main induction valve was heavily wrinkled, but no cracks were located. The valve top was moved 2 to 4 in.off its seat to port and aft, and divers were able to get their fingers between the top and the seat almost all the way around the top. The retainer ring and gasket both failed to such an extent that a section of the gasket about 6 in.to 8 in.long was completely out of the groove.

The main induction piping, where visible from the induction valve to about frame 70, was reported to be in good condition. At about frame 70, however, the piping was wrinkled and cracked. No inspection of interior ventilation or bulkhead closures was feasible at the time of the resurvey.

The main vent risers located were found to be in various conditions. Those to main ballast tanks 2A and 2B were reported in good condition, with the valves seating satisfactorily. This inspection was entirely by feeling and it may be doubted that the vents were watertight. The vent risers at FBT 4A and 4B were found to be broken, and the vent valves were askew and not seating. In this case again, visibility and access were limited, and all information came from hand inspection. At FBT 4A and 4B, a piece of copper tubing (presumably hydraulic) was found to ruptured. It is believed that none of the main vent systems was tight or operable.

4.047 Ship Control

Judging by the damage done to the gyro repeater, TBT, and the 1 MC on the bridge, it is presumed that all ship control was lost immediately.

4.048 Ammunition

Ammunition apparently acted normally, there being no indication of any detonation. The only handling device inspected was the 5-inch passing scuttle, which appeared to be in good condition.

4.049 Strength

Although it was difficult to make any definite analysis of the residual strength, it was evident that the vessel had been weakened to a very serious extent, and enough to make repairs of any sort inadvisable.

4.050 Miscellaneous

Miscellaneous piping. Exterior hull piping such as 10-pound blow, hydraulic and torpedo impulse, was damaged as much as the rest of the boat. The after port impulse pipe to the forward torpedo room leading from the flask to the hull, was broken at the flange on the hull and at the flask, and this section was missing. The 10-pound blow pipe to No. 1 main ballast tank was cracked at about frame 42, and out of round. A piece of copper tubing, presumably hydraulic, at the No. 4 A and B fuel ballast tank vent riser was broken and bent.

Radioactivity. Radioactivity of pieces of wood, steel, and marine life brought up from Pilotfish was of very low magnitude, and considerably less than that found on comparable materials from Saratoga and Apogon.

4.051 Welding and Riveting

Welding and riveting in the shell plating and superstructure were found to have held up as well as the clear metal. Failures in seams and plating were about equal in extent.

Figure 1. PILOTFISH. Dished pressure hull aft of frame No. 121, port side. ABCR Photo No. 6039-1.

Figure 2. PILOTFISH. Break in deck forward of stub mast, about frame No. 98. ABCR Photo No. 6036-7.

Figure 3. PILOTFISH. Main engine exhaust, frame No. 96 to No. 97, port. ABCR Photo No. 6039-6.

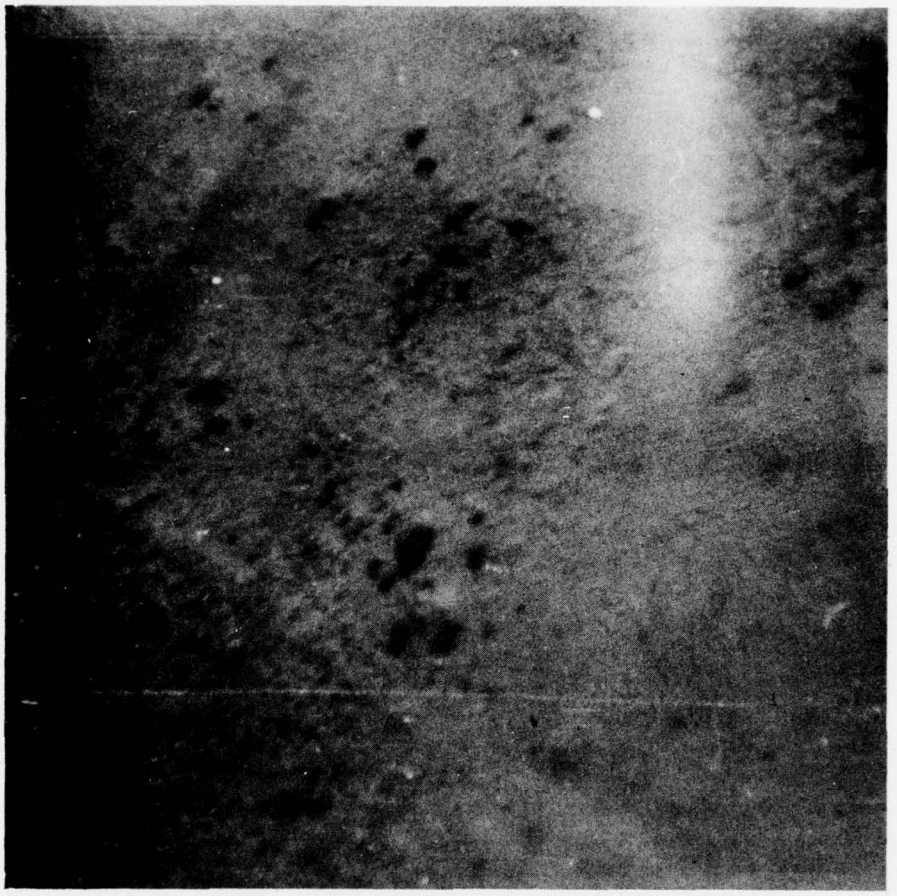

Figure 4. PILOTFISH. Weld in ballast tank, about frame No. 79. ABCR Photo No. 6039-20.

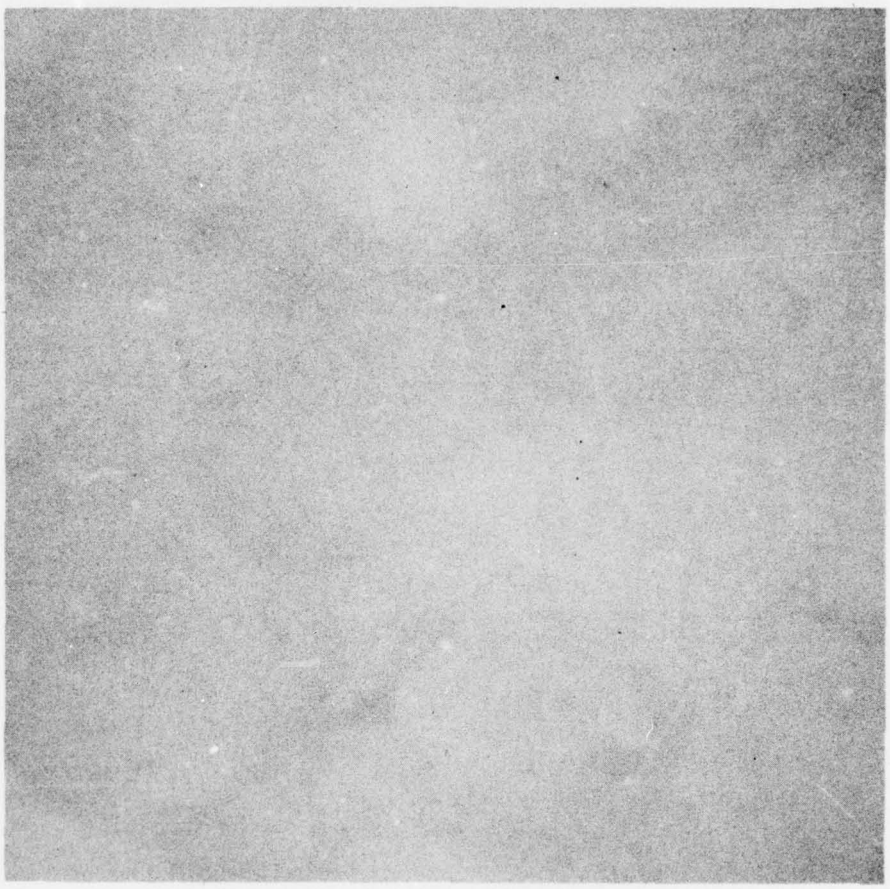

Figure 5. PILOTFISH. Buckled outer shell over transverse bulkhead, about frame No. 85, port. ABCR Photo No. 6040-11.

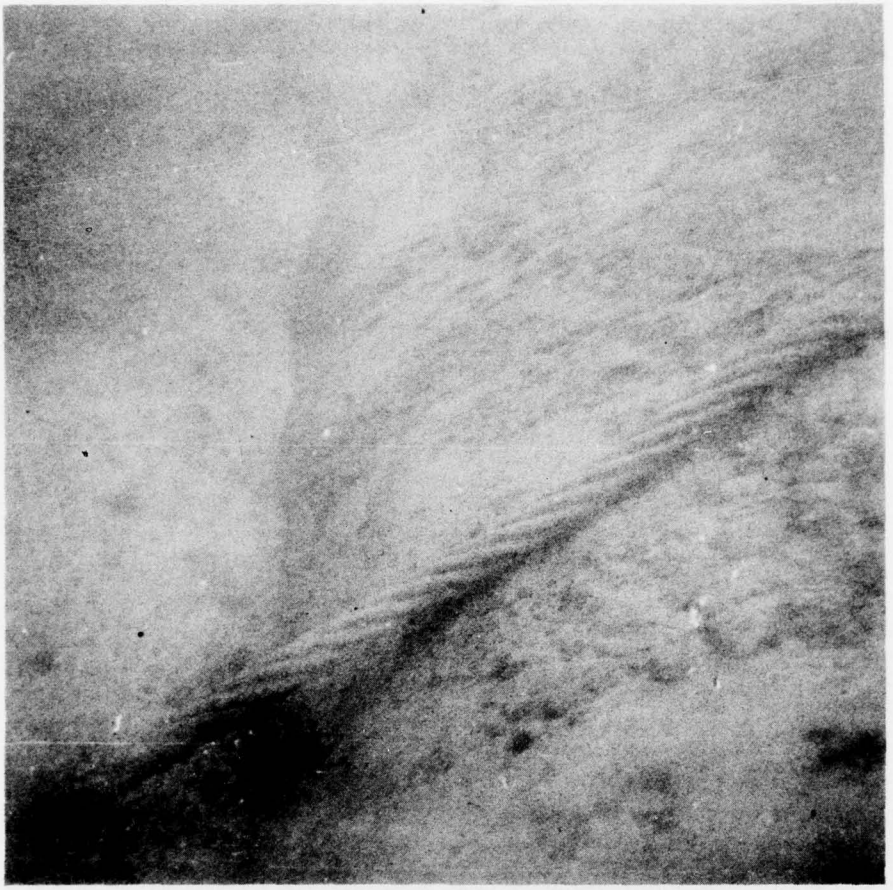

Figure 6. PILOTFISH. Dented outer shell between transverse frames, about frame No. 50. ABCR Photo No. 6040-15.

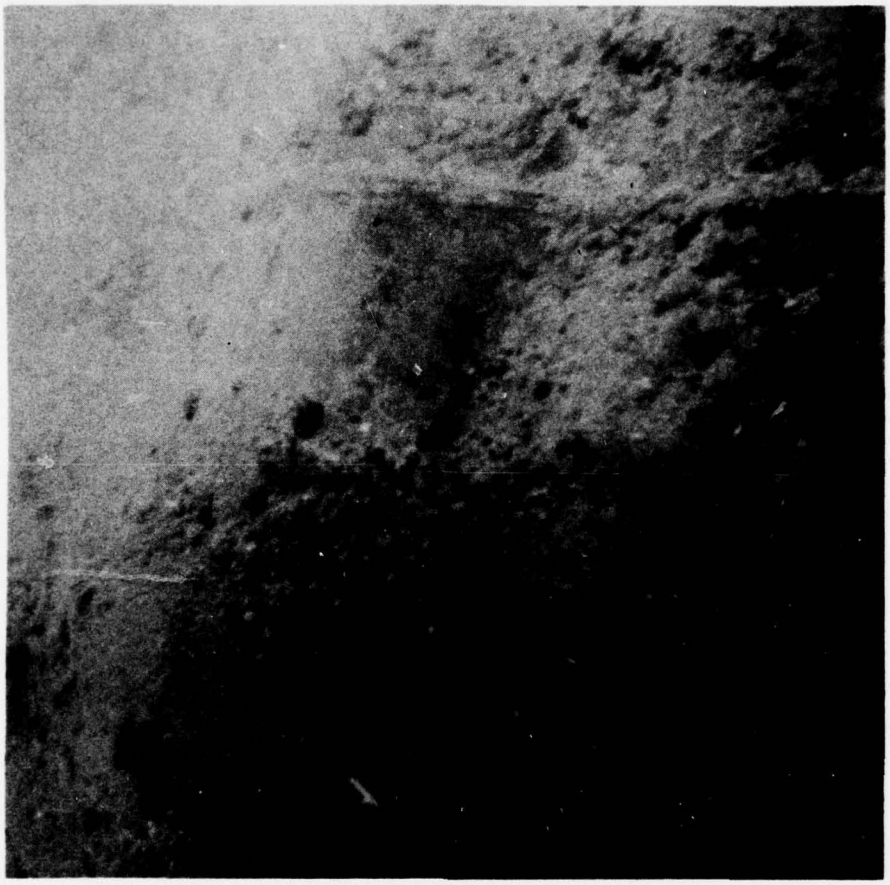

Figure 7. PILOTFISH. Indentation between transverse frames and longitudinal dent in outer shell. Frame No. 54, port side. ABCR Photo No. 6042-2.

Figure 8. PILOTFISH. Damaged torpedo shutters on starboard side. ABCR Photo No. 6042-15.

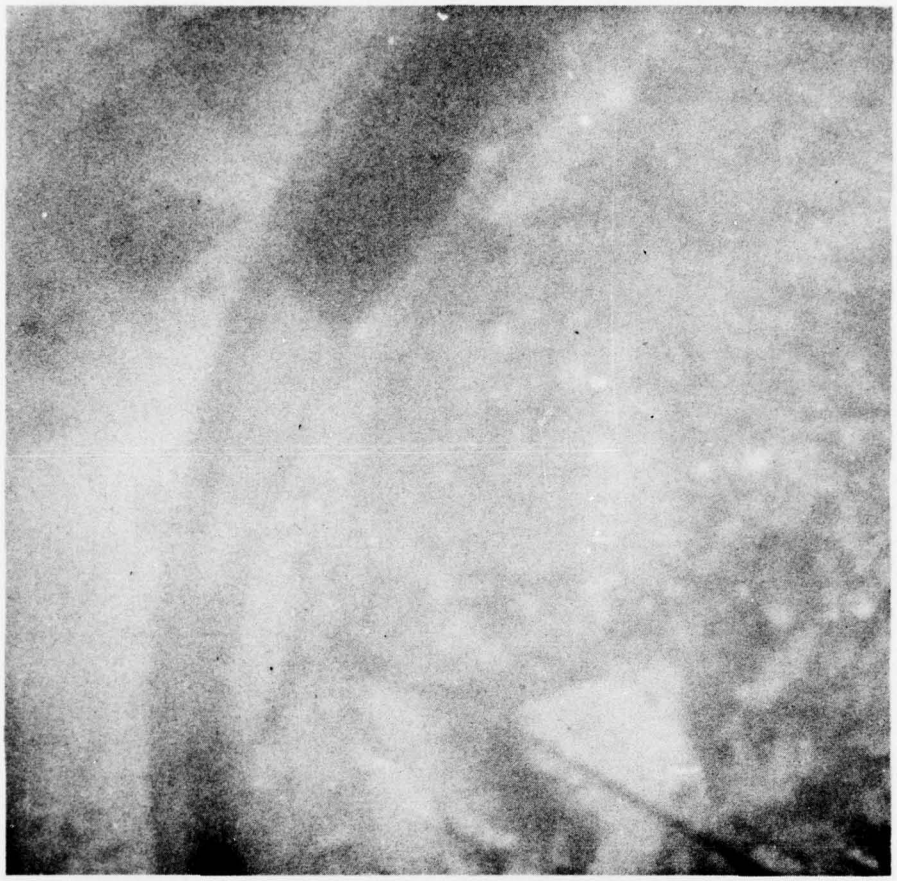

Figure 9. PILOTFISH. Main induction valve looking down showing displaced top on seat. ABCR Photo No. 6046-8

ANNEX A: PILOTFISH

Drawings Showing Location of Damage

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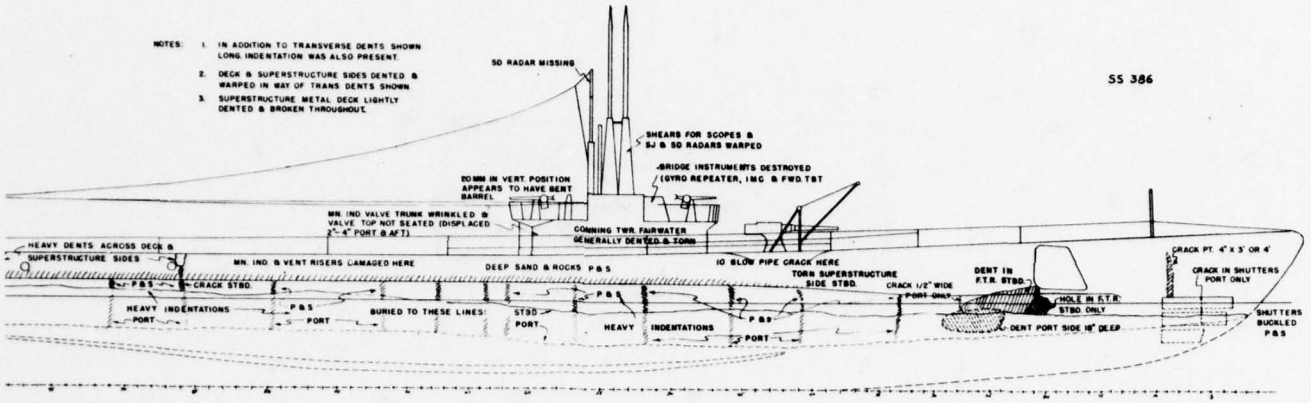

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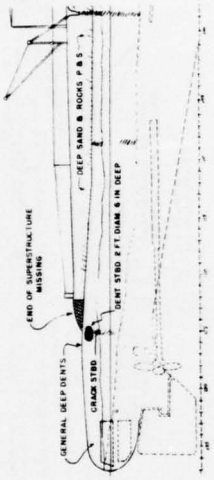
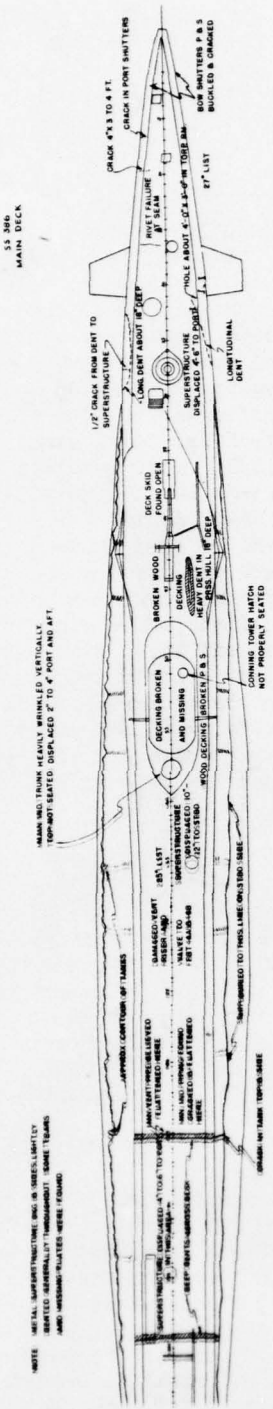

END OF SUPERSTRUCTURE MISSING
DEEP SAND & ROCKS P&S
DENT STBD 2 FT DIAM 6 IN DEEP
CRACK STBD
GENERAL DEEP DENTS

[redacted]



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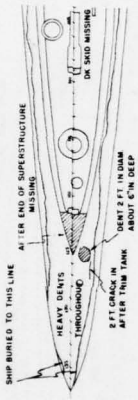
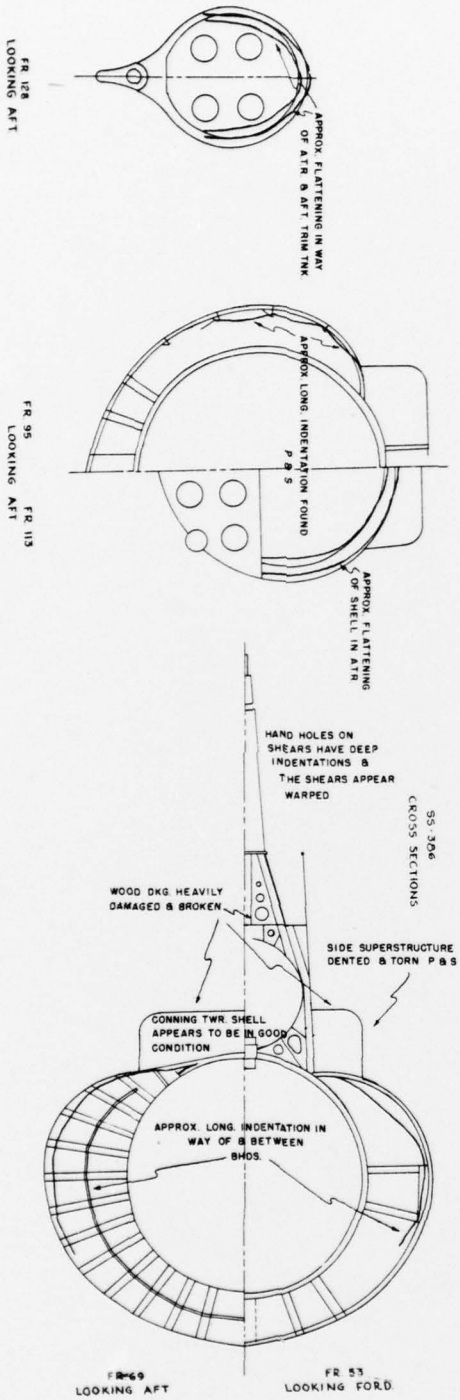

SHIP BURIED TO THIS LINE
AFTER END OF SUPERSTRUCTURE MISSING
HEAVY DENTS THROUGHOUT
DK SKID MISSING
DENT 2 FT. IN DIAM ABOUT 6"IN DEEP
2 FT. CRACK IN AFTER TRIM TANK

[redacted]



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ANNEX B: PILOTFISH

Photographs

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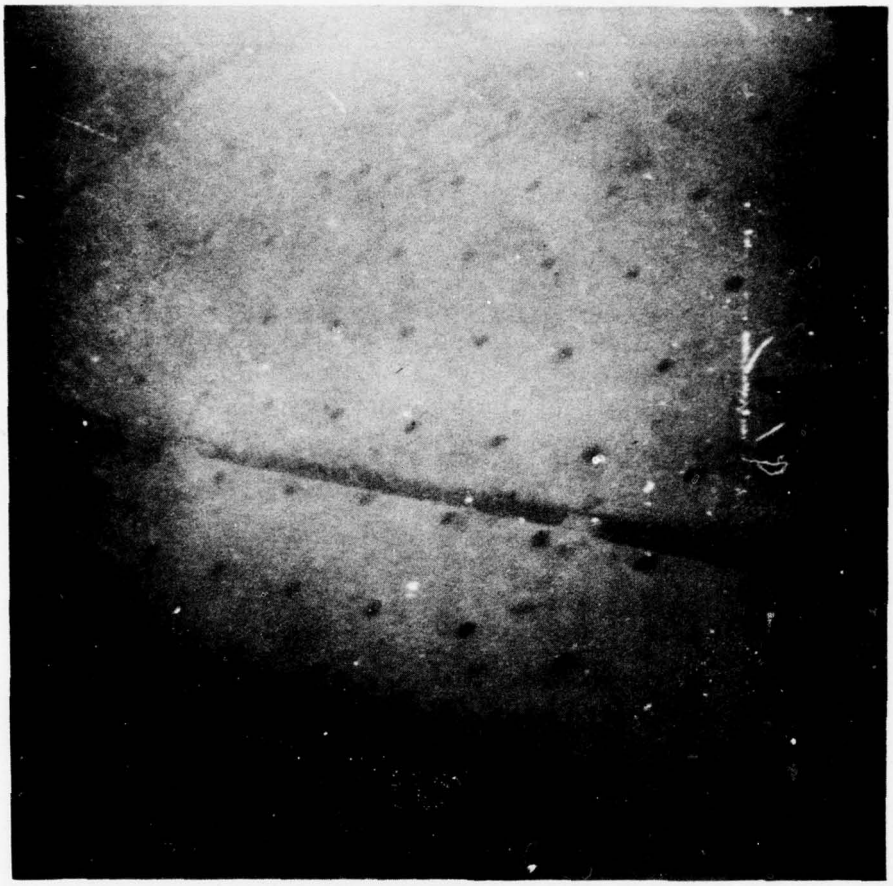


Decking near after engine room hatch, looking to port. ABCR Photo No. 6036-1.

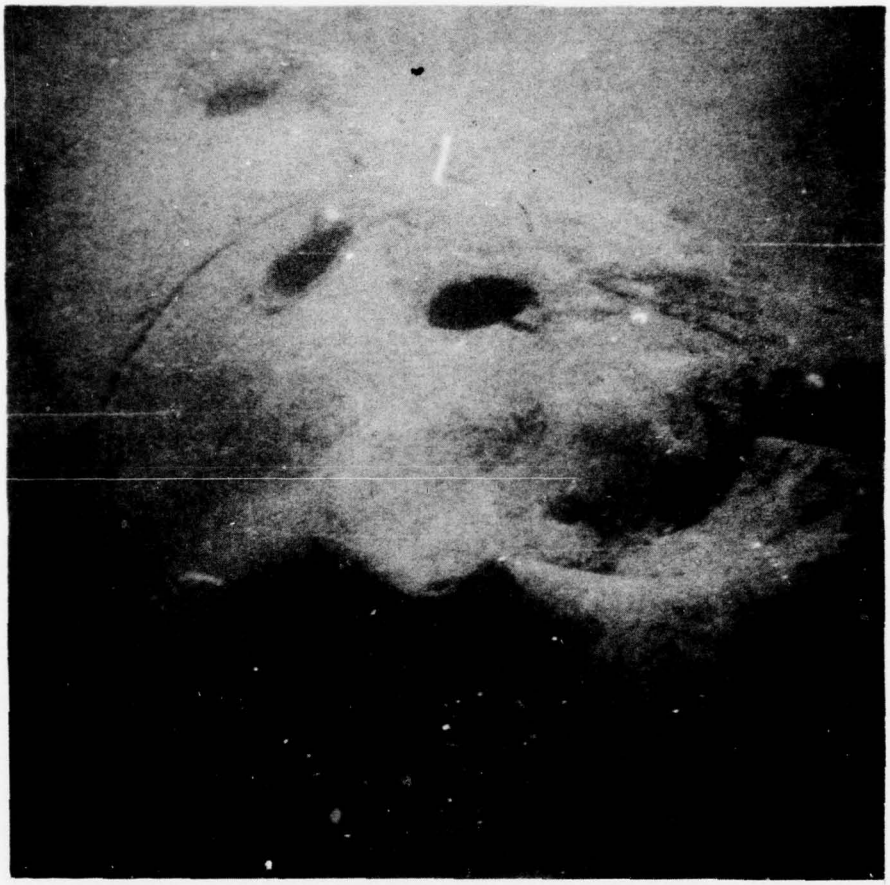
View of after engine room hatch, looking aft and port. ABCR Photo No. 6035-2.

Starboard side, frame 98. ABCR Photo No. 6035-3.

View of dent in superstructure at frame 85. ABCR Photo No. 6035-5.

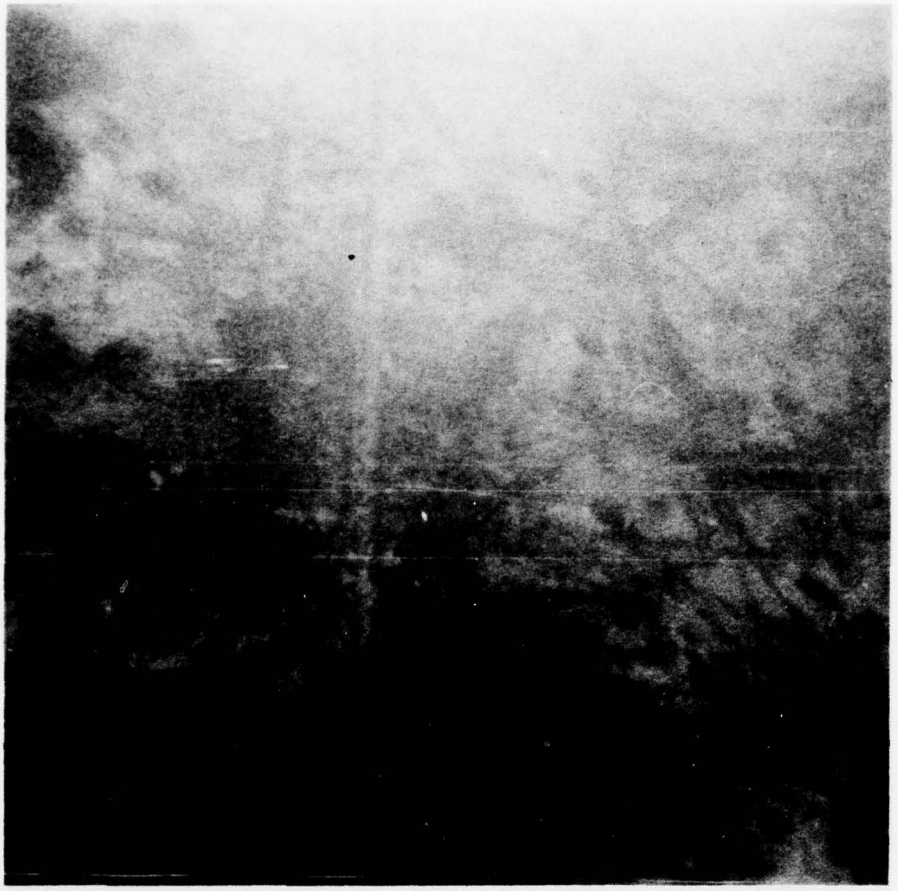
Transverse dent in superstructure forward of after engine room hatch. ABCR Photo No. 6035-6.

View of damage in way of after main engine exhaust, port side. ABCR Photo No. 6035-7.

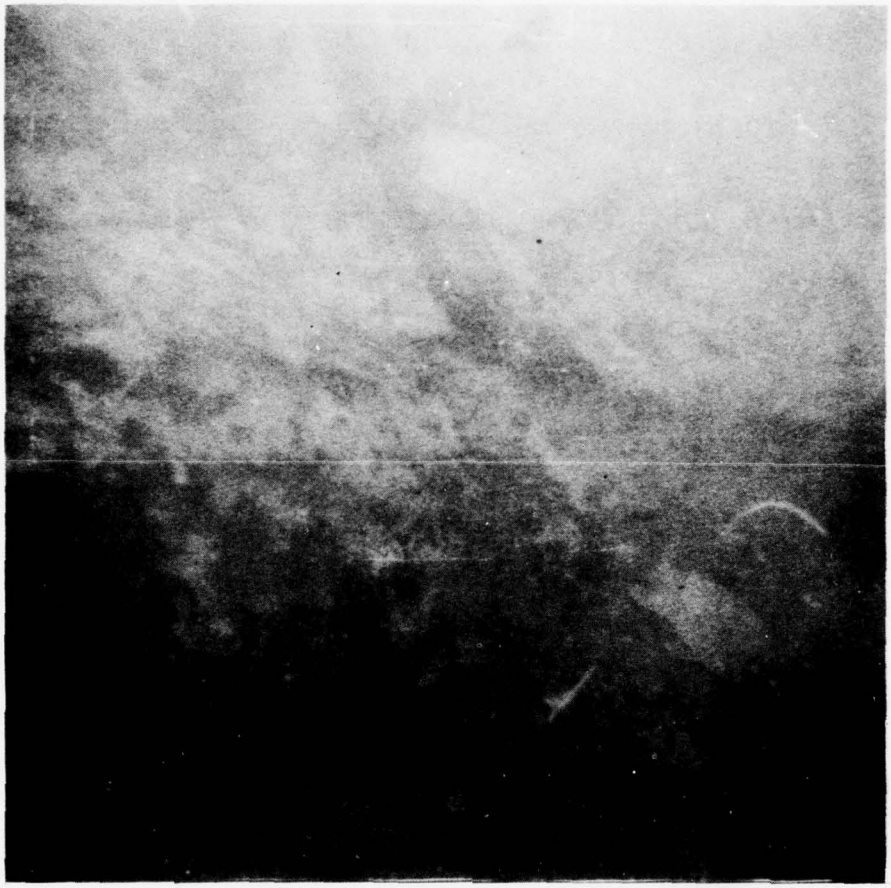


View of damage in way of after main engine exhaust, port side. ABCR Photo No. 6035-8.

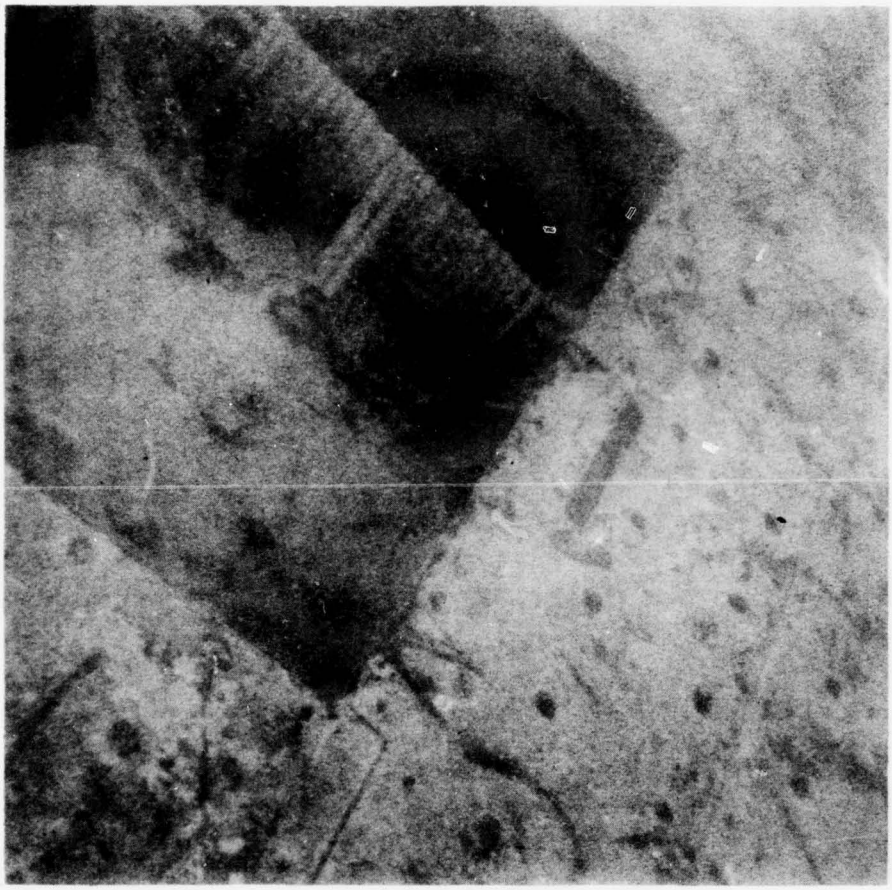
Damage to outer hull, around frame 97, port side looking aft.
ABCR Photo No. 9 End.



Deck at frame 99. ABCR Photo No. 6036-2.



Deck at frame 99. ABCR Photo No. 6036-3.

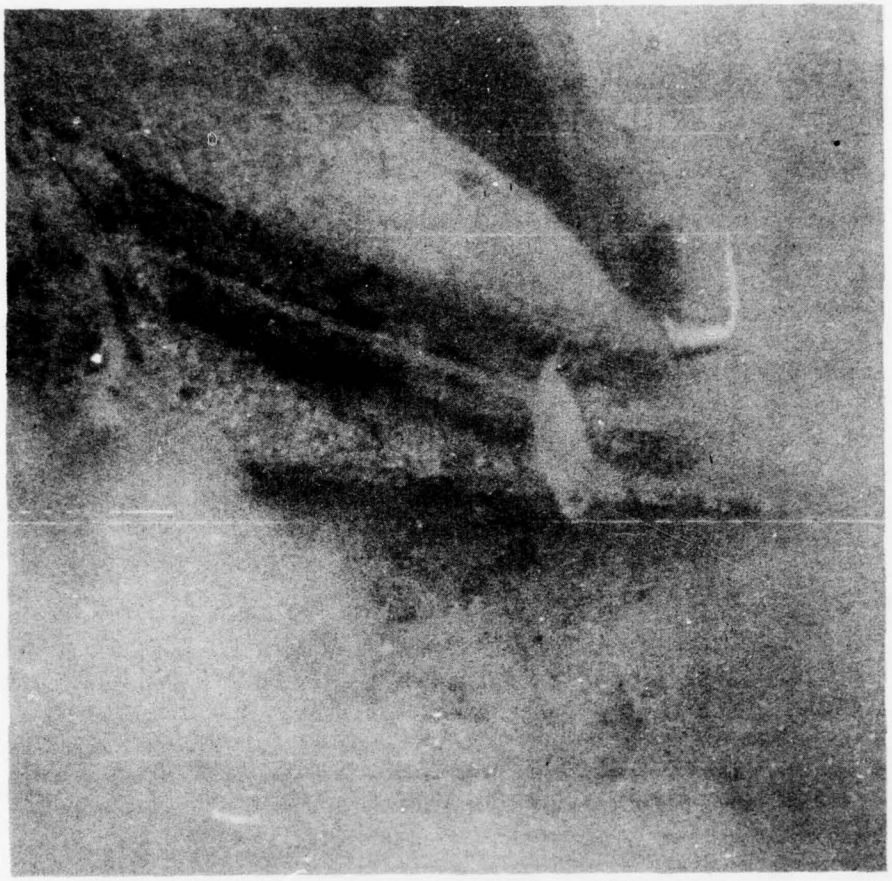


Frame 94 to 95, after starboard corner of after engine room hatch. ABCR 6036-4.

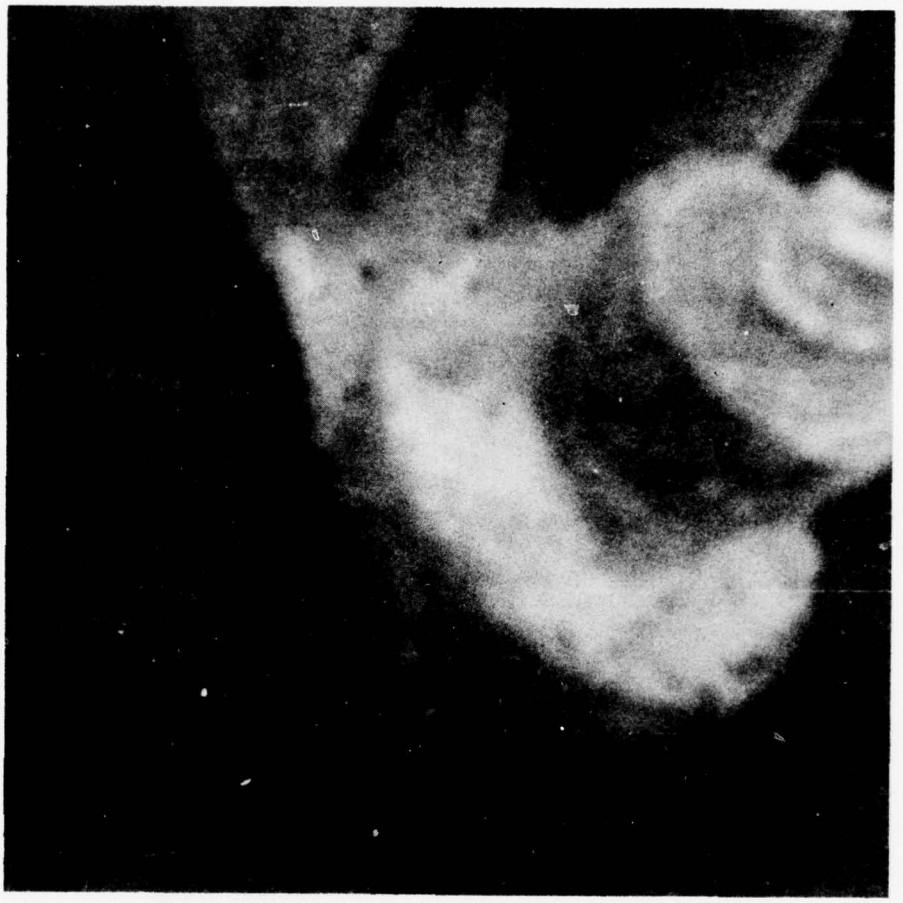
View of after engine room hatch, frame 94 to 95. ABCR Photo No. 6036-5.

Frame 94 to 95, after starboard corner of after engine room hatch. ABCR Photo No. 6036-6.

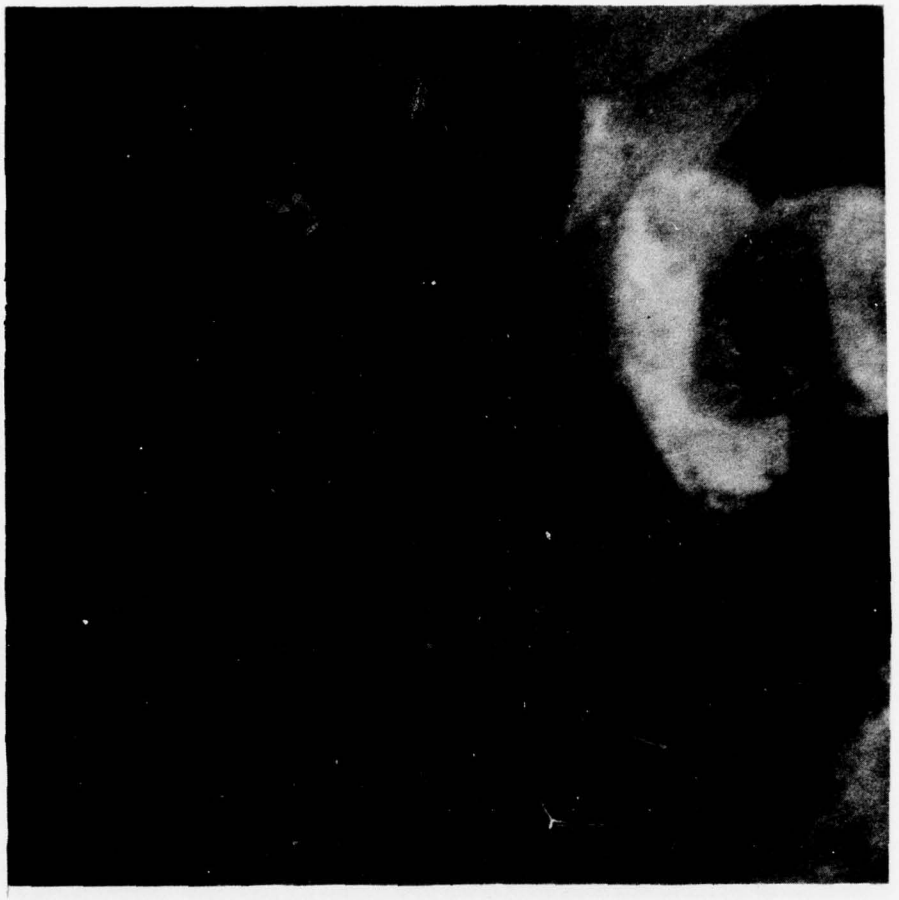
View of deck in way of after torpedo loading skid. ABCR Photo No. 6036-8.



After torpedo loading hatch. ABCR Photo No. 6036-9 End.

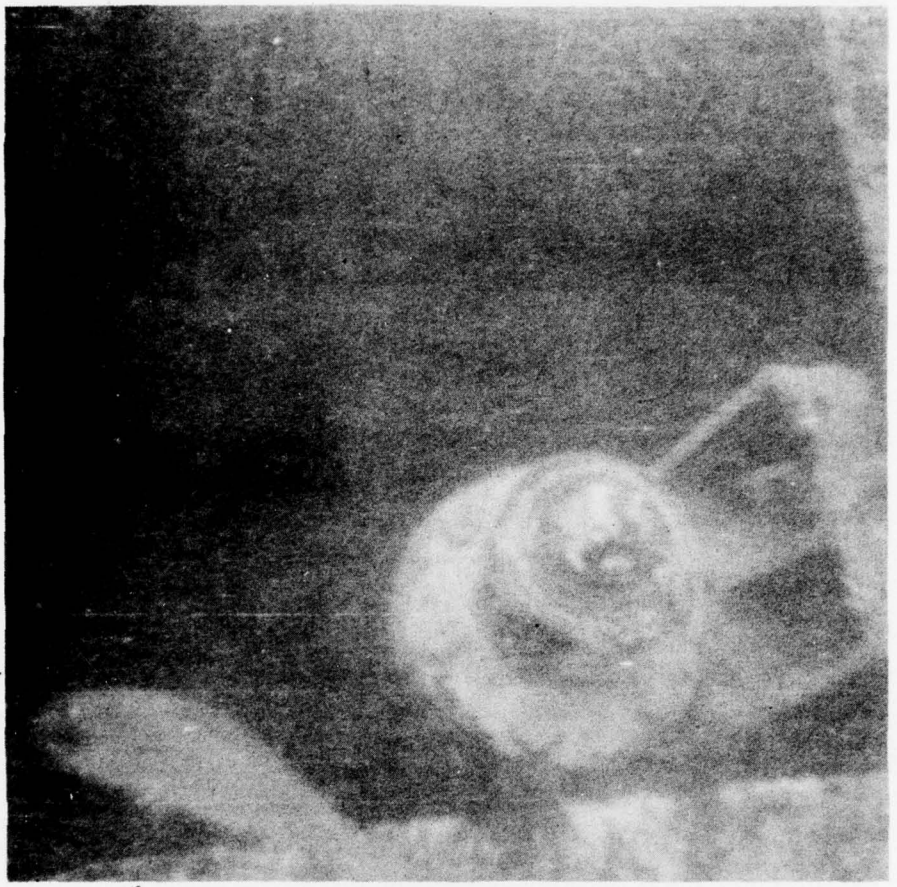


Frame 99, after fuel oil fitting. ABCR Photo No. 6037-1.

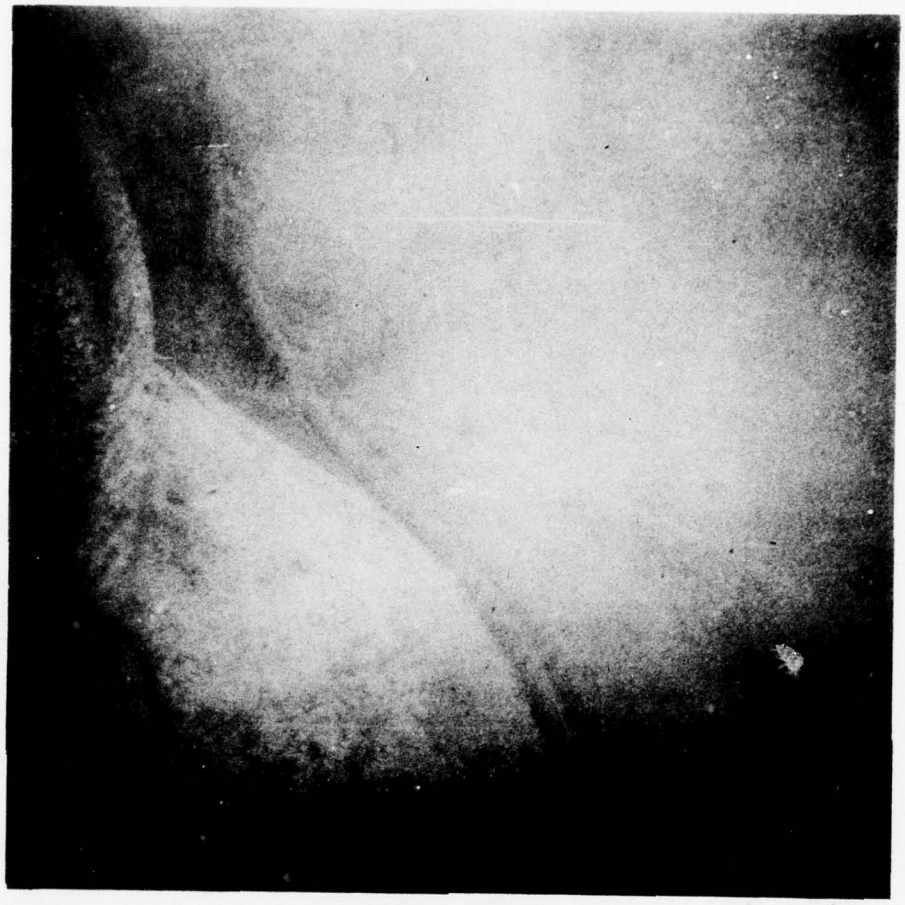


Frame 99, after fuel oil fitting. ABCR Photo No. 6037-2.

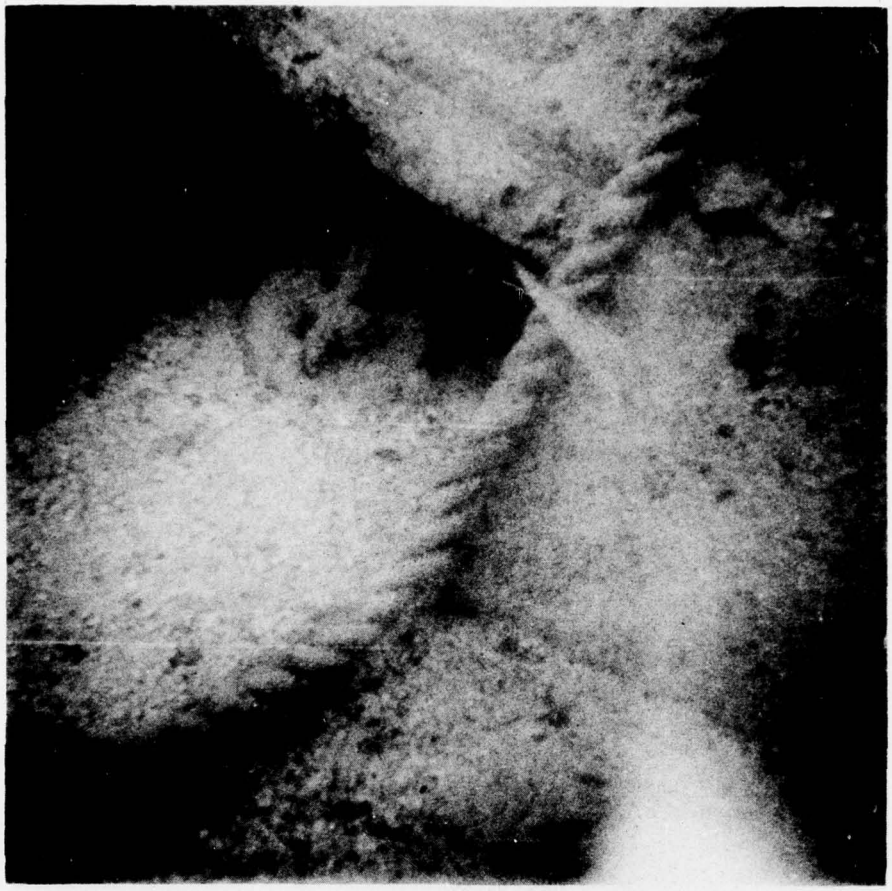
Frame 99, after fuel oil fitting. ABCR Photo No. 6037-3.



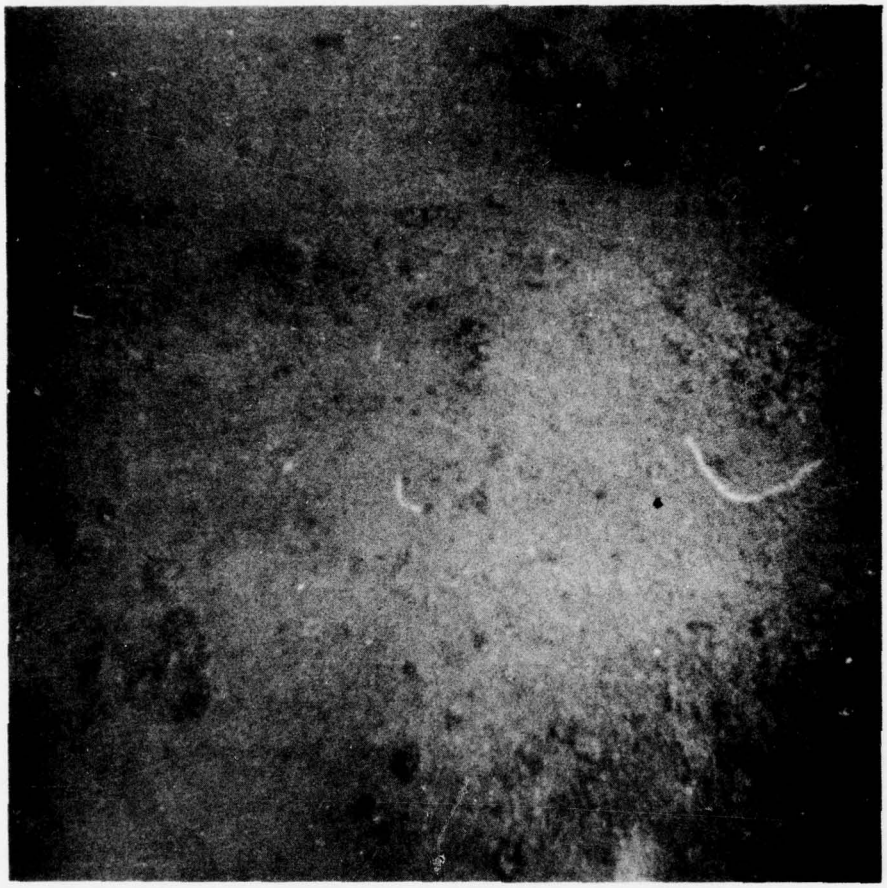
Frame 99, after fuel oil fitting. ABCR Photo No. 6037-4 End.



Top of pressure hull, looking down about frame 120, port side. ABCR Photo No. 6039-2.

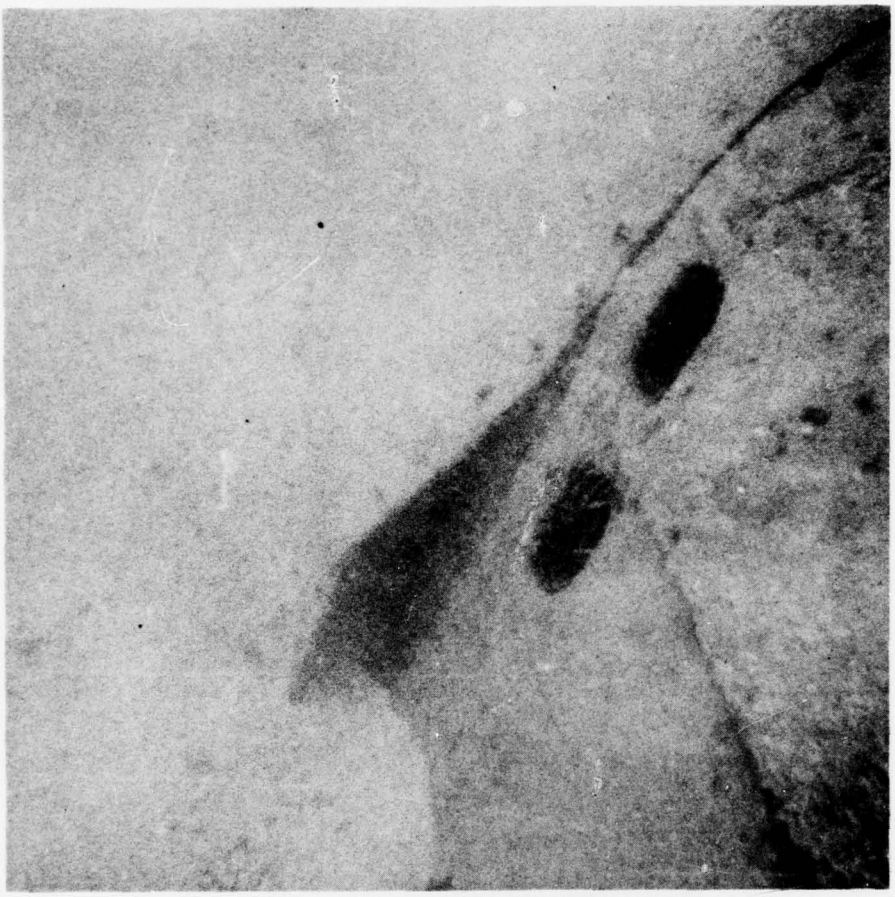


Unidentified valve wheel about frame 120, starboard side.
Note sand covering hulk. ABCR Photo No. 6039-3.



Dished normal fuel oil tank #7, port side. ABCR Photo No. 6039-4.

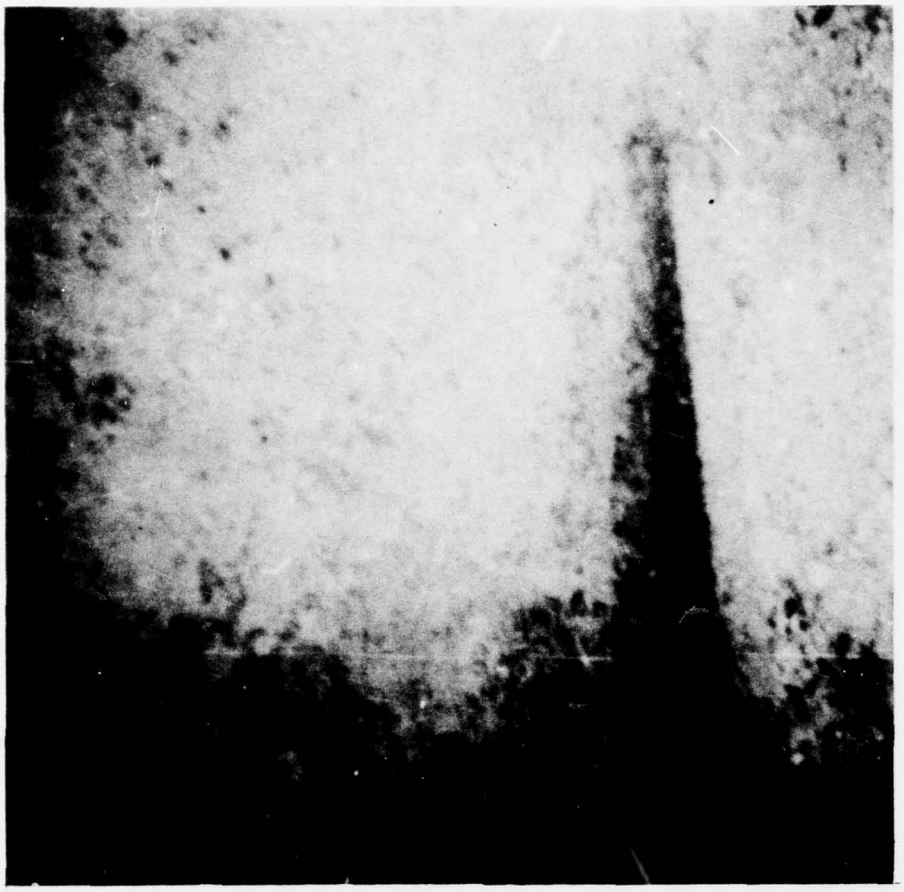
Main engine exhaust, frame 96-97, port. ABCR Photo No. 6039-5.



Superstructure damage, port side, about frame 78. ABCR Photo No. 6039-7.

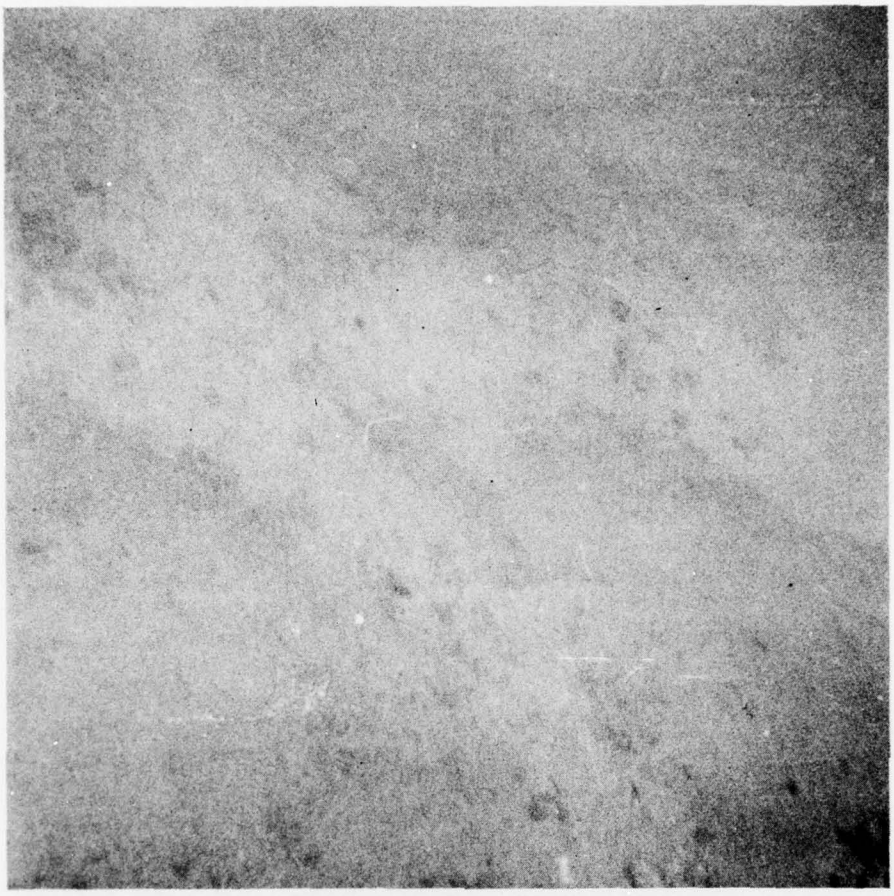
Looking down, port side of frame 121, showing dented pressure hull in way of after torpedo room, port side. ABCR Photo No. 6039-10.

Looking forward and down on hull, about frame 109, port side, dent. ABCR Photo No. 6039-12.

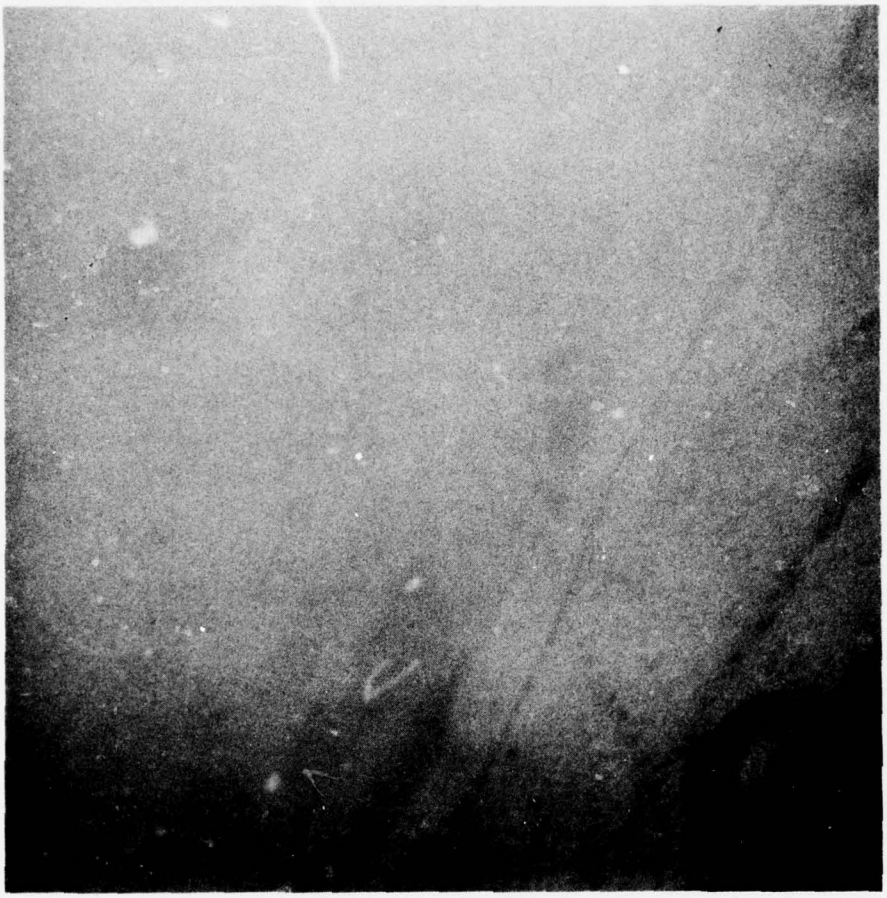


Unidentified view, about frame 103. ABCR Photo No. 6039-13.

Tear in superstructure, frame 78, port. ABCR Photo No. 6039-15.

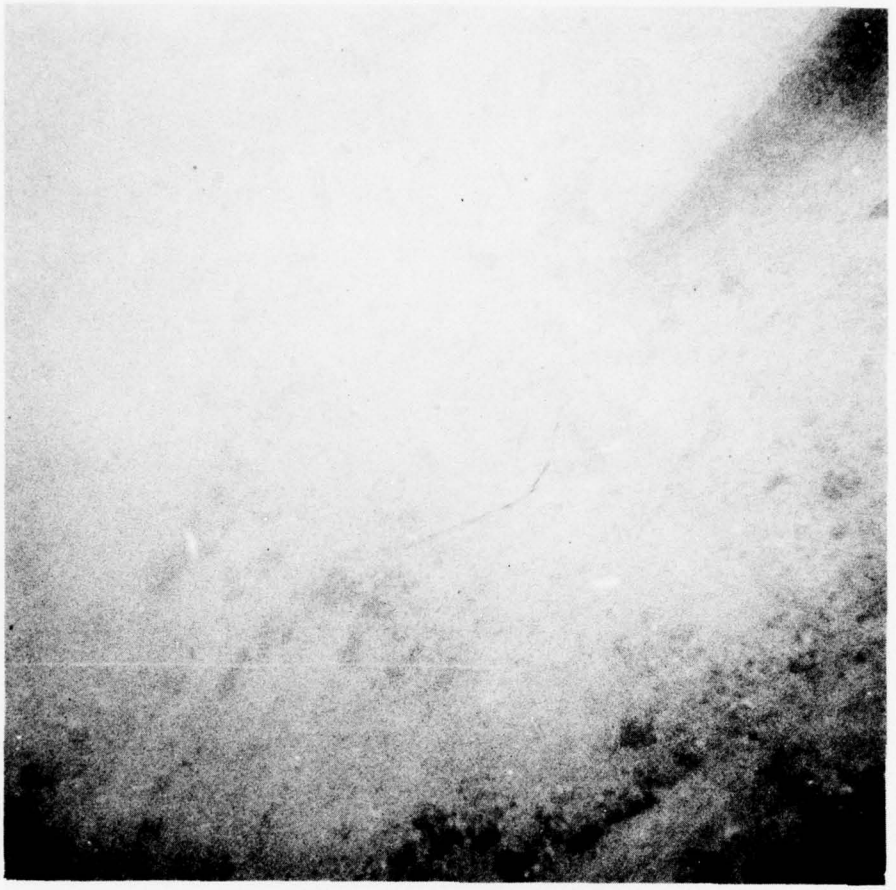


Frame 116 port side, dished in place in hull. ABCR Photo No. 6039-16.

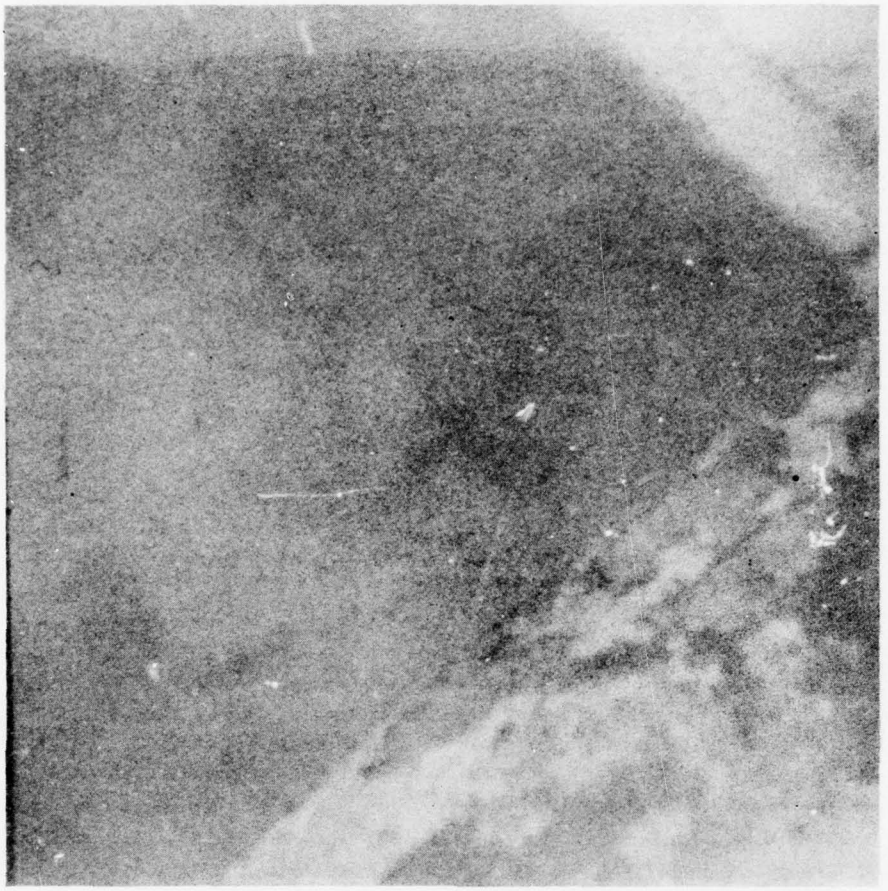


Superstructure, port side, about frame 109 and 110. ABCR Photo No. 6039-17.

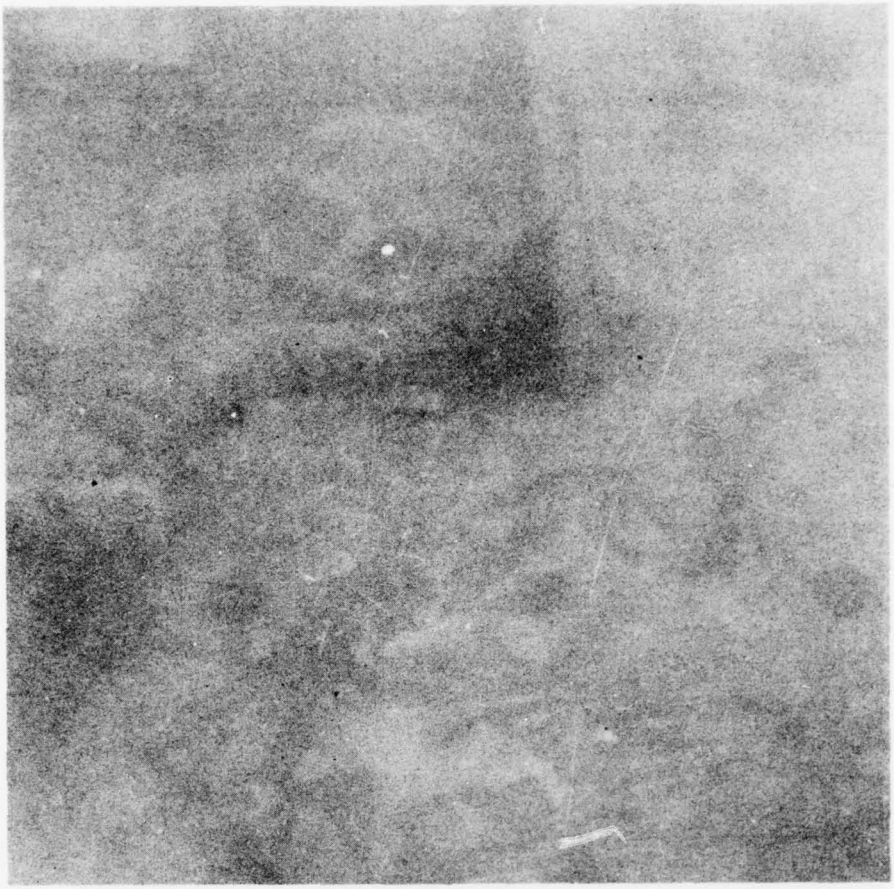
Dent in hull about frame 98. ABCR Photo No. 6039-18.



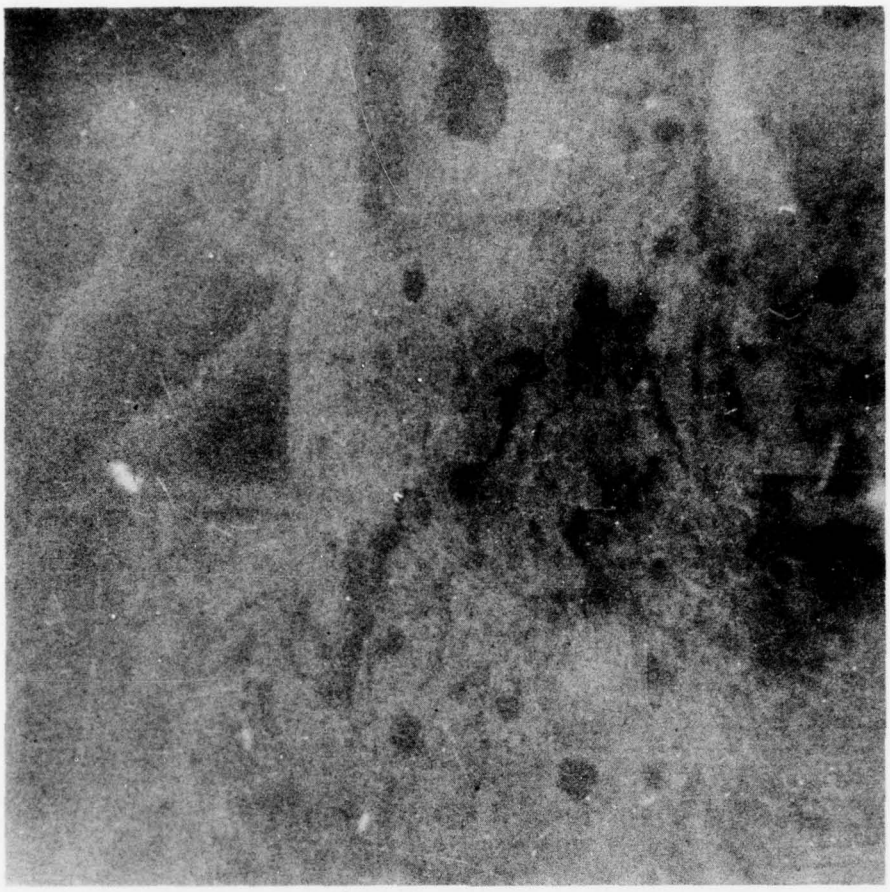
Dent in pressure hull about frame 98. ABCR Photo No. 6039-19 End.



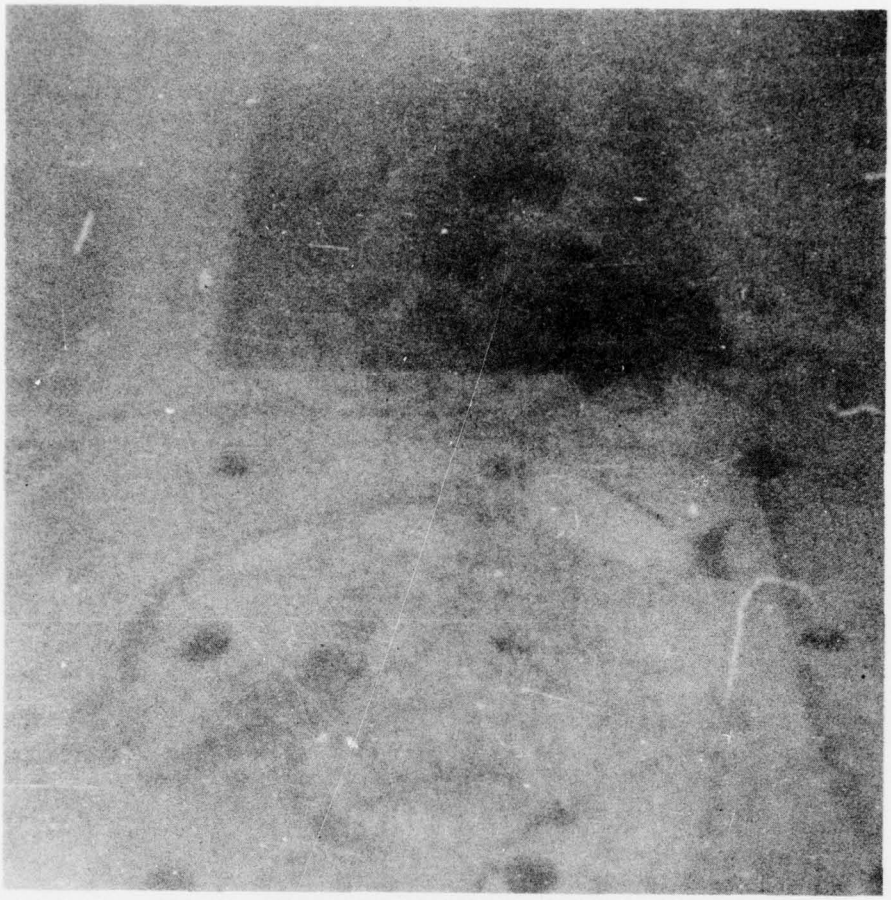
About frame 81 looking to port, view of superstructure decking and unsatisfactory view of pressure hull and piping. ABCR Photo No. 6040-1.



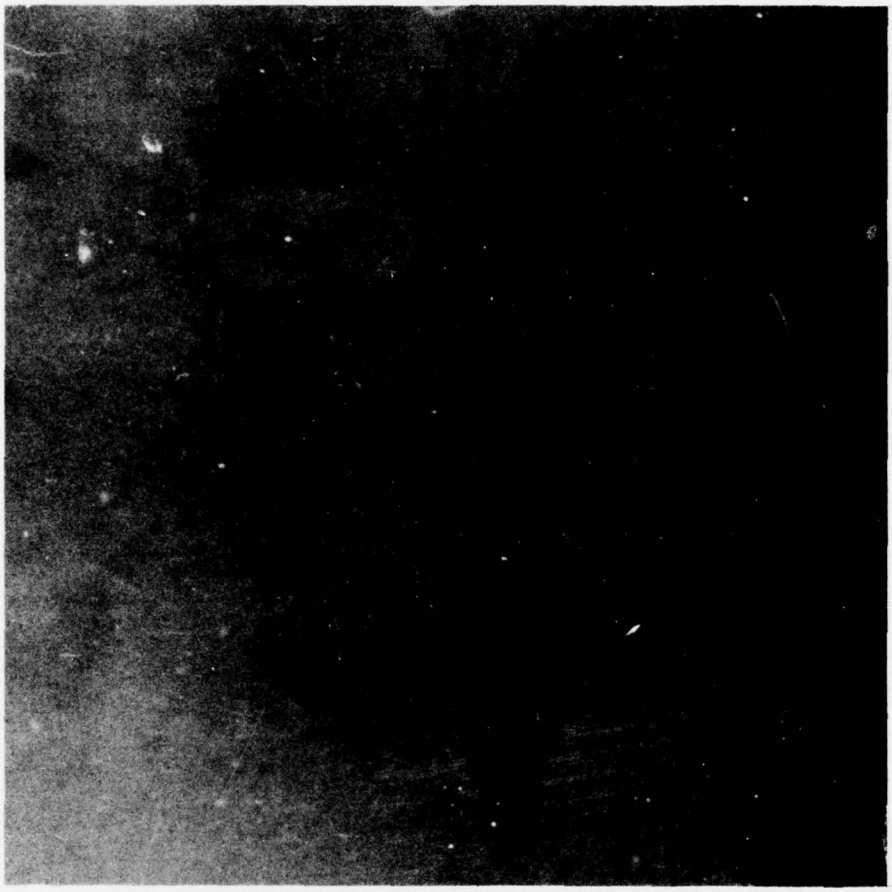
About frame 88, port side, looking to port, view of unidentified valve handwheel. ABCR Photo No. 6040-5.



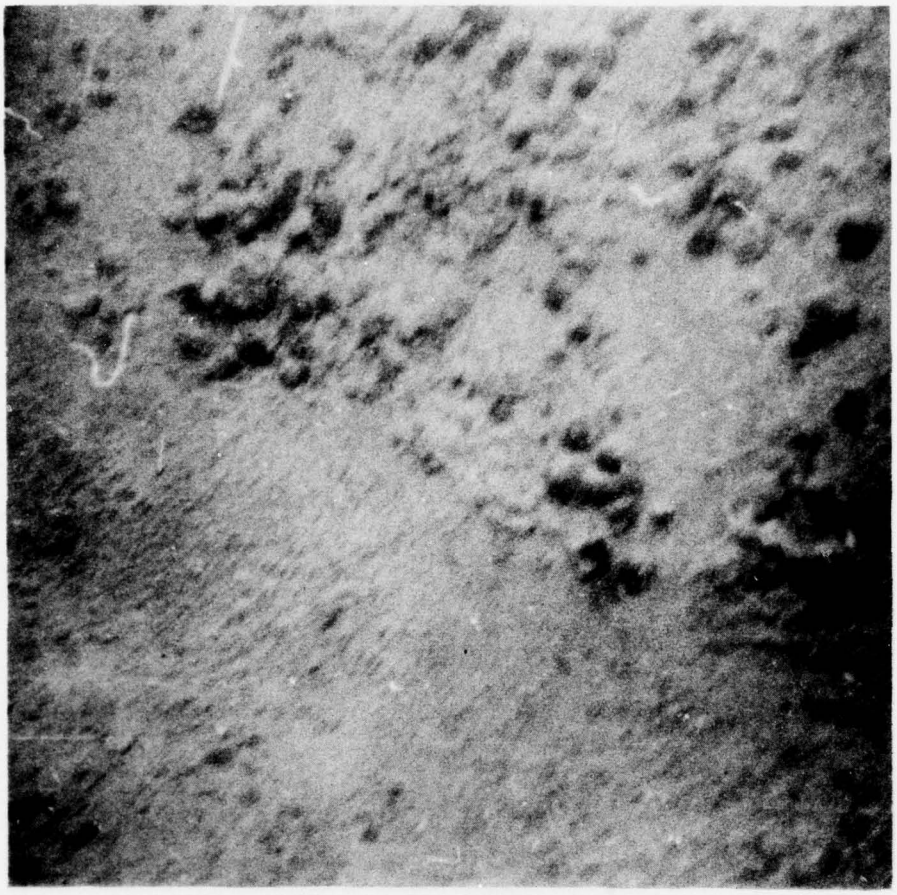
About frame 88, looking down, view of unidentified valve hand-wheel. ABCR Photo No. 6040-6.



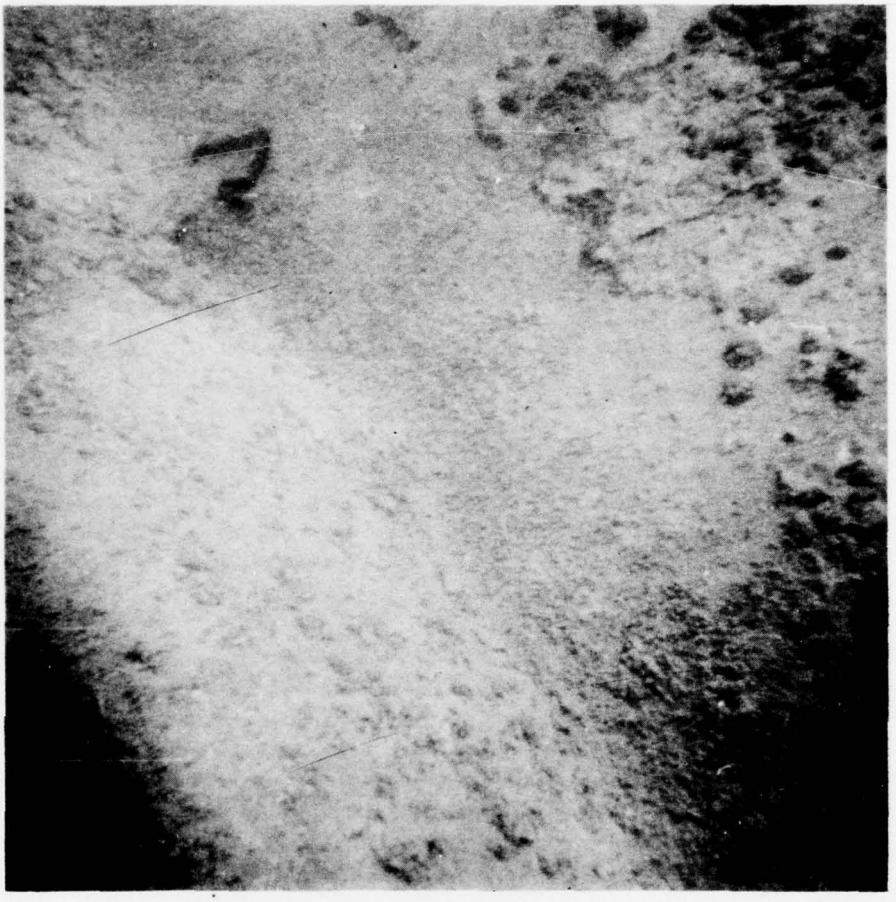
About frame 88, looking to starboard, view of superstructure deck and unidentified valve handwheel. ABCR Photo No. 6040-7.



About frame 88, looking forward, view of superstructure deck and unidentified valve handwheel. ABCR Photo No. 6040-8.



About frame 53, longitudinal dent in outer shell looking forward. ABCR Photo No. 6040-12.



About frame 50, port side looking forward, view of longitudinal shell dent. ABCR Photo No. 6040-13.

About frame 53, port side looking down on transverse dent in outer shell. ABCR Photo No. 6040-14 End.

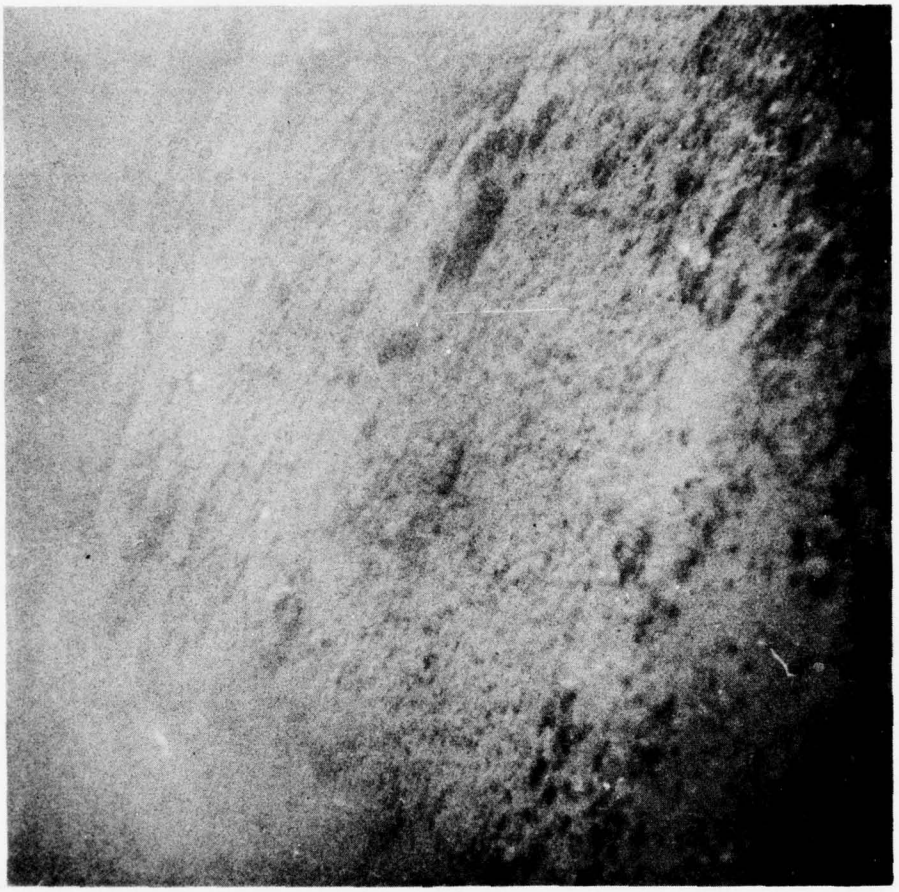
View of superstructure, frame 82, looking forward, pressure hull and piping not visible. ABCR Photo No. 6041-1.

Unidentified view of high pressure piping, presumably about frame 55, starboard. ABCR Photo No. 6041-3.

[redacted]

View of ruptured superstructure plating about frame 38. ABCR Photo No. 6041-5.

[redacted]



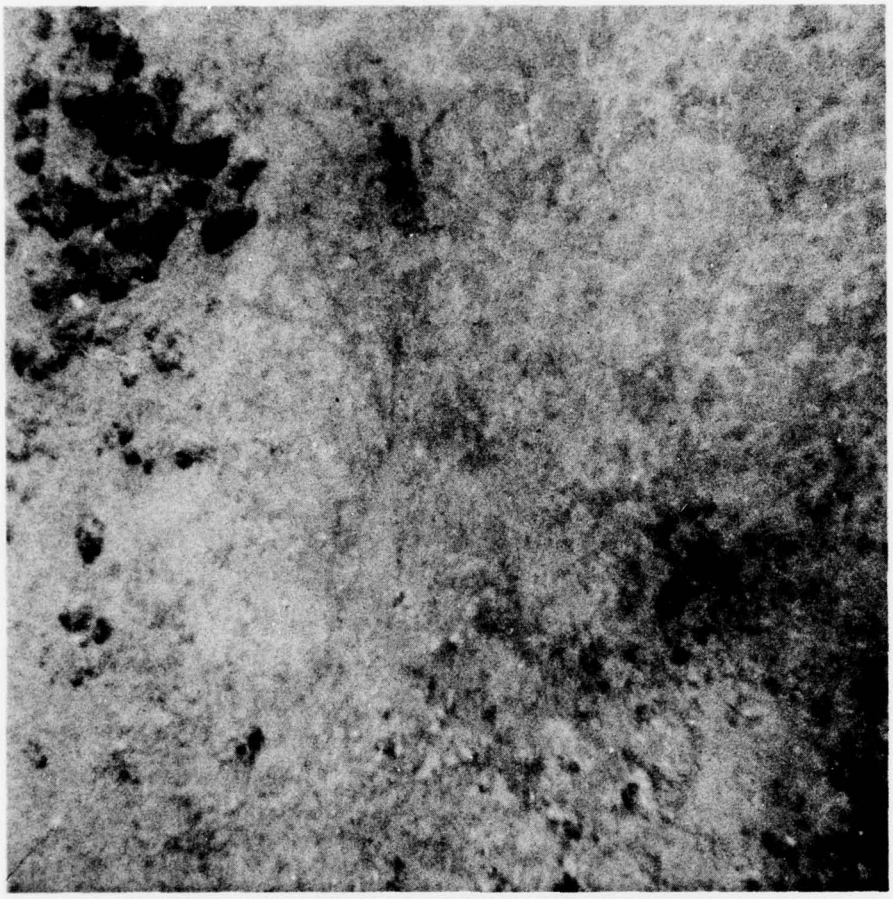
Dent in side, after part of forward torpedo room, port side, frame 23. ABCR Photo No. 6041-6.

Crack through torpedo shutters, frame 10. ABCR Photo No. 6041-11.

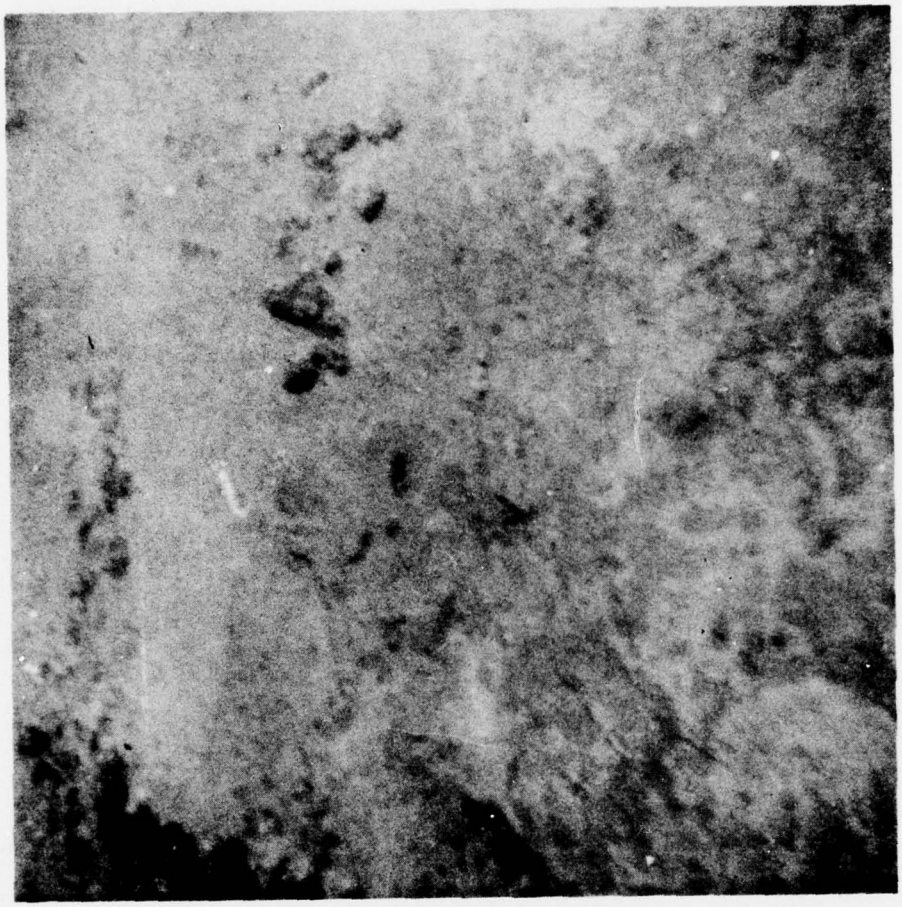
Crack at frame 7, port side. ABCR Photo No. 6041-12.

Damage in way of port torpedo shutters, port side, about frame 7. ABCR Photo No. 6041-13 End.

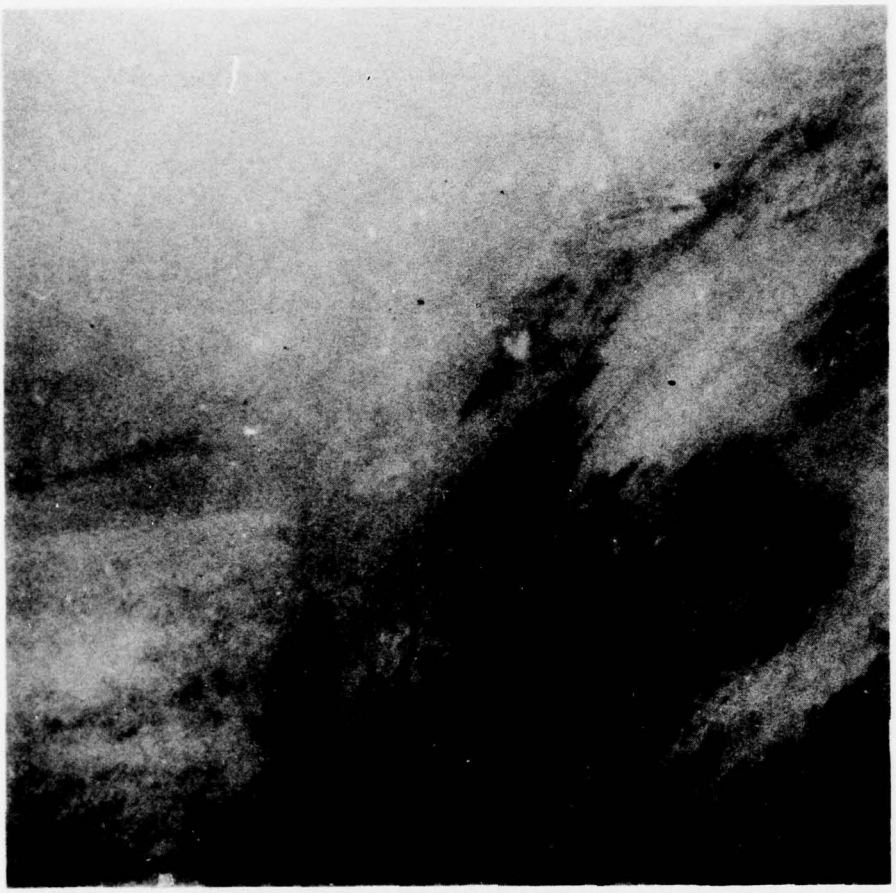
Frame 47, dents, port side, between frames and outer shell.
ABCR Photo No. 6042-3.



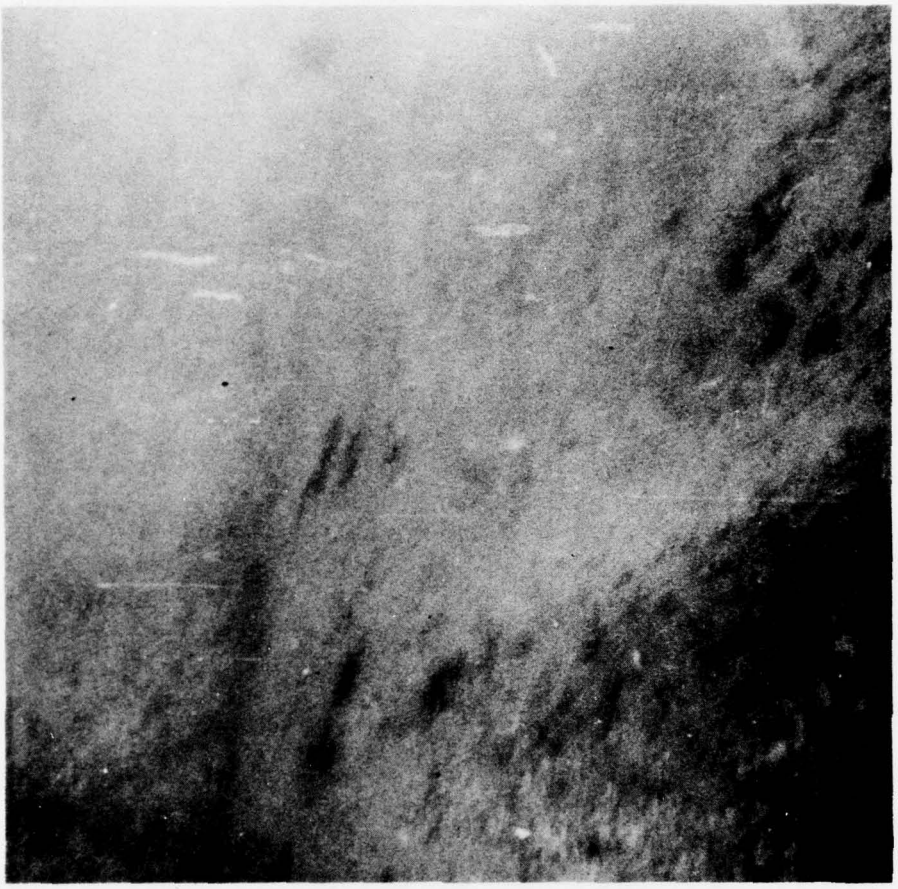
Frame 42, bad dents, port side of outer shell. ABCR Photo No. 6042-4.



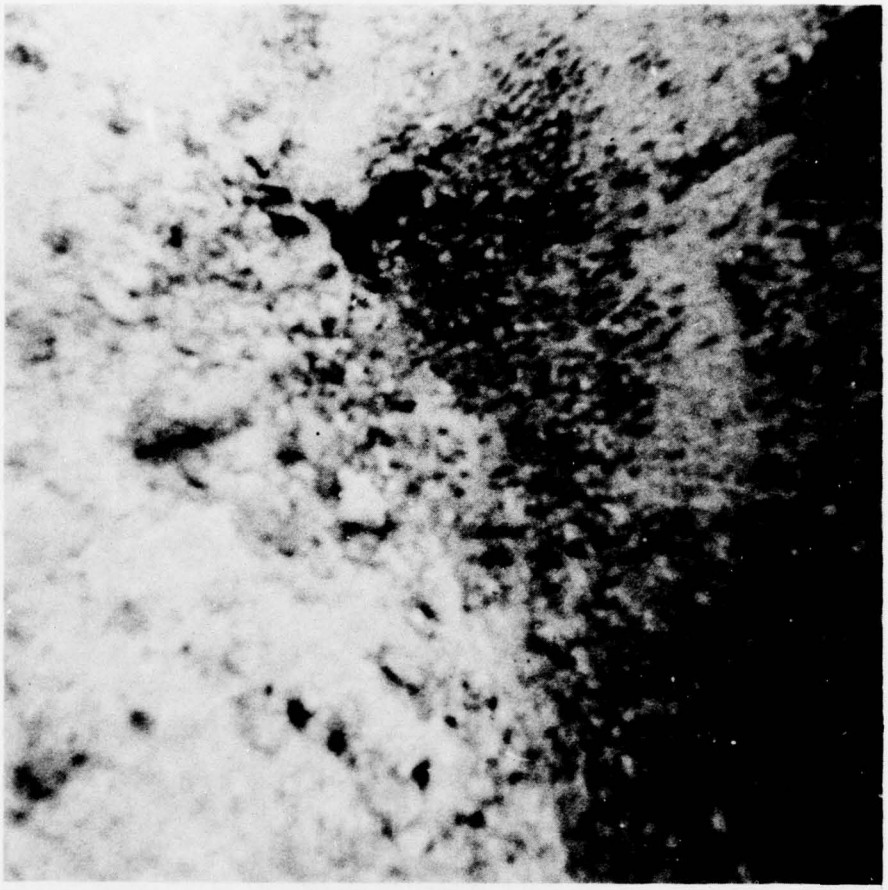
Frame 42, bad dents, port side of outer shell. ABCR Photo No. 6042-5.



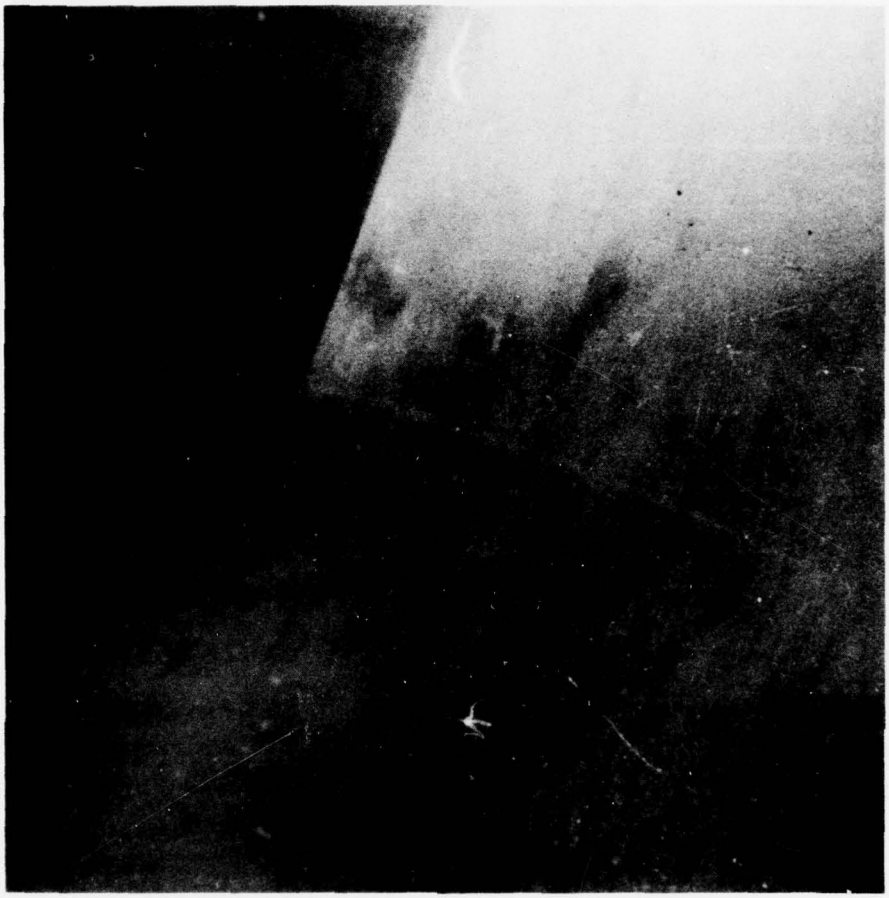
Frame 42, bad dents, longitudinal and transverse, port side outer shell. ABCR Photo No. 6042-7.



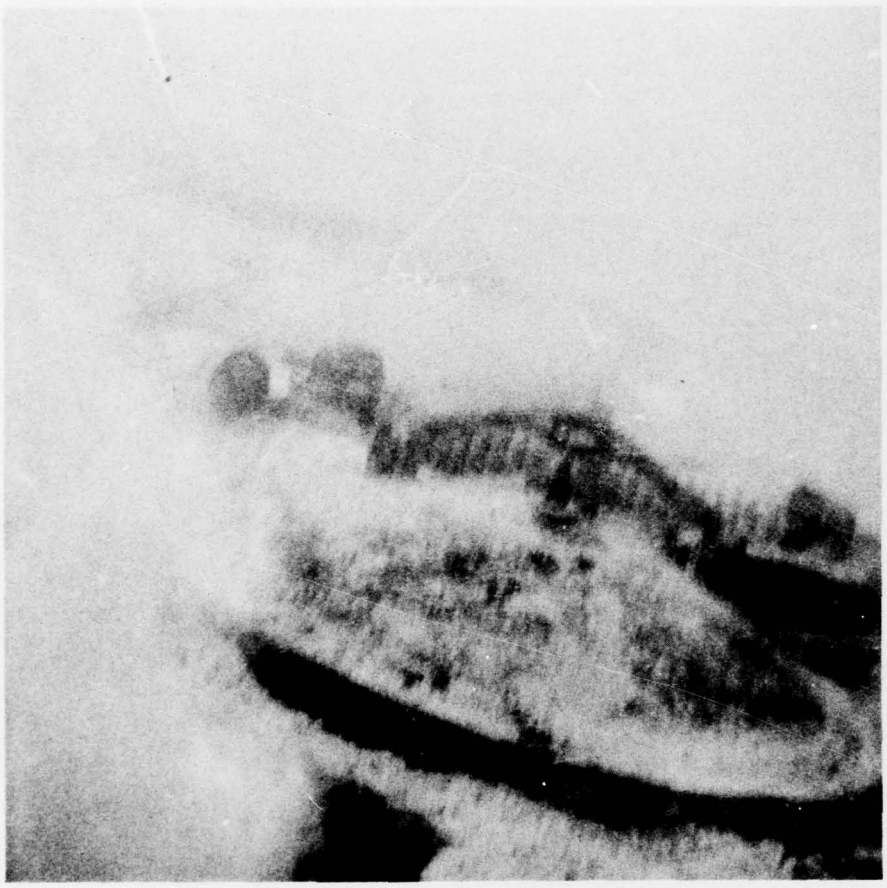
View, frame 30, port side, sharp longitudinal dent, about 18 ins deep, looking forward. ABCR Photo No. 6042-9.



View, frame 30, port side, sharp longitudinal dent about 18 in. deep, looking forward, showing crack in shell. ABCR Photo No. 6042-10.



View of starboard bow plane. ABCR Photo No. 6042-12.



Forward torpedo room escape hatch. ABCR Photo No. 6042-16 End

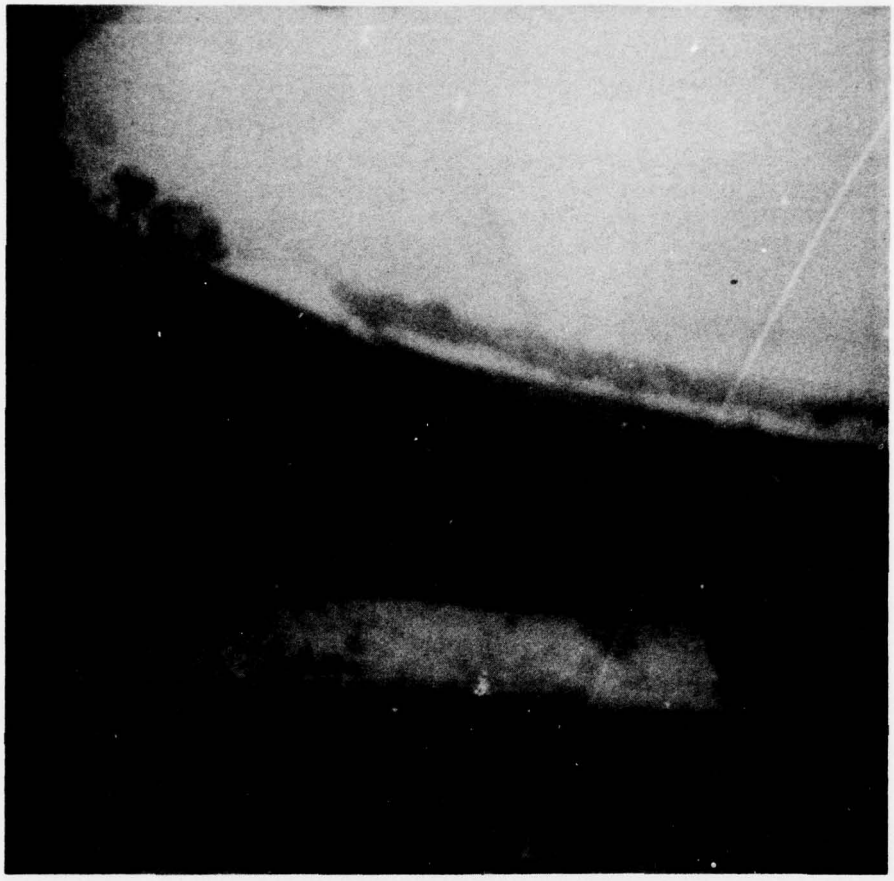
View of after engine room hatch, looking to port. ABCR Photo No. 6044-1.

View of after engine room hatch, looking forward. ABCR Photo No. 6044-2.

View of after engine room hatch. ABCR Photo No. 6044-3.

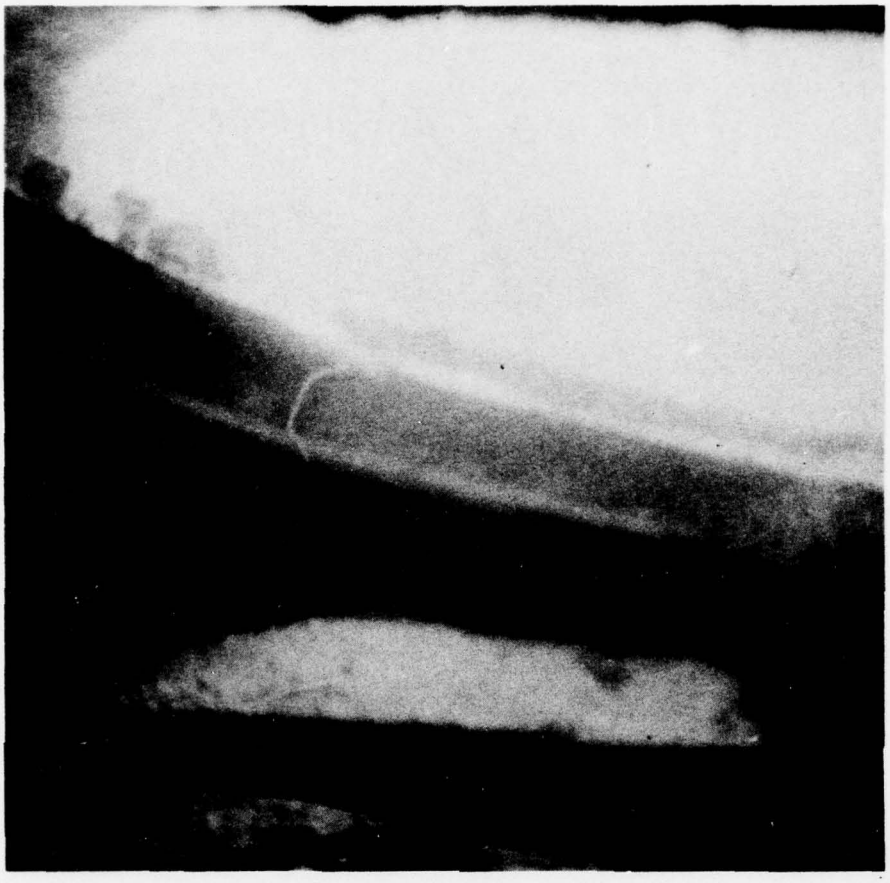
View of after engine room hatch, looking to starboard. ABCR Photo No. 6044-4 End.

Unsatisfactory view of top of main induction valve after wood deck had been removed from cigarette deck. ABCR Photo No. 6046-1.



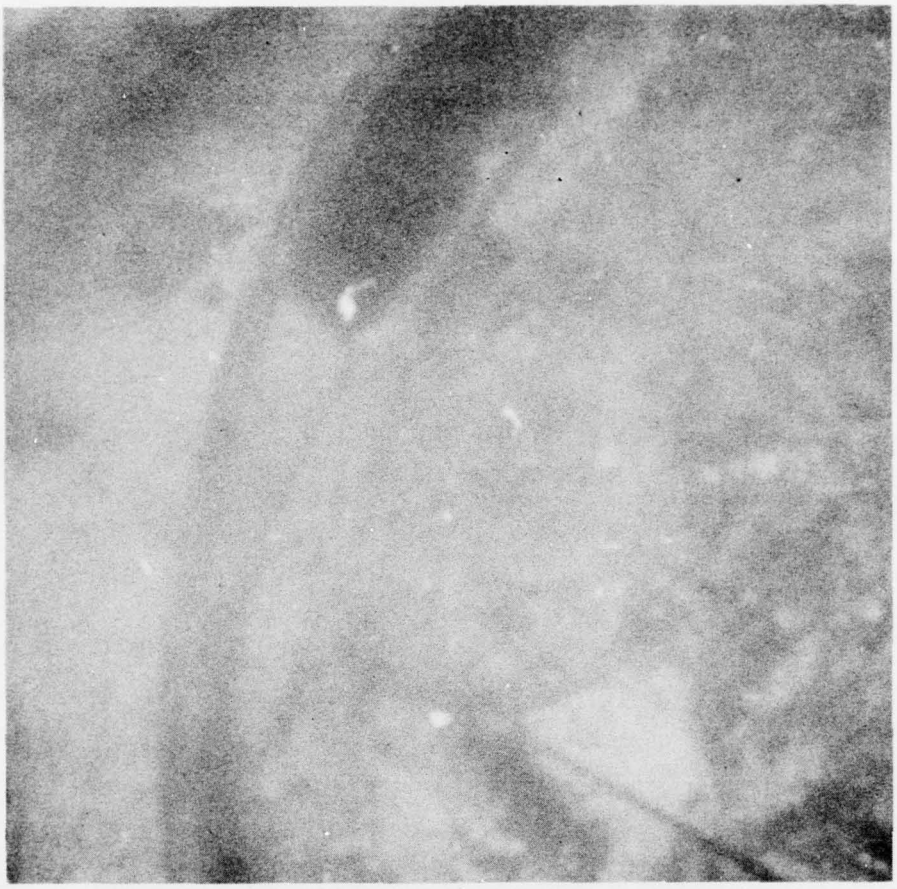
Close up of top of main induction valve looking aft. ABCR Photo No. 6046-4.

Close up of top of main induction valve looking aft. ABCR Photo No. 6046-5.

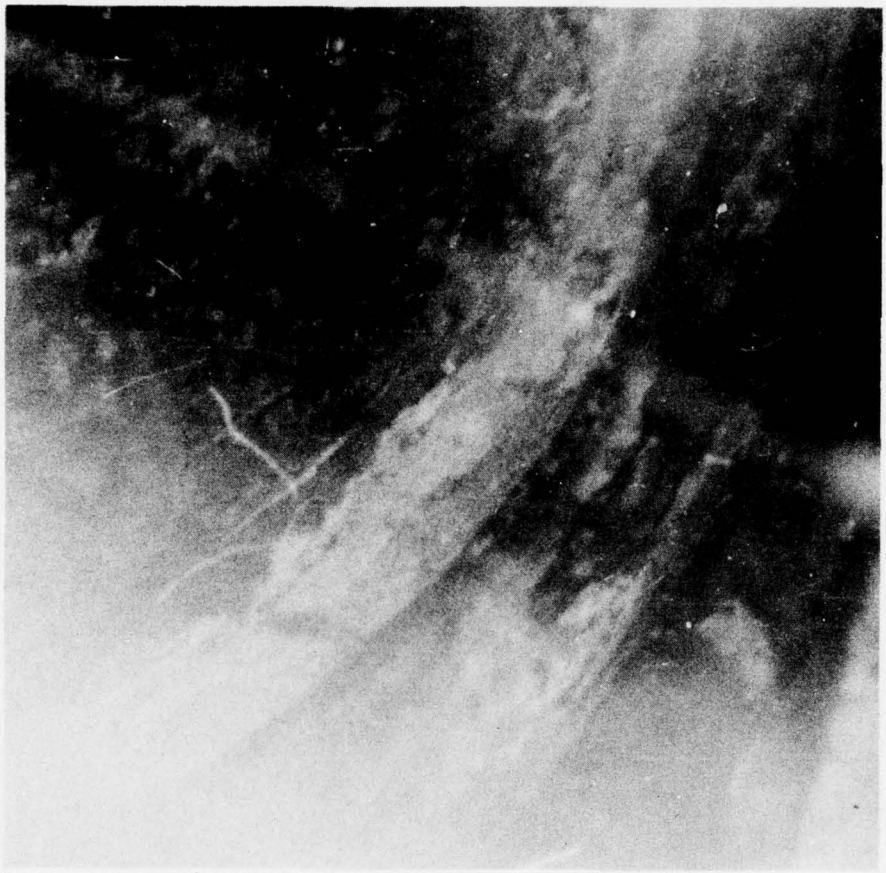


Close up of top of main induction valve looking aft. ABCR Photo No. 6046-6.

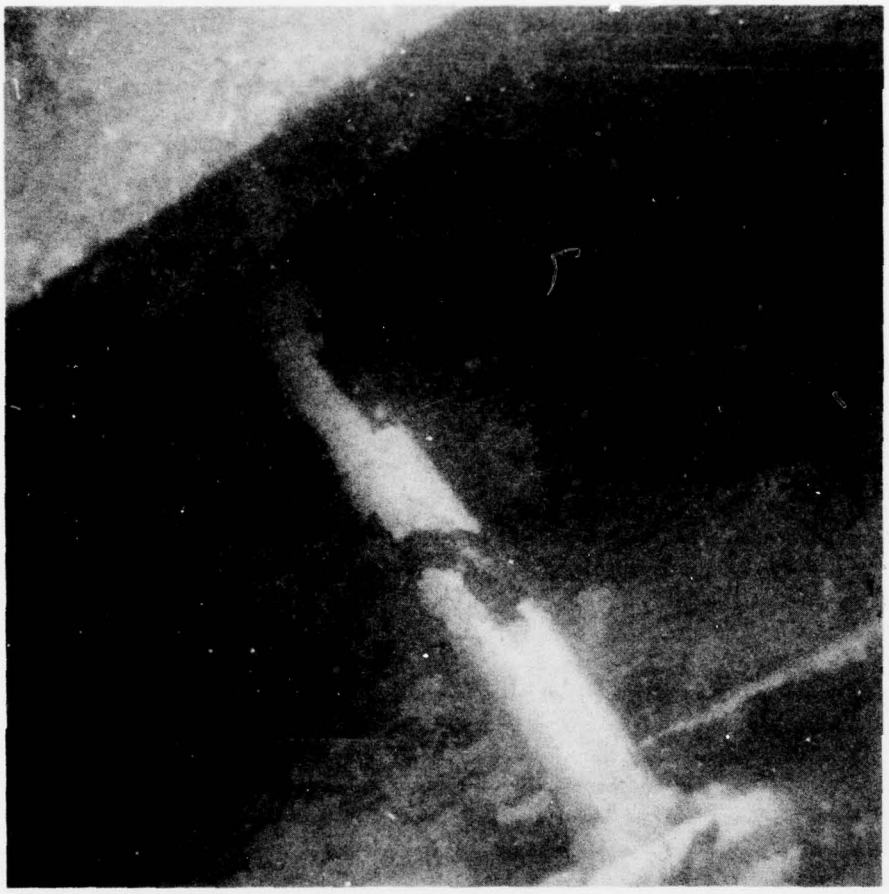
View of main induction valve looking down showing displaced top on seat. ABCR Photo No. 6046-7.



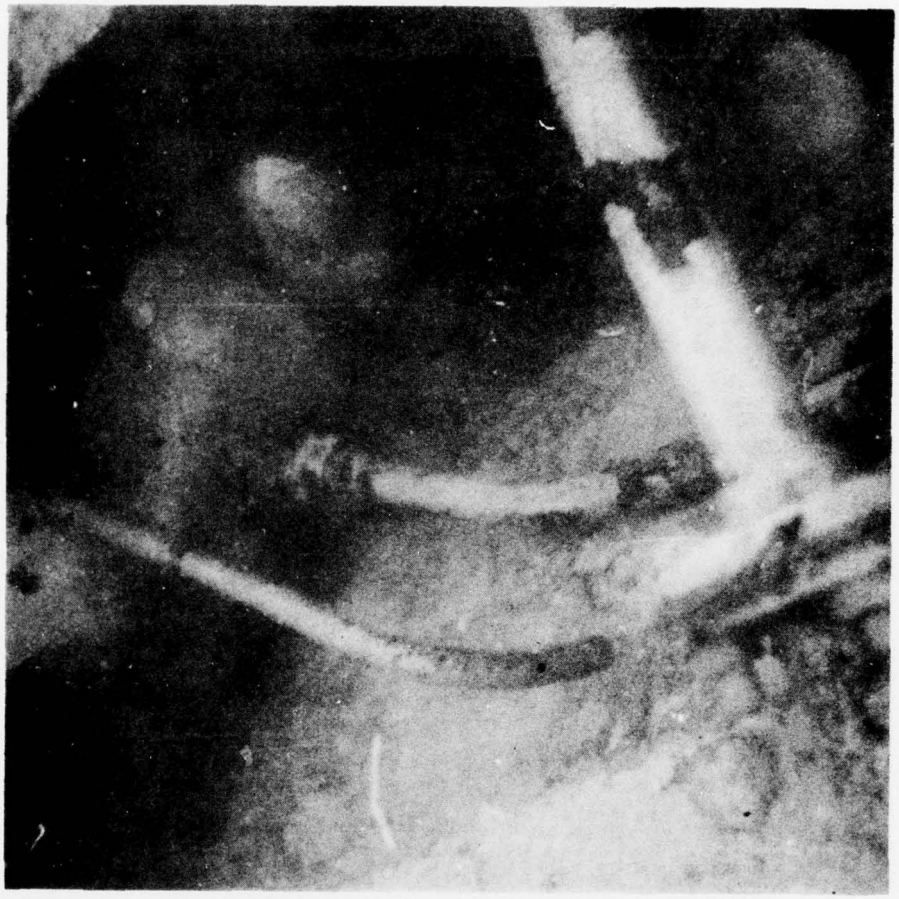
View of main induction valve looking down showing displaced top on seat. ABCR 6046-8.



View of main induction valve top showing permanent port displacement. ABCR Photo No. 6046-10 End.



View of unidentified piping, presumably 10 pound blow running fore and aft, about frame 82. ABCR Photo No. 6047-4.



View of one sound and one ruptured line, presumably hydraulic and piping believed to be 10 pound blow, about frame 82. ABCR Photo No. 6047-5.

View of unidentified piping, presumably 10 pound blow running fore and aft, frame 82, broken and sound smaller piping presumably hydraulic visible in background. ABCR Photo No. 6047-6 End.

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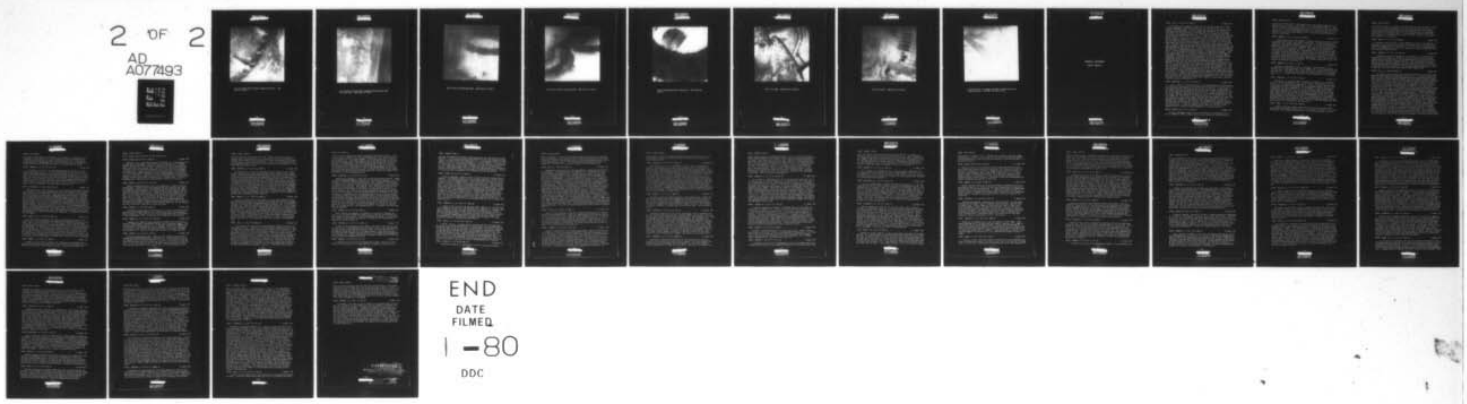

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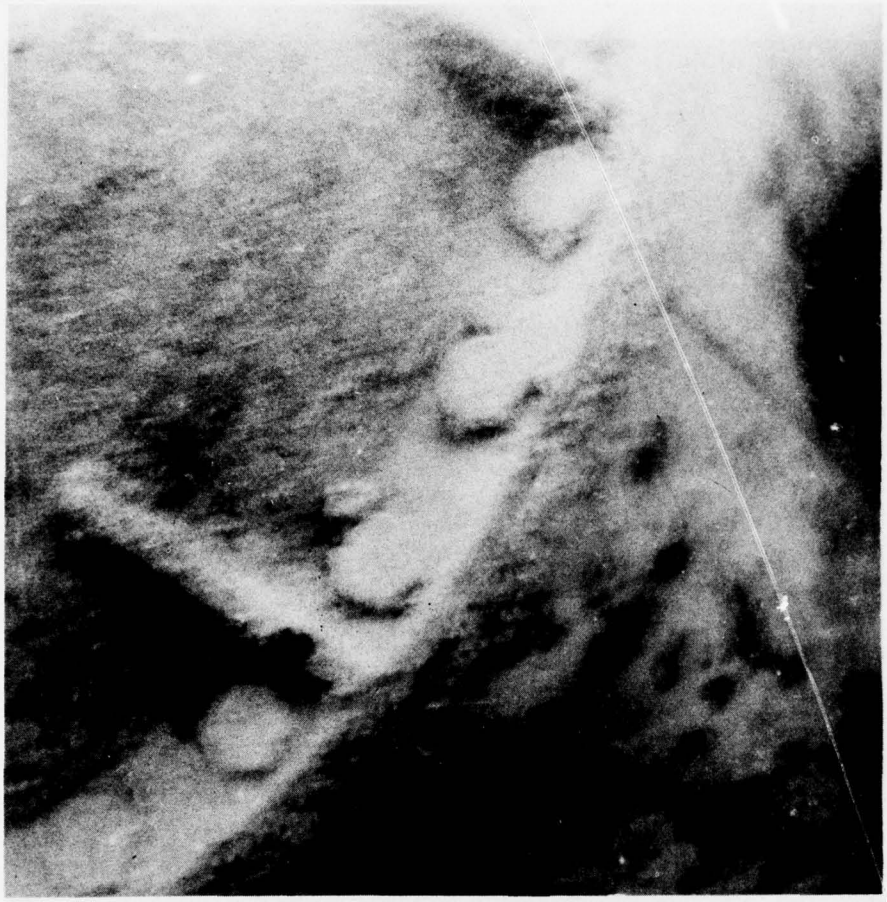
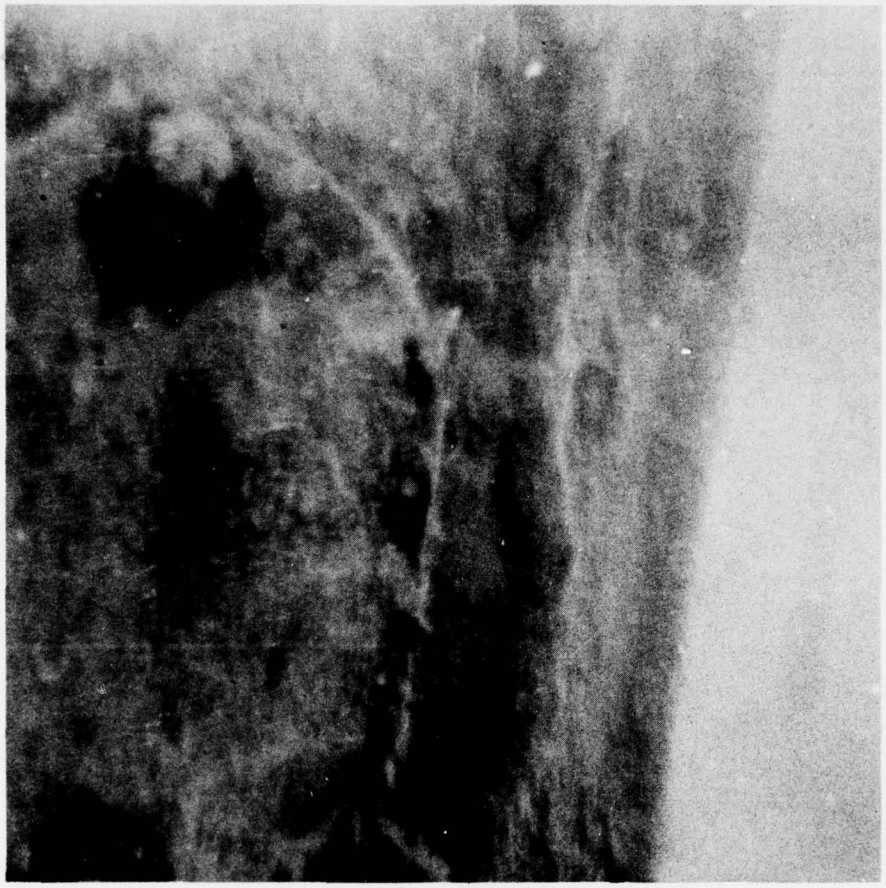
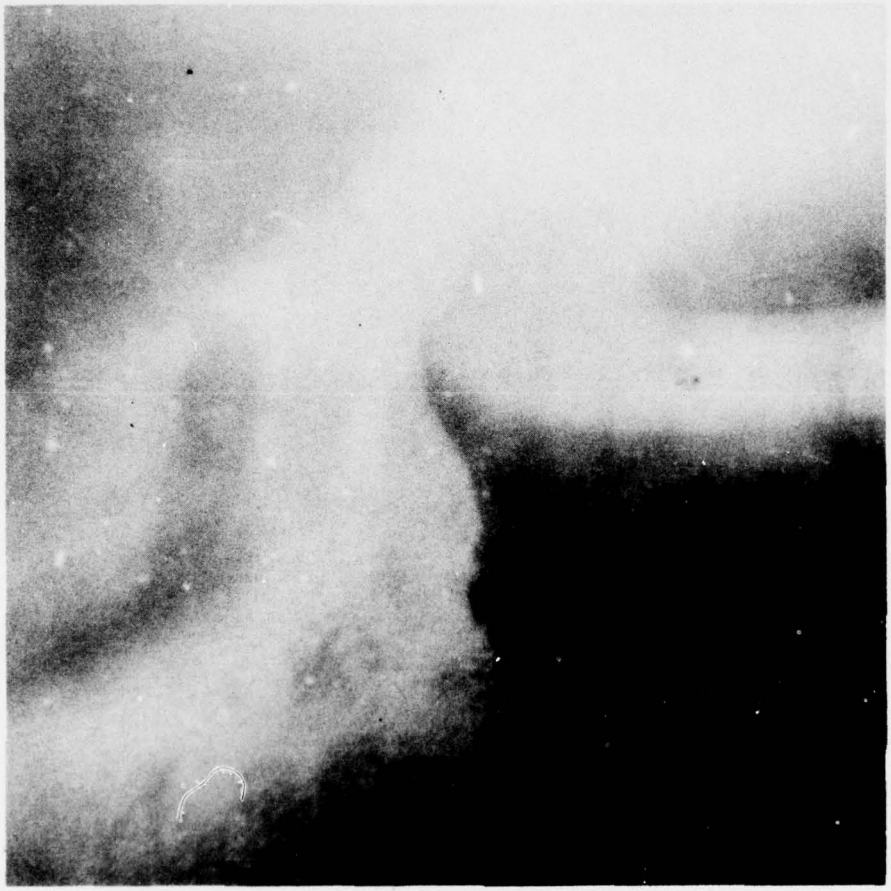


View of forward edge of shears looking from bridge. ABCR Photo No. 6048-6.

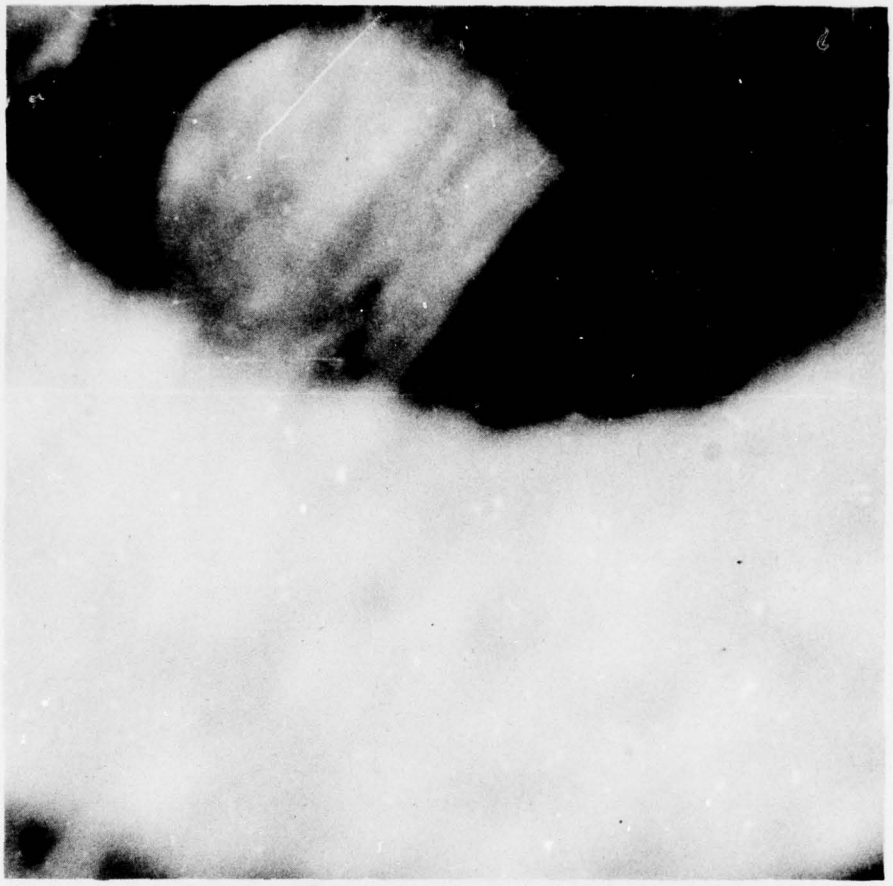


View of after periscope shear showing dented hand hole plate on forward side. ABCR Photo No. 6048-8.

View of top of #1 periscope shear. ABCR Photo No. 6048-9.

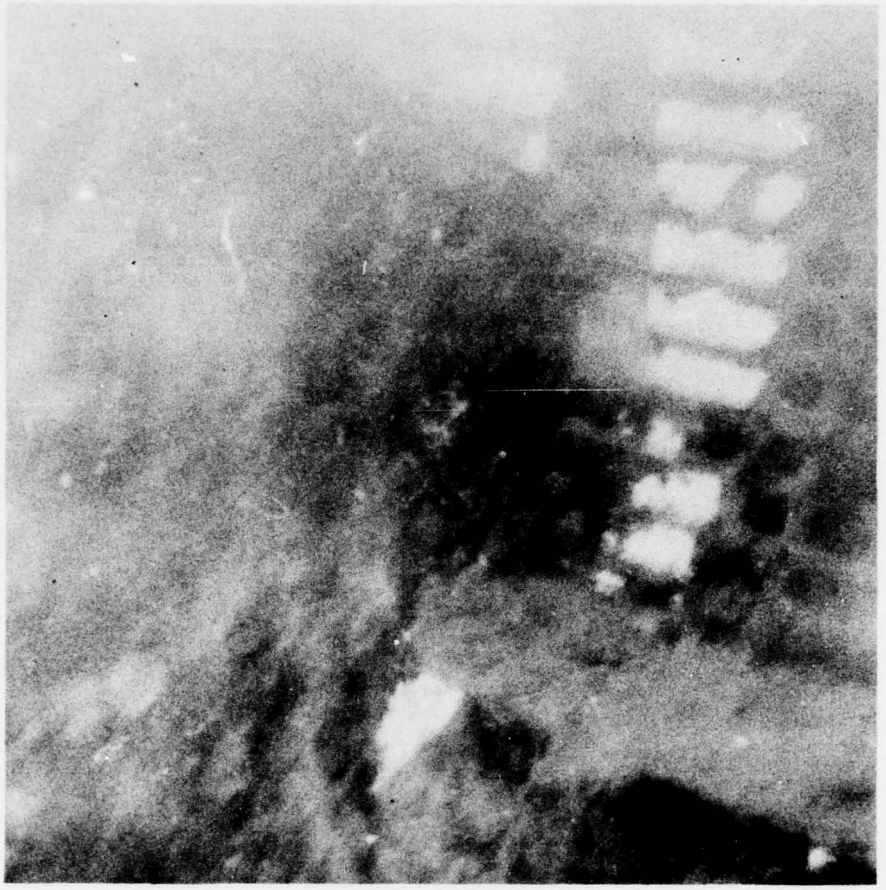


View of top of after periscope shear. ABCR Photo No. 6048-10.



View of forward periscope looking down. ABCR Photo No. 6048-11.

View of SJ Radar. ABCR Photo No. 6048-12.



View of SJ radar. ABCR Photo No. 6048-13.

Unidentified view of damaged equipment on bridge believed to be gyro repeater. ABCR Photo No. 6048-15 End.

[redacted]

ANNEX C: . PILOTFISH

Divers' Reports

[redacted]

DIVER: GAY, G. L. 283 36 58, MM1, DO 5 August 1947

I descended on the stage with instructions to look around and try to locate submarine Pilotfish. The stage stopped a few feet from the bottom and I still could not see any wreckage. I left the stage and descended to the bottom on the descending line which was a line to a grapnel that had hooked into something on the bottom. The bottom was fairly solid except for a soft spot here and there. Visibility while walking was about 6 ft. I followed the grapnel line over the bottom and soon noticed the hull. At a glance I knew it was a submarine and reported same to topside. I was told to walk along the side so they could tell which way she way lying with respect to the ship. I walked along the side for about 20 ft. and the bottom started downward into quite a hole so I climbed up on the sub and came aboard just a couple of feet forward of the recess in the deck for the marker buoy. I walked along a few more feet and saw the after torpedo loading hatch. I then came upon a cleat and then saw the aft torpedo room escape hatch, then the capstan and then the large stern chock. I knew definitely that I was on the stern of the boat and had been walking on the port side. I turned around and walked forward again. I saw two salvage fittings and called out the markings to topside. I was told I was at frame No. 88 and the two fittings were MBT No. 6D and salvage air, after engine room, high. I continued on forward to just past the after engine room hatch. The boat seemed to be at about 25 to 30° list to starboard and very slightly up by the bow. All of the deck seemed to be in good condition. All hatches were closed and looked in excellent shape as well as the superstructure deck around them. The side that I had walked along from about frame No. 113 to frame No. 104 appeared in good condition, with the superstructure deck about 10 ft. off the bottom. My time ran out as I passed the after engine room hatch so I went back to the cleat at frame No. 112, where I had secured the descending line. The line ran across the deck from the cleat and on over the starboard side. I did not see the grapnel. The line tended from the ship to the cleat at almost 90° to the sub's side. I estimate that the Coucal and the submarine were lying almost parallel to each other. I found no salvage hoses, wire, or lines on top of the boat except for an old 15 lb. grapnel, that hung on the side with about 1/4 in. chain on it, at about frame No. 104. I pulled this down when I climbed up on the side. There were no lines, wires, or chains on the stern chock, capstan or cleats that I had seen. Visibility on the sub was about 10 ft.

DIVER: GRIFFITHS, R. A. 376 53 72, GM1, DO 6 August 1947

I was to help No. 1 diver open covers in the superstructure and take pictures. The first one we tried was on the port side right at the start of the life rail. We could move this cover from side to side, but not fore and aft. It was caught in the inboard after corner and marlin spikes did not give enough leverage to pry it up. On the high side, frame No. 99, at the same spot I took two pictures of a dent in the deck plating. This dent was about 8 or 10 in. wide and approximately 7 or 8 in. deep. The dent seemed to run across the ship, but I'm not sure of it. Further forward No. 1 diver found a place where the cover was already up or away. The cover was just forward of this recess. I didn't get a very good look at it. It was about 40 ft. forward of the starboard side descending line, or about 35 ft. from the start of the port side life rail. No. 1 diver took pictures of this spot. I tried to look at the edge of the hole to determine if it had been torn free or just knocked over. I could not determine how it came off. The rest of the plating on which I walked or traveled appeared to be in good condition.

DIVER: GORING, Carl 321 22 31, CBM, DO 6 August 1947

Diving on Pilotfish, purpose of dive was to secure two descending lines to deck of submarine. When I reached bottom I landed near after escape hatch, but

DIVER: GORING (CONT'D)

could see no damage to same. Saw a small hole in deck between escape hatch and capstan about 8 in. square. In this area the deck was slightly pushed in. After receiving descending line from topside we took it forward and secured it at frame No. 85 to a valve wheel amidships and then went aft to frame No. 112 and threw off grapnel line. We then went forward and secured the second descending line to a stanchion in center of deck at frame No. 100. Time was up on the bottom and we came up to first stop.

DIVER: DENISON, H. D. Jr. 283 15 91, CBM, DM 6 August 1947

I landed on the deck of the submarine aft about frame No. 100 with the camera. While being tended by the other diver, I started aft. The amidship lifeline is rigged aft to the torpedo loading hatch. The hatch is closed. The marker buoy is missing. Going aft I noticed the escape hatch. It is closed. The entire submarine is on about a 30° list to starboard. The superstructure from frame No. 121 to frame No. 125 is missing. There is a large dent in the whaleback on the starboard side about frame No. 128. From frame No. 128 aft the bottom is nearly level with the top of the submarine. Coming forward, I inspected the port side for damage. Found superstructure badly bent at frame No. 85 from the pressure hull across the entire deck to the other side and took pictures of it. Also took pictures of engine room hatch and torpedo loading hatch. About frame No. 80 took pictures of loose plates in deck gratings. The torpedo loading skid is gone. Returned to descending line and came up.

DIVER: CREDLE, C. M. 262 36 33, CMM, DO 6 August 1947

Diver No. 2 assisting diver No. 1 in removal of portable plate to get to pressure hull to take pictures and look for damage. No. 1 diver removed plate and took pictures. I saw manhole which looked intact, also two hand holes open just above the plate. The deck was also pushed down a very little bit, I would say no more than 1 in. Visibility was 10 ft. and this was about frame No. 99, starboard side.

DIVER: BOSTWICK, E. E. 316 56 01, CBM, DO 7 August 1947

Went down as No. 1 diver, landed on submarine at frame No. 88. Walked aft to end of lifeline at frame No. 100. Gave No. 2 diver my lifeline and air hose. Went aft until I reached after escape hatch. Started to take pictures but camera didn't work. Returned to descending line and got another camera. Went aft to escape hatch and took two pictures of it, one forward, one aft looking from port to starboard. The hatch looked to be in good condition. Went aft to capstan which was at frame No. 119. Took two pictures of deck plating missing on starboard side, also took two pictures of deck plating missing on port side of capstan. Walked aft to frame No. 121 and slid off starboard side of sub. Started walking further aft and was told to return to my descending line. Coming back I ran across a hole at about frame No. 120 right under the name Pilotfish. The hole seemed to be about 2 ft. wide and 3 ft. deep. Was pulled back up on sub by my tender and returned to my descending line and started up.

DIVER: PRICE, J. F. Jr. 295 26 50, CBM, DO 7 August 1947

I landed at frame No. 112 and started aft on the deck. There was a small plate out of deck at about frame No. 119. Then I went over the side to the bottom at frame No. 121 and started aft from there. The plating was dished in about 6

DIVER: PRICE (CONT'D)

in. between the frames. I reached a soft patch aft which was also dished in about 3 in. Could not take pictures as it was too cloudy from sand at that time. I got back on sub and started forward. I took several pictures of aft torpedo loading hatch, then continued on forward. The deck was broken up along frame No. 98 and I took pictures of that. I started taking pictures of engine room hatch frame No. 94 to frame No. 95 and took 3 of them. I was told to return to my descending line and come up.

DIVER: MOORE, C. B. 337 30 67, CPHM, DO 7 August 1947

Descended on aft port cleat. Found submarine with a 30° to 45° starboard list. Walked aft to the after chock, slid over the starboard side and noticed a small indentation, approximately 2 ft. diameter and 1 or 2 in. deep. This indentation is about 3 ft. starboard and 2 ft. aft of the closed chock. No other damage was seen as I covered no other territory.

DIVER: SCHNEPF, R. J. 621 10 20, GM2, DO 7 August 1947

I reached the deck of the submarine first and when No. 1 diver came down, I followed him aft to frame No. 121 where I took his lifeline and air hose and camera cable in hand and tended him. The sub seemed to be on an even trim fore and aft but was listing to starboard about 45°. The deck plating for the most part was in good condition except for one dent about 2 ft. wide and 1 ft. deep extending athwartships all the way across the deck and down the port side as far as I could see, visibility being 5 ft. This dent was located at frame No. 97. One access plate was loose at the escape hatch to after torpedo room.

DIVER: GAY, G. L. 283 36 58, MM1, DO 7 August 1947

I descended to the wreck with instructions to locate hole on after end starboard side about frame No. 125 and take pictures of it. I landed on deck of submarine at about frame No. 88 and started aft along port side, passed engine room hatch, marker buoy recess, torpedo loading hatch, aft torpedo room hatch, capstan and came to stern chock. Here I could look directly down on the hull. Visibility about 6 ft, the hull here aft of chock was dented in between squares formed by transverse and longitudinal frames and gave the appearance to the hull as being pock marked. These dents were from slight to a depth of 6 in. or more severe forward on starboard side. I took pictures of this and then went down on hull aft of chock and found a crack in hull about 4 ft. down from centerline at about frame No. 125. The crack ran fore and aft, was about 4 in. wide in middle and about 8 to 10 in. long. Lower part of crack was pushed inboard. I could not find anymore cracks or holes in this area and took picture of the crack. I was then told to check manhole at about frame No. 127 1/2. This manhole cover was not split or cracked although it was bent in. The edges appeared tight enough to be watertight. When I came forward to the superstructure at the stern chock, I discovered that the superstructure from frame No. 121 to frame No. 125 was missing. I examined the hull here and could tell places where it had been attached. The hull here was in good condition outside of being slightly dented. I took one picture of the superstructure aft of the chock. I was then told to look for places in superstructure deck where decking could be removed to inspect under it. I could not find any such place that could be unbolted or lifted up until I got to frame No. 94. Just forward of the engine room hatch there was a portion of the deck about 2 ft. wide and 4 ft. long that had two holding down bolts on the after end and hinges on the forward end. As the bolt heads were countersunk in the deck I could not use

DIVER: GAY (CONT'D)

the wrench I had brought with me and was told by topside to look around the conning tower for this wrench. As I went forward I noticed the decking bent in several places and brought up a sample for radioactivity test. I reached my descending line and was brought up. At the 30 ft. stop a tool bag was sent down for my tools and I put the sample of metal in it also and sent it topside.

DIVER: CRESSEY, O. R. 208 75 17, M1, DO 7 August 1947

I descended to the deck of the Pilotfish and went aft behind No. 1 diver while he was taking pictures. I stopped and inspected the deck around the after torpedo room escape trunk while No. 1 diver was taking pictures a little aft of that. The hatch itself was all right but the bell seat was wrinkled in one place toward the port side of the sub. We then went forward to about frame No. 99 and attempted to open a portable deck plate. One side was already undogged and the hinge on that side was broken but the other side was holding fast. Our time on the bottom ran out before we were able to get it open. The sub has a list of about 35 to 40° to starboard. The trim seems to be about even.

DIVER: WILKINSON, J. P. 658 38 06, SF1, DO 7 August 1947

Descended to port side, frame No. 113. Went forward looking for deck plating which I could get up. Found one hinged plate 2 or 3 ft. forward of after torpedo hatch just about on the centerline. Could not raise this plate. Went forward to lifeline stanchion on center line. Found hinged plate just forward of this stanchion. This plate was loose and the hinges were broken on port side. Tried to pry starboard side loose but could not. The deck plating on each side of hinged plate was pushed in. No. 2 diver took pictures of this damage. Went forward on center lifeline. Came to place on starboard side where a section of deck plating had been removed. On the hull at this place was a removable plate about three ft. square. The nuts holding this plate were 1 1/4 in. A 6 in. pipe running forward offset at this plate and went around it on the inboard side. On the offset of this pipe it was flattened out on top. Took three pictures of this section. I did not inspect port side thoroughly but believe the hinged plate there was the same as on the starboard side. This section I have just described is on frame No. 85 as near as I can figure.

DIVER: MOORE, W. M. Jr. 371 96 58, BM1, DO 7 August 1947

No. 2 diver and I descended to the deck of the wreck and went aft to the closed chock. I took one picture of the whaleback looking down through the closed chock. This chock is at frame No. 121. From there we started working forward looking for portable plates to raise and take pictures of the valves and pipes and hull underneath. At frame No. 120 I found a plate off and took two pictures of the hull underneath. One looking from port to starboard and one looking from forward to aft. At frame No. 111 I found another plate on the port side but it had been spot welded in one spot on the after end. At frame No. 98 I found another plate which was loose on the port side but was jammed on the starboard after corner. No. 2 diver and I were working to open this plate when we were ordered to ascend. The whole wreck in the vicinity where I was had a list of about 30 to 35° to starboard.

DIVER: CREDLE, C. M. 262 36 33, CMN, DO 7 August 1947

Landed on deck of wreck at frame No. 85. Staying at the descending line, I had no chance to examine but about 15 ft. on each side of the descending line from midships, the wreck was listed between 30 to 35°. There were two small deck

DIVER: CREDLE (CONT'D)

plates missing between frames No. 80 and frames No. 85.

DIVER: GORING, Carl 321 22 31, CBM, DO 7 August 1947

Purpose of dive to open portable plates at frame No. 98, to take pictures of pressure hull or any damage. Left surface with tool bag and tools. Reached bottom; visibility 10 ft; went forward to frame No. 98; tried to open portable plate, after some time, got same open. Took pictures of pressure hull and what I believe to be a valve going into pressure hull. I could not see any damage to pressure hull or valve in this area but the portable plate I had opened and deck in this area, toward starboard side, were slightly pushed in to a depth of 4 to 6 in. in one place. I was told to return to my descending line but before I reached it I was told by topside that No. 2 diver had fallen off of wreck and was using my lifeline and air hose to climb back up. I waited for No. 2 diver at descending line. They took him up first and then I came up to first stop.

DIVER: PLEMEL, L. M. 328 35 47, CSF, DM 7 August 1947

Landed on submarine and went aft to the escape hatch. A plate on the port side was open. Looked for one on the starboard side but there was none there. Went forward to the place where the marker buoy was and opened one just about 5 ft. inboard from there (frame No. 105). Went forward to about frame No. 98 and opened one from there and then went to frame No. 91 and opened another one. We had a lot of trouble because the deck on the inboard side was pushed over the dog. I put the wrench on at an angle and had No. 2 diver step on it and force the wrench on. I had to take the dog all the way off in order to open that plate. I could see good, about 40 or 50 ft. Around the descending line the coral dust is all pushed or washed off by divers sliding around. When I was all the way aft by the hatch, I could see where the deck slopes off onto the pressure hull aft of the chock. That part of the deck is gone.

DIVER: MILLER, F. F. 372 28 25, BM2, DO 7 August 1947

I descended at about frame No. 88 and went aft to the end of lifeline about frame No. 100. At about frame No. 90 I noticed a hole where a plate was gone. When I returned to frame No. 113 I could see the escape hatch and it looked like it was in good shape. Then I returned to the descending line and started up.

DIVER: DENISON, H. D. Jr. 283 15 91, CBM, DM 7 August 1947

I landed on the submarine nearly amidships at frame No. 88. My job was to inspect fittings beneath the superstructure and look for any other damage. With the other diver tending I started aft. At frame No. 93 amidships, inspected one hole and found a 3 in. fueling line. Noted no damage. Sent for the camera and took pictures. About frame No. 98 found another fuel oil fitting. No damage. Took pictures of it. Sent up the camera and returned to the descending line.

DIVER: JAROSZ, W. P. 207 24 97, CSF, DO 8 August 1947

Diving on submarine Pilotfish. Purpose of dive, taking pictures inside of portable plate near starboard cleat at frame No. 81. Inside of hole was a 6 in. line shaped like a 90° elbow and was about 2 ft. long. It seemed like a cooling jacket as pipe going down into submarine was about 2 1/2 in. This line came from aft. A 3/4 in. line comes off the 6 in. runs under same and goes down into sub, this line was loose and had a 3/4 in. union on it. A 1 in. line about 1 1/2 ft.

DIVER: JAROSZ (CONT'D)

long comes from aft and goes down into sub. Forward of these pipe lines is a portable plate 1/2 in. thick about 2 ft. long and 1 ft. wide, it is secured by 1 in. nuts. Took pictures of hole at frame No. 97 where descending line is secured to valve wheel. Inside was a 4 in. gate valve. A 3/4 in. line comes from aft and leads down below valve. A 3/8 in. line which seems like tubing leads aft to 4 in. line, this line also was loose.

DIVER: BOSTWICK, E. E. 316 56 01, CBM, DO 8 August 1947

Went down as No. 1 diver and took camera with me. Landed on sub at frame No. 88. Waited for No. 2 diver and gave him my lifeline and air hose. Walked forward to frame No. 86 where plating had been taken off and took three pictures of the vent riser and pipes that were underneath. Went on the starboard side at frame No. 81 and took two pictures of the side where it was dented in. These pictures were taken where the exhaust for the after engine room is. Went back up on submarine and walked forward to frame No. 76 where another deck plating had been taken off. Took three pictures here of the vent riser and pipes connecting to it. Was told to check over where the vent risers were and see if any damage was done. Didn't find any damage on the one at frame No. 76. The one at frame No. 86 had one 3/4 in. pipe that was a little loose when I shook it. Walked forward until I came to conning tower. Was told to look up and look for damage on conning tower. Started up ladder to get closer, looked at it and my time was up. Returned to my descending line and started up.

DIVER: PRICE, J. F. Jr. 295 26 50, CBM, DO 8 August 1947

I was No. 2 diver, but I had the camera. Hit the sub at frame No. 99 and went aft on the port side until I came to closed chock then went over on pressure hull and took two pictures of plating below me at frame No. 121. It was dished in about 6 in. or more and I thought there might have been a hole in the hull but there was none. Started forward on bottom and took pictures of a valve at frame No. 120 or frame No. 119 on hull. Started forward again and took two pictures at frame No. 101. All of this is of pressure hull except the two pictures of exhaust, one of top half and the other the bottom. Then I got on the pressure hull itself. I started forward which was O.K. as far as I could see, but it had a lot of sand on it and I couldn't see it all. I continued forward on pressure hull and took pictures of dished in place at frame No. 71 or about. Then continued until I was along side of conning tower, then told to return to my descending line.

DIVER: GAY, G. L. 283 36 58, MM1, DO 8 August 1947

I left surface with instructions to photograph and inspect from aft to forward along port side. I landed on the bottom alongside starboard side of wreck. I climbed upon wreck and when camera came down I untied it and started aft. When I got back to the stern chock I took pictures of small tear in hull that I had previously mentioned in my other diving report. There were slightly dented places in the hull and I took a picture of them. I found more dents at frame No. 119 and took another picture. I found a little more severe dents at frame No. 109 and took pictures. At frame No. 103 the top of the ballast tanks were bent badly; took pictures. Also the same at frame No. 94. There was a bad tear in the side of the superstructure at frame No. 78, I took one picture of this at an angle looking forward. At frame No. 50 I found the largest dent and some of the transverse frames also appeared to be bent. I took one picture looking

DIVER: GAY (CONT'D)

slightly down and forward and another looking directly down at the dent. I continued forward to frame No. 23. The superstructure side was very badly bent so I took a picture of this looking forward. At this time I was told to return to my descending line. I came back along the top of the ballast tanks to the after part of the conning tower. I came back up on deck and followed my lifeline and air hose to the descending line. While walking along the top of the ballast tanks on port side I noticed that the ballast tank was covered with coral dust to a depth of 18 in. in some places. I saw the aft engine exhaust but could not see the forward one as the coral dust had it covered. The after one was slightly egg-shaped. All my pictures of the wreck except for first two were taken of the port side of the hull and superstructure.

DIVER: WILKINSON, J. P. 658 38 06, SF1, DO 8 August 1947

Descended on Pilotfish to inspect hull on port side and take pictures. Landed on wreck at stanchion, frame No. 99 walked aft to stern chock, frame No. 121. Slid down hull to bottom and started forward on port side. Saw first dished in place at frame No. 116, took one picture at frame No. 100 and frame No. 109, two dished in places took two pictures. From frame No. 109 to frame No. 105 three dished in places, took three pictures. From frame No. 105 to 89 no dished in places. Between frame No. 88 and frame No. 87 and 86, two large dished in places. Took three pictures of this. Next dished in place was between frame No. 79 and frame No. 80. Took one picture. Next one between frame No. 67 and frame No. 68, took one picture. From frame No. 61 looking forward as far as I could see was dished in between each frame. Giving it a washboard effect. Took one picture, and had no more pictures in camera. The bottom along the side of the wreck was rough and full of holes. These holes varied from 1 ft. to 5 ft. deep. My vision on the bottom was about 10 ft. At frame No. 121 only 6 ft. or 7 ft. of the wreck was out of the sand. As I came forward, more of the sub was exposed at frame No. 61. She was pretty well out of the sand. Looking up at frame No. 61, I could not see any part of the superstructure. This completed my dive. I returned to my descending line and ascended.

DIVER: SCHNEPF, R. J. 621 10 20, GM2, DO 8 August 1947

When I reached the submarine I followed No. 1 diver aft to frame No. 121 where I took his lines in hand and tended him as he went over on the bottom and went forward to take pictures. I got as far forward as frame No. 70 and the deck was in good condition except for one dent, 2 ft. wide and 1 ft. deep extending athwartships around frame No. 87.

DIVER: GRIFFITHS, R. A. 376 53 72, GM1, CO 8 August 1947

Cressey started taking pictures at frame No. 59 where he went over the port side of the sub. I was tending him from the deck of the sub. The decking around the port side of the conning tower was good, except in the forward port side. It had numerous breaks here, but all in the same vicinity. There wasn't any life rail near where the forward 5-inch gun should be. The pictures ran from frame No. 59 to frame No. 35. I didn't see any other wreckage or damage as the tending and giving of recognition marks kept me busy.

DIVER: CRESSEY, O. R. 208 75 17, M1, DO 8 August 1947

I descended to the deck of the Pilotfish with a camera. When No. 2 diver landed we went forward to the conning tower and I dropped to the bottom on the

DIVER: CRESSEY (CONT'D)

port side and worked my way forward along the pressure hull inspecting and taking pictures. I took three pictures at about frame No. 53 where the pressure hull was dished in on either side of the frame about 6 in. I took another picture at about frame No. 45 where it was slightly dished in. At around frame No. 33 the hull was buckled in about 12 in. and this ran forward and into the bottom at about frame No. 26. This buckle was so abrupt that it appeared as though it was just above a deck or a longitudinal beam. There was a weld that ran along about 8 in. above the bottom of the buckle and there were no signs of its having been weakened. Time on the bottom was up so we returned to the descending line and started up.

DIVER: GORING, Carl 321 22 31, CBM, DO 8 August 1947

Diving on Pilotfish. Purpose of dive, to take pictures of starboard side of submarine. Left surface, landed on sub at stub mast, went aft to chock and went over side to bottom, started forward. After going forward about 50 ft, I had to go back up on deck of submarine so No. 2 diver could get my lifeline and air hose in hand to tend me. Landed on bottom again along side of sub. Started forward again. There was very little of the pressure hull showing as it was covered up. Still haven't found any damage either to pressure hull or superstructure. Found crack in pressure hull and superstructure at forward edge of main engine muffler at frame No. 85. Took pictures of crack in superstructure but couldn't take pictures of pressure hull because of silt. I could feel crack in pressure hull. Couldn't tell how large it was. Started on forward, took pictures of portable plate that was open; salvage fitting at after edge of plate was marked with 4 lugs. All the pipes on pressure hull in this area, frame No. 82, were O.K. Got as far forward as the forward edge of the conning tower, was told to return to my descending line.

DIVER: DENISON, H. D. Jr. 283 15 91, CBM, DM 8 August 1947

I landed on the after 5"/38 cal. gun mount about frame No. 64. Took the angle of the submarine there and had a 25° starboard list. Went aft to the engine room hatch at frame No. 85 and took angle and found 25° starboard list. Took the camera and being tended by the other diver, went over the starboard side to inspect and photograph damage. Took pictures of break in ballast tank at frame No. 80. Photographed damaged superstructure between frame No. 60 to frame No. 40. Photographed dents in starboard side of pressure hull at frame No. 35. Came aboard and returned to descending line and came up.

DIVER: PRICE, J. F. Jr. 295 26 50, CBM, DO 10 August 1947

I was No. 1 diver. I hit main deck of sub port side aft of conning tower. My job was to go forward starboard side of conning tower to the bow vents and try and get the angle on list of sub there. On my way there, I noticed one stanchion of lifeline carried away and the wooden deck was broken in some places. There was salvage hose on the deck that helped me get along the deck but I don't know if they were hooked up or not. There was about 4 or 5 in. of sand on part of steel deck and the only clear place I could put my inclinometer was on No. 1 bow vent. I took two or three readings which were all 27° to starboard. Then I started back to give the other diver a hand on the hatch which he was working on. In just a few minutes I was told to return to my descending line to come up.

DIVER: MILLER, F. F. 372 28 25, BM2, DO 10 August 1947

I descended at frame No. 67 and took No. 1 diver's lifeline and air hose

DIVER: MILLER (CONT'D)

and we started aft. I went aft as far as the stub mast and then No. 1 diver went over the starboard side and started forward. When I got about even with the conning tower, I noticed there were many holes in the superstructure deck and forward of the conning tower so much of the deck was gone that it was hard to walk. I helped No. 1 diver back on top side and we turned to the descending line.

DIVER: GAY, G. L. 283 36 58, MM1, DO 10 August 1947

Descended with instructions to take inclinometer to forward gun platform and get a reading. I landed on the wreck at frame No. 61. I waited for my tender and went around the starboard side of conning tower and forward to the gun bed. I took a reading and found the boat to be listing about 25° to starboard and about 3 to 4° up by the bow. I got the camera from No. 2 diver and went around port side of conning tower. As I passed doorway in conning tower, I stepped inside to see if it was wide enough for a diver to get through. I went further aft to frame No. 59 and went over the side to the bottom and started walking forward on port side. At frame No. 54 there were some heavy dents in side between the transverse frames. I took two pictures here. I found another large dent at frame No. 47 and took one picture. At frame No. 42 there was a large wrinkle running transversely and looked like it stuck out about 4 in. I took four pictures here from bottom to where the superstructure came to the hull. Further forward at frame No. 38, the side was indented between the transverse frames; at frame No. 30 and forward for about 6 frames there was a sharp longitudinal dent in the hull. It was about 18 in. deep and the hull above the large dent had transverse dents between the transverse frames. The hull below the dent seemed in perfect shape. I took three pictures of this dent. One picture was at about frame No. 26 where there was a small tear in the metal at the deepest part of the dent. This tear was about 3 in. long. I went forward to frame No. 24 which was just aft of the bow plane and took another picture of a small dent. The bow plane was rigged in and too high to examine carefully. I was told that my time had run out and to return to the decending line.

DIVER: HESLOP, W. R. 238 83 78, BM2, DO 10 August 1947

Landed on sub at frame No. 62 and went forward on starboard side to forward torpedo room and escape hatch. Other diver inspected hatch and then went over the port side at frame No. 27 as I tended him. Went forward on port side to frame No. 7. The forward deck forward at frame No. 20 was covered with about 1 to 2 in. of silt and the after bow buoyancy tank vent was covered. Forward of frame No. 7 was pretty well cleared. The forward stub mast is still intact but with no lifeline between frame No. 10 and frame No. 15. Hauled other diver back on deck at frame No. 33 and returned to descending line.

DIVER: PLEMEL, L. M. 328 35 47, CSF, DM 10 August 1947

Landed on sub and went to the forward escape hatch. Went over the port side to the bottom. I went to the crack at frame No. 31 and started taking pictures as I went forward. I found another crack at about frame No. 10 and took pictures of it. The crack came up the pressure hull to the top of that plate and then went forward just where the decking was welded onto the pressure hull. The crack running fore and aft was not in the pressure hull. The stem does not look like it has a 25° list. It has a starboard list of about 10°. The pressure hull all the way forward from where I started at frame No. 31 has dents between frames. The dents are all about 3 to 4 in. deep. The first crack at frame No. 31 was about 1/2 in. wide. It ran from the bottom up to the superstructure bulkhead. The

DIVER: PLEMEL (CONT'D)

second crack at frame No. 10 came up from the bottom and ran up about 3 or 4 ft. It was about 4 in. wide at the bottom and came to a point at the top where the superstructure started.

DIVER: BOSTWICK, E. E. 316 56 01, CBM, DO 10 August 1947

Went down as No. 1 diver. Took camera with me. Landed on submarine at bottom of ladder going up on conning tower at frame No. 62. As soon as No. 2 diver got on sub I gave him my lifeline and air hose and started forward. Got to forward torpedo room escape hatch and then went over the starboard side at frame No. 25. Walked forward to about frame No. 16 and took two pictures of split plate in superstructure hull. This split was about 3 ft. long and 4 in. wide. It was split right where two plates come together. Was told to go back to the bow planes and look for hole inside. This hole was at after edge of bow plane and looked to be about 3 ft. high and 6 ft. long. I took five pictures on the outside of superstructure hull and three pictures from the inside looking out. Came back out and started forward. Saw the draft number on ship's side and the bottom of the No. 2 was just above the ocean bottom. Went on forward and looked at the stem from dead ahead. Looking from this position the bow of the ship seemed to have only 15° list to starboard. Went around to port side where port anchor chain came out of hawse pipe. This chain was tending up and down. Came back forward and took three pictures of torpedo tubes.

DIVER: MOORE, C. B. 337 30 67, CPHM, DO 10 August 1947

Descended to bottom of ladder that goes to the cigarette deck. Enroute forward on the starboard side the only damage noticed was in the decking, which is well broken. The bow of the sub seemingly does not have as much of a list as does the stern and midship. When tending No. 1 diver from the forward capstan, I could see no damage on the deck from there forward to the bow. On the ascent I could see no damage to the radar mast or the periscope mast. The periscope is missing.

DIVER: WILKINSON, J. P. 658 38 06, SF1, DO 10 August 1947

Descended at frame No. 67, port side, of Pilotfish. Went to starboard side and went forward around conning tower to forward torpedo loading hatch. Went over the side here. Went forward on bottom inspecting hull. Saw no damage until I came to starboard bow plane. Then I found a hole starting a few inches above the bottom edge and aft of the bow plane extending downward and widening out at the bottom. Took four pictures of hole. The water was cloudy by then so I examined the hole with my hands. It was 3 or 4 ft. high and about 5 ft. wide at the widest point. Went inside hole and could feel around plate like a hull or tank. Also felt a number of braces fastened to this inside plate but couldn't determine what they were. Went on forward, had very little vision and saw no damage. Came to starboard bow torpedo tubes. The upper tube and part of the middle tube were out of the sand. Saw no damage to tube doors. Took two pictures of doors. Went around bow to port tubes and saw no damage. Was ordered to come up and did so.

DIVER: SIMPKINS, L. E. 872 07 21, MOMM2, DO 10 August 1947

Descended on starboard descending line to the bottom where the line was secured to a cleat on the port side of sub at frame No. 68. Walked forward from descending line along starboard side of conning tower. Came to the forward torpedo loading hatch with deck skid still intact. Hatch was still dogged shut.

DIVER: SIMPKINS (CONT'D)

Walked forward seeing and inspecting sound gear. Was still intact and in fair shape. Walked forward to the companion way and found decking torn up surrounding the ladder. This hatch was also closed. Went forward to forward escape hatch and trunk. Hatch closed and covered with sand. Hand wheel is missing from this hatch. Moved on forward looking for good decking where I could take up my slack air hose. Saw marker buoy. Came aft to tend No. 1 diver. He descended over the side at last lifeline stanchion. Moved forward tending him as he moved. Wire I was holding parted. Fell over side. Went forward to find No. 1 diver. Ended up at bow planes and torpedo tube shutters on starboard side. Saw upper two shutters. Came aft and found the other diver. Tended him from bow around to port side. Told to return to descending line.

DIVER: MOORE, W. M. Jr. 371 96 58, BM1, DO 10 August 1947

No. 1 diver and I descended to the deck of the wreck and landed just aft of the conning tower. We walked forward on the starboard side. No. 1 diver was to go to the extreme bow with the inclinometer and No. 2 diver was to go forward to the escape hatch and try to open it. I arrived at the escape hatch and inspected the hatch, the fitting for the downhaul on the rescue chamber and the seat for the submarine rescue chamber. Except for the absence of the handwheel on top of the hatch, everything seemed in fair condition. The handwheel was gone. I used a wrench on the spindle for the dog and succeeded in turning it about one complete turn. I then tried to raise the hatch using the wrench for leverage but could not move it. In going to and from the hatch and the descending line I noticed a small door on the side of the conning tower. Also just forward of the conning tower the deck was gone in some places and badly damaged in others. This was on the starboard side just forward of the tower. There was a salvage hose lying on deck and draped over the side.

DIVER: MULLEN, R. F. 201 61 73, CSF, DM 11 August 1947

I landed on submarine at frame No. 60 starboard side and went forward to escape hatch at frame No. 27. I tried to open this hatch with assistance of No. 2 diver but was unable to accomplish this. I reported to topside and was instructed to go aft to frame No. 31 and go down to other hatch at frame No. 28 on trunk. I did this and proceeded to open this. I turned the quick closing handle clockwise and then found a tumble dog on the starboard edge of hatch. I could not move this dog. I then turned the quick closing handle counter clockwise and tried to take the tumble dog off but I still could not move it. I then tried to disassemble the dog but could not do that. Topside then ordered me back to my descending line and I started back. Visibility was clear for 15 ft. and hazy for 10 more ft. which gave you a total visibility of 25 ft.

DIVER: CREDDLE, C. M. 262 36 33, CMN, DO 11 August 1947

Diver No. 2 assisting diver No. 1 to open escape hatch. Landed on bottom about frame No. 60 and went forward on starboard side to frame No. 29. Visibility a little over 15 ft. Met with no success in opening forward torpedo escape hatch. The deck from about frame No. 59 forward to frame No. 29 on starboard side is badly broken up. The escape hatch looks O.K.

DIVER: CRESSEY, O. R. 208 75 17, M1, DO 11 August 1947

I descended to the deck of the Pilotfish and went to the forward edge of the conning tower to pick up the tools where the previous set of divers had left them.

DIVER: CRESSEY (CONT'D)

Then I went back to hatch leading down into the aft battery. I loosened the dogs on it and was only able to raise the hatch about 2 in. What I thought was a strongback lying across the hatch turned out to be a deck beam running fore and aft. Right in that section the entire deck had moved over to starboard about 10 in. The beam appeared to be broken free about 1 ft. forward of the hatch but it was still secure aft. Most of the woodwork on the deck there was missing so it wouldn't be very hard to get at the beam to burn it out of the way.

DIVER: SCHNEPF, R. J. 621 10 20, GM2, DO 11 August 1947

When I landed on the submarine I went to the aft battery compartment hatch. The deck around the hatch was shifted over to starboard about 1 and 1/2 ft. so it was impossible to open the hatch. The hatch itself looked to be in good condition. I took four pictures of the deck over the hatch, one from starboard, one from port, one from aft and one from forward.

DIVER: GRIFFITHS, R. A. 376 53 72, GM1, DO 11 August 1947

I got to the after engine room hatch and took four pictures of it. The deck above the hatch or level with it seems to be shifted from starboard to port. The starboard side of the hatch looks to be covered by 6 in. of decking. The port side has 6 in. of extra clearance. The hatch would not open wide enough to get pictures. I then went to the torpedo loading hatch. The dogs released all right but the pinch bar hasn't enough leverage to push it open. The hatch looked in good condition and the deck had not shifted here. I couldn't get it open so was told to go to the after escape hatch. I had to go to the bottom to retrieve the camera. When I got to the escape hatch, No. 2 diver had it open. I took three pictures of it open. Our time ran out and I returned to the descending line. The rest of the dive was uneventful.

DIVER: GOLDSMITH, W. E. 626 24 30, GM2, DO 11 August 1947

Landed on submarine at frame No. 59. Went aft until I came to hatch at frame No. 94, after engine room. No. 1 diver took several pictures of this hatch at different angles. The superstructure deck around the hatch did not appear to have shifted any from this distance. Didn't get a chance to examine it closely though. We both went aft to the torpedo loading hatch, frame No. 109. Deck around hatch appeared to be O.K. There was a small stream of bubbles coming up through the hatch around the handwheel shaft. Couldn't get the hatch open so I went aft to the escape hatch at frame No. 115 while No. 1 diver went back for the camera. I got the hatch open but it wouldn't stay open. No. 1 diver came back with camera so I held the hatch open while he took pictures of it. A lot of stuff floated out of hatch when I opened it. I couldn't make out what all of it was but some of it appeared to be oil. The superstructure deck around the escape hatch was in good shape. Let hatch go, returned to descending line.

DIVER: PARK, H. E. 301 26 48, TM3, DO 11 August 1947

Reached the bottom, after No. 1 diver, at the cleat on the port side at about frame No. 88. I then went aft to the after torpedo escape hatch which is at frame No. 115½. I opened the hatch and held it open while No. 1 diver took pictures of the inner side of the hatch. I noticed while No. 1 diver was taking pictures that the bail for the down haul cable in the sub rescue chamber was in good shape except for being frozen with rust. No. 1 diver inspected the bell seat around the hatch and then I shut the hatch. I went forward with No. 1 diver to the torpedo loading

DIVER: PARK (CONT'D)

hatch which is at frame No. 109. I assisted him in trying to open the torpedo loading hatch. Time was up on the bottom so I picked up the tools and returned to the descending line. We did not get the hatch open. Visibility was good. It was from 20 to 30 ft.

DIVER: GORING, Carl 321 22 31, CBM, DO 11 August 1947

Purpose of dive, to take pictures of after escape hatch and try to open after escape hatch and the torpedo loading hatch. Left surface; landed on sub, just aft of conning tower; went aft to escape hatch; took pictures of same. I couldn't see any damage to hatch, dogs, gaskets, gasket seat or to bell seat. Started forward to torpedo loading hatch. No. 2 diver and I worked on same trying to open it, but couldn't. I could see air bubbles coming from inside hatch, from stem in center of hatch. I was told to return to my descending line. Reached descending line, came up to first stop.

DIVER: HESLOP, W. R. 238 83 78, BM2, DO 11 August 1947

Landed on wreck at frame No. 63 and went forward on starboard side to companionway at frame No. 30. Other diver went down companionway and inspected between pressure hull and superstructure. I tended him from bottom of companionway. The only thing I could observe was the door leading into forward torpedo room escape trunk and it appeared to be in good shape. The ladder in the companionway was all intact. Returned to descending line after other diver completed his inspection.

DIVER: WILKINSON, J. P. 658 38 06, SF1, DO 11 August 1947

Descended on Pilotfish. Landed on port side at frame No. 67. Removed descending line from cleat. Went to starboard side and forward. Came to ladder on conning tower. Went up ladder on conning tower and went to forward hatch. Noticed no damage to hatch. Was unable to open hatch. Went to after hatch which seemed to be just a flat plate. Could not feel any handles on this hatch or notice any damage. Came down ladder on conning tower. Picked up weight and descending line and went to forward escape hatch. Secured descending line to holes of escape hatch. Wooden deck forward of conning tower was very badly broken up. Vision on bottom was 5 or 6 ft. End of dive.

DIVER: DENISON, H. D. Jr. 283 15 91, CBM, DM 11 August 1947

Landed on the starboard side of boat at frame No. 59 with camera. Went around starboard side of conning tower and forward to frame No. 30 to companionway of escape hatch. While moving forward, I noticed the deck gratings are broken up in places and the framing of the superstructure was bent in some places. While the other diver tended me, I went under the superstructure at frame No. 30 to inspect the pressure hull for damage. I inspected forward to frame No. 20 and found no damage in the pressure hull. The superstructure framing is broken in places.

DIVER: PRICE, J. F. Jr. 295 26 50, CBM, DO 12 August 1947

I was No. 1 diver. The first thing we did was move our port descending line from the conning tower ladder to the cleat on port side of sub just aft of conning tower. We were then to go back up on conning tower and try to open conning tower

DIVER: PRICE (CONT'D)

hatch. Between the guns on cigarette deck there was a plate gone at frame No. 58, fallen in. We continued on to hatch, frame No. 51, conning tower, and tried to pry it open. No. 2 diver did, about two inches, and I had my hand in on the gasket which felt O.K. to me. With two divers working in that small place you couldn't see or get around, so I tried to assist the other diver by handing him tools he needed and helping push on pry bar. There was some wooden deck, frame No. 54, on starboard side of conning tower level with cigarette deck, that seemed to me to have more of an angle and to slope inboard. The hand rails on cigarette deck was broken on starboard side, frame No. 59.

DIVER: MOORE, W. M. Jr. 371 96 58, BM1, DO 12 August 1947

I descended to the deck of the wreck. We removed the descending line from the after ladder leading up to the cigarette deck. We secured it to a cleat on the port side just abaft the conning tower. We then went up on the cigarette deck and started forward on the starboard side. As I went forward I noticed the plate over the induction valve and though I did not inspect it, it looked as if it had been pushed slightly downward. I arrived at the conning tower hatch and went to work trying to open it. Visibility inside where it was was poor. The hand-wheel was on the hatch and I turned it about 2 1/2 to 3 turns with a wrench. I pulled upward on the hatch and was able to open it far enough to feel of the gasket and retaining ring. They seemed in fair condition. When I opened the hatch a small amount of fuel oil came out. I kept trying to open the hatch but could only open it about 1 1/2 to 2 in. It seemed to keep catching on something very stable and solid. The hatch was counter sunk in the deck to a depth of about 5 to 6 in. and it opened from port to starboard and slightly forward.

DIVER: MOORE, C. B. 337 30 67, CPHM, DO 12 August 1947

Purpose of dive was to take television camera to bow planes. After the camera was unshackled from the descending line, my diving partner and I started toward the submarine with it. We soon found that the apparatus was very heavy and most awkward to maneuver on the bottom. The bottom was soft and sticky, however, even if it had been hard the camera would have been a difficult problem to carry. The bulk, weight, and design of the camera case are all more than a diver can comfortably compete with. After a hard struggle the apparatus was finally gotten to frame No. 30 of the sub. Due to little light from the sky and much bottom silt stirred, the visibility was practically negligible.

DIVER: BOSTWICK, E. E. 316 56 01, CBM, DO 12 August 1947

Went down as No. 1 diver. Reached bottom and saw that the television gear was upside down. That is, with the part with the glass in it in the sand. Asked topside to take up on television gear and untied it from descending line. As soon as No. 2 diver reached bottom he took hold of the underwater light braces on one side and I took hold of the braces on the other side. Then we started out towards the sub. The gear didn't seem so very heavy but was very cumbersome and bulky to handle. Especially when you came to a place where the bottom was soft. Arrived at the submarine side at about frame No. 30. Held the television gear up for them to try and get a picture. Was told to return to my descending line and stand by to come up.

DIVER: CRESSEY, O. R. 208 75 17, M1, DO 12 August 1947

I descended to the deck of the Pilotfish and landed on the starboard side by

DIVER: CRESSEY (CONT'D)

the sound apparatus and went over to the companionway ladder and waited for No. 2 diver. He tended me while I went below onto the pressure hull to inspect the starboard side. At about frame No. 25 there was a pipe of about 3 or 4 in. diameter that came down and was flanged about 6 in. from the pressure hull. The bottom section of the flange parted from the pipe. It felt as if it was a threaded fitting and was pulled out of the flange. I went forward to the bow planes. The large gear was all right as far as I could see but I didn't notice the rest of the mechanism. The two torpedo impulse charge bottles were secured to the vertical bulkhead and in good condition. The line that ran into the hull was alright but the forward one seemed to be flattened. There wasn't any break at either end of it. There was a large hole in the pressure hull starting at about frame No. 18 and going aft about 4 or 5 ft. At the forward edge of the hole the break was clean but about 1 ft. back at a welded seam it split along the weld for about 6 in. and from there aft the bottom of the hole was broken clean and it rolled under the top of the hole.

DIVER: GRIFFITHS, R. A. 376 53 72, GM1, DO 12 August 1947

I checked the decking around the engine room hatch again. The decking is still shifted from starboard to port. The starboard side of the hatch is overlapped by the decking at least four in. The port side has 4 in. of extra clearance. We then went to the after torpedo hatch to try and open it. The dogs were checked again to make sure they were released. There were still small air bubbles coming out from around the shaft that operates the dogs. With a pinch bar I got a better chance to try and open the hatch. I managed to crack it enough to get another stream of bubbles from a 2 o'clock position on the hatch. Having no success here we were told to go back to the aft engine room hatch, frame No. 94, and see if the decking could be moved so that the hatch could be opened. The only way to get that hatch open would be to cut a section out of the decking. There is angle iron over the top and the decking is riveted to the angle iron. Our time ran out and we returned to the descending line.

DIVER: GORING, Carl 321 22 31, CBM, DO 12 August 1947

Diving on Pilotfish. Purpose of dive was to inspect pressure hull from frame No. 30 forward. Left surface. Landed on sub at forward escape hatch. Visibility fair 10 ft. Went down companionway inspecting pressure hull as I went forward. Found marker buoy where it had been pushed down from superstructure deck, and some wreckage but couldn't tell what it was for sure. It felt like reach rods. I never found any damage to pressure hull and had a hard time going forward because of the frames going from pressure hull to superstructure deck. I was told to return to my descending line. I went aft to same and came up to first stop.

DIVER: SCHNEPF, R. J. 621 10 20, GM2, DO 12 August 1947

When I reached the submarine I went up on the cigarette deck and got a pinch bar and proceeded aft until I met No. 1 diver at the aft torpedo loading hatch. Some air bubbles were escaping around the handwheel stem and when we applied the pinch bar to try and open the hatch more bubbles started escaping at the edge of the hatch around two o'clock while facing aft. We were unable to open the hatch. We then proceeded to the aft engine room hatch and found that the deck had shifted to port about 4 in. just even with the end of the hatch balancing spring. We got word to come up so we returned to descending line.

DIVER: PLEMEL, L. M. 328 35 47, CSF, DM 12 August 1947

Landed on the sub at frame No. 65 and went forward to the escape hatch. I then went down the ladder onto the pressure hull. At the foot of the ladder is the escape trunk hatch with the dogs off. I went around the trunk on the left going forward. Just forward of the trunk on the port side was the telephone buoy. It was forced down through the superstructure deck. The top of the buoy was about 1 ft. below the superstructure deck. The bottom was about 3 ft. from the pressure hull. Between the trunk and the buoy was a crack in the weld going fore and aft about 2 1/2 ft. long; the inboard side was dented down about 4 in. at the middle. I then went forward until I came to the vent risers, the one on the port side was not damaged. The reach rod was solid and in the closed position. I did not find the strainer. The 10 lb. blow riser was also in good shape and also the 225 lb. salvage valve reach rod was there which went up to topside. I did not see the pipe. All the angle iron stanchions below the superstructure deck are bent to starboard. They are welded to the hull and on some of them the weld was broken off. Note: The crack was in the well where two plates joined running fore and aft.

DIVER: DENISON, H. D. Jr. 283 15 91, CBM, DM 13 August 1947

I landed at frame No. 27 at the forward escape hatch with the light and camera. While the other diver tended me, I went under the superstructure at frame No. 30 to inspect pressure hull for damage. At frame No. 25 I photographed a dent in the pressure hull near the top of the hull. Worked forward to frame No. 20 on starboard side of hull and found a hole in pressure hull inboard of bow planes. Visibility was poor due to silt. Left lamp in the hole for next diver and returned to descending line.

DIVER: WILKINSON, J. P. 658 38 06, SF1, DO 13 August 1947

Descended on Pilotfish and landed at frame No. 67, port side. Went forward on port side to conning tower. Climbed up conning tower until I could see top of main induction valve. On after port side of conning tower, found a section of plating which was ripped open and pushed out making an opening long enough to look inside. The induction valve could be plainly seen through this opening. Started to burn out a hole where the rip was located. Returned to descending line and came up.

DIVER: MOORE, W. M. Jr. 371 96 58, BM1, DO 13 August 1947

No. 1 diver and I descended to the deck of the wreck and landed at the forward escape hatch. No. 1 went aft to start ripping up the wooden deck, on the starboard side outboard of the conning tower. I stopped at the forward torpedo loading hatch to open it. The handwheel was on the hatch and turned fairly easy after starting it with a wrench. As the handwheel started turning and loosening the hatch air started escaping from around the gasket. I got to starboard of the hatch and kept turning the handwheel until it stopped. I had turned it about 2 1/2 full turns. Air was escaping from all around the hatch except at the extreme bottom. Topside told me to go aft and help No. 1 diver while that compartment was venting. I went aft and helped him until I was told to go back and look at the hatch again. When I got back to the hatch it was still venting slightly. I turned the handwheel about another half turn. I then tried to open it but could not move it. I was starting to try to pry it open with a wrecking bar when I was told to prepare to ascend.

DIVER: CRESSEY, O. R. 208 75 17, M1, DO 13 August 1947

I descended to the deck of the Pilotfish and went over to the companionway ladder and waited for No. 2 diver to take the hoses and tend me. I went forward under the superstructure deck to the hole in the hull on the starboard side at around frame No. 18. I wasn't able to get all the way down to the hole so I held the camera down and steadied it as best as possible with my feet and took a picture directly at the hole. After that, I took a series of pictures about the hole including a picture where one stanchion was pulled loose from the pressure hull and a picture of the pipe coming down from the aft torpedo impulse flask where it had parted from the lower half of the flange. I took more general view shots of the edges of the hole from aft to the hole. I took another picture of a dent in the hull at frame No. 17 just behind the bow plane gears. This dent was fairly well covered with silt so it may not show in the picture. From that dent the pressure hull was slightly buckled in all the way over to the port side. Some of the pictures of the hole were taken with the light setting on the bottom and the rest were taken with the light suspended about 2 ft. below the camera and shining down.

DIVER: PLEMEL, L. M. 328 35 47, CSF, DM 13 August 1947

Landed on the sub at the forward escape hatch. Went aft to the forward torpedo loading natch to see if it was opened. It was not open so I tried to pry it open with a pinch bar. I could not open it. I then went aft to 2A salvage fitting to look for the vent riser. I saw where the other set of divers started taking up the deck. There was no vent riser there. I then tried to get under the superstructure deck at the hole just forward of the magazine hatch on the starboard, forward edge of the conning tower. I could not get my hat into the hole. The salvage fitting to 2A was broken off the plate on the superstructure deck. I tried to break it off at the pressure hull. It's loose and I could bend it around but it did not break off. I then went to the port side where I saw some decking broken and looked around there. I saw where the pipe going to the vent valve was. I then started cutting the deck away there which was on the port side about 3 ft. from the conning tower. I was cutting the deck towards the center of the boat.

DIVER: GOLDSMITH, W. E. 626 24 30, GM2, DO 14 August 1947

Landed on sub at forward escape hatch, frame No. 27. Went aft to frame No. 46 on the port side to help No. 1 diver cut away some of the superstructure deck. Went forward to frame No. 34 to see if the forward torpedo hatch was open, but found it was still closed with a small stream of bubbles coming out from around the edge of it. I was unable to open it. Went aft to frame No. 46 again and looked into the hole that No. 1 diver was cutting. I saw a pipe, about 3 to 4 in. in diameter with a square lug on top of it about 1 1/2 in. square. I think this was a fuel line. It was located on the port edge of the deck. About 2 ft. to starboard of this were two lines, about 1 1/4 in, running up to salvage connection. I tried to get down in the hole but couldn't make it. After I got out, I looked into the hole again but couldn't see anything because of the silt I stirred up. I gathered up some pieces of the wooden deck and came up.

DIVER: MOORE, W. M. Jr. 371 96 58, BM1, DO 14 August 1947

No. 2 diver and I descended to the deck of the wreck and landed at the forward escape hatch. We then went aft to where the deck had been cut away, to make an entrance over MBT 2A and 2B. This entrance was immediately forward of the conning tower between frames No. 46 and 47. I went underneath the deck slightly on the starboard side and commenced searching for the vent riser from starboard to port. I searched about to frames No. 47 to No. 45 and ran into a bulkhead. This

DIVER: MOORE (CONT'D)

bulkhead had a passage in the center and just aft of it was a trunk. I went through this passage and searched again for the riser but did not find it. I went back out on deck and forward to about frame No. 44. I went underneath the deck there and searched from port to starboard to about frame No. 43. At frame No. 43 there was another bulkhead that stopped me from further search forward. Slightly on the starboard side I found a longitudinal frame that had been dented down. I also found where a section of the 10 lb. blow piping passed through the bulkhead and where it went through the bulkhead was torn for about 8 in. Topside told me to come back out and prepare to ascend.

DIVER: GORING, Carl 321 22 31, CBM, DO 15 August 1947

Purpose of dive was to burn plate on conning tower. Left surface, landed on sub deck just aft of conning tower, went forward to job, tried to find where plate was holding, found one place, burned same. I could see a light coming from side inside of conning tower. I gave No. 2 diver the torch and went around to other side of sub to find where light was coming from. Found small inspection plate open. Then I went up on cigarette deck, portable plate was gone, and I could see top of main induction valve. Couldn't tell if it was all the way closed or not (but the valve looked a little higher on the port side forward). I'm not sure of this. Went back down on deck. No. 2 diver had finished cutting plate loose so I helped him take same down. While No. 2 diver took plate to descending line, I inspected main induction valve. I never saw any rupture in same but saw wrinkles about 1 ft. from the top of the induction trunk. Returned to my descending line. Came up to first stop.

DIVER: GRIFFITHS, R. A. 376 53 72, GM1, DO 15 August 1947

I was to assist No. 1 diver in anyway I could. The place where he burnt was at frame No. 57 in the conning tower. I looked at what was inside of the hole and believe it is the engine induction and ship's supply. It looked like it had two domes to it. The top one had no piping coming from it. I could see light between the top dome and the cigarette deck. The lower dome seemed to run right around and alongside the conning tower shell. The lower dome seemed to make two compartments of the spot. The lower part of the conning tower was not cut out as yet so the second dome could be something else. I could not reach inside far enough to determine any damage. I was then told to return to my descending line.

DIVER: HESLOP, W. R. 238 83 78, BM2, DO 15 August 1947

Landed on wreck at frame No. 63 and went to port side of conning tower. Proceeded to cut remainder of plate from bulkhead at frame No. 58. Started inspection of main induction valve. As near as I could determine seal was intact on top of main induction intake. The mushroom was torn loose from the trunk and there was a 3 to 4 in. clearance all the way around. The trunk itself was all intact and didn't appear to have shifted position any. Returned to descending line.

DIVER: PARK, H. E. 301 26 48, TM3, DO 15 August 1947

Reached the bottom at the forward escape hatch which is about frame No. 28. When No. 2 diver reached the bottom we both started aft. When I got to about frame No. 59, on the port side of the conning tower (where the previous divers had been burning), I picked up the burning torch and continued aft to about frame No. 77 (which was the portable inspection plate I had opened on my previous dive). I layed the torch down and showed No. 2 diver the inspection plate at about

DIVER: PARK (CONT'D)

frame No. 82-81 which he was to open. Then I returned to my work. The mesh wire ran up and down on all four sides of the hole from the superstructure deck to the pressure hull. I burnt the wire on the after side and bent it out so I could feel about the inside and see what was there. There didn't seem to be anything on the port side and on the starboard side a line about 6 or 8 in. ran up to amidships on the after side of the mesh wire and then it went aft amidships. Time on the bottom was up so I carried the torch back to where I got it at frame No. 59. I then returned to the descending line and started up after No. 2 diver. Visibility was very good for about 15 ft.

DIVER: DENISON, H. D. Jr. 283 15 91, CBM, DM 15 August 1947

I landed on the submarine immediately aft of the conning tower fairwater on the port side with the camera. My job was to inspect and photograph the main induction valve and the pipes leading from it. I found the umbrella and superstructure torn loose from the valve and took pictures of it. The superstructure was about 6 in. away on the starboard side and 3 in. on the port side. I saw this through the hole cut in the sheathing of the conning tower on the port side. I went up to the cigarette deck and inspected the main valve. It was in a closed position but pushed aft about 2 in. on the seat exposing part of the gasket. I took four pictures of this but the light was bad. I noticed that the after radio insulator is broken out of the radio trunk. The 18 in. line connection to the main induction looked good. The main pipe (36 in.) just under the valve looked wrinkled like it had been squeezed. I went down to the starboard side of the conning tower and looked at the 36 in. pipe through the inspection plate. It looked O.K. from that side. Expanded metal screen was down from around main induction. Conning tower superstructure moved from port to starboard slightly.

DIVER: MOORE, W. M. Jr. 371 96 58, BM1, DO 15 August 1947

No. 2 diver and I descended and landed at the forward escape hatch. Visibility was not very good, about 5 or 6 ft. at the most. I went aft to frame No. 80 to a junction box on the port side. This box's dimensions were about 20 by 24 in. and the forward and after side started down at the sides for a few inches. A 16 to 18 in. pipe ran into this box. From my position looking down, I could see several more pipes going from the box. The 16 in. pipe seemed to run down to the forward side and aft on the after side. On the after side there was a hole in the pipe running about halfway around the pipe on the port side. The width of the hole seemed about 6 to 8 in. and was filled with silt. There was 2 pipes about 6 in. running out of the forward side. They were undamaged as far as I could feel and see. There was also 2 pipes running out of the after side undamaged. A 1 in. or a 1 1/4 in pipe ran across the box from port to starboard. This pipe was loose but I could not see either end of it. A 5/8 in. pipe ran from starboard into the top of the box but it was broken off flush with the top of the box. I took pictures of all the pipes, flanges, damage to the large pipe and the label plate on top of the box. These pictures were taken from about 2 1/2 ft. and were from all angles.

DIVER: SIMPKINS, L. E. 872 07 21, MOMM2, DO 16 August 1947

Descended on port descending line to forward escape hatch. Went aft with other diver until we came to burning torch. Assisted him in taking torch aft to place where he was going to burn. I then went aft to frame No. 82 or frame No. 81 and opened the deck plate just aft of cleat at frame No. 80. After I opened the plate and secured my tools, I made one inspection of everything I could reach.

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DIVER: SIMPKINS (CONT'D)

Found a box-shaped affair. It was rectangular in shape. It was approximately 2 ft. wide looking fore and aft. Athwartships it was about 3 ft. An inspection plate or cover on top was secured by 16 studs. The plate was sealed by a hard gasket. On aft side of plate in its center was about 1 1/4 in. pipe coming out of it about a 15°. This pipe ran aft about 2 ft. and there up to deck plate to a hole about 4 in. in diameter. There was no cap on pipe and its threads seemed that they weren't stripped. On aft side of box a pipe about 16 or 18 in. in diameter ran aft. About 10 in. aft of first flange this pipe was bent into itself and was rotten from rust. A pipe 1 in. in diameter was connected to inspection plate in center on outboard side. It ran aft and inboard. Its inboard end seemed to be broken off. A 1/2 in. pipe was dangling over this plate but was connected some place inboard out of reach. On forward side of box a rectangular shaped casing came to it secured by studs. This casing ran down about a foot forward of the box. It seemed to taper out at the bottom, athwartships as it went down. On inboard forward side a 6 in. pipe came from forward inboard and connected to another pipe of about same size. The latter ran inboard to another pipe running fore and aft. Didn't appear to be any damage to these latter pipes except for being rusty Time was nearly up. Another box of same shape was across the deck on starboard side. Time was up. Helped No. 1 diver bring torch forward and when we reached the descending line, I came up.

DIVER: WILKINSON, J. P. 658 38 06, SF1, DO 16 August 1947

Descended on Pilotfish at frame No. 67. Went aft on port side until I saw forward stanchion of center lifeline. Went inboard at stanchion and found hole in deck just forward of stanchion. Looking down in hole, I could see nothing but expanded metal on the port and starboard sides. Feeling with my hand inside of hole on forward side, I could feel something which I am not sure what it was and cannot describe very well. I could feel what seemed to be a spring about 3 in. in diameter with coils about 1/2 to 3/4 in. in diameter. This spring was pointing to port and forward and slightly down forward. I could also feel a plate which seemed to cover an opening. This plate was about 3/4 in. thick and 6 or 8 in. in diameter. This plate was open on one side the thickness of my fingers. I also felt a 3/4 in. pipe or tubing which came up out of the hull. It turned and went forward. In the after part of this hole in the deck I could feel two 10 in. pipes with flange joints. These pipes were running fore and aft on each side of the hole. Took a series of pictures looking forward inside of hole. On deck outside of hole on port side was a salvage fitting with four buttons, frame No. 77. About 2 ft. aft and 3 ft. to port was another salvage fitting with five buttons, frame No. 78. Went forward on port side to conning tower where a section of the bulkhead had been cut out opposite main induction valve. Took a series of pictures of induction valve, looking inboard from port side. Had good vision of induction valve. The top plate of the valve was pushed down in the center shaping it like a saucer. There was an opening between the top plate and the valve body large enough to get my fingers in 2 or 3 in. From the top of the valve down about 1 ft. where the valve mushrooms out, the valve was corrugated or wrinkled. These wrinkles were vertical and 2 or 3 in. deep. I went to after part of conning tower and looked through a hole in the bulkhead. The induction valve was in the same condition here as on the port side. Started to take pictures but my time was up so returned to descending line.

DIVER: PRICE, J. F. Jr. 295 26 50, CBM, DO 16 August 1947

I was No. 2 diver. My job was to take pictures of the periscope housing and of radar. I landed on forward escape hatch and went aft on starboard side until I

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DIVER: PRICE (CONT'D)

was even with the periscope and then started up taking pictures of the housing just above the bridge where there were several big bolts holding it in place. It seemed O.K. to me. I then went on up the housing taking pictures of some of the inspection plates that were dished in but were in place, to the top and took pictures of that, and the radar both from the bow and from the stern side of it, then started back to my descending line taking two pictures on bridge on my way back. When I got back to the descending line I took it off of the sub altogether so it could be brought up to the Coucal.

DIVER: CRESSEY, O. R. 208 75 17, M1, DO 16 August 1947

I descended to the deck of the sub landing at the forward escape trunk and went aft to frame No. 46 and dropped down onto the pressure hull through a hole that had been cut in the deck. I inspected the pressure hull forward until I came to a transverse bulkhead. It appeared as though the ballast tanks might have been moved slightly but nothing in the vicinity appeared to be broken. I then went aft and found a vent riser at frame No. 49 that was in good shape. The vent lines ran aft to about frame No. 53 and went through the hull. I cleared the silt away as best possible and felt around the pipe fittings on the hull. It was in good shape. The 10 lb. blow line was intact where it married into the vent line and it was O.K. as far as I was able to see going aft. I inspected these vent lines on both port and starboard sides and they were the same. There was a wire mesh guard over the section where the flapper valve is and everything felt all right underneath it.

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