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A.C.B. 0233/43 (1)

SOUTH-WEST PACIFIC

ANTI-SUBMARINE REPORT

JUNE, 1943

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A.C.B. 0233/43 (1)

SOUTH-WEST PACIFIC

ANTI-SUBMARINE REPORT

JUNE, 1943

ANTI-SUBMARINE
WARFARE DIVISION,
NAVY OFFICE,
MELBOURNE

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A.C.B. 0233/43 (1)

SOUTH-WEST PACIFIC

ANTI-SUBMARINE REPORT

JUNE, 1943

ANTI-SUBMARINE
WARFARE DIVISION,
NAVY OFFICE,
MELBOURNE

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Commanding Officers are invited to submit items of general interest for inclusion in the Australian Sea Frontier Monthly Anti-Submarine Report, of which this is the first issue.

It is hoped to include photographs, sketches and topical items each month, and the assistance of members of Ships' companies will be welcomed.

SECTION I. COUNTER MEASURES.

REVIEW FOR MAY.

The fact that no ship was sunk in our main coastal convoys during May gives promise that recently adopted counter measures are proving a deterrent to Japanese submarine commanders. Losses for the month were the S.S."Fingal", torpedoed while being escorted by U.S.S."Patterson" and the hospital ship "Centaur" which was sunk with heavy loss of life while proceeding independently.

Following the experiences of convoy P.G.50, in which two ships were hit but not sunk, day and night escort diagrams were altered. A/S vessels were disposed further from the convoy, and it appears that this effort to force submarines to fire from extreme ranges has met with a measure of success. Towards the end of the month attacks were made on two convoys, one off Twofold Bay and the other off Cape Everard, but in both cases the torpedoes, which appeared to be nearing the end of their run, were seen to miss.

The number of escorts sailing with coastal convoys was increased to an average of four A.M.S. On some occasions use was also made of "B" type Fairmiles, but their activity with convoys from Sydney was curtailed by periods of heavy weather.

Days of sailing northbound and southbound coastal convoys were twice changed during the month.

1. ESCORT GROUPS.

Experience has shown that the efficiency of escorts is greatly increased by employing them as a Group. In this way ships develop a high standard of team work and are able to carry out attacks together instead of individually.

Great difficulty has been experienced in forming Groups for our coastal convoys, but it is hoped that more ships will be available in the near future and that the Group system will operate. Meanwhile, Commanding Officers should make every effort to work as a "team" and to learn their Senior Officer's ideas and intentions.

The following comment on an Atlantic Convoy is interesting because it stresses the need for escorts operating together:-

"The main lesson to be learned from this experience is clear. That the ships in the escort were individually efficient is proved by the number of encounters they had with the enemy and the amount of damage they inflicted. Had the escort been equally well trained as a group the encounter might well have been one of the highlights of the U-boat war. As it was -- at least two U-boats were sunk and about six damaged.

"The inability of the escort to fend off attacks on the convoy was due to the fact that it was a scratch team. There were present at the time 10 escorts with two or more in the vicinity; six of these were destroyers. A force this size, drilled as a team, understanding the Senior Officer's ideas and intentions, should be ample. In this case, however, the ships had not worked together previously and were led by a Senior Officer they did not know.

"The main point of criticism which arises is the question of the positioning of the Senior Officer. Undoubtedly in this case, and probably in most cases, he should be astern where he can see what is happening. Had the Senior Officer of this convoy stationed himself astern during the night he would have realised at once that ships were being torpedoed and would have had a better idea of the direction of the attack. He would have realised that escorts stationed in the threatened sectors were absenting themselves for long periods, and would thus have been able to reorganise the screen so as to fill the gaps, or order them back to the convoy."

2. IMPROVEMENT IN COMMUNICATIONS.

The value of good communications was stressed at all convoy conferences. W/T silence on the R/T wave was relaxed and Commanding Officers were urged to exercise communications both at sea and in harbour. The importance of good communications and team-work among the escorts outweighs the disadvantage of breaking W/T silence. More than 20 A.M.S. were fitted with R/T during the month, and R/T sets were installed in all ships of commodores of convoys.

It should be borne in mind that R/T is not perfect, and Senior Officers and Commanding Officers are to ensure that the standard of V/S communication is kept as high as possible.

Efforts have been made to ensure closer liaison with the Royal Australian Air Force and to improve communications between escorts and aircraft.

3. OPERATIONS "RASPBERRY", "ARTICHOKE" and "OBSERVANT".

Fortunately, perhaps, there was no need to carry out the "Operations" introduced during the month as no ship was torpedoed after their adoption. A good account of one of these -- Operation "Raspberry" -- is given in Section Three.

4. FITTING OF RADAR EQUIPMENT.

Two Radar sets, Type A272 (corresponding to the U.S.Type S.G.) and Type A.286P are now being installed in H.M.A.S."BROOME".

These sets are being fitted for the purpose of carrying out trials, the results of which will be standardised equipment

and speedy fitting. It is expected that general fitting of A.M.S. will begin in the near future.

(The Hedgehog shows its "prickles").

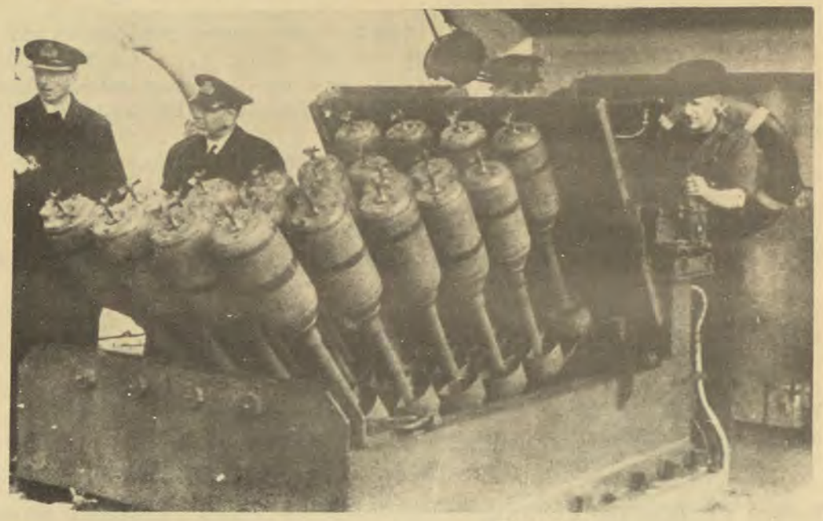


Fig.(1).

Fig. 1.

A Hedgehog mounting cleared for action and loaded. The mounting itself weighs two tons and each projectile contains 35 lb. of Torpex and weighs about 63 lb.

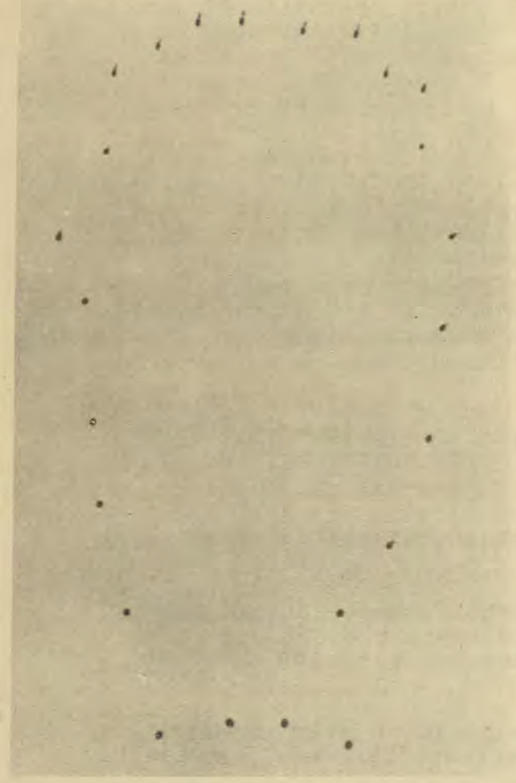


Fig.(2).

Fig. 2.

A Hedgehog pattern in flight. Each salvo, which consists of 24 rounds, has a range of about 210 yards. The charges strike the water in a circular pattern of 30 yards diameter.

5. ANTI-SUBMARINE WARFARE DIVISION.

An Anti-Submarine Warfare Division has been established at Navy Office, Melbourne under the direction of CSWPSF. Representatives of the U.S.N. and R.A.A.F. are included on the Division which will be responsible for the practical and technical planning of Anti-Submarine measures of all kinds.

6. R.A.A.F. CONVOY PATROLS.

All coastal convoys in the SWPA have been escorted by R.A.A.F. aircraft which maintain a day and night patrol. Escorting aircraft usually fly some distance from the convoy, carrying out planned search schemes, and for this reason are not often visible from the ships. One R.A.A.F. Squadron has averaged 1000 flying hours a month on convoy patrols.

R.A.A.F. Officers are now attending Convoy Conferences, and it is hoped that the air crews themselves will be present on some occasions.

On May 17 instructions were issued by R.A.A.F. that when wakes of torpedoes are sighted by aircraft, the point at which the track begins is to be marked with smoke floats. This will be done in addition to any bombing which may be carried out. Aircraft will occasionally drop bombs after the U-boat has submerged, the object being to keep the submarine down.

7. TRAINING AND EXERCISES.

The Commander 7th Fleet, has advised CSWPSF that a submarine will be made available whenever practicable for exercises off Brisbane. The Dutch submarine K9 is being refitted and is expected to be available for exercises off Sydney next month.

Eliptical A/S Targets are being built in Sydney and should be available shortly.

8. HEDGEHOGS AND MOUSETRAPS.

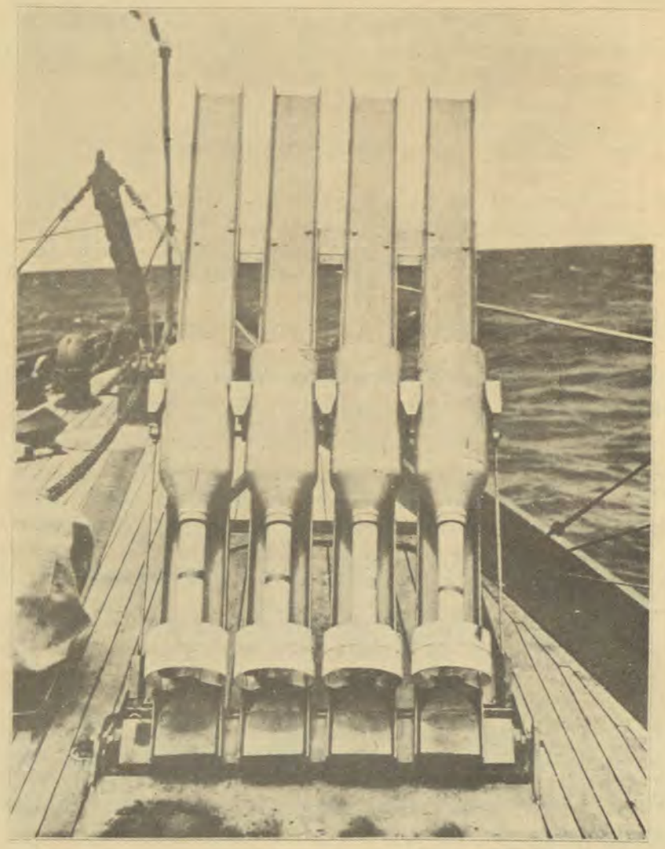
A Hedgehog has been fitted in H.M.A.S."Stuart" and it is intended that all frigates ("River" class Corvettes) should be similarly fitted.

Details of the Hedgehog are shown in the plate opposite, and the Mousetrap is shown overleaf.

The theoretical probability of depth charge attacks varies between 6½ per cent and 18 per cent, according to the type of pattern available. The actual average probability has been found to be 3 per cent to 8 per cent.

The theoretical probability of success of the Hedgehog is in the region of 60 per cent. This figure has been confirmed by results

(A "Baited Mousetrap").



A loaded Mousetrap mounting. A similar mounting is fitted on the other side of the forecastle. The eight charges, each containing 33 lb. of T.N.T., have a range of approximately 300 yards, and strike the water in line with a 70 to 80 yards spread.

of sea trials with unrestricted submarines, and the Admiralty considers that under action conditions the probability will not be lower than 30 per cent at a very conservative estimate.

Main reasons for the increased probability with the Hedgehog are the greatly reduced dead time with an ahead throwing weapon, the much faster and more regularly sinking projectiles, and the fact that contact fused charges compete with a target at any depth.

Full-scale explosive trials have proved the Torpex projectile to be fully lethal to any existing German U-boat.

There are occasions when counter attacks with depth charges must be made. Ships must, however, give full weight to the Hedgehog's higher probability of success. Unless the U-boat is an immediate menace to the convoy it is better to accomplish its destruction with the Hedgehog rather than temporarily divert it from its objective with a depth-charge "headache".

Tests and actual use of Hedgehog have shown that "trophies" are not as numerous as those which follow a successful Depth Charge attack.

9. DEPTH CHARGES.

Depth Charges should be fired at 60 yard intervals instead of 40 as before. Appropriate cams for Recorders A/S 3 are under construction and will shortly be forwarded to all bases for fitting.

Attacks should be carried out in Scale 25. A new "Speed and Depth" scale is being sent to bases for fitting. C.A.F.O.s 2021/42 and 127/43 refer.

An analysis of depth charge attacks in the Atlantic and Mediterranean between January 1941 and September 1942 shows that in 283 hunts assessed "U-boat Present", 6,188 depth charges were dropped. The number of charges per U-boat sunk was 170, and the number per U-boat sunk or damaged was 64.

The Admiralty recently carried out "Shock" trials with Amatol and Minol depth charges. The firing ship sustains most damage if the explosion is on the beam and least damage if the explosion is directly astern of the firing ship. Beam charges are always at least 60 yards away, but if the ship is steaming at slow speed rail charges will be nearer and may cause damage. It was found that the deeper the explosion (at the same distance from the ship) the greater the damage.

It was found that with 14 charge patterns only between 8 and 11 charges exploded. Trials proved that the explosion of a depth charge will force the primer and pistol out of any other depth charge which is within a certain distance at the moment of firing. The distance varies with the direction, but is about 110 ft. above the explosion, 50 ft. below the explosion, and 70 ft. on the side.

10. What would YOU do?

The following question, taken from an Admiralty report, is based on an incident which took place recently. Study it, plan your own solution, then turn to Page .19. to see what the Commanding Officer, in fact, did.

Question.

1. Your ship is the Starboard wing ship of the screen. An aircraft has reported a U-boat on the surface six miles on the starboard beam of the convoy. You have been ordered to investigate and, proceeding at full speed in the direction indicated, have sighted the conning tower of a U-boat. A few minutes later, at an estimated range of seven miles, the U-boat dives.

SECTION II. ENEMY ACTIVITY

1. ENEMY SUBMARINE ACTIVITY - MAP FOR MAY, 1943.

2. ANALYSIS OF ENEMY SUBMARINE ATTACKS.

Analysis of Sinkings, 1943.

MONTH	No. of ATTACKS	No.Ships SUNK	Tonnage SUNK	No. Ships DAMAGED	Tonnage DAMAGED.
January	4	1	2,047	2	17,398
February	2	2	11,988	Nil	Nil
March	1	Nil	Nil	Nil	Nil
April	6	5	24,996	Nil	Nil
May	8	2	5,359	1	5,832
TOTAL	21	10	43,390	3	23,230

3. ANALYSIS OF CONVOYS - MAY.

Area.	No.of Ships.	Tonnage	No. Sunk.	Tonnage Sunk	Percentage of total Tonnage.
Thursday Is.- Darwin	14	26,938	-	-	-
Barrier Reef-Brisbane	75	344,861	-	-	-
Brisbane - Sydney	80	299,077	-	-	-
Newcastle-Melbourne	145	588,780	-	-	-
Coral Sea	63	307,433	-	-	-
Arafura Sea	21	64,699	-	-	-
Single Escorted Ships.					
East. Aust. Coast	14	82,600	1	2,137	2.6
From Pacific	18	184,647	-	-	-
West. Aust. Coast	3	68,817	-	-	-
Coral Sea	52	176,317	-	-	-
TOTAL	485	2,144,169	1	2,137	.1

In addition 905 ships sailed independently. Of these, one, the Australian Hospital Ship "CENTAUR" (3,222 tons) was sunk.

4. MINES.

On May 16 H.M.A.S."KAPUNDA" reported echoes, considered to be mines, in a position north-west of Fitzroy Island Light. Radar contacts of surface craft had been made on May 9, 10, 14 and 15, and the area was searched without result.

A German Y-star mine was washed ashore at Port Macquarie on May 19. The mine appeared to have been floating for at least six months. Later in the month H.M.A.S."VENDETTA" sighted a floating mine similar to the British "Howsmine", 45 miles north-west of Sandy Cape.

5. JAPANESE CLAIMS.

Tokio Radio, in a communique for the South-West Pacific Area on May 27, said that Japanese submarines had achieved the following results between May 5 and May 24:

"Sunk .. Two tankers, 30,000 tons; six cargo ships, 57,000 tons; one transport, 15,000 tons. Total 102,000 tons."

Actual tonnage sunk was 5,359 tons, with 5,832 tons damaged.

SECTION III. NARRATIVES.

1. SUBMARINE SIGHTING OFF COFF'S HARBOUR.

A Japanese submarine, possibly of the "I - 5" class, was sighted in the vicinity of northbound coastal convoy G.P.52 on May 25. The weather was cloudy, with intermittent heavy rain and poor visibility. The wind was S.S.E. force 7 and the seas rough with a heavy swell.

The Master of S.S. Montoro, Commodore of the convoy, reported that the submarine was sighted by the Second Officer, apprentice and naval gunner, and that it passed across Montoro's bows from starboard without making any attempt to attack.

The following narrative is taken from the report of Commanding Officer H.M.A.S. "Deloraine", Senior Officer of escort.

"At 0227k/25th May a red Verey's light was fired from the Commodore's ship "Montoro", followed shortly afterwards by V/S signal "SUBMARINE ON PORT SIDE". Deloraine increased to 15 knots and proceeded on course 305° from position "D" in night screening diagram N.E.4.

Contacting Kalgoorlie and Yandra was somewhat difficult but at 0234 "Deloraine" had passed "Prepare to fire starshell, "Yandra" to illuminate convoy".

The Commodore had also passed the following information by R/T;- "It appears Fox was running on surface and when sighted went below, proceeding westward." This signal was received by "Yandra", but apparently not by "Moresby" or "Kalgoorlie".

"Deloraine" was unable to raise "Moresby" by R/T, but as she was already in the position covering the starboard side of the convoy, "Deloraine" left her for the more vital communication with "Kalgoorlie" and "Yandra".

At 0236 course was altered to 255°, and at 0237 "Deloraine" commenced firing starshell over an arc from 270° toward 180°. "Kalgoorlie" also opened fire, but the bursts appeared a long way off on my starboard bow whilst "Yandra's" starshell illuminated the convoy to some extent.

After the sixth starshell had been fired the gun's crew were almost washed overboard by the heavy seas prevailing, so "Deloraine" cleared the forecastle and at 0240 dropped a depth charge set to 100 ft. At 0250 a further depth charge was dropped set to 150 ft., at which time I ordered "Kalgoorlie" by R/T to take station on my starboard beam distant two miles, course 190°, and sweep to the southward. "Kalgoorlie" acknowledged this signal.

At 0300 "Deloraine" made Blue 18 to "Kalgoorlie", and this was also acknowledged, but never at any time were the ships within

sight of one another.

"Yandra" in the meantime had been ordered by "Deloraine" to search for one hour to the westward of the convoy's course.

At 0355 "Deloraine" had taken station on the port bow of the convoy, and, still seeing nothing of "Kalgoorlie", decided to remain in that position until daylight, leaving "Moresby" to cover the starboard side.

Dawn disclosed "Kalgoorlie" with "Tinana" bearing 290°, distant approximately 3.5 miles from the convoy. They regained station at approximately 0700 and the A/S screen for four escorts was completed shortly after 0700 when "Yandra" reported negative results from her search and resumed her position.

Weather conditions were very adverse, and the fact that "Tinana" wandered from the convoy and took "Kalgoorlie" with her can readily be understood under the circumstances.

The FS.6 R/T set is by no means reliable; no doubt the fact that untrained ratings operate the set has some bearing on the unsatisfactory results, but it is strongly emphasised that a more reliable set is urgently needed as soon as possible.

The whole operation was carried out by R/T and ships of the escort were completely hidden from each other during the entire period with the exception of "Moresby" who was sighted in between rain squalls towards the latter part of the proceedings."

Comment:

The operation shows that escorts are showing initiative, and that R/T can be a very valuable aid, particularly under adverse weather conditions.

Unsatisfactory reception of R/T may be attributable to the absence of loudspeakers and the lack of crystals, but early priority has been given to both, and the position will soon be rectified. However, while it is realised that the R/T sets at present installed have definite limitations, Commanding Officers should endeavour to give ratings training by frequent R/T exercises both at sea and in harbour.

As much instruction as possible in the control of starshell should be arranged.

It is considered that "Deloraine" showed commendable energy under very difficult conditions.

2. ATTEMPT TO TORPEDO "LIBERTY" SHIP.

Towards midnight on May 29 an attempt was made to torpedo the U.S. "Liberty" ship "Sheldon Jackson" which was proceeding

independently from San Francisco to Sydney. Two torpedoes were fired but both missed.

"Sheldon Jackson" was in position 32° 53' South, 153° 49' East, zigzagging at 10.25 knots, when a torpedo passed within 10 feet of the starboard bow. The ship had just commenced a turn to port and a few seconds later another torpedo was seen running a parallel course to "Sheldon Jackson" between 50 and 100 feet from the starboard side.

The "Liberty" ship opened fire with the after 3" gun, firing one round astern and one round on each quarter. The submarine was not sighted, but approximately five minutes after the attack a severe underwater explosion shook the ship. Speed was immediately increased on a course directly away from the submarine for 45 minutes, and the zigzag was then recommenced.

The explosion is believed to have been due to one of the torpedoes exploding at the end of its run.

3. MOUSETRAP ATTACK ON SUBMARINE.

A United States Sub-Chaser, S.C.747, made a number of Mousetrap attacks on an enemy submarine off the South-east coast of New Guinea on May 11. S.C.747 was escorting a Dutch merchant ship, S.S."Van der Lijn", from Townsville to Fall River, when, at 0610K the ship was seen to make a sudden alteration of course to starboard. "Van der Lijn" then made "Submarine submerged astern of us."

S.C.747, who was in station between 1,000 and 1,500 yards ahead of the merchant ship, turned to investigate and "Van der Lijn" made by flags "I am being attacked by submarine".

It was later learned that the submarine was not actually sighted, but that three torpedoes were seen, two of which passed across the bows and the third of which missed astern. They appeared to have been fired well below the surface, but in passing "Van der Lijn" the three broke surface, then regained depth and continued on.

S.C.747 increased speed to 14 knots and made for the apparent position of the submarine. An Asdic contact, which was classified "Submarine" was obtained at 800 yards, and an attack was made by recorder. No hits were heard. (NOTE: Mousetrap charges will only explode on actual contact.)

Contact was regained at about 700 yards and another recorder attack was carried out. This time two, and possibly three, charges were heard to explode. Two more attacks were carried out but contact could not be regained. S.C.747 circled through the area of the attack but no debris or oil was sighted.

A Beaufort bomber pilot, escorting "Van der Lijn", sighted the three torpedoes which appeared to be fired from the same point. He reported that they missed 80 and 200 feet ahead and 50 feet

astern. The water was very clear and he could see sharks swimming near where the depth charges had exploded, but saw nothing of the submarine.

At about 0900K S.C.747 had another contact, but had sufficient Mousetrap charges left for only one attack. No results were observed.

4. A HEDGEHOG KILL.

The following description of a recent sinking as a result of a Hedgehog attack has been released by the Admiralty.

> "About three seconds after the last splash of the Hedgehog, splashes were seen and two distinct underwater explosions were heard. Almost immediately there was a loud noise similar to that caused by a submarine blowing tanks. This noise was probably partially caused by escaping air from the inrush of water. Approximately one minute later a very large upheaval estimated at 50 yards long was observed."

A method of carrying out a Hedgehog attack is as follows:-

The attack begins by approaching the submarine from a range of 1200-1000 yards at a constant speed of 8 to 12 knots. The lower speed is preferable except when the submarine is making more than 3 knots and the attack is not started from a position fine on the submarine's bow.

In the initial stages of the attack the ship should be steered for the centre bearing of the contact, course being altered to each new centre bearing as soon as it is reported. If the target is moving right or left, deflection is estimated from the rate of change of bearing and course is subsequently altered to each new centre bearing corrected for deflection. If the bearing changes rapidly the ship's head should be kept swinging in an effort to keep it as close as possible to the bearing on which to fire.

The pattern is fired at the correct range as shown by the Recorder. The Recorder must be slightly modified to allow for charges being fired ahead of the oscillator after the time of flight instead of astern of the oscillator after a short lag.

5. A SUCCESSFUL OPERATION "RASPBERRY".

In view of the introduction of Operation "Raspberry", in the South-West Pacific Area, and the fact that A.M.S. will soon be equipped with Radar, the following narrative, taken from a British report, is of interest. The escort consisted of five corvettes - four Norwegian and one British.

The convoy sailed from the United Kingdom on November 7, and proceeded without incident for 10 days. The peace was rudely

shattered, however, towards midnight on November 17 when "Rose", on the starboard bow, sighted a U-boat. Almost immediately the Asdic operator reported "Torpedoes approaching", and as "Rose" turned towards the submarine one ship was struck and other torpedoes were heard to explode in the convoy. At the critical moment "Rose's" Asdic failed and she was unable to attack, although the U-boat had been forced to dive.

An hour later the convoy was again attacked, and Operation "Raspberry" was ordered, the convoy making an emergency turn of 40° to port. As "Rose" turned she obtained a Radar contact to starboard, and forced the U-boat to submerge by starshell and gunfire. Asdic contact was obtained and a depth charge attack was made, followed almost immediately by a depth-charge and hedgehog attack. Oil and wreckage were seen on the surface, but "Rose" was too busy to collect "trophies".

"Vervain", the British Corvette, had obtained an Asdic contact after completing Operation "Raspberry", but her set broke down after making one attack.

No further attacks developed, but at 0321 "Rose" detected two U-boats by Radar. She immediately gave chase, firing starshell and Oerlikon tracer to indicate the position to "Potentilla" who was coming to assist. The first U-boat made off on the surface at high speed, and the second, which dived at a range of 2,600 yards, was depth charged.

"Montbretia" then obtained an Asdic contact and turned to attack it. Just before the charges were dropped she obtained a Radar contact on another U-boat, and the corvette steamed over both submarines, distributing 39 depth charges between them before rejoining the convoy.

So far the corvettes had succeeded in preventing the U-boats from firing, but they were outnumbered by the pack, and at 0500 a salvo was fired. "Potentilla" actually had the U-boat on her Radar screen a few seconds before the attack and was dashing in at full speed. She dropped a 10-charge pattern on the submarine, then turned to rejoin the convoy, three ships of which had been torpedoed.

There were no more attacks until 0740 when "Montbretia" was in contact with two submarines - one at 1,000 yards on her Asdic, and another 4,000 yards on the port beam on her Radar. As she was making an attack on the Asdic contact a torpedo struck her on the starboard side, right forward. "Montbretia" shuddered, then plunged on at full speed, only to be hit again seconds later, this time amidships on her port side. She went down quickly by the head, and sank while still making way.

Comment:

The size of the U-boat pack operating against this convoy seems to have been about six. The U-boats frequently turned away or dived when they were illuminated by starshell, and so were prevented from firing even though not actually under attack. Even in attacks that were successful torpedoes appear to have been fired at some distance from the convoy.

Operation "Raspberry" resulted in two contacts - one Asdic and one Radar. On this occasion submarines operated in a pack. Their attacks were made on the surface at night - a condition which would probably occur in Australian waters.

6. AN ASDIC - RADAR CLASSIC

The following encounter, involving successive and efficient use of direction finding, Radar, lookouts, hydrophone effect and Asdic, is a classic of its kind. It is interesting, too, because it indicates the capabilities of small "escort-vessel" Radar types in use in the S.W.P.A.

"Viscount" and the rescue ship "Stockport" obtained a D/F fix while engaged in an Atlantic convoy in August, 1942. "Viscount" and "Potentilla" steamed to the area and obtained a radar contact at 5,000 yards. Shortly afterwards the submarine which was sighted and attacked by gunfire dived and was held by Hydrophone effect. Both ships obtained an echo shortly afterwards and 3 attacks were carried out. No certain conclusion as to their effect could be reached as both ships had further Radar contacts and steamed off to protect the convoy.

Shortly before midnight two ships were torpedoed. but "Viscount" sighted the U-boat and attacked.

"Potentilla", closing the rescue ship, sighted a U-boat apparently manoeuvring to attack. Opening fire the corvette scored at least one hit with her 4" on conning tower, and, just failing to ram, dropped a shallow pattern around the U-boat whose stern was still awash.

The U-boat's stern remained above water for a minute or two after this, and "Potentilla" dropped a second pattern over the swirl just after it disappeared.

Just as she started picking up survivors from merchant ship, "Potentilla" had another U-boat contact on her Radar screen. The attack which developed was even more promising than the previous one, again a hit with 4" being scored on conning tower. No further attacks developed.

Radar Type 271, similar to the Australian type A272 being fitted in all A.M.S., and to the U.S. type S.G., functioned well and was responsible for 14 sightings. Type 290 (U.S. type S.C.) played

a small but invaluable part by relieving Type 271 of responsibility for station keeping, leaving the latter for whole time search.

U-boat detection ranges of Type 271 varied between 7,000 yards and 3,000 yards.

7. JAPANESE VERSION OF U-BOAT WAR

The following "account" of the activities of a Japanese submarine off the Australian coast was broadcast recently by Tokio Radio:

"The gallantry of a lone Japanese submarine which appeared, disappeared and reappeared in the Southwestern Pacific waters like a will o'wisp, to strike terror into the hearts of the enemy, sinking a total of 54,000 tons of shipping, including two fully loaded enemy transports convoyed by an enemy destroyer, is disclosed in reports by Ro Hirate, Navy Press Corps.

One night an 8,000 ton transport came within sight of our submarine. Presently the submarine released its first torpedo, which hit the enemy transport amidships, apparently striking the engine room, as the ship was soon enveloped by white smoke; strangely, the ship listed to starboard despite the fact that the torpedo hit the port side. Shortly its right deck slipped into the sea, and the ship soon disappeared.

The following day the submarine sneaked deep into enemy waters, when it encountered an 8,000 ton oil tanker, unleashed a torpedo, which struck the stern. Emitting clouds of steam the tanker began sinking from the very first. A few minutes later the tanker released a depth charge, and, when our submarine appeared on the surface, the enemy, in a last fighting effort, fired a shot from its bow. The ship's bow, however, soon began to rise in the air, the ship stood up vertically and plunged down to Davy Jones' locker.

The sinking of two ships was enough to make the enemy wide awake. Accordingly, the submarine was on the point of changing its course when it was brought face to face with an enemy destroyer. The submarine lost no time in again changing its course, only to find another destroyer. It now became obvious that the submarine was in a dragnet of enemy subchasers; however, it managed to escape unnoticed.

On the evening of an undisclosed date there came heavy squalls which covered the sea. A 10,000 ton freighter suddenly appeared like a phantom in the squalls, steaming unsuspectingly towards us. Our submarine waited until dark, then immediately attacked the freighter. A torpedo hit the engine room, disabling the engine. We were just thinking of releasing another torpedo in order to hasten the vessel's trip to its watery grave when the bow of the freighter went up and the whole ship slipped into the sea, stern first.

Following this exploit we were not favoured with many targets

for some time. Accordingly, we idled along. However, on the night of a certain day, we intercepted a large convoy fleet heading towards the direction of Sydney from the direction of Melbourne. Convoyed by two destroyers, ten freighters of the 8,000 tons class, came towards us enveloped in columns of black smoke. Visibility was not so good, and it was difficult to attack, but, fearing that the convoy might change course if we waited till next morning, we threaded our way, carefully avoiding the enemy destroyers. That very day the dark clouds hovering overhead of the merchant fleet parted and, under the beautiful glimmering three stars forming Orion's Belt, this group of freighters was sighted in our periscope. An attack was launched immediately. Providence you may call it, for two torpedoes struck two ships simultaneously, whereof one caught fire, causing the sea to become covered with flames. The other ship, listing heavily, plunged into the sea.

Another night we caught sight of a 12,000 ton freighter. There was no moon and it was pitch dark. Accordingly, we steered ahead of the enemy ship and waited for dawn to attack. Just before dawn we released a torpedo which unmistakably struck the engineroom. Although the stern sank below the surface the ship wouldn't completely sink because it was a huge thing. Presently dawn came and we released another torpedo, aimed at the spot below the funnel. A thundering explosion and rising sprays accompanied the hit, and the gigantic ship was swamped by the sea".

8. JAPANESE SUBMARINE TRICK

An enemy submarine on May 30th unsuccessfully attempted a "ruses de guerra". This is the first of its kind reported in the S.W.P.A., but is similar to German U-boat tricks.

Between 0240 and 0310 H.M.A.S."LITHGOW" was called up on R/T by name. No answer was given until the fourth call was made. The Commanding Officer decided that it was probable that an enemy submarine was the source of the signals and answered by using the ship's pendants, hoping that the U-boat would close "LITHGOW". Nothing more was heard.

Subsequent investigation disclosed that neither Caloundra or ships in company were responsible.

In view of this, it has been decided that some form of R/T authentication should be agreed upon by escort groups. It is suggested that ships might adopt the policy of choosing some book held by all ships (e.g. Navy List). The "challenge" would then be a page number (e.g. 42) and the "reply" would be the top left hand word on that page (e.g. Smith). The advantage of this type of authentication is that it changes with every challenge and reply.

9. WHAT THE COMMANDING OFFICER DID

It was decided to employ a stratagem with the object of forcing the U-boat on a definite course. It was assumed that the U-boat

would think that the destroyer would take its course on diving to be parallel to that of the convoy. In order to strengthen this impression the destroyer altered 20° to port shortly before the U-boat disappeared. Acting on the assumption that the U-boat would now alter to starboard - on the reciprocal to the Convoy's course - the destroyer altered back 35° to starboard when 4 miles distant from the U-boat's furthest-on position.

Five minutes later course was altered another 45° to starboard on to the estimated bearing of the U-boat at that time, and a zigzag search at 15 knots was begun. After five minutes asdic contact was obtained and after a series of attacks oil and wreckage came to the surface.

SECTION IV INTELLIGENCE

1. JAPANESE SUBMARINE TACTICS

Information from captured documents and a study of numerous attacks by Japanese submarines have revealed that forms of attack vary greatly according to the methods of different commanders. It is believed, however, that the general principles given below will be of use in countering enemy U-boat attacks.

Patrolling:

Enemy submarines in dangerous waters normally remain submerged during daylight hours, but have been known to surface during daylight hours in areas where air reconnaissance is not severe.

Attack:

The enemy submarine is most likely to use one of the following methods of attack.

(i) Daytime: Attack will normally be carried out submerged. However, in the case of an unarmed merchant ship or one not on the alert, the submarine making the attack may surface and use her gun.

(ii) Night: During the 10 days prior to and after the full moon attack will normally be carried out submerged. On dark nights (even during the above period) attack will normally be carried out on the surface.

(iii) Ships in harbour: Attack will be carried out at periscope depth.

(iv) General: Japanese submarines depend greatly on the use of hydrophones and possibly on Radar.

Hydrophones:

The bearing of a surface ship can apparently be calculated at a distance of up to 8 to 10 miles by hydrophone. A ship on the surface can be heard at a much greater distance than a submarine submerged, e.g. -

Submarine on surface at 5 kts. can be heard at 5.5 miles.
Submarine submerged at 5 kts. can be heard at 1.5 miles.

Attacking Position:

The enemy submarine will try to place itself right ahead of, or on the bow of, the target, and will manoeuvre into a position enabling it to fire torpedoes at a range of between 1000 and 2500 yards. The Japanese consider the best firing position to be about 70° on the bow.

Salvoes of torpedoes with a fixed spread have been fired at ranges of 5,000 yards or more, but the percentage of hits is low at this range and the chances of taking avoiding action are increased. When attacking convoys, however, torpedoes are often fired at greater ranges, the submarine being at periscope depth.

Action after Attack:
After firing torpedoes Japanese commanders have been ordered to "retire hastily from the locality". They will not normally attempt to assist other submarines damaged by counter action. Dependent on the methods of individual Commanding Officers, enemy submarines will not generally risk remaining stopped, but will try to move out of the area if being attacked or if they consider their presence is suspected.

Angle of Dive and Maximum Submerged Depths:
Japanese submarines usually crash dive at 3°, increasing to 8 to 10 degrees. The maximum practical depth of Japanese "I" class submarines is considered to be about 200 feet. The critical depth is approximately 260 feet, but Japanese submarines have been known to go to about 300 feet.

In a crash dive a submarine would probably make a sharp turn to port or starboard after complete submergence.

Use of Periscope:
The periscope need be exposed only a few inches, but five feet or more may be exposed, especially if the ships are far away. At distances of six miles or more periscopes may be exposed for 10 minutes or longer.

For close work the longest a periscope will be exposed is 10 seconds (more often less) with an interval of two minutes between exposures. At less than two miles the interval would be one minute, and the exposure probably five seconds or less.

2. ENEMY EQUIPMENT

Wireless:
It is believed that Japanese submarines can receive W/T signals while submerged. They also have some two-way communication method for use while under the water. Little is known of this except that the Japanese refer to it as the "electric wave".

Japanese submarines almost invariably make a signal to base after an attack.

Radar:
It is possible that some enemy submarines are fitted with Radar, although there is no concrete evidence of this at present.

Asdic:
Japanese submarines are known to be fitted with an efficient type of Asdic.

Torpedoes:
Japanese torpedoes appear to be driven by compressed air and have a speed of approximately 45 knots. Pistols are mainly contact, but the enemy is known to have been experimenting with magnetic pistols and it is believed that some of this type have been used.

Electric torpedoes, which leave little or no wake, are also fired. There is evidence that some Japanese torpedoes explode at the end of their run.

3. LOSSES, CONSTRUCTION AND CAPABILITIES:

Submarines carry Aircraft, Mines or Midgets:
"I-1", sunk by two New Zealand corvettes off Guadalcanal on January 29, carried landing barges when she was sunk and documents found in her showed that other "I" class submarines carry aircraft, midget submarines or mines.

Armament of this type is usually one 5.5" of 5" gun with from one to four machine guns or cannon. The number of torpedoes carried varies from 17 to 22. Surface speed of the fastest of this class is 23.6 knots, and maximum submerged speed is about 8 knots.

Other classes - "I-100", "RO", and "RO-100" - are smaller, slower, and not so well armed. "I-121", "I-122" and "I-123" have two minelaying tubes, in each of which are three mines. Each submarine carries 42 mines.

Cruising Capabilities
Another captured document which was apparently written out by the Engineer Officer of "I-1" gave the following notes on the cruising endurance of Japanese U-boats.

Cruiser ("I-1" type) submarines	2½ months
Large seagoing ("I-100" type) submarines.	1½ months
Minelaying ("I-121" type) submarines.	1 month
Medium Seagoing ("RO" type) submarines.	1 month.

Losses and Building Programme
The following estimate of Japanese submarine strength was found in "I-1". It is interesting to note that the writer of the document apparently had an accurate idea of submarine sinkings.

Class	Tonnage	7/12/41	New	Lost	?/1/43
"I"	1955-2400	30	13	11	32
"I-100"	1142-1638	30	11	13	28
"RO"	655-988	15	14	5	24
"RO-100"	500	0	30	0	30
TOTALS		75	68	29	114

Ruses de Guerre
British escort vessels have made several reports recently of enemy "ruses de guerre". H.M.S."Asturias", outward bound from Freetown sighted a bright flare in the water and, on closing, found that the flame was coming from a large cannister about two feet square.

The flame and smoke were subsequently visible for about 17 miles. No explanation is apparent other than that it was a U-boat ruse to attract shipping.

Japanese submarines have been known to use search-lights in an effort to divert shipping towards them.

Action Stations - At the Double!

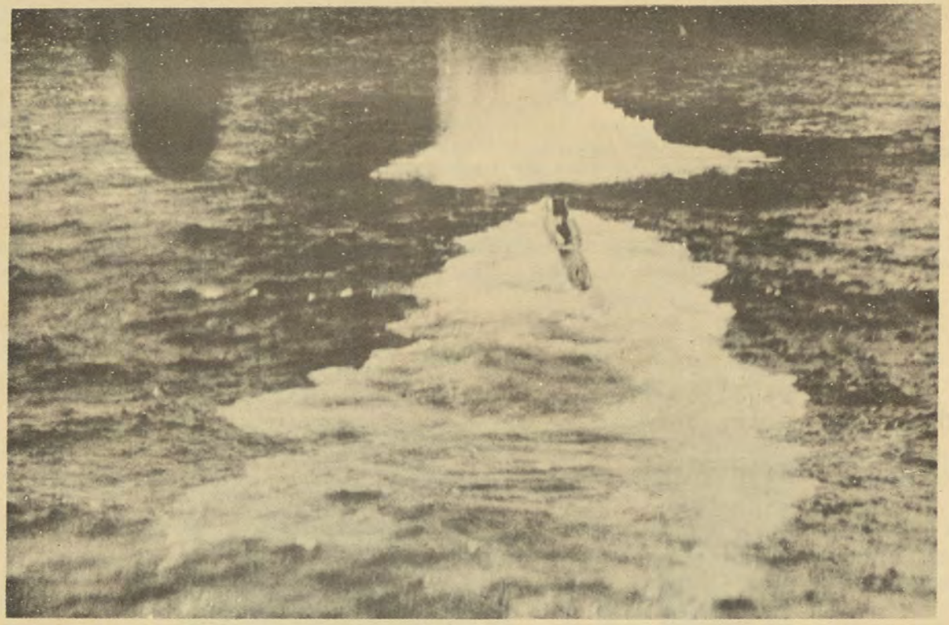
The necessity for bringing all available firepower to bear on surfaced or surfacing submarines as rapidly as possible is emphasised by these figures, compiled by the U.S. Navy Department's Intelligence Division.

The time taken by Japanese submarines to go from "Alert Cruising" to complete submergence varies from 66 to 81 seconds.

The time required from the order to surface to the firing of the first round varies between 80 and 90 seconds.

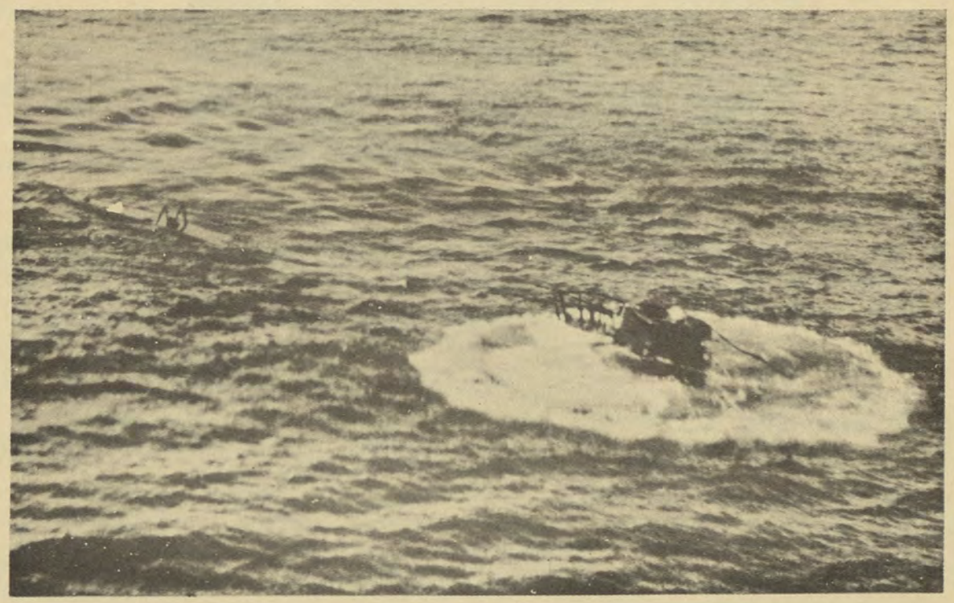
Gunnery Officers please note!

(An Aircraft Kill)



Surprised on the surface by an aircraft, this U-boat was depth-charged (above) just as she began to crash dive.

Below: The U-boat crash diving. This photograph was taken just before the aircraft dropped a bomb which hit the U-boat amidships.



(Grave for a U-boat).

End of a U-boat! Blazing oil on the surface was all that remained as the aircraft circled the spot where the U-boat had been hit.

SECTION V MISCELLANEOUS

1. NAVY DAY, JAPANESE STYLE

The Japanese Navy, on May 27, celebrated its 38th Navy Day, and although Rear Admiral Hideo Yano tried to sugar the bitter pill of setbacks with figures which "proved" Japanese naval superiority, most of his news was bad indeed.

Not the least of his worries was the death "in action" of Fleet Admiral Yamamoto who was said to have been largely responsible for early Japanese victories and strategy.

Speaking over Tokio Radio, strictly for home consumption, Rear Admiral Yano said:

> "This is the 38th Navy Day, the second in the GEA war. It is a significant day also to honor the spirit of the late Fleet Admiral Yamamoto, who was killed in action at the foremost front in the South Pacific in April.
>
> "His death in an aircraft at the front shows how important the air arm is in the war. The USA, recovered from earlier reverses, is now desperately raiding air bases as a preliminary to air combat with Japan."

Admiral Yano admitted that pressure on Attu was likely to be too much for the "small garrison", and that air pressure in the South West Pacific was increasing.

> "There is no doubt," he said,"that the enemy is trying to push back our land troops, extend his air bases, and, in co-operation with land and sea forces, to launch an attack on our homeland."

2. HUSH! HONOURABLE ENEMY LISTENS

Tokio Radio last month broadcast a "dramatic" description of the beginning of one of their air raids.

> "Unnamed officers orders were delivered to air crews. Enveloped in loud noises, the airplanes took off on an unnamed direction. They flew for an unnamed time to the south of an unnamed island."

Results, of course, were "unnamed".

3. GERMAN U-BOAT REVIEW FOR 1942

Berlin's "Volkischer Beobachter" published a full-page map showing "this year's bag by German and Italian U-boats."

Each ship "sunk" is indicated by a red dot which, the paper declares, "look like drops of blood". "Each one of them marks the position of the sinking of an enemy merchant ship or transport ..... Successes by surface ships, mine warfare and aircraft are not included on this chart."

The paper does not explain whether, for instance, there is a separate dot for each of the numerous "sinkings" of "Ark Royal". Neither does it account for apparent sinkings right in the middle of certain West Indian islands.

Germany claims that up to the end of 1942, 23,000,000 tons of shipping was sunk by them, and a further 3,000,000 tons by Italy and Japan. This "depreciation" of Japan's effort must have been very painful to the late Admiral Yamamoto who had claimed for Japan the sinking of 505 Allied warships and 484 merchant ships.

4. SOMEONE MUST BE WRONG

Tokio Radio, in its English news session, recently broadcast a talk by Commander Hansen, a "Berlin Naval correspondent". Commander Hansen declared that the Allies, at the outbreak of war, had 42 million tons of shipping, and that 31 million tons of this have been sunk. With 14 million tons of new construction, the Allies have 25 million tons left.

Tokio commented: "The Allies claim that they have more shipping than before, but this correspondent's remarks clearly deny such statement."

5. C.A.F.O.s ON ANTI-SUBMARINE SUBJECTS, 1943.

Attention of A/S C.O.s is directed to the following list of C.A.F.O.s dealing with Anti-Submarine subjects. (NOTE: C.A.F.O.s 205/43 to 301/43 inclusive have not been received).

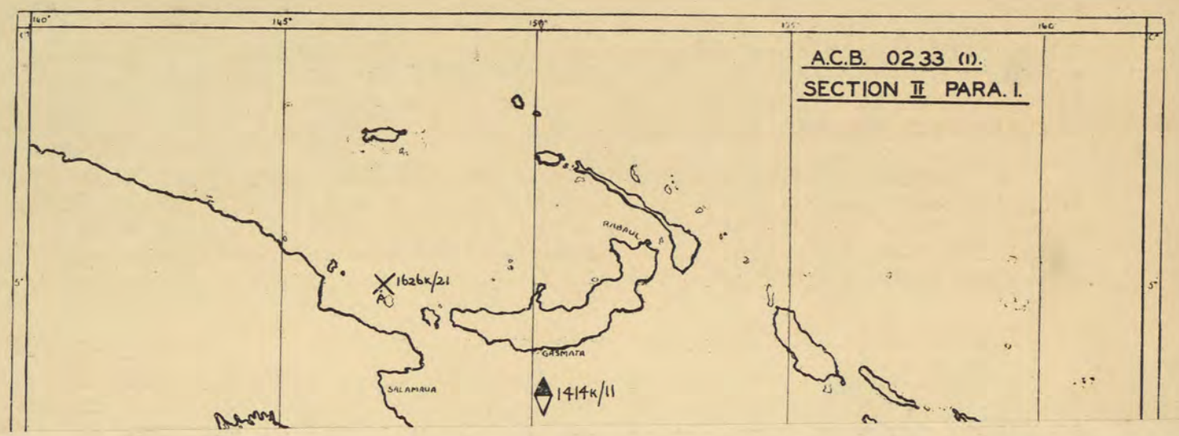
CAFO	Subject	Brief Description	Work by
24	Depth Charges	700' setting for use against very deep U-boats.	-
72	E/S	Modification to amplifier.	B.S.
73	A.V.C. Receiver	Check on calibrations.	B.S.
116	Depth Charges	Analysis of Expenditure and failures.	-
126	Asdic Sets	Earthing of Components.	S.S.(B)
127	Recorders A/S3 and A/S 59	Modification to Firing Cam for use in Scale 25	B.S.
200	A/S "H" books	Supersession by C.B.	S.S.
338	Spares	Training motors Patt.9955/6/A	S.S.
339	Switch Mag. Patt.2168	Excessive sparking - removal	S.S.(B)
340	Motor Unit Patt.A2022/3	Fitting of replacements	-

S.S.= Ship's Staff. B.S.= Base Staff. S.S.(B)= Ship's Staff with Base assistance.

The following C.A.F.O.s should be noted where they are applicable:

25, 34, 36, 69, 70, 164, 172, 173, 194, 341, 344.

By Authority: H. E. DAW, Government Printer, Melbourne.



A.C.B. 0233 (1).
SECTION II PARA. I.