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A.C.B. 0254/45 (2)

# ROYAL AUSTRALIAN NAVY

# MONTHLY NAVAL WARFARE REVIEW

FEBRUARY, 1945

S E C R E T



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# MONTHLY NAVAL WARFARE REVIEW

FEBRUARY, 1945

TRAINING AND STAFF
REQUIREMENTS DIVISION,
NAVY OFFICE
MELBOURNE.

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REQUIREMENTS DIVISION,
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SECTION I

# CURRENT EVENTS IN SOUTH WEST PACIFIC

## 1. H.M.A.S. "AUSTRALIA" AGAIN DAMAGED BY JAPANESE AIRCRAFT

The narrative below has been extracted from the Action Report of H.M.A.S. "AUSTRALIA" for the operations leading up to the landings in the Lingayen Gulf on 9th January. It will be a long time before the fortitude and determination displayed by "AUSTRALIA'S" company during the period 5th to 9th January are surpassed. During those five days "AUSTRALIA" was hit by no fewer than five Japanese suicide planes and suffered over 100 casualties yet she fulfilled all of her commitments and did not leave the assault area until late on the 9th January when she was detailed as one of the escorts for a fast transport group returning to Leyte.

H.M.A.S. "AUSTRALIA" departed from San Pedro Bay, Leyte at 0001 Item on January 3rd and joined Task Unit 77.2.1 (Rear Admiral Weyler in U.S.S. "NEW MEXICO") in Leyte Gulf. This Task Unit joined Task Unit 77.2.2 to form Task Group 77.2 (Vice Admiral Oldendorf in U.S.S. "CALIFORNIA") and commenced the passage to Lingayen Gulf via Surigao Strait, Mindanao Sea, Sulu Sea and Mindoro Strait.

The whole Task Force was known as the Bombardment and Fire Support Group and, in company with Task Group 77.4 (Escort Carrier Group), proceeded in two divisions - the Lingayen Fire Support Unit (C.T.U. 77.2.2) plus 6 escort carriers in the van and the San Fabian Fire Support Unit (C.T.U. 77.2.1) plus 6 escort carriers approximately 15 miles in the rear. The total force consisted of 6 battleships, 12 escort carriers, four heavy cruisers, two light cruisers, 39 destroyers, 12 destroyer transports and three naval tankers.

The first incident occurred at 1717 on the 4th January when the escort carrier "OMMANEY BAY" in the rear group was hit by a Judy which carried out a suicide dive which started such serious fires that the carrier had to be abandoned and sunk.

January 5th was a day of continuous air alerts. Reports of as many as 69 bogies were received entailing 808 intership reports At about 1700 H.M.A.S. "ARUNTA" reported being damaged by a near miss. She remained stopped but rejoined the force later in the night. Late in the afternoon a determined attack on the rear

force was made. The raid was plotted in from 1715 till 1730 when a number of planes were seen coming in from the west. The planes were either Kates with torpedoes or Zekes with large belly tanks.

At least six enemy planes were sighted on a relative bearing of Red 80 from "AUSTRALIA". They were just above the water and were under fire from all ships. One of the planes was brought down but the remainder crossed close ahead of "AUSTRALIA". One plane continued on to score a hit on the escort carrier "MANILA BAY" but another executed a very steep turn to starboard and, ending in a vertical dive, hit "AUSTRALIA" on the port side of the upper deck amidships.

Material damage from this crash was slight, apart from damage to funnels, crane, decks and ammunition lockers and the only damage to fighting efficiency was that No. 2 Port 4-inch mounting and two Bofors were put out of action. One gun of the 4-inch mounting and both Bofors were in action again the same night and the other gun was ready next day.

Minor damage was done to circuits, radar and W/T equipment but was quickly repaired. Casualties were unfortunately very heavy - 25 killed and 30 wounded. These were mainly the crews of 4-inch, Bofors and pom poms on the port side.

At dawn on the 6th January (S-3 Day) the Minesweeping Group entered Lingayen Gulf supported by the Bombardment and Fire Support Group which split into its two component parts, the Lingayen and the San Fabian Fire Support Groups. The latter proceeded to bombard targets on Poro Point and the town and bay of San Fernando on the east side of Lingayen Gulf. "AUSTRALIA" had no specific targets for this bombardment, being detailed for counter battery work and targets of opportunity.

During the bombardment there were numerous suicide attacks on our forces, mainly on the Minesweeping Group. In the San Fabian Fire Support Group, H.M.A.S. "SHROPSHIRE" had a near miss.

At midday the Minesweeping Group reported that the approaches to the lower end of the Gulf were clear of mines and the two Fire Support Groups proceeded up the swept channel and took up stations in accordance with the Bombardment Orders. "AUSTRALIA" was again allotted counter battery work.

At about 1725 a number of enemy planes attacked and were engaged by gunfire. At 1734 a Val dived on to "AUSTRALIA" from the starboard quarter and, flattening out, hit the ship on the upper deck between Nos. 1 and 2 starboard 4-inch mountings. This

plane carried a bomb which from fragments found appeared to have been converted from a large calibre shell.

A fire broke out but was quickly subdued although "A" boiler room had to be shut down temporarily. Material damage was mainly confined to S.2 mounting. Repairs carried out on board had one gun of this mounting in action by the 8th and the other by the 11th. Except for the air warning radar which was out of action for 25 hours all radar and W/T defects were remedied during the night. Casualties were again heavy - 14 killed and 26 wounded (the whole of the crew of S.2 gun and most of the crew of S.1 gun). Subsequently, except for special bombardment firing, there were only sufficient crews to man one 4-inch mounting each side.

The Bombardment and Minesweeping Groups retired from the Gulf for the night.

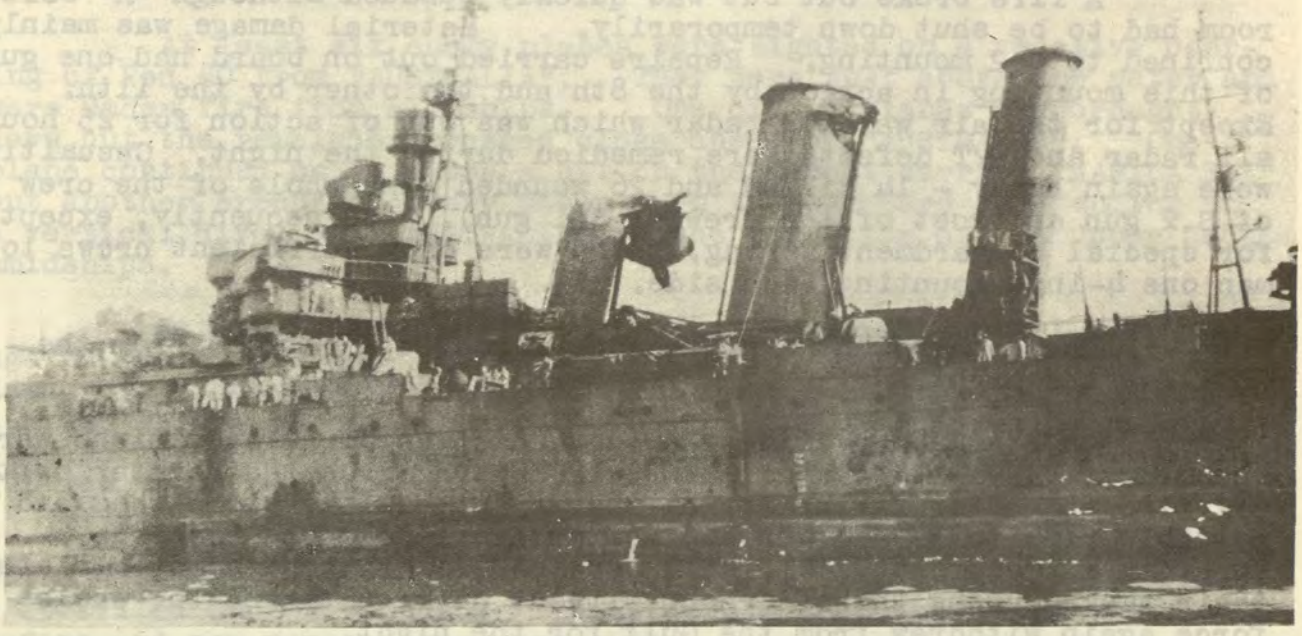
On 7th January minesweeping and bombardment operations were resumed. "AUSTRALIA" and "SHROPSHIRE" were allocated counter battery fire and after firing during the day at railway store sheds and possible pill boxes and gun emplacements silenced one probable 6-inch gun at about 1600. The underwater demolition teams completed their tasks during the afternoon without difficulty and the whole force again withdrew from the Gulf for the night.

At dawn on the 8th January the whole force was moving into the Gulf to carry out further bombardments. At 0720 a Dinah was sighted coming in low on the port quarter. "AUSTRALIA", last in the line, opened fire and at the same time four patrolling Wildcats attacked. The Dinah crashed twenty yards from the ship and skidded into the ship's side doing very little damage. One of the Wildcats followed the Dinah right in despite the fire from "AUSTRALIA" and the pilot was seen later to bale out of his plane.

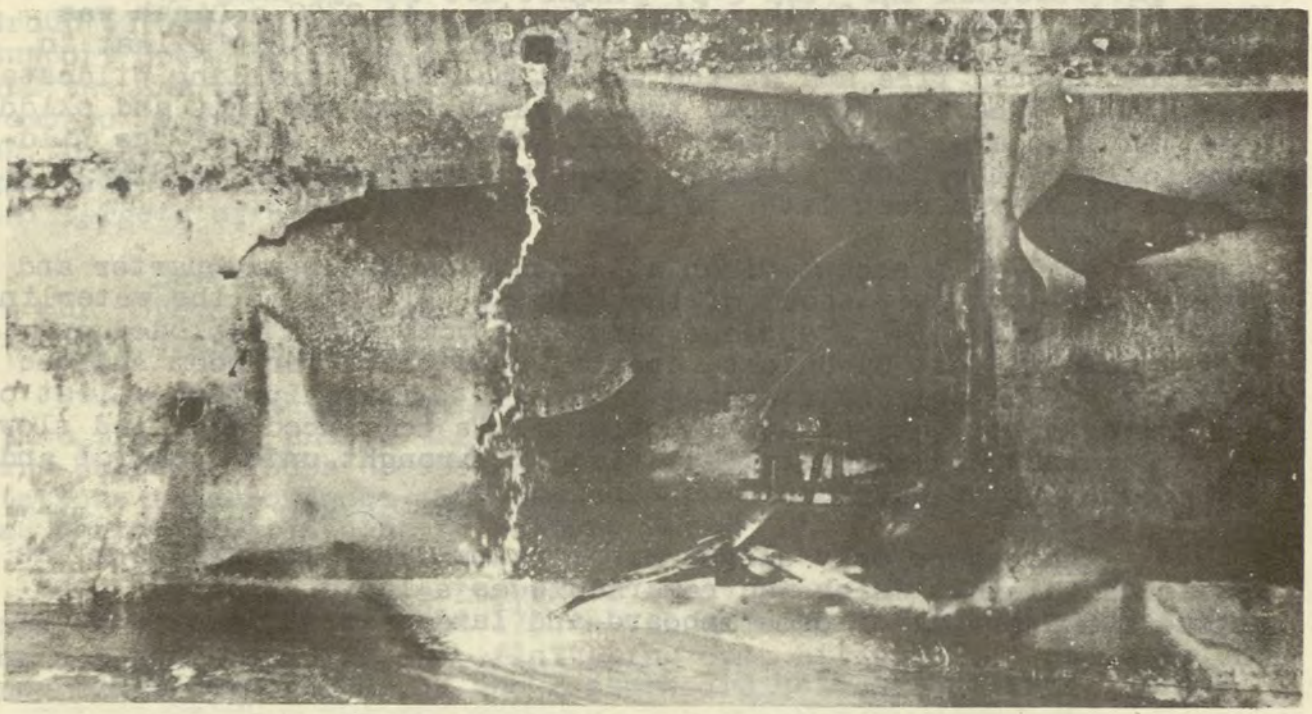
At 0739 a second Dinah attacked from the same quarter and was brought down just short of the ship but hit her on the waterline below the bridge. The plane carried a bomb which exploded and blew a hole 14 feet by 8 feet, opening up a provision room and one oil tank to the sea and flooding bilges. The ship took a list of 5 degrees to port and adjacent compartments commenced to flood slowly. The list was corrected and flooding brought under control and the shoring up of bulkheads was carried out.

There were only slight minor casualties, mostly shock, as a result of this hit which was remarkable as a lot of shrapnel, one engine and a propeller came inboard and landed in various parts of the ship.

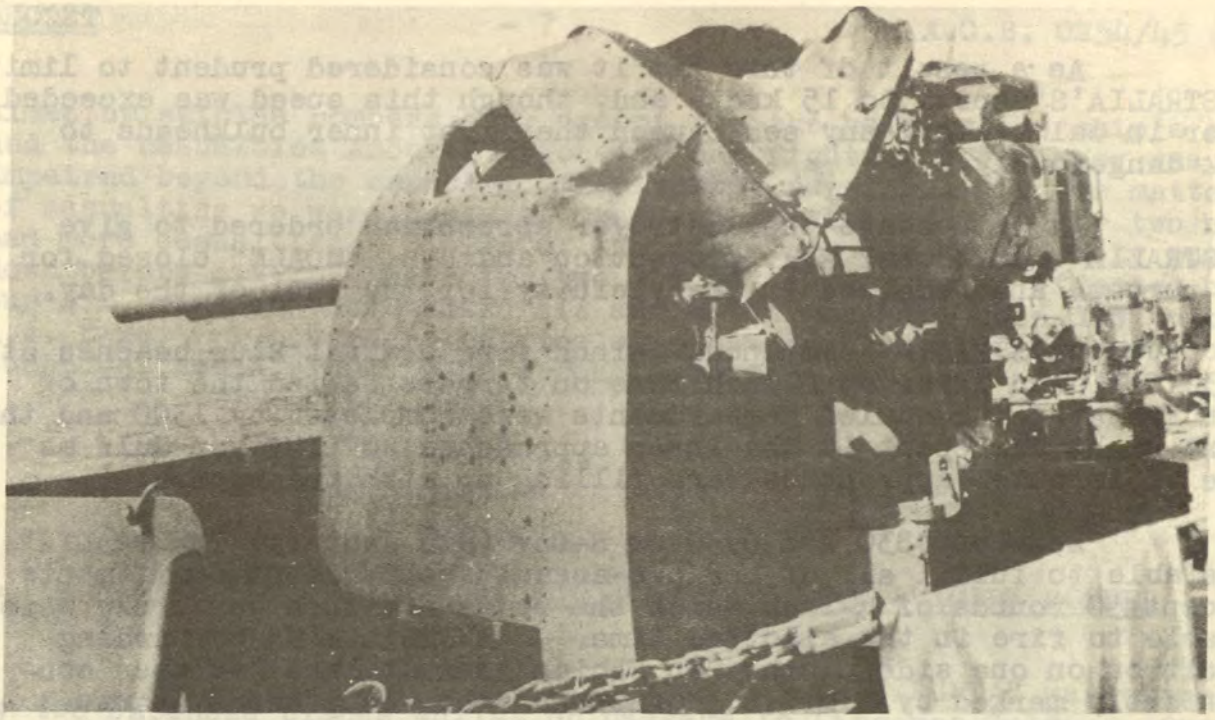
## H.M.A.S. "AUSTRALIA" - ACTION DAMAGE AT LUZON



General view Port side



Damage on waterline Port side



S.2 4-inch gun from Forward

Propeller of fourth Japanese plane

As a result of this hit it was considered prudent to limit "AUSTRALIA'S" speed to 15 knots and, though this speed was exceeded later in calm water, any sea caused the light inner bulkheads to work dangerously.

At this stage the destroyer screen was ordered to give "AUSTRALIA" additional A.A. protection and U.S. "MOALE" closed for the purpose and remained in the vicinity for the rest of the day.

"AUSTRALIA" commenced 4-inch fire against Blue beaches at 1030 followed later by 8-inch fire on targets behind the town of San Fabian. Scheduled bombardments were completed by 1300 and the next night was spent in the inner approaches to Lingayen Gulf as the whole outer approaches were filling up with transports.

Between 0830 and 0930 on S-Day (9th January) "AUSTRALIA" was able to fulfil all of her pre-assault bombardment commitments except 50 rounds of 4-inch which the reduced 4-inch gun crews were unable to fire in the allotted time. "AUSTRALIA'S" bombarding position on one side of the San Fabian Assault lane had been conveniently marked by H.M.A.S. "GASCOYNE" who was present as usual before S-Day carrying out surveying duties. After the assault waves had landed a further 8-inch bombardment was carried out and, when this was completed at 1030, "AUSTRALIA" had no further commitments for the day.

Now came the fifth suicide attack. At 1311, two planes were sighted coming in from the east. One dived past the ship and hit U.S.S. "MISSISSIPPI" and the other came in from ahead after a curving dive and attempted to hit the bridge and forward controls. He however missed his aim and, diving under the fore yard, caught his wing tip on a mast strut which swung him into the foremost funnel and over the side. There was no other material damage than the cutting off of the top third of the funnel which necessitated closing down two boilers in "A" boiler room and the severing of a few radar and W/T aerials which were quickly repaired. There were no casualties. A hole was cut in the damaged funnel by next day and all boilers were again in action.

Towards evening "AUSTRALIA" was directed to report to C.T.F. 79 and with U.S.Ships "COLUMBIA" and "LOUISVILLE" and H.M.A.S. "ARUNTA" was detailed to join the fast transport group returning to Leyte. This passage was uneventful and on arrival on the 12th preparations were made to put a temporary patch on the hole in the ship's side preparatory to proceeding south for repairs.

The Commanding Officer, H.M.A.S. "AUSTRALIA" remarks:-

"During the operation H.M.A.S. "AUSTRALIA" was hit five

times by suicide bombers and, except for the hole in the ship's side and the casualties among A.A. crews, her fighting efficiency was not impaired beyond the capacity of temporary repairs. In the matter of casualties we were lucky as other ships with only one or two hits had more casualties. Two of the attackers were definitely put down before hitting the ship, two did not appear to be affected by our A.A. fire and one missed his aim which may have been due to the A.A. fire. I consider that the same number of hits from bombs or torpedoes would probably have done much more damage."

## 2. H.M.A.S. "ARUNTA" DAMAGED BY NEAR MISS FROM SUICIDE BOMBER

At 1735 on 5th January, 1945 H.M.A.S. "ARUNTA" was attacked by two Japanese planes whilst on passage to Lingayen Gulf. One of these planes veered to the right late in the attack and the other attempted to make a suicide crash on the bridge. The ship took avoiding action and the plane, a Zero, crashed into the water about 30 feet from the ship's side abreast the engine room and gearing room. The aircraft carried a bomb estimated to be about 250 lbs.

Bomb splinters made 50 holes in the ship's side between the water line and the upper deck abreast the engine room, gearing room and the second W/T office. The largest of these holes was about 12 inches by 6 inches. About 50 holes were also made in the superstructure. As the electrical leads to both steering motors were damaged the rudder could not be moved from hard-a-starboard and, as it was necessary to keep the ship under way while the enemy planes were still attacking, "ARUNTA" continued to circle to starboard for about 10 minutes until the rudder could be centered with the hand pump gear.

By 1745 the forced lubrication system was failing and the gearing room was inaccessible because of steam escaping from damaged pipes. It was accordingly necessary to stop main engines and to shut down all boilers. The gearing room was found to be flooded to the water line and the engine room to a depth of about 3 feet 6 inches. Damage control parties were detailed to plug holes in the ship's side while pumping was commenced in the engine room at an estimated rate of 80 tons per hour using port and starboard bilge ejectors and in the gearing room at an estimated rate of 100 tons per hour using the portable diesel pump working from the upper deck

and the starboard bilge ejector. By 2255 the ship was able to proceed at 25 knots. The lost ground was made up during the night and "ARUNTA" like "AUSTRALIA" was able to fulfil all of her commitments during the assault on Lingayen Gulf.

## 3. AUSTRALIAN L.S.I's AT LINGAYEN GULF

After embarking elements of the United States 37th Infantry Division and their equipment on the 11th and 12th December, H.M.A. Ships "MANOORA", "KANIMBLA" and "WESTRALIA" departed from Torokina on the 16th and arrived at Manus on the 21st. The next 10 days were spent in harbour, with small shore recreational parties and twice daily cinema performances relieving the monotony to a certain extent. The three ships left Manus with Transport Group Able on the 31st January carrying the following personnel and stores:-

| | Officers | Enlisted Men | Cargo |
|---|---|---|---|
| "MANOORA" | 43 | 930 | 466 tons |
| "KANIMBLA" | 83 | 1247 | 390 tons |
| "WESTRALIA" | 62 | 975 | 500 tons |

"MANOORA", "KANIMBLA" and "WESTRALIA", together with the U.S.Ships "SARASOTA" and "TITANIA", comprised Transport Division 8 which was one of the three transport divisions constituting Transport Group Able (Task Group 79.3). The Group Flagship was A.G.C.7, U.S.S. "MOUNT McKINLEY" flying the flag of Rear-Admiral I.N. Kiland, U.S.N.

Transport Group Able sailed from Manus accompanied by a destroyer screen and took station 10 miles astern of Transport Group Baker. Throughout the voyage air cover was provided by two escort carriers operating between the two transport groups.

The two groups reached the entrance to Leyte Gulf early on the morning of the 6th January and proceeded on the scheduled route through Surigao Strait and up the west coast of the Philippines, past Negros, Panay and Mindoro Islands. The port of Manila was passed about 80 miles to the westward during the forenoon of 8th January.

During the passage through Surigao Strait and frequently

thereafter enemy aircraft were in the vicinity of the Assault Groups and, as mentioned in another section, one plane which attempted a suicide dive on "WESTRALIA" was brought down within 10 feet of the stern on the evening of the 8th January.

At 0657/9th the order to deploy was made and the ships proceeded to their assigned positions about six miles from the beach. Troops began to disembark at about 0745 - "MANOORA" started at 0746 and had four waves away by 0810. During the assault phases on both parts of Lingayen Gulf the bombardment, directed by float spotter planes, was terrific and the enemy air opposition was weak and ineffective. The beaches were subjected to rocket bombardment from 0900 to 0930.

Weather conditions for the landing were excellent with very little wind and practically no swell. As the boats moved inshore almost the entire contryside in the vicinity of the beach was shrouded in smoke from the exploding shells of the bombardment. The first waves of assault troops reached the beaches at 0932.

At about 1030 the L.S.I's weighed and proceeded to positions about 4,000 yards from the shore in order to discharge their military cargo and equipment. This was completed without damage by 1630 and the ships were all ready to sail at about 1800.

All ships in the area were ordered to make smoke at 1823 when enemy aircraft were in the vicinity and a most effective screen enveloped the whole of Lingayen Gulf. The order to cease making smoke came at 1934 and at 1952 the transports of both attack forces weighed anchor and proceeded from the area.

## 4. "WARREGO" AND "GASCOYNE" CHASE JAPANESE DESTROYERS ON WAY TO LUZON

H.M.A. Ships "WARREGO" and "GASCOYNE" left Leyte Gulf on the 2nd January with the Minesweeping convoy of Commander Task Group 77.6 and proceeded down Surigao Strait at 10 knots.

After one plane had been shot down by the convoy at dusk on the 2nd, a more determined attack developed at 0730 on the 3rd when 10 aircraft attacked from different directions. Three of these planes attacked "GASCOYNE" and one attacked "WARREGO" without causing damage to either ship. Four of the planes were shot down by fire from the convoy and by fighters from escort carriers.

There were no further incidents of note until the afternoon of the 5th despite the fact that the convoy had passed within 70 miles of Manila. At 1543 that afternoon two Japanese destroyers, which had been reported previously by aircraft, were sighted astern steering a westerly course. The only destroyer on the screen, U.S.S. "BANNION", and the two Australian ships were detailed to attack and immediately altered course towards the enemy at full speed with the range at 19,000 yards. The opening salvoes fired at the Japanese ships were all short but the two enemy destroyers immediately turned about and retired towards Manila at full speed making smoke. Only "BANNION" had the speed to continue the chase and she claimed a few hits before the three ships returned to the convoy at 1641.

The convoy arrived off Lingayen Gulf at dawn on the 6th January (S-3 Day). The Hydrographic Unit was engaged in laying buoys during the day. Several air attacks were made by suicide bombers on both the Bombardment and the Minesweeping Groups. One of the planes commenced an almost vertical dive over H.M.A.S. "SHROPSHIRE" but was disintegrated in mid-air by the first round fired by "GASCOYNE'S" after 4-inch mounting. During another of the attacks U.S.S. "BROOKS" was damaged and was taken in tow by H.M.A.S. "WARRAMUNGA". "GASCOYNE" took over the tow next morning and proceeded to the shallows off Santiago Island where the tow was slipped and "BROOKS" was anchored.

"WARREGO'S" task for the 7th January was the marking of the approach lane at the entrance to the Gulf while that of "GASCOYNE" was the marking of the beach approach lanes. There was no interference from enemy aircraft.

Buoy laying was recommenced at 0900 on the 8th and, after the two suicide attacks on H.M.A.S. "AUSTRALIA", the remainder of the day was free from interference except for the activities of one or two snoopers. All buoys were laid by 1600.

"WARREGO" and "GASCOYNE" had a comparatively easy time on S-Day and were able to watch the assault ships making full use of the buoyed channels laid by the Hydrographic Unit during the previous three days. "GASCOYNE" left the assault area early on the 10th January and proceeded to Leyte. All surveying equipment was transferred to "WARREGO" who had further commitments in the area.

## 5. JAPANESE BOMBARDMENT OF MINDORO

On the night of 26th December, 1944, the American beachhead

at Mindoro was bombarded by a Japanese Naval Force. During the attack one Japanese destroyer was sunk. A survivor from this ship, a first class petty officer, was later captured and has supplied the following information concerning the attack.

At 0900 on the 24th December a Japanese Naval Force consisting of "ASHIGARA" (CA), "OYODO" (CL) and six destroyers("KIYOSHIMO", "KASUMI", "ASASHIMO, "SUGI", "KAYA" AND "HINOKI") departed from Camranh Bay, French Indo-China. The force was to be accompanied by the aircraft carrier "UNRYU" but she was sunk off Formosa on 19th December by an American submarine while proceeding south to join up. (The U.S. Submarine "REDFISH" claimed that she sank a Japanese carrier on that date). The force steamed north along the China coast as far as Hainan and then turned north-east in order to appear to be headed for Formosa. After reaching a latitude somewhat north of Manila it changed course towards Manila, again to make that appear to be the destination. Manila Bay was passed at about 0400 on the 26th and from then on course was set straight for San Jose, Mindoro, at an increased speed of 24 knots. The ships planned to arrive at the objective at 2230 that night, to attack shipping and shell the airstrips and shore installations and to withdraw at about 2330.

In the late afternoon of the 26th the ships were located by five B-24's and were attacked by other American planes after dark. "KIYOSHIMO" (the prisoner-of-war's ship) was hit during this attack and fell behind shortly before the objective was reached. All ships were attacked again by planes off San Jose at about 2130 when "KIYOSHIMO" suffered more bomb hits. During the actual attack on the objective she was hit by a torpedo (fired by a P.T. boat) which caused the main damage. She sank at about 2230. Survivors were picked up by two Japanese destroyers after the ships had completed their firing. As the prisoner-of-war struck out for the shore immediately, he was missed. The following day he was taken prisoner by a P.T. boat.

Following the attack, it was planned that the three "MATSU" class destroyers were to head for Manila to refuel, to depart from there about noon on the 27th and to proceed to Camranh Bay, arriving on the morning of the 29th. Other ships in the force were to return to Camranh Bay by a direct route after curving north to escape the American air searches. They were to reach their destination by dawn on the 28th.

## 6. H.M.A.S. "WESTRALIA" SHOOTS DOWN A "ZEKE" OFF LINGAYEN GULF

At dusk on the 8th January, 1945, H.M.A.S. "WESTRALIA" was

proceeding with Transport Group Able of the Lingayen Attack Force on a course of 350° speed 12 knots. The group consisted of six ships in line ahead covered by escort carrier and land based planes. "WESTRALIA'S" radar was not in use in accordance with convoy instructions.

After the escorting planes had shot down four Japanese planes in the vicinity of the convoy, a "Zeke" managed to penetrate the screen and approached from the port quarter. The plane maintained a steady course until bearing about Red 170 from "WESTRALIA" when it was hit by 40 mm. fire and commenced a steep suicide dive aimed at the bridge of the L.S.I. Repeated hits were scored by guns of all calibres during this attack and the aircraft was forced into a steeper dive which caused it to crash no more than 10 feet astern of "WESTRALIA". Wreckage was strewn over the stern of the ship and the steering gear was temporarily disabled by an underwater explosion. There was only one minor casualty.

Commander Task Group 79.1 officially credited "WESTRALIA" with the destruction of this "Zeke".

## 7. U-BOAT OPERATIONS IN THE SOUTH WEST PACIFIC - JANUARY, 1945

After the flare up of U-boat activity in the South West Pacific Area during December, the month of January was comparatively quiet with few sightings and only one attack outside the Philippines area. Details are not yet complete of operations in the Philippines during January but at least three attacks were made by Japanese submarines (one of them by a midget submarine) and one U-boat and one midget U-boat were claimed as possibly sunk in the anti-submarine operations which followed these attacks.

Three torpedoes were fired from seaward into Humboldt Bay on 12th January. These torpedoes all exploded harmlessly - two outside the bay and one inside - but one exploded 300 feet away from the merchant ship "PONTUS ROSS" after bouncing off the ship's side and leaving a small indentation. Seven escort vessels in the vicinity, including H.M.A.Ships "BURDEKIN", "TOWNSVILLE", "ROCKHAMPTON" and "KATOOMBA" searched the area outside Humboldt Bay without success.

After an aircraft had reported sighting seven submarines in four groups within 25 miles of each other about 100 miles W.S.W. of Bathurst Island on 15th January N.O.I.C. Darwin issued an AF message

Four ships engaged in survey duties in the area were detached to carry out a search but they reported negative results when the operations were abandoned on the 17th.

SECTION II

# OPERATIONAL AND TRAINING

## 1. INTRODUCTION OF LORAN INTO R.A.N. VESSELS

Approval has recently been given for the fitting of Loran into all cruisers, destroyers, sloops, frigates and A.M.S. vessels of the R.A.N. The fitting of this navigational aid to ships with high priority has already commenced.

Loran (LOng RAnge Navigation) is a radio instrument which enables ships and aircraft to fix their positions accurately in a few minutes irrespective of the state of the weather and without breaking W/T silence.

Loran receivers interpret special signals from transmitting stations situated on distant shores and the operator quickly determines his ship's geographical position by making a reading referring to Loran Tables, and drawing on a plotting sheet a line of position for each reading.

Some of the advantages that Loran possesses over other systems of navigation are as follows:-

(i) It can obtain accurate fixes at ranges of 600 to 700 miles from a transmitting station in daytime and 1,200 to 1,400 miles at night. Accuracy is comparable to that of celestial observations.

(ii) Loran is almost completely independent of the weather. It works during the most adverse weather, in rough sea or air and under all conditions except heavy lightning in the immediate vicinity.

(iii) No transmission from the ship or plane is required and W/T silence thus may be maintained.

(iv) Loran fixes may be obtained by a skilled operator in about two minutes. No calculations are necessary.

(v) Because the transmitted signals are coded in their timing, the use of Loran is restricted to friendly craft having appropriate

charts or tables; the enemy cannot use the system, even if he has receiving equipment.

(vi) Loran fixes are not dependent upon compass, chronometer or other radio or radar sets; special Loran equipment is used.

(vii) Because Loran measures the time of arrival of radio waves instead of the direction of arrival as in radio direction finding, a simple straight wire aerial without any special requirements may be used.

Loran stations now operating in the Darwin area and in the Marianas cover an area bounded roughly by the coast of North West Australia, Borneo, the Philippines, southern Japan and eastern New Guinea. Other projected stations in the Pacific and Indian Oceans (including Station in the Philippines, Halmaheras and in the Bay of Bengal) will shortly cover the entire area likely to be used in the final stages of the war against Japan. The North Pacific already has Loran cover throught the Bering Sea and the Aleutians by day and for an additional 1,000 miles south-west of the Aleutians by night.

How Loran operates

The principles of transmission and reception which Loran utilizes may be stated simply:-

(i) Radio signals consisting of short pulses are broadcast from a pair of special shore-based transmitting stations.

(ii) These signals are received aboard ship on a specially designed radio receiver.

(iii) The difference in time of arrival of the signals from the two stations is measured on a special indicator. By means of a cathode ray tube, this distance may be measured in microseconds (millionths of a second).

(iv) This time-difference establishes a single line of position by reference to special charts or tables.

(v) Two or more lines of position from different pairs of stations are crossed to obtain a fix.

Loran stations are always arranged so that two or more pairs will cover strategic areas. Two operating pairs are usually formed from three stations by arranging one master station located in the centre to operate in both pairs, sending out two different sets of pulses to two different slave stations. By establishing two position lines the navigator can determine where these lines

intersect and find his position. If a third pair of stations is present it is wise to check the fix by obtaining a third reading and a third position line.

Accuracy of Loran

The accuracy of Loran lines of position varies over the service area of each pair of stations. It is very high - within a few hundred yards - near the base line between the stations, very low near the base line beyond the stations and quite high over the rest of the area. Except near the extensions of the base line, a rough but usable idea of the accuracy may be had from the rule that the error will not be more than 1% of the distance from the stations. For example, at 1,000 miles the reading will be within 10 miles of the correct value and at 200 miles within 2 miles of the correct value.

Loran Courses at Balmoral and Flinders Naval Depot

Courses of four days duration are to be given to watchkeeping officers and bridge ratings at Balmoral commencing in March or April.

These courses will be sufficient to familiarise watchkeeping personnel with the operation of the equipment. Courses of three weeks duration concentrating on the fitting and maintenance side of Loran will be given to technical officers and radio mechanics at Flinders Naval Depot commencing 26th February.

Security

The word Loran is a coined word and is not classified. If it is used with the term Navigation or any indication of its use or nature is given it is CONFIDENTIAL.

2. SUMMARY OF JAPANESE SHIP-BORNE RADAR

During the weeks since the Second Battle of the Philippines Sea, considerable information has been obtained on Japanese ship-borne radar. A report prepared by the Office of the Chief Signal Officer, General Headquarters, South West Pacific Area on 12th December, 1944 reviews the status of radar aboard Japanese combatant ships and the following is a brief summary of findings:-

Probably all combat ships have one or two air warning radars, a surface search and fire control radar, and a radar search receiver. In addition, some have A/A or searchlight control radars.

Some radar installations were probably rushed through for use in the recent naval battles.

The efficiency of these radars is still considerably less than current Allied types.

The Japanese have had to reply on modified search radars for surface fire control, apparently owing to the lack of speciality designed fire control sets.

SECTION III

# NARRATIVES

## 1. AMERICAN SUBMARINE OPERATIONS DURING NOVEMBER AND DECEMBER, 1944

United States submarines have recently been carrying on a relentless and highly effective private war against Japanese Fleet units. The role played by submarines against troop or supply-laden enemy merchantmen, tankers and transports is well known; three-fourths of Japanese maru losses have been caused by submarines. Less publicized but important reconnaissance and lifeguard missions have been completed. Actions against enemy fleet units have been frequent and successful, but never more so than during November and December, 1944.

First blood in the action following the landings at Leyte was drawn by submarines. The U.S. Submarines "DACE" and "DARTER" combined to sink the heavy cruisers "ATAGO" and "MAYA" off Palawan on 23rd October and to damage the heavy cruiser "TAKAO" so badly that she had to retire. On the same day, "BREAM" put "AOBA" out of commission near Manila. Following the American Third Fleet's action east of Luzon on 25th October, "HALIBUT" reported five hits on a battleship or heavy cruiser and "JALLAO" sank a three-funnelled Japanese light cruiser. Among important targets hit in subsequent encounters are the following.

6th November: "RATON" and "RAY" attacked two heavy cruisers off Santa Cruz. One "KUMANO" class heavy cruiser was beached and later destroyed by aircraft.

17th November: "SPADEFISH" was credited with the definite sinking of a Japanese escort carrier, as yet unidentified, off Formosa.

19th November: "HAKE" put two torpedoes into a "NATORI" class light cruiser south of Manila. The cruiser was escorted by two "MATSU" class destroyers.

21st November: "SEALION" torpedoed two reported battleships in a Japanese Task Force off Formosa. One later exploded and vanished from the radar screen.

25th November: "CAVALLA" reported a successful attack on a Japanese heavy cruiser in the South China Sea.

29-30th November: "ARCHERFISH" hit and sank a large carrier close to the Empire. Identification of the carrier was not positive but it resembled the "HAYATAKA" class.

13th December: "BERGALL", operating south of French Indo-China, attacked two heavy cruisers. One "ATAGO" class heavy cruiser was observed to blow up and break in two. The bow half was seen to sink. The second cruiser (unidentified) was damaged.

19th December: "REDFISH", in an aggressive daylight attack between Formosa and the Empire, scored two hits on an unidentified carrier which was seen to sink stern first.

22nd December: "TILEFISH" put three torpedoes into a "FURATAKA" class heavy cruiser five miles south of Tokyo Bay and saw it sink 40 minutes later. If identif-ication of the cruiser is correct, the ship was probably "AOBA".

The damage inflicted, as listed above is heavy and definite.

The identification of some of the units is open to question because of the very nature of a submarine attack. The submarine commander must identify his target quickly, often in poor light, by the superstructure and, as new Japanese types appear, errors in identification are unavoidable. For example, the new large "SHIMO" class destroyer has a superstructure remarkably similar to Japanese heavy cruisers. It is thought that the ship sunk by "CAVALLA" on 25th November may well have been a destroyer of this class, since no heavy cruiser was then believed to be in that area. Little is known regarding the appearance of the new heavy cruiser "IBUKI" but, by coordinating the known facts, it is quite possible that this may have been the ship hit by "HALIBUT" on 25th October, reported as a battleship or heavy cruiser. If this identification is correct, this new enemy heavy cruiser was probably sunk.

## 2. "U-188's" CRUISES IN THE INDIAN OCEAN

On the 30th June, 1943, "U-188" sailed from Lorient in company with "U-155". It was a time of intense activity in the Bay of Biscay, but the boats were lucky and escaped attack, though twice sighting aircraft. On the 12th July they parted company,

"U-188" being ordered to take fuel from "U-487", which was then about 400 miles west of Teneriffe, while "U-155" continued on southward. On the 13th, however, the supply U-boat was sunk by aircraft from U.S.S. "CORE", which approached while the watch were engaged in unpacking a bale which had come drifting by - that bale might almost rank as a "secret weapon" for part of its contents, which had been placed on the control room floor, burst into flames when the first bombs were dropped and the Captain and guns' crews had to grope their way through dense smoke to reach the bridge. The surprise was so great and the destruction of the boat so speedy that no signal was sent to the U-boat Control, and it was not until "U-188" had spent nearly a week waiting at the rendezvous that the loss of "U-487" was presumed. On the 18th, Control ordered her to rejoin "U-155", which was by now about 500 miles to the southward. She caught up with her and obtained sufficient fuel and provisions to round the Cape of Good Hope, which was given a wide berth, and reach a rendezvous with the tanker "BRAKE" to the south-eastward of Madagascar. Six U-boats - five German and Italian - were expected. The Germans arrived and, after three days, were still waiting for the Italian "AMMIRAGLIO CAGNI" to appear. Instead of the U-boat came the news of the surrender of Italy and the rendezvous, now feared to be compromised, was hastily abandoned.

"U-188" now set course for the south-east coast of Arabia. On her way she passed close to Mauritius and reconnoitred the harbour of Port Louis. Her captain - he was a Lieutenant-Commander named Luedden - found no shipping there, probably somewhat to his relief, as the directions for entering the harbour were discovered to be wrong. From Mauritius his course took him between the Admiralty and the Seychelles Islands to the westward of Mogadishu, where on 21st September, he came upon his first target, the Liberty ship "CORNELIA P. SPENCER". Despite the fierce gunfire which greeted him when he surfaced, he attacked successfully and sank the ship. He recorded in his log the appearance a few hours later of a Flying Boat which, he presumed, had come to search for survivors.

A few days later "U-188" reached her operational area, after a passage from Lorient lasting almost exactly three months. Luedden found conditions most difficult. Sometimes a mist obscured the horizon and made it hard to distinguish sea from sky; the extreme phosphorescence of the mirror-calm sea made him fearful of detection every time that he fired a torpedo. The hot sticky climate affected the crew who, despite their long passage, had not yet become acclimatized to the tropics. Machinery was affected almost as much as men were; the diesels could only be kept going by constant attention and all the torpedoes loaded at Lorient ran badly and the cause of their failure could not be remedied. On 27th September, "U-188" sighted off Masirah Bay a convoy of ten ships -

seven of them tankers - proceeding towards Aden. She pursued it for 16 hours and then the diesels broke down and she had to abandon the chase. Next day she found a convoy sailing up the Arabian coast; she seems to have been in a good attacking position, but this time the torpedoes failed. Six were fired and six were heard exploding at the end of their run. An aircraft drove her off before she could try her luck again.

Luedden then decided to move up the coast and enter the Gulf of Oman, where he could expect to find particularly worth-while targets in the tankers bound to and from Abadan. In six days he sighted - and attacked - four, but not one was sunk. As to the first attack he had to enter in his log: "Electric torpedo exploded after 8 minutes 26 seconds - attacking distance, 800 metres." The next two entries record the appearance of surface craft and aircraft, no doubt explaining why four days elapsed between his first and second attacks. On the evening of 5th October he torpedoed the 10,000-ton Norwegian tanker, "BRITANNIA", and claimed her sunk, but she was in ballast and, though hit amidships, safely reached Bandar Abbas. Two more tankers were attacked - the brief entries in the log describe the actions eloquently enough.

6th October

2132 - Tanker - Type "CANDOLITE" - 310° - 12 sea miles
2 air torpedoes - tanker turned into track (strong phosphorescence).

2239 - Tanker - two electric torpedoes - end of run detonations.

On 8th October, Luedden was ordered to leave patrol and make for Penang. "U-533", which had been with him at the great rendezvous with "BRAKE" in September, apparently took over his area in the Gulf of Oman. "U-533's" operations on the Arabian coast had been even more unprofitable than those of "U-188" and her stay in the Gulf of Oman ended after ten days with her destruction by aircraft of 244 Squadron, the sole survivor being spurred on by fear of sharks to swim 20 miles in 28 hours until he reached Khor-Fakkam on the Muscat coast.

The only incident on the passage to Penang was an unsuccessful attack on an escort vessel and on 30th October "U-188" ended a patrol of 121 days, during which she had covered over 19,000 miles - 925 of them submerged. Repairs took several weeks, so that it was not until 12th December that "U-188" left for Singapore, which Luedden dutifully called by its temporary Japanese name "SHONAN". There the boat loaded a rich cargo, 100 tons of tin, 24,000 lb. of rubber, 1,000 lb of quinine, four chests of opium and nearly

1,500 sacks of wolfram packed in rubber and weighing about 40,000 lb. They were consigned to a firm in Berlin, the manifest being dated 29th December, 1943.

"U-188" returned to Penang and sailed from there on 9th January, 1944, on her second patrol. Its success, compared with that of the first cruise, shows how much acclimatization means in operations in tropical waters. On his first patrol Luedden had sunk one ship and damaged another; on his second he sent to the bottom seven ships of a total tonnage of nearly 50,000 tons, and a like number of small sailing craft. His first kill was made soon after he had passed through the Nine Degrees Channel. Just before midnight on the night of 20/21st January, he attacked the British "FORT BUCKINGHAM", which was bound from Bombay to Durban. Though in ballast and hit by one one torpedo, the ship sank in about five minutes. It dragged down all its boats with it and the survivors had to take to rafts, upon which some of them drifted for 16 days. The Chief Officer, the only officer to survive, said that his experiences reduced his weight by 30 lb., but also cleared up a bout of malaria from which he had been suffering.

"FORT BUCKINGHAM" was sunk outside the operational area assigned to "U-188" which was to the eastward of Aden. The first kill which Luedden achieved here was the "FORT LA MAUNE," which was carrying 8,000 tons of General and Military Stores. Attacking just before midnight, Luedden had again to use only one torpedo. After the ship had sunk, "U-188" surfaced and one of her crew questioned a boat-load of survivors. Perhaps the German would not have been entirely gratified if he had known that his voice sounded "definitely Japanese" - it was a particularly dark night. He first asked the name of the ship and was promptly told by the Third Officer that she was a Spanish ship, the "Santa Maria". The German, for his part, seems to have no doubts about the voice of the man who was speaking and called him a liar, threatening to open fire if not told the truth. The Third Officer then saw through the darkness three men on the U-boat's deck armed with tommy guns and gave the name, but refusing to be intimidated, added that they were bound from Port Said to Australia. This, though reasonably true - the ship was in fact on passage from Aden to Cochin - did not satisfy the German, who after writing it down said, "That is not our information - you are a new ship from London". He was wrong, but that his intelligence was a little too good for our comfort was made clear when the ship to which he was referring was sunk a few days later.

Luedden now settled down to a most profitable three weeks. On the night of 25th/26th he sank two ships, the "SAMOURI" of 7,210 tons, and the "SURADA" of 5,427 tons. Three nights later he sent a Greek merchantman of 4,677 tons to the bottom, but then there was a pause in his operations, which the following entries in his log no doubt explain:-

30th January

0341 - Flying Boat

1608 - Flying Boat

1735- - Escort Group
0205

He stood well out at sea before making his next attack on 4th February, when he torpedoed the Liberty ship "CHUNGKING". He then went for some rather smaller fry and on the 7th sank three native sailing ships. He began with gunfire, but, as always seems to be the case with U-boats, this was both expensive and ineffective and they had to be finished off by ramming. On the 9th he sank not only another Arab dhow, but also the 7,500 tons merchantman "VIVA", which took the last of the torpedoes which he had embarked at Penang. He still had one of the Lorient electric torpedoes left. It was seven months since he had taken it on board and, when he fired it at a tanker next day, the familiar "end of run" detonation was heard.

With all his torpedoes expended Luedden now began his passage home. On the 12th he used up his remaining ammunition to sink three more Arab sailing vessels and perhaps regretted his expenditure, for on the 14th he entered in the log -

14th February

1912 - Steamer 80° (No torpedoes, no guns).

For the next three weeks Luedden proceeded slowly southward to another rendezvous with the tanker "BRAKE". He met her on the 11th and obtained supplies, but he was only just in time.

On 12th February H.M.S. "RELENTLESS" had found and destroyed the tanker "CHARLOTTE SCHLIEMANN" as she was refuelling a U-boat at a rendezvous south-eastward of Mauritius. D/F fixes showed that U-boats were still in the area ten days later and it was appreciated that the enemy would probably have to send another tanker to supply them and the boats which, like "U-188" had been patrolling in the Arabian Sea. A force consisting of two cruisers (H.M. Ships "NEWCASTLE" (wearing the flag of Admiral Commanding Fourth Cruiser Squadron) and "SUFFOLK") an escort carrier (H.M.S. "BATTLER") and two destroyers (H.M.Ships "QUADRANT" and "ROEBUCK") was therefore assembled at Mauritius at the beginning of March. Seven Catalinas of 259 and 265 Squadrons were also made available, their operations setting the western limit to the area in which the enemy could safely supply his U-boats.

C.S. 4 sailed from Mauritius on 6th March. Though from the 8th onwards "BATTLER'S" aircraft had to face bad weather, yet, on the 11th and 12th, a number of the flying crews spent eight hours in the air, some making night patrols as well. At about 1000 on the 12th, their exertions were rewarded by the sight of a tanker and two U-boats making off on a south-westerly course. The tanker, subsequently found to be the "BRAKE", had refuelled "U-188" - with considerable difficulty, judging by the oil which surrounded the latter - and was now trying to find easier conditions in which to complete her task.

This move had been accurately forecast by "BATTLER'S" meteorological officer, and C.S. 4, sweeping in a north-easterly direction, was about 40 miles to the southward of the enemy. At 1018 he ordered "ROEBUCK" to attack the enemy. Earlier it had seemed that for lack of oil the destroyer would have to return to Mauritius - 1,450 miles - but, as a result of fine seamanship, she had been refuelled by "SUFFOLK" in the most difficult conditions possible. As she closed at full speed, "BATTLER'S" aircraft signalled to her - twice by dropping a message on board - not only the range and bearing of the tanker, but also the positions of the U-boats accompanying her. At 1116 "ROEBUCK" sighted "BRAKE" at a range of 13 miles and ten minutes later opened fire. The ship was soon burning and sank just after 1200.

The two U-boats had dived before "ROEBUCK" closed the tanker, but that evening they were found on the surface and attacked by "BATTLER'S" aircraft, which severely damaged one of them.

"U-188" met three U-boats on her passage home and was to have met a fourth. On 22nd March she fell in with "U-1062" and obtained mail and cyphers from her; then, after rounding the Cape and suffering considerable damage from heavy seas in doing so, she met "U-181" on the equator. From this U-boat she received some lubricating oil and also took off a Lieutenant Commander - possibly a Commanding Officer under instruction. On 28th April she rendezvoused with "U-129", which transferred to her two G.S.R. sets, a "NAXOS" and a "BORKUM" which Luedden, with the passage of the Bay of Biscay before him, was no doubt, glad to have.

On the 1st "U-188" was ordered to close "U-66", one of the oldest boats at sea, which was running very short of oil. She was 300-400 miles west of the Cape Verde Islands and about 600 miles from"U-188". Luedden calculated that it would take him five or six days to reach the position but his W/T transmitter was out of order and he could neither inform "U-66" nor control that he had received the signal and was complying with it. Late on 5th May he heard hydrophone effect and, sighting three destroyers through the periscope, made off to the south-east. These destroyers were

part of U.S.S. "BLOCK ISLAND'S" Task Group and a few hours later one of her aircraft sight "U-66". It was bright moonlight and a calm sea and to the aircraft the U-boat "appeared to be lying to, at times moving in circles and at times steaming on a steady course." The fact that she was obviously waiting at a rendezvous was not lost upon U.S.S. "BUCKLEY", who had been ordered to hunt. She approached up the path of the moon and got within 5,000 yards before she was sighted. Her appearance must have gladdened the heart of "U-66's" captain, who, owing to the failure of "U-188's" W/T must have begun to wonder if he was ever going to receive any assistance. At 0308 on 6th May he fired a recognition signal, to which, of course, there was no reply. After about five minutes he discovered his mistake and fired a torpedo but by then it was too late, "BUCKLEY" being only a little over a mile away. At about 0320 there began a very brisk action. The U-boat tried to open the range but at 0329 "BUCKLEY" rammed her and rode up on her forward of the conning-tower. After a minute's fierce hand-to-hand fighting "BUCKLEY" backed off - with five Germans on board - and the U-boat again tried to escape but "BUCKLEY" closed her and sent her to the bottom at 0336. The entry in "U-188's" log referring to this action is curious:-

6th May

0520 - "SEEHAUSEN" ("U-66") reports aircraft attack. During whole day, depth-charge and bombing attacks.

The next entry is more illuminating:-

1215 - Order from Control: Rendezvous cancelled. Turned away from carrier group to south and later to east.

"U-188's" plight was now not a particularly happy one. Though she had enough diesel oil to supply another boat, she was apparently very short of lubricating oil and, with her W/T transmitter out of action, could not ask for assistance. To make matters worse, the appearance of "Block Island's" Task Group had forced her back on her tracks. If she had not been able to get torpedoes and ammunition from "BRAKE" - it is not known what supplies beyond oil she had taken from her - she would have been helpless if brought to action.

Luedden seems to have made the best of a bad job. Apparent-ly proceeding submerged as much as he could, he passed through the Cape Verde Islands, then through the Canaries, finally making Madeira. He must have gone extraordinarily slowly for it took him from 6th to 27th May to get from the latitude of the Cape Verde Islands to a position westward of Cape Finisterre, and his progress seems to have got slower the further north he went. This was partly due to the

extreme caution which he showed during the period of the full moon in June, for he apparently spent each night on the bottom off the Portuguese coast. He passed close westward of Cape Finisterre and was then so short of lubricating oil that he had to abandon his intention of making Lorient and steered for Bordeaux instead. This he reached on 19th June, 10 days under a year since he had left France.

As he had made no signals for over six weeks he had been given up for lost and his arrival, with his cargo of tin, rubber, wolfram, opium and quinine, must have been doubly welcome.

(Admiralty Anti-Submarine Report November, 1944)

## 3. U.S.S. "HOEL'S" GALLANT ACTION OFF SAMAR ISLAND

The following tribute to the United States destroyer "HOEL" is paid in the United States Seventh Fleet Intelligence Center Intelligence Bulletin No. 3-45 of 19th January.

"As classic examples both of a destroyer performing its function as screen for capital ships and of unswerving courage in the highest traditions of the service, an account of the loss of the destroyer "HOEL" in the fleet engagement off San Bernardino Strait on 25th October, 1944 is given below.

"With two other destroyers and four destroyer escorts, "HOEL" formed the screen for six escort carriers of Task Unit 77.4.3 when almost without warning that force was attacked by enemy forces estimated to consist of five battleships, 12 cruisers and 12 destroyers. Upon receiving word of the approach of the Japanese units at approximately 0640, the Blue destroyers set about laying a smoke screen around our escort carriers, upon the completion of which they commenced a torpedo run on the leading battleship of the vastly superior Japanese force, at that time 18,000 yards away. At a range of 14,000 yards the three destroyers opened fire with their main batteries, "HOEL" shortly thereafter receiving her first hit which knocked out all voice radio communication. Two minutes later, with shells splashing about her, she launched torpedoes. By this time the Nips had her bracketed and hit followed hit, one knocking out the port engine, another destroying the steering apparatus, necessitating a shift to manual control. Her aft guns had been put out of action long since, the barrel of one having been shot off by a direct hit.

"With the battleship line having been turned, in any event, the destroyers switched their attack to the cruisers, closing to 6,000 yards and launching torpedoes. Surviving officers of "HOEL" are of the opinion that they scored hits on the leading cruiser, noting explosions at her waterline at the time the torpedoes would be expected to hit the target. Officers from both "HOEL" and "JOHNSON", which played a similarly heroic role, feel that the enemy cruiser was so badly damaged that it was subsequently scuttled and abandoned.

"Having fired her torpedoes, "HOEL" attempted to retire on a south-westerly course, only to find herself squarely in the middle of the entire Japanese task force, with the line of battleships on one side and the remainder of the line of cruisers on the other. In this situation she actually continued the heroic battle for more than an hour, her decks and superstructure a shambles. Over 600 rounds were fired at the enemy, most of them of necessity over open sights since virtually all controls had been shot away. During this period she was subjected to more than 300 two and three-gun salvoes, forty of which scored direct hits. Most damaging of these were the smaller calibre shells as the eight and sixteen inchers fired from the battleships and cruisers pierced both sides of her tissue-paper hull without exploding. Finally, at 0840, with all engineering spaces flooded and one magazine on fire, the crew abandoned the ship and a few minutes later she turned over and sank.

"Heavy casulaties were suffered by "HOEL" - most of them, because of the chaotic situation, being unaccounted for. On the other side of the ledger, however, can be balanced not only the possible destruction of an enemy cruiser but, more important, the turning of the Japanese units and thus the prevention of the possible destruction of the entire carrier escort force."

SECTION IV

# INTELLIGENCE

## 1. NEW JAPANESE SUPPLY SUBMARINE

A Japanese submarine of a new and recently developed supply type has been partially salvaged in Lingayen Gulf. Interrogation of an army engineer prisoner of war discloses that this submarine, designated YU-3 is of a type operated by the army shipping service. It is used exclusively for transport and supply purposes. The new type has only recently been placed in commission and the prisoner of war states that there are probably only a very few in operation up to the present. A total of 50 men can be carried possibly exclusive of the crew.

The vessel has a surface speed of from 6 to 8 knots and a speed of 2 knots submerged. Propulsion is by a single screw.

It has a beam of 15 feet and an overall length of 130 feet. The conning tower, of elliptical shape, measures 12 feet by 6 feet in cross section. Access is gained by two hatches placed fore and aft of the conning tower.

Armament consists of one gun, probably a six pounder, placed forward of the conning tower. The submarine carried no torpedo tubes.

This type of submarine seems to be intermediate between the larger newer HA class, which is armed with torpedo tubes and the RO-100 class of small coastal types. The older I-class submarines are capable of carrying 50 troops with 15 tons of cargo and with suitable modification could carry 100 men in addition to the crew. They have a length of 360 feet.

Other prisoner of war information indicates that 6 cargo submarines, possibly of the YU type, were building at Yokosuka in January, 1944. Description of the conning tower, hatch placement and gun position conform to those of YU-3. The prisoner however believed these submarines to have two torpedo tubes forward and estimated the tonnage larger than that possible for the YU-3. He also believed these to be capable of carrying two Daihatsu (large landing barges) on the after deck.

The YU-3 is an abbreviation for Yuso Sensuikan 3 or "Transport Submarine 3". These are operated by units called Sensui

Yuso Daitai or "Submarine Transport Battalion", army units whose mission is the transport of troops and supplies by submarine to forward areas, according to an undated captured document.

The further development and commissioning of supply submarines of the YU type is of special interest in connection with the apparent change in the commitment of the regular Japanese Submarine Fleet from missions of supply to those of attack and reconnaissance. This trend had been marked over the past few months, since Japanese submarines could find near-at-hand and profitable targets in our large scale shipping and task force activity.

The cutting off of more and more Japanese forces within the Philippines however brings back a growing necessity of providing some type of supply of which submarine craft offers the greatest possibility.

(U.S. Seventh Fleet Intelligence Center Intelligence Bulletin No. 3-45 of 19th January, 1945)

## 2. JAPANESE "MATSU" CLASS DESTROYER

The United States Seventh Fleet Intelligence Center's Intelligence Bulletin No. 1-45 has published information concerning the Japanese "MATSU" class destroyers which has been received from prisoners-of-war and captured documents and which supplements the article published in A.C.B. 0254/44 (2).

The "MATSU" class is becoming increasingly important as it is now believed to be the only class of destroyer being built by the Japanese. Construction time is reported to be 10 weeks. ("TERUTSUKI" class destroyers take three times longer). The mass production of this simplified type of small destroyer is a desperate attempt by the Japanese to compensate for the appalling destroyer losses suffered in recent months. Twenty-seven ships are reported to have been commissioned to date.

An officer prisoner-of-war states that "MATSU" class destroyers are given names of trees, flowers and grasses. The names of old destroyers (scrapped or sunk) are also used, provided they are tree-flower-grass names. Known names of ships in this class are: "MATSU", "MOMO", "KUWA", "TAKE", "UME", "MAKI", "TSUBAKI", "MOMI, "SUGI", "KAYA" and "HINOKI". Names of old destroyers probably used by this class are "HAGI", "FUGI", "KUSU",

"SUSUKI", "SUMIRE", "KIKU", "HASHI", "HASU", "YANAGI", "ENOKI", "TACHIBANA", "KASHIWA" and "KATSURA". The names or probable names of the remainder of the class are not known at present. "MATSU" and "KUWA" are the only two units known to have been sunk.

A brief description follows of the ships' characteristics. This bears out previous descriptions generally and furnishes some additional information.

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|---|---|
| Length | 300 feet (approx.) |
| Displacement | 1,000 tons (approx.) |
| Complement | 10 officers and 200 men |
| Speed | 28 knots maximum |
| Propulsion | Steam (two boilers) - single screw |
| Funnels | Two widely separated straight funnels |
| Armament | 1 single 5-inch D/P gun forward and one twin 5-inch D/P gun aft with shielding half-turrets. 4 triple and 8 single 25 mm. A/A M/G's. |
| Torpedoes | 1 quadruple torpedo mount (no reloads) |
| Depth Charge Gear | Stern rack and two throwers |
| Radar | Twin-horn type, mounted on a pedestal above the bridge just forward of the mast. Also small screen array (2' x 1½' x 1-inch thick) mounted about half way up the mast). |

## 3. JAPANESE DESTROYER-TYPE TRANSPORTS

The Japanese have been developing a new fast destroyer-type transport which is also equipped with stern tracks. These tracks are apparently designed to launch amphibious craft and might also be used to launch P.T. boats or even midget submarines.

Prisoners state that these transports are described by the Japanese simply as Naval Transports and are numbered rather than named. There is no evidence of the number of units currently afloat or building but several have been sighted in the Bonins and the Philippines, suggesting that they are being produced in some quantity.

The enemy has apparently attempted to design a vessel with

sufficient speed and firepower to operate on "express runs" in forward areas, replacing badly needed destroyers which in past campaigns were pressed into this service. The novel launching gear aft permits the parent ship to carry its own means of landing reinforcements and supplies and at the same time equips it to serve as a tender for P.T. boats or midget submarines if the tactical situation permits.

The ship has fast clean lines and should be capable of at least 20 knots. It could be easily mistaken for a destroyer or large minelayer. The armament is confined principally to light AA (there are at least eleven 25 mm. M.G's), plus a shielded gun in the bow which is believed to be a single mount 4.7-inch dual purpose gun.

The entire after deck is clear, except for two sets of heavy tracks which run from the exceptionally heavy mainmast to the markedly sloped stern. The tracks serve as cradles and launching skids for amphibious craft which are apparently simply pushed down the ramp-like stern into the water.

Photographs of Futami Ko (Chichi Jima) on 16th November show one ship of this new class with two landing barges on the port tracks. Photographs of Iwo Jim on the 3rd December show a similar ship (possibly the same one) with one barge on the port tracks.

There are only two hatches and these do not compare in size with the estimated weight capacity of the mainmast. The inference is that the heavy mainmast and booms are designed to lift landing barges aboard.

Since there are no cargo hatches visible aft of amidships, it is probable that a large part of below-decks space in this section can be used for troop-transport. Another possibility is that the enemy has devised a method of flooding an after compartment of the ship to permit the lowering of the stern to water level prior to launching operations.

(U.S.P.F. and P.O.A. Weekly Intelligence 18th December 1944)

## 4. JAPANESE MINES AND TORPEDOES

With one exception, Japanese mines are very similar to those used by the United States Navy. As with most Japanese

ordnance, their mines are simple, well-built and effective. The majority found adrift will be filled with a black powder-like explosive which usually will detonate to a high order if the mine is fired upon.

The most common mine encountered to date is the Type 93 in its four models. This is a moored contact, chemical horn mine, used defensively. Sources differ as to the maximum depth of water in which is is possible to lay this mine, but the most reliable figure is probably 1160 feet. This mine has been found widely in the Pacific. Fields of it were swept recently at Palau and in Leyte Gulf.

Seen floating, Type 93 will have the usual mine appearance, a low floating sphere with a top cover plate and several lead horns. The horns will vary in number according to the model used. All Type 93 mines should be safe if adrift, since a strain on the mooring cable is required to close the firing circuit of the mine. Disposal should be effected by gunfire from a distance of 200 yards or more. 40 mm. fire has been found most effective.

Other types of moored chemical horn mines are in service in the Japanese Navy but are less frequently encountered. One, the Type 88, is submarine laid. This mine possesses similar characteristics to the Type 93 and can be expected in water as deep as 990 feet.

Within the last two months the Japanese have placed in service a mine of new design, so far found only in the Philippine area. This type is the aircraft-laid, switch horn, drifting mine, closely resembling a bomb.

From documentary evidence and aerial reconnaissance the Japanese are known to have as well, influence mines of the acoustic and magnetic variety. To date there is no evidence that these have been used nor have nay been recovered in dumps.

It is assumed that any Japanese design in this type will bear the usual characteristics. They will fire on noise produced by a ship, or on one of the components of the ship's magnetism; they will be laid in water not deeper than 120 feet; they will be aircraft layable, probably with a parachute; they will resemble a cylinder, rounded at one end. When such mines are encountered, sweeping of them cannot be fully effective until one has been recovered and examined. Seventh Fleet has a vessel especially equipped for this work. It is requested that any evidence of

influence mining should be reported immediately.

(Seventh Fleet Intelligence Center - Bulletin 26-44 of 29th December, 1944).

Japanese Mine and Torpedo Research

An insight into Japanese Navy experiments with aerial torpedoes and mines laid by aircraft is given by a document recently translated as CINCPAC-CINCPOA Item No. 9922. The document was published in October, 1942 by the Naval Air Technical Depot at Yokosuka and the experiments reported on were to be completed during late 1942 or the middle of 1943. Most were to be conducted under the supervision of one Captain Shoji Naruse, an ordnance officer.

The enemy was apparently concerned with improvement in the dropping characteristics of his torpedoes. Drops from higher altitudes and at greater speeds without increasing the time to attain the set depth were desired. Investigation of this problem was begun in 1941. As a result of test firing, it was learned that the shape of the torpedo head was important. In tests with Italian pointed heads and other special types of pointed heads, shallower dives were achieved, but porpoising was frequent. Efforts were being made to prevent this tendency and also to devise means of keeping the torpedo on a true course even though it had porpoised.

Several noteworthy experiments were mentioned. The development of a 2,000 kg. (4.400 lbs) torpedo to be carried by large aircraft had advanced to the point of manufacturing 12 units for trial. This experiment was scheduled for completion in March, 1943. Research was in progress on small model torpedoes of the 500 kg. (1,100 lbs.) level for use in attacking small warships and merchant vessels. One of these was designated "Kurai" and was constructed to permit steep dive firing while reducing to a minimum the distance required to be travelled before reaching the adjusted depth. Of particular interest was the report that a rocket type torpedo with a total weight of 500 kg. had been ordered from the Nagasaki ordnance and was being manufactured for trial.

Specific results were given in two instances. The goal with the Type 91, Modification 3, torpedo, which is that model most widely used at present, was to drop it from heights of over 100 meters (slightly more than 300 feet) at speeds in excess of 300 knots Results revealed that the torpedo could generally stand a drop of 400 meters (more than 1,200 feet) at 210 knots.

Results with the Type 91, Modification 6, which is the Type 91 with a modified warhead to accommodate an increased explosive charge, showed successful drops from 200 meters (over 600 feet)

at 180 knots. It operated excellently, even in shallow water, and attained a speed of 41 knots for 2,000 meters (in excess of 2,000 yards).

Experiments to develop mines suitable for laying by aircraft were also being conducted. Of great interest in this respect is information that the Japanese Type 93 mine has been converted for airplane use. It was reported that this type was successfully laid from an altitude of 300 meters (900 feet) and at an air speed of 120 knots by a Mavis. Results were considered excellent.

Other experiments involving mines designated "K" mines were under way. It is believed that this is a parachute-laid ground mine of the influence type, but it it must be noted in this respect that the Japanese K-2 mine recently recovered in Samar Strait is a floating contact type. "K" may possibly be the secret designation for air-craft-laid mines still in the design stage.

Also under consideration were mines known as Type "P" but no further information on these was given.

(U.S.P.F. and P.O.A. Weekly Intelligence 1st January, 1945)

## 5. JAPANESE BOMB USED AS LIMPET MINE

Limpet mines made their first appearance in the Pacific in mid-November 1944 when Japanese at Palau planned to use a hastily improvised type during an abortive attack on Schonian Harbour on 17th November. Prisoners were captured who revealed the enemy plan and at least two of the crude box-like mines were recovered and analysed by ordnance experts.

The Japanese have presumably had access to Italian developments in this field, although there is no evidence that the use of limpet mines will be widespread. The mines recovered at Palau were extremely crude and represented only the experiment of a lone hardpressed Japanese garrison.

One of the charges was found drifting near Eil Malk and the other was discovered on the beach at Ngeregong Island. In each case the charge was made of one 50 kg. Army aerial bomb placed in a watertight wooden box 10 x 18½ x 68 inches. A large blasting cap set in plastic explosive was found in the nose of the bomb. The fuse

(waterproofed) was passed through this sheet and out through the top of the box, where a pull-type igniter was attached.

The safety factor was provided by the length of the fuse - 13 feet - which burned at the rate of 35 seconds per foot. This gave the swimmer who was to attach the mine to the target ship roughly seven and one-half minutes to escape the area.

There were four plugs in the box housing the charge. According to a prisoner, these were to be removed by the swimmer when the mine was attached to the ship, allowing the mine to be submerged. No attachment device was apparent. The mine could presumably have been attached to a ship's propellers by a rope loop or simply submerged to detonate beneath the ship.

The target ships at Palau were all United States L.C.I's.

(U.S.P.F. and P.O.A. Weekly Intelligence 18th December, 1944)

## 6. JAPAN'S SHIPPING POSITION

Recent heavy losses have cut sharply into Japan's dwindling merchant fleet. An estimate of available tonnage as at 1st December, 1944 was recently published in the O.N.I. Weekly of that date.

"During the last few months, available Japanese shipping has been decreasing at a steady rate of 150,000 to 200,000 gross tons monthly. Two divergent forces have tended to stabilize this rate of attrition. Although more and more Allied ships and planes are operating against Japanese shipping from bases closer and closer to Japanese supply lines, the fraction of the Japanese merchant fleet with which they are dealing is progressively smaller.

"Japanese tanker tonnage remains above the 500,000 tons mark. This phenomenon is not entirely explained by the high priority which tanker production has received, for many dry cargo vessels have been converted to carriers of petroleum in bulk and are carried as tankers in the estimates which follow".

## Japanese Shipping Position - 1st December, 1944

| | Freight & Transport | | Tankers | | TOTAL | |
|---|---|---|---|---|---|---|
| | No. | Gross Tons | No. | Gross Tons | No. | Gross Tons |
| Basic Ship List 1st March '44 | 5791 | 7,478,050 | 163 | 766,000 | 5954 | 8,244,050 |
| Construction 1st March - 1st December, '44 | 474 | 457,000 | 34 | 218,000 | 508 | 675,000 |
| Known Naval Oilers | | | 26 | 126,000 | 26 | 126,000 |
| TOTAL ASSETS | 6265 | 7,935,050 | 223 | 1,110,000 | 6488 | 9,045,050 |
| War Losses Estimated to 1st December '44 (1000 G.T. upwards) | 1237 | 5,148,000 | 93 | 584,000 | 1330 | 5,732,000 |
| War Losses Estimated to 1st December '44 (100-1000 G.T.) | 1180 | 391,000 | 20 | 9,000 | 1200 | 400,000 |
| TOTAL LOSSES | 2417 | 5,539,000 | 113 | 593,000 | 2530 | 6,132,000 |
| TOTAL AVAILABLE | 3848 | 2,396,050 | 110 | 517,000 | 3958 | 2,913,050 |
| TOTAL SERVICEABLE ø | 3270 | 2,036,643 | 94 | 439,450 | 3364 | 2,476,093 |

ø 15% reduction (of total available) for lay-ups and repairs.

## 7. DEPTH CHARGE EQUIPMENT ON JAPANESE "KAIBOKAN"

In A.C.B. 0233/44(9) it was stated that a new anti-submarine weapon had been noticed on the quarterdeck of a new Japanese destroyer or destroyer escort. The installation appeared to be two rows of seven depth-charge throwers, the rows running fore and aft and each thrower being inclined to the deck at an angle of about 60°.

Inspection of a Japanese Kaibokan (i.e. an escort vessel of the frigate type) which was beached in Ormoc Bay after being badly damaged by a B-24 on 10th November, 1944 has revealed a similar installation this time with two rows of six depth-charge throwers.

The depth-charge assembly took up no less than 52 feet of the total length of 220 feet of the Kaibokan. Besides being fired from these twelve throwers, depth-charges could also be dropped from a single stern trap after being rolled down a long set of rails between the throwers.

A prisoner of war estimated that up to 300 depth-charges could be carried by this class of ship. From inspection the depth-charges were found to be the new Japanese standard Type 2, Model 2, weighing about 350 lbs. and containing about 105 kg. of explosive.

The throwers themselves were of a type which had never been examined before and were particularly interesting. They were of very crude construction and weighed about 1,500 lbs each. There were no electrical connections between the bridge and the throwers and it is presumed that they were fired manually on receipt of orders given by megaphone from the bridge. There was no type designation on the throwers but plates on each thrower were marked "Kobe Steel Manufacturing Works" with numbers ranging from 20-40 - possibly indicating that they were among the first of their type produced.

SECTION V

# MISCELLANEOUS

## 1. THE DEVELOPMENT OF U-BOAT CONSTRUCTION, 1940-44.

The development and characteristics of German U-boats have been very carefully watched all through the war, and from photographs taken between 1940 and the autumn of 1944 it is possible to survey the history of U-boat construction.

### The U-Boat Building Program

At the outbreak of war, Germany was still developing her underwater fleet. When the shipyards were first photographed, they were building 250-ton, 500-ton, 740-ton and 1,600 ton (minelayer) U-boats. Towards the end of 1940, the last of the 250-tonners were fitted out and the first of the new 1,200-tonners was laid down. In the meantime the total number of boats under construction has been more than trebled; three-fifths of this total were 500 tonners. Early in 1941 the first of the 1,600 ton broad-beamed supply U-boats was laid down. This class and the 1,200-tonners obviously foreshadowed operations in distant waters.

During 1941, U-boat construction continued to increase, but in the autumn there was a decline. This was made good early in 1942 and by the end of that year about 245 boats were noted under construction. The increase was almost entirely in the 500-ton class and by December, 1942 these U-boats accounted for three-quarters of the total number being built.

### 1943 Construction Stepped Up

At the end of 1942, Admiral Doenitz became the Commander-in-Chief of the German Navy and during the first quarter of 1943 the construction of U-boats was considerably stepped up. Ten more 500 tonners were seen on the slips, but this increase was partly offset by the fact that the broad-beamed U-boat program was almost completed. The total number of U-boats under construction at this time exceeded 250 and the effort was maintained at the figure until September 1943. Meanwhile in July, a new series of 1,600-ton broad-beamed cargo U-boats was begun, but none of these had been launched by the autumn of 1944.

During the last six months of 1943 photographic cover of the U-boat yards was scanty, but it was seen that building activity was decreasing. In March 1944, it was again possible to assess the position; in that month about 140 boats were under construction, 105 of which 500-tonners, whereas on 1st September 1943, some 250 boats had been seen in various stages of completion, 195 of them being 500-tonners. The only class to show an increase was the 1,600 ton cargo-carrying class. This striking decline indicated that some major change of policy must have been made.

Two New Classes of U-boats

Between March and August 1944, it became clear what the change of policy was, for two new classes of U-boat were discovered. These are the 250 feet (Type XXI) and the 110 feet (Type XXIII) prefabricated U-boats. These boats are quite different from any of their predecessors not only in lines and design, but also, as their title shows, in method of construction. During February and March 1944, the first of these new boats were assembled, but it was not until June and July that they began to be assembled in numbers. Then for the first time in nine months the number of boats under construction increased.

The U-boats of the old classes had taken between ten and twelve months to complete, so that the average yearly output has been roughly equal to the number of boats under construction at the beginning of the year. At the peak period, the summer of 1943, about five U-boats were being completed each week, three-quarters of them being 500 tonners. According to photographic evidence, over 240 U-boats were completed during the year from September, 1942, to August 1943. Naturally with 250 U-boats still building in September, 1943, the output remained high until June 1944, when it dropped suddenly. It probably will continue to drop but will rise again when the new program gets under way. By the end of this year the output is likely once more to reach four boats a week. This quick recovery is due to the fact that the new prefabricated U-boats take between six and ten weeks to assemble on the slips, whereas the old classes took some seven to ten months to build.

Conning Tower Design

From the beginning of the war until early in 1943, the distinctive German design of the conning tower showed little change. It consisted of the conning tower proper with a step or bandstand, which was a railed platform extending aft. A light A.A. gun was usually mounted on this platform. Early in 1943 the increasing effect of air attack forced the Germans to fit a much bigger anti-aircraft armament. This involved major changes to the conning tower. Moreover, some place had also to be found for the new detector devices which the enemy was beginning to use.

Two Bandstands Introduced

The changing of the conning tower was first seen in March 1943, when vertical photographs of Stettin revealed a 740-ton U-boat with the new type of conning tower. This had two successive bandstands instead of the original one, and it has now become the standard design. The conning towers of the 1200-ton U-boats show a slight variation in that the lower step is further aft than on the other classes, but it is solidly connected to the conning tower structure and is not a separate unit. One 1600 tonner had an after step which was separate from the conning tower but connected to it by a raised catwalk.

Minor modifications have since been made to the standard two step design, the most obvious being the widening of the upper step so that two light AA guns could be mounted abreast. The height of the platform of this step has also been raised to allow the guns mounted on it to fire forwards over the top of the conning tower proper.

The new prefabricated classes have an entirely different conning tower. The 250-feet boats have a streamlined conning tower with tapering projections forward and aft of the central "core", and there are no bandstands. The conning towers of the 110-footers are more like the orthodox German design and resemble those of the old 250-ton class. However, there is again no bandstand and the after part of the conning tower slopes away at the point where the bandstand should be; there is then a break in the line of the structure which gives way to a "tail" which runs well aft.

The complete change in the conning tower design of the prefabricated U-boats indicates that the modifications to the earlier design failed to solve the problems which confronted the U-boats on their operational patrols. It should be added that none of the new boats has yet become operational.

Conning Tower Fittings

The arrangements inside the conning tower are generally similar in all types, except that there is one important difference between the 500-tonners and the bigger types; this is in the position of the periscope standards. In the 500-tonners one periscope is led through the forward part of the conning tower (where a round hole on the top of the front of the structure clearly shows where the periscope emerges) and the second is in the after part. In the bigger boats both periscopes are grouped together in the after part of the conning tower.

The conning tower is armored but the plating is not usually visible, although an armored door has been seen which runs across the middle of the conning tower to protect the men on the bridge. Visible fittings may include a box-like widening of the starboard side of the conning tower which is believed to provide stowage for the hydrogen bottles which are used to inflate the radar decoy balloons. On one 1200-ton U-boat, two cylindrical drums and a framework structure were seen abaft the guns on the upper step, which had been specially enlarged. These fittings were evidently connected with the helicopter kite which is used by long distance U-boats for observation. These kites are intended for use in unfrequented waters where shipping is not escorted but scattered and consequently difficult to find.

Schnorchel Installed

Another prominent fitting is the Schnorchel which is mounted forward of the conning tower. When not in use, it is housed in a long slot cut in the deck. When being used, it is raised upright, being hinged at the conning tower end of the slot, and is held in position by a clip on the front of the conning tower. It extends about 27 feet above the deck, which corresponds to periscope depth, and may have some kind of aerial on the top.

Guns

Until the spring of 1943, all sea-going and ocean-going U-boats carried a more or less standard armament. The 500-tonners mounted one 88 mm. (3.5 inch) gun on the deck forward of the conning tower and one 20 mm. (.78-inch) gun on the single bandstand. U-boats of 740 tons and above carried a 105 mm. (4.1-inch) gun forward, a 20 mm. gun on the bandstand and a 37 mm. (1.46-inch) gun on the deck abaft the conning tower. Changes in this armament were first seen in March 1943, when the two step conning tower was introduced with a single 20 mm. gun on each step. Towards the end of April the first U-boat with this armament was photographed at sea. Almost immediately the 37 mm. mounting on the deck was discarded and two 20 mm. guns were mounted on each bandstand. By that time the U-boats had adopted the policy of remaining on the surface and shooting it out with the aircraft, and consequently the AA armament had to be increased again.

20 mm. Mountings Increased

By August 1943, 500-tonners were operating with quadruple 20 mm. mountings on the lower step and double 20 mm. mountings on the upper step. During the summer, the 500-tonners discarded their forward guns, though the bigger boats still carried theirs. By the

late summer of 1943, the standard armament of 500-ton boats was therefore six 20 mm. guns. Apart from their forward guns the bigger boats were similarly armed, though some of the 1600-tonners were seen with variations. One 1600-ton minelayer and supply U-boat mounted with three twin 12.8 mm. guns, two on the upper step and one on the lower, and a 1600-ton broad-beamed supply boat carried a 37 mm. gun forward, a single 20 mm. on the bandstand and another single 37 mm. gun on a raised platform abaft the conning tower and connected to it by a catwalk.

By autumn, the two single 20 mm. mountings on the upper bandstand had been adapted to carry two twin 20 mm. guns, and later in the year the quadruple mounting on the lower step was being replaced by a new 37 mm. gun. The new gun is fully automatic and apparently specially designed for U-boats. It has a large shield to protect the crew. This is now the standard anti-aircraft armament for U-boats, and while the bigger boats still have a 105 mm. gun forward, the 500-tonners have discarded them entirely. Even some of the 740-tonners have been seen without them. Most U-boats also carry one or two light machine guns which can be mounted on the wings of the conning tower, but they are not often seen.

Radar Fittings

Radar was first fitted during the spring and early summer of 1943, when various forms of apparatus were seen on the forward part of the conning tower. These did not remain for long, probably because they could only be trained directly forward, and later in the summer a retractable radar mat was being mounted. This apparatus is rotatable and is housed in a box-like structure on the port side of the conning tower.

German Search Receiver

Parts of the German Search Receiver (G.S.R.) are also visible, the most usual resembling a drum on top of a stick. This is most often seen on the port side of the conning tower just forward of the radar mat housing. It can be mounted elsewhere and various other designs exist, one of which may be in the form of a cross about one foot wide. The after periscope standard is another favorite place for mounting these aerials and more than one type may be carried. In addition to D/F loop is probably carried but it is rarely seen extended. It is housed on the starboard side of the conning tower and can be located by the slit in the top through which it is extended; the slit is rectangular with a round bulge in the middle.

(Coastal Command Review, October, 1944)

## 2. GERMAN AND JAPANESE SUBMARINE OPERATIONS

Final figures for November show that seven U-boats were sunk or probably sunk by Allied attacks - two in the Atlantic and five in the Pacific. Three Japanese midget submarines were also reported as being sunk in the Pacific. For these losses, the enemy U-boats could only claim the sinking of five merchant ships totalling 22,000 tons - three in the Atlantic and two in the Indian Ocean.

During December the German U-boat fleet began to show offensive tendencies compared with their meagre efforts over the previous three months. Nine ships totalling 56,000 tons were sunk in all areas for the loss of four U-boats sunk or probably sunk. Two German midget submarines were also sunk off Ostend. The total merchant shipping losses for the month were 30 ships of 122,000 tons, seven ships being sunk by mines and 14 by marine risk.

In January the score was again in favour of the U-boats and preliminary figures show that nine merchant ships totalling 42,000 tons were sunk for the loss of only four U-boats sunk or probably sunk. One midget Japanese submarine was claimed as sunk in the Philippines area. The total merchant shipping losses due to enemy action were 14 ships of 67,000 tons - nine by U-boats, three by mines, one by aircraft and one by surface craft.

SECTION VI

# MATERIEL

## 1. MODIFICATIONS AND REPAIRS TO RADAR EQUIPMENT DURING REFIT

There has been a tendency in the past to consider that Radar is of such a specialised nature that modifications and defects concerning it are not to be listed amongst other defect items normally rendered by ships. When considering this it will be obvious that unless the Base Staff are given some warning of those jobs which require to be undertaken in regard to radar and associated equipment during the forthcoming refit, they will not be in a position to make adequate plans for carrying out this work.

There will thus be a tendency on the part of base staffs to assume that if no Radar defects are listed then nothing is to be done. Any Commanding Officer who fails to render a complete list of radar defects prior to the refitting conference should hardly expect sympathy from base staff when the Port Radar Officer finds that the equipment does require attention.

The Port Radar Officer is there to assist ships with their radar problems at all times, but he cannot know in full the ship's requirements and therefore it is essential that the Officer-in-charge of radar or the senior mechanic in the ship should not only submit defect items in the normal manner but should ensure that the Port Radar Officer is fully acquainted with the nature of the work to be undertaken.

## 2. C.A.F.O's ON ANTI-SUBMARINE SUBJECTS

| C.A.F.O. 1944 | Subject | Brief Description |
|---|---|---|
| 2482 | Bearing Recorder Pattern A.2247 | Introduction of New Scales (Contd.) |

C.A.F.O's contd.

| C.A.F.O. 1944 | Subject | Brief Description |
|---|---|---|
| 2577 | Suspended Depth Charge | Instructions for use |
| 2588 | A/S Directing Gears Patterns A.810 and A. 880/B | Introduction of Roller Guide Assemblies and Special Spanners |
| 2589 | Asdic and Echo-Sounding Equipment | Maintenance during Refits |
| 2590 | Asdic Oscillators | Defects due to Leakage Joints - Remedy |
| 2591 | Lubrication of Directing Gears | Worm Housing of Pillar Assemblies, Patterns A.759 and A.760 - Alterations and additions. |
| 2621 | Electro-Hydraulic Depth Charge Pattern Control System | Safety Arrangements at Traps and Throwers - Introduction of Safety Levers. |
| 2624 | Receivers Pattern 2074A | Replacement of Earlier Models |
| 2625 | Spanners - Special for Type 147B | Introduction |
| 2626 | A.V.C. Receiver | Stowage of Spare Panels - Amplifying and Supply and Relay |
| 2667 | A/S Searches | Nomenclature |
| 2669 | Depth Recorders, Pattern A.2296 B and A.2297 B | Modification to Improve Visibility of Trace |
| 2672 | Spanners, Pattern A.2635 and A.2636, to Facilitate Fitting of Asdic Range and Depth Recorder Motors | Introduction |

Attention is also drawn to the following orders - 2483, 2581, 2622, 2658, 2668, 2671 and 2674

SECTION VII

# SHIPPING STATISTICS FOR SOUTH WEST PACIFIC

## 1. CONVOYS - NOVEMBER, DECEMBER, 1944

During December, 23 merchant ships, totalling 134,912 tons were convoyed in forward areas of the South West Pacific Area compared with 38 ships totalling 136,850 tons in November. No damage to ships in convoy was caused by enemy action during either month.

## 2. SINGLE ESCORTED SHIPS - NOVEMBER, DECEMBER, 1944

| AREA | No. of Ships | | Tonnage | |
|---|---|---|---|---|
| | November | December | November | December |
| West of Humboldt | 7 | 6 | 42,499 | 41,490 |
| East of Humboldt | 5 | 2 | 35,806 | 14,392 |
| Total | 12 | 8 | 78,305 | 55,882 |

## 3. INDEPENDENT VESSELS - NOVEMBER, DECEMBER, 1944

| AREA | No. of Ships | | Tonnage | |
|---|---|---|---|---|
| | November | December | November | December |
| Eastern States - Western States | 45 | 37 | 283,122 | 247,516 |
| Melbourne - South Australia | 81 | 103 | 352,775 | 452,650 |
| Newcastle - Melbourne | 179 | 188 | 796,884 | 791,691 |
| Brisbane - Sydney | 140 | 117 | 712,484 | 526,514 |
| Barrier Reef - Brisbane | 99 | 90 | 450,454 | 352,343 |
| West of Humboldt | 211 | 225 | 1,366,474 | 1,435,081 |
| East of Humboldt (including Coral Sea) | 638 | 605 | 3,998,998 | 3,624,810 |
| Arafura Sea | 16 | 18 | 85,048 | 78,205 |
| Total | 1,409 | 1,383 | 8,046,239 | 7,508,810 |

4. MONTHLY OUTWARD GROSS TONNAGE - NOVEMBER, DECEMBER, 1944.

| PORT | No. of Ships | | Tonnage | |
|---|---|---|---|---|
| | November | December | November | December |
| Humboldt Bay | 192 | 377 | 1,289,128 | 2,388,263 |
| Langemak | 200 | 260 | 1,300,066 | 1,593,162 |
| Sydney | 313 | 281 | 952,718 | 863,368 |
| Melbourne | 147 | 134 | 697,019 | 525,725 |
| Newcastle | 195 | 181 | 422,493 | 444,666 |
| Biak | 77 | 83 | 381,179 | 408,435 |
| Milne Bay | 103 | 84 | 477,632 | 378,165 |
| Brisbane | 67 | 76 | 327,747 | 348,461 |
| Fremantle | 62 | 45 | 395,485 | 303,720 |
| Oro Bay | 51 | 49 | 293,024 | 262,548 |
| Townsville | 61 | 56 | 247,286 | 210,318 |
| Lae | 38 | 62 | 201,000 | 184,120 |
| Adelaide | 40 | 33 | 184,911 | 143,940 |
| Cairns | 66 | 58 | 183,119 | 137,884 |
| Port Kembla | 35 | 36 | 128,946 | 109,945 |
| Whyalla | 19 | 23 | 80,532 | 106,355 |
| Hobart | 13 | 18 | 42,084 | 87,924 |
| Port Moresby | 14 | 7 | 65,659 | 50,531 |
| Darwin | 7 | 9 | 35,985 | 48,949 |
| Thursday Island | 17 | 14 | 42,396 | 44,670 |

4. MONTHLY OUTWARD GROSS TONNAGE - NOVEMBER, DECEMBER, 1944.

| PORT | No. of Ships | | Tonnage | |
|---|---|---|---|---|
| | November | December | November | December |
| Humboldt Bay | 192 | 377 | 1,289,128 | 2,388,263 |
| Langemak | 200 | 260 | 1,300,065 | 1,593,162 |
| Sydney | 313 | 281 | 952,716 | 863,368 |
| Melbourne | 147 | 134 | 697,019 | 525,725 |
| Newcastle | 195 | 181 | 422,493 | 444,666 |
| Biak | 77 | 83 | 381,179 | 408,435 |
| Milne Bay | 103 | 84 | 477,632 | 378,165 |
| Brisbane | 67 | 76 | 327,747 | 348,462 |
| Fremantle | 62 | 45 | 395,485 | 303,790 |
| Oro Bay | 51 | 49 | 293,024 | 268,548 |
| Townsville | 61 | 56 | 247,286 | 220,316 |
| Lae | 38 | 62 | 202,000 | 184,128 |
| Adelaide | 40 | 33 | 184,911 | 143,940 |
| Cairns | 56 | 58 | 183,119 | 137,864 |
| Port Kembla | 35 | 36 | 128,946 | 109,945 |
| Whyalla | 19 | 23 | 80,532 | 106,355 |
| Hobart | 13 | 18 | 42,084 | 87,924 |
| Port Moresby | 14 | 7 | 65,659 | 90,531 |
| Darwin | 7 | 9 | 35,989 | 48,949 |
| Thursday Island | 17 | 14 | 42,396 | 44,670 |