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TACTICAL PROBLEM I-1934-SR.

CRITIQUE

BY

Captain R.C. MacFall, U.S. Navy

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CRITIQUE.

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Gentlemen:- The tactical problem under discussion represents one of the difficult problems in any overseas campaign. No matter where we fight beyond the continental limits of the United States, we will have to insure safe transport of our men and supplies. If we have not gained control of the seas, then our supplies must be guarded throughout the dangerous areas. In the World War most of our effort was directed to the safeguarding against submarine attack, with weak surface escort to take care of a lone enemy raider. In any normal war, with the enemy free to use a part of the whole of his sea-going forces, we have a much harder task. You will find in most of our problems here that BLUE, due to lack of bases, is obliged to protect vital non-combatant vessels in order to wage war overseas. For that reason, convoy operations should be studied carefully for the lessons that may be gained from them.

In this particular problem, the further successful operations of BLUE in the Western PACIFIC require the safe arrival of BLUE reenforcements; both BLUE and ORANGE realize this. BLUE has given the convoy a heavy guard while ORANGE has detached his valuable battle cruisers from his battle force and sent them, together with heavy and light cruisers, destroyers and submarines to prevent the arrival of BLUE reenforcements. A finish fight is indicated.

DIAGRAM 1.

Diagram 1 is the BLUE Battle Plan in case he is attacked by the ORANGE Raiding Force reported in a position favorable for attack. BLUE has a fair picture of the ORANGE force and has decided on a plan of defense as shown here. Let us examine this plan.

Under the task organization, you will note that the aircraft are listed as a task group. The question again arises, should the aircraft of such a force operate according to doctrine plus such additional instructions as might be included in Par. 3 (x) or may they be handled as a task group? In this particular problem, with no carrier present, probably the first only would be practicable. Nevertheless, if the effective use of our air forces requires them to act as a task force on missions above and beyond normal doctrine of the types of air craft present, the commander should be able to so use them. Communications should provide necessary equipment if it is not already available.

Should the Convoy be designated as a task group, or should instructions regarding the train be in Par. 4? Where the Train vessels accompany the combatant forces and are obliged to operate to conform to the movements of that force, where they have an actual fighting value, they properly can be organized into a task group.

Looking at Paragraph 2 you will note that the Commander outlined a plan of action in which is included a liberal use of smoke to offset enemy superior gun range. In Paragraph 3, however, the C-in-C orders that the light forces and aircraft only use smoke when ordered by the O.T.C. I think this restriction is faulty. In the first place, the O.T.C. may not be in a position to realize the necessity for smoke by those forces not within his theatre of action. It also restricts the initiative of the subordinate commanders. It might seem

better to have stated in Paragraph 3 (x) that the Commanders in the various areas would control the use of smoke.

DIAGRAM 2.

This diagram shows the Battle Plan of the ORANGE Commander of the Eastern Detachment. You will note that in this order the aircraft are operating under doctrine and under instructions carried in Paragraph 3 (x). The ORANGE Commander has divided his force into 4 task groups one of which, the submarines, may or may not be present in the area. This would seem desirable for if the submarines are in the area their operations will be in keeping with the Battle Plan and other ORANGE forces will be prepared to assist in their operations.

It will be noted that ORANGE has organized a Convoy Attack Group consisting of all of his heavy cruisers, thus protecting his battle line and the Destroyer Attack Group by only one division of light cruisers. The question comes up was it necessary for ORANGE to assign so many heavy cruisers to this task? Would not 5 or 6 cruisers have accomplished the same purpose, that is, drawing off BLUE forces from the main battle line, in equal numbers to those actually drawn off by the 8 cruisers; in other words, the Principle of Economy of Force was violated. It would seem that ORANGE cruiser superiority was used up with a certain disregard of this principle. If ORANGE had sent 5 heavy cruisers to the Southern area, BLUE would have had to send his 3 heavy cruisers backed up by a battleship just the same in order to have prevented a raid on his Convoy. ORANGE would then have had cruiser superiority with his own battle line while at the same time would have weakened BLUE defense to the same extent. Generally speaking, however, if this dispersion of force was desirable in the estimate and plan of the C-in-C, the ORANGE Plan was an excellent plan. However, it must always be remem-

bered that cooperation by widely separated units is difficult and not always successful.

DIAGRAM 3.

Before proceeding any further it might be well to discuss a Convoy or Train formation. The diagram now on the screen shows what is known in the tactical publications as the "Type A Train Formation". During the World War when large convoys were being attacked by submarines the shallow train formation was considered the best for protection from such attacks. Due to the shallowness of the formation submarines had only a short time in which they could make their attack. However, it is quite evident that such a formation is not easily maneuvered to the flank, nor can a change of course of the fleet be made without considerable readjustment of lines of bearing of the train. It is a very inflexible formation and practically commits the fleet to a specific course especially during hours of darkness. Let us compare this train formation with that shown in the next diagram.

DIAGRAM 4.

This is what is generally known as the "Type B Train Formation". It does not cover as much front as the Type A, nor is it as shallow as the Type A formation. Consequently it may be considered more vulnerable to a submarine in position to attack. However, in an operation overseas where one expects to meet attack from other forces than submarines mobility on the part of the train becomes a paramount necessity. The C-in-C must be able in a long overseas operation to maneuver his fleet so that it will not be where the enemy expects it to be. Changes of course during the daylight may be observed by trailing forces or by air forces so changes of course at night are most desir-

able in the plan for the overseas voyage.

The C-in-C should endeavor by the movement of his fleet to prevent submarines in any number getting in to attack position. This can best be done by keeping the enemy in doubt as to the direction of the advance. The same applies to raids by light forces, and even to major attacks. Part of the effective defense of a convoy depends on the ability of the protecting forces to get between the attacking force and their objective. A mobile train formation can expedite this maneuver by moving away from the threat and giving the protecting force more time to get into position.

In this Type B Train Formation, if you consider the leader of the middle group as the guide and the leaders of the outlying groups as guides for their respective groups, maintaining a permanent bearing and distance on the train guide, you will readily see that the train can move promptly in any direction by simultaneous movements of the train guide and its sub-guides. You can well understand that 30 or 40 train ships consisting mostly of merchant vessels with untrained crews can only perform the simplest of maneuvers. Following in a column formation is about as much as you may expect. I can conceive that in the formation shown if the various guides of the convoy groups are ships such as the ARGONNE, WHITNEY, DOBBIN, or various others of our naval auxiliaries, they could readily conduct their groups in the direction indicated without confusion, day or night.

When you consider that convoy ships in time of war will unquestionably be equipped with guns and probably will carry aircraft and catapults, the Type B Formation gives room for maneuver, for launching aircraft, has a good gun defense possi-

bility, and, generally speaking, can be moved in any direction at any time, day or night. To my mind this is the greatest possible defense against attacks by submarine or surface forces.

DIAGRAM 5.

Diagram 5 shows the moves of BLUE and ORANGE up to the time that the game was placed on the game board. You will note the position of the BLUE submarines which were out ahead of the BLUE reenforcements where they might have gotten an attack in on ORANGE forces coming in from the Westward. However, the movements of ORANGE forces denied them an opportunity to attack and they were trying to get back to the battle area when the game was placed on the board. ORANGE submarines were coming up from the Southward and Westward to join in the action but only 3 arrived in the area of the battle during the time of the game, the others were coming up from the Southwestward and due to arrive some hours later.

DIAGRAM 6.

Diagram 6 indicates the positions of the various ships of BLUE and ORANGE at the time the game was placed on the board. Note that BLUE Train is in the A formation, that the ORANGE Striking Force is approximately 40,000 yards to the Northward of the BLUE Reenforcements, while the Raiding Force of 8 ORANGE CAs are on the opposite side 50,000 yards from their objective.

DIAGRAM 7 (Moves 1 - 6).

Diagram 7 covers the period from 0930 to 0954. There is no gun fire in this area during this period but several very important events occurred. Both sides launched their aircraft. ORANGE ordered his aircraft to concentrate in the area over the ORANGE battle cruisers and they were proceeding to this position; but, before the group from the 8 CAs arrived 14 BLUE VS attacked ORANGE 6 VOs in the vicinity of ORANGE CCs. 4 ORANGE VS from their CLs to the Northward joined in the fight as soon as they had arrived; however, as a result of the air battle, 14 VS BLUE and 6 VO and 4 VS ORANGE were all shot down. ORANGE A.A. fire had to be held up as it was impossible to distinguish the enemy from their own planes. This loss of the battle cruisers' spotting planes was immediately felt by ORANGE for ORANGE was about to take advantage of her long range fire and open up on the BLUE battleships. The loss of this plane spot forced ORANGE to retire temporarily until the arrival of the 16 VS planes from the heavy cruisers. The senior aviator in this flight designated 4 planes to spot for the CCs while the others either stood by to take up the spot or guarded the spotting planes. This brings up the point, should spotting planes be able to spot for other than their own ship, and if so, are there communication facilities available to issue orders to planes in the air? Certainly it is most likely that enemy planes will try to knock down spotting planes if they realize that by doing this they can destroy the effectiveness of long range fire, and if not means are provided to substitute planes for those lost, then the very vital advantage of superiority of fire is lost almost at the beginning of an action. It would seem that this flexibility of employment should and must be a part of our development.

In this particular instance ORANGE, whose battle plan was based on the advantage he would gain from superiority of fire, finds himself in trouble.

It is understood that communication equipment is now in the process of manufacture which will allow a 2-seater plane to have a pilot hooked up to a 2 radio circuit head set, one for command purposes and the other for spotting purposes, while the spotter is hooked up to the spotting circuit alone. It is probable that training will eventually provide for a flexibility in spotting which is found necessary in the games on the game board.

Attention is invited to the fact that ORANGE Destroyer Squadron 1 is cruising some 3 miles ahead of their battle cruisers and making no effort to assist in screening these very valuable units of the ORANGE fleet. It would seem that they might better be spread out in an A.S. screen up to the time that they are to be called in for attack purposes. The whole ORANGE plan depends upon her speed superiority and yet the ORANGE destroyers are held in a squadron cruising formation. This is one of the examples of not using all your forces to the maximum capacity in action.

Generally speaking, this diagram is a diagram of maneuver in which the forces are getting into their attack and defense stations.

BLUE has detached 3 CAs and BB-33 to interpose between the 8 ORANGE CA and the convoy, while the other 2 BB, 4 CLs and 11 destroyers are interposing between the battle cruiser threat to the Northward and the convoy. It will be noted in this

diagram that BLUE wishes to reverse the course of his convoy, and from the diagram you will see the complications that have resulted from an unwieldy train formation. There is grave doubt that a group of 30 merchant ships would be able to accomplish the maneuver shown on this diagram. Train formation will have to be simple and nothing more complicated than a follow-the-leader movement can be expected to be satisfactorily performed. If the Type B formation had been used the Train could have performed this maneuver with practically no confusion and in a very prompt manner.

You will note that this reversal of course on the part of BLUE has practically abandoned his submarines to the Westward. In other words BLUE has sacrificed the advantage of having submarines of his own in the battle area and has depended entirely upon the weapons of his surface craft for victory. It would seem that BLUE could well have kept on his course and brought his submarines into the action in this very vital battle which he is about to wage.

DIAGRAM 8.

Diagram 8 covers Moves 7 - 12 and the period 0954 to 1012. At the beginning of the move 3 ORANGE CCs opened fire on BLUE CL-11, leading Crudiv 2, at a range of 25,000 yards. At the end of 3 minutes this fire was shifted to BLUE BBs, 2 CCs firing at BB-35 and one on BB-34, at a range of 25,000 yards. They continued on these targets through Moves 8 and 9, and the BLUE O.T.C. realizing he was being seriously damaged, ordered his light forces and airplane smokers to cover the battleships with smoke. By the end of Move 10 the range had decreased to 23,000 yards and BLUE BB-35 had been damaged 10%. At 1003 the 3 ORANGE CAs in the Southern area opened fire on BB-33, range 23,000 yards, no plane spot due to the fact that

their planes had been ordered to the Northern area. At the beginning of Move 11 ORANGE CL Division 3 opened fire on BLUE CLs to the Southward dividing the fire as follows: 1 double, 1 single, and 1 divided. At the beginning of Move 12 ORANGE CCs, having lost their battleship targets due to the smoke screen, shifted their fire to the BLUE CLs 11, 12 & 9. This brought fire on the BLUE light cruisers as follows: ORANGE CC-3, CL-21 and 22 firing on BLUE CL-11; ORANGE CC-1, CL-23 on BLUE CL-12; ORANGE CC-4 and ½ CL-24 firing at BLUE CL-9; and ½ ORANGE CL-24 on BLUE CL-13. The rapid change of range caused by the battle cruisers' movement to the Southeastward decreased the effectiveness of the battle cruiser fire; however, by the end of Move 12 BLUE CL-11 had been damaged 20%.

On the BLUE side, BLUE had not been able to open fire until 1000 when 3 BLUE CAs to the Southward opened on ORANGE CA-34, leader of Western ORANGE division. At 0003 BB-33 joined in this fire on CA-34. In the Northern area the BLUE CLs opened fire on ORANGE CLs 23 & 24, 2 double concentrations. At 1009 BLUE battleships joined in the gun action, one BB firing on CC-3 while one divided fire on CCs 1 & 4, at ranges of 21,000 yards; while the BB's secondary batteries concentrated on CL-18. By the end of Move 11 ORANGE CA-34 to the Southward had been damaged 10%, while to the Northward ORANGE CL-24 had been damaged 10%, and CL-18 15% by the end of Move 12.

DIAGRAM 9.

BLUE Train moves to the Southeast to avoid the heavy attack coming in from the Northward. Note the long cumbersome columns trying to operate to aid their defense. Half of the BLUE communication effort is being devoted to getting the train to move into the area and in the direction desired by the Train Commander. BLUE Southern defense group keeps interposed between ORANGE raiding group and the convoy. BLUE CAs are nearly 8,000 yards further from the enemy than BLUE BB-33 which forces the latter to take the full force of the attack of the enemy CAs until the range has been reduced to about 22,000 yards when the BLUE CAs come into range at over 30,000 yards, which is ineffective at best. Should not these CAs have moved up close to the BBs so that they could have kept up their fire while ORANGE was closing? In case ORANGE should shift their fire to the BLUE CAs the latter were to windward and could have protected themselves by smoke. As it is now BLUE CAs add to the fire of BB-33 at a long and ineffective range while BB-33 is having a hot close range action. ORANGE CAs are without plane spot as their planes were sent to the Northern area to assure the battle cruisers having plane spot; however, 4 VS are returning to take up the spotting for the CAs but are not yet in position.

In the Northern area action is heavy. Both sides have plane spot. During this period ORANGE sent in a destroyer attack. Was it properly supported and was the objective free to move? No, ORANGE battle cruisers started to support the attack and then, once the torpedoes were launched, moved off. Likewise BLUE battleships moved off, away from the torpedoes thereby moving away from two dangers, battle cruiser fire and destroyer torpedoes. What is a supported torpedo attack? It is one in which the guns of the enemy are kept occupied while the destroyers

dash in. If the enemy transfers his fire to the attacking destroyers, he must take a punishing gun fire from the supporting forces. In this case, BLUE short range guns rendered his battleship gun fire ineffective beyond 22,000yards and, therefore, not being able to engage the enemy heavy ships effectively, he could transfer his fire to such vessels of the ORANGE force which his guns could reach.

When BLUE sensed that torpedoes had been fired, he just moved out of the area and paid no price for the action. In the meanwhile BLUE light forces, aided by their battleships, poured a hot fire into the ORANGE attack group and wiped them out. ORANGE light forces were forced to fire their torpedoes at ranges from 7700-9500 yds in the case of the destroyers, while the light cruisers fired at 11,000 yards. There were no torpedo hits for BLUE battleships were free to run.

On a target with 20 knots speed, a 27-knot torpedo has to be fired within 6200 yards if it is to even overtake a target free to move, and assuming that it takes three minutes to turn the target vessel away from the attack.

In this melee, BLUE CLs fired 6 torpedoes to the Northward knowing that under the heavy gun fire they were taking their ships were apt to sink with their torpedoes on board.

A study of the gun fire in this area shows ORANGE CCs continuing fire on BLUE CLs until 1015, then shifting to the battleships, which at that time were behind smoke. There was little or no damage on the battleships. BLUE CLs were getting badly punished from the combined gun fire of ORANGE CCs and CLs, averaging 45% damage by the end of Move 13. BLUE Desron 1 was suffering from the secondary battery fire of the battle cruisers and from fire of the ORANGE destroyers. BLUE DL-6 was damaged 80% by the end of Move 14. By the end of this move BLUE CLs were damaged from 80 to 40%, and by the end of Move 15 only

BLUE CL-13, 40% damaged, remained afloat. ORANGE battle cruisers fired on BB-35 and that ship was damaged 20% by the end of Move 15. Their secondary gun fire together with that of the ORANGE destroyers had sunk BLUE DL-6 and DD-152.

In the Southern area the rapid changes of course and range are reducing ORANGE CA/fire effect so that BB-33 is getting very little damage.

BLUE gun fire was as follows: In the Southern area BLUE CAs are doing very little damage on ORANGE CAs at 32,000 yards: BLUE CAs are firing two on ORANGE CA-34, and one on ORANGE CA-35, while BLUE BB-33 shifts to ORANGE CA-38 at a range of 23,000 yards. Not much damage is being done.

In the Northern area things are humming. BLUE CLs are engaging ORANGE CLs at ranges from 11 to 7,000 yards. BLUE destroyers are engaging ORANGE destroyers at ranges around 6000 yards, while BLUE battleships keep up their fire on ORANGE battle cruisers at ranges 17 - 19,000 yards, target angle 75, direct fire, plane spot with director. By 1015 ORANGE CC-3 is 20% damaged, ORANGE CLs average 22% damage, while ORANGE CL-18 is 90% damaged and sinking. By 1018 ORANGE CL-21 is sunk or sinking, and the remaining ORANGE CLs average 50% damage. BLUE battleships add their secondary battery against the ORANGE destroyers and two of these are sunk. ORANGE battle cruiser damage has now mounted: ORANGE CC-1 damaged 10%, CC-3 20%, and CC-4 damaged 10%, by 1018. By 1021 all 4 boats of ORANGE Desdiv 3 are sunk and all of ORANGE CLS are either sunk or sinking, while in the Southern area damage to ORANGE CA-34 has increased to 20% due almost entirely to fire of BB-33.

DIAGRAM 10.

This period sees the failure of ORANGE dest oyer attack in the Northern area, and the loss of practically all of ORANGE light forces in that area. Only the 4 destroyers of the A.S. screen remain to ORANGE. ORANGE CC return to support the attack but it is too late. The destroyers are gone and by the middle of Move 18, the torpedoes have run their course.

BLUE destroyers deployed across the van of ORANGE destroyers retiring from their attack, and rakedthem by enfilade fire. ORANGE DD had only a few bow guns with which to reply. BLUE DD again moved so as to block the escape of these destroyers and again enfiladed them, ranges getting down to point blank fire. ORANGE CCs to the northward could not distinguish friend from foe in the melee. BLUE CL-15 added her fire against ORANGE DDs.

The Director ruled that 7 ORANGE DDs were lost to 3 BLUE DDs. The advantage of position was all with BLUE in this destroyer action.

In the Southern area ORANGE CAs do not like the concentration of BLUE BB-33 and the three BLUE CAs, so CA Division 7 moves off to the Westward, taking the 4 VS with them for spot. Crudiv 6 continues its engagement with BLUE BB-33. Will the BLUE CAs get out of support distance of BB-33?

BLUE Convoy is having the jitters trying to keep clear of the action. I would hate to think what the average merchant skipper would be saying.

BLUE DDs guarding the train have been ordered to re-inforce the Northern defense group. They are seen passing through the gaps in the train formation with precision. Again I hate to think what would happen with the average merchant skipper.

Looking at the gunnery situation in detail, ORANGE CCs have a triple concentration on BB-35 but due to indirect fire and rapid change of range its effect is nil. We can pass over the light force action as its results were conclusive.

In the Southern area, three ORANGE CAs concentrate on BB-33 at ranges 22 - 18,000 yards. ORANGE Crudiv 7 fires at BLUE CAs, two on CA-36, 1 on 34, 1 on 32, range 29,000. All long range guns both sides, have plane spot, except ORANGE Crudiv 6. The latter, in order to shoot effectively, have to get in to top spot ranges which suits BLUE BB-33. However BLUE BB-33 begins to suffer at the rate of 10% damage each move or a total damage of 30% by the end of Move 19.

BLUE CA-36 gets damaged 10% during this period.

ORANGE CC concentration still ineffective due to indirect fire and change of range. At end of Move 19, total damage on BB-35 is 30%.

BLUE BB to northward unable to fire at ORANGE CCs on account of range. To the southward, BB-33 engages CA-34 of ORANGE Crudiv 7, then shifts to CA-39 of Crudiv 6, then divides fire on CA-39 and 38, all in 9 minutes, which is not conducive to the best results.

BLUE CAs stand to the West engaging ORANGE Cruviv 7, two on CA-35, one divided on CA-33 and 32, and keeps this distribution throughout this period - range 29 - 25,000 yards.

By 1035, CA-34 is 40% damaged, CA-38 50% damaged, and CA-39 is 60% damaged.

Note that BLUE CAs are getting separated from their BB support.

DIAGRAM 11.

This period sees the battle cruisers in the northern area returning to the fight with BLUE BBs 34 and 35. ORANGE A.S. screen is spread out ahead of the CCs. Due to changes of course and the rapid change of range, the CC triple concentration on BLUE battleship has practically zero effect until Move 23 when with the range reduced to 17,000 yards, the fire becomes effective. The CC secondary battery is applied against BLUE DD division to the southward which seems to be approaching to attack, and then against BLUE CL-13 which has now been joined by Desdiv 8 of the Train A.S. screen.

BLUE BB A.S. screen smoked for a part of this period, then stopped. BBs were in sight to the CCs the greater part of this period. It wasn't until Move 22 that the CCs got in to BLUE BB range and fire was opened on them, BB-35 on CC-3, BB-34 on CC-1 and CC-4. BLUE battleship secondary fire together with CL-13 and all BLUE DDs in the area opened on ORANGE screening destroyers.

At 1033 BLUE attacking destroyers fired 24 torpedoes, but being under effective fire only 12 ran. The division then turned ships right and fired another salvo of 24 torpedoes, 12 of which ran. The range at the time of firing was 11,800 and 10,000 yards respectively.

The destroyers then tried to escape by running away, making rapid changes of course. Only one succeeded in escaping.

The torpedoes were reported by ORANGE Desdiv 4 as they passed those ships. The first flight reached the CCs just as they had completed a 90° turn and were headed within a point of the reverse course of the torpedoes. By individual ship movements the CCs avoided the torpedoes which passed close ahead of the two eastern CCs.

The next flight, however, caught the CCs in a less favorable situation, and CC-1 was hit by one torpedo. The formation was

considerably broken up and CC-1 was without gunfire for three minutes.

In the Southern area BB-33 is mopping up ORANGE Crudiv 6. Concentrating her fire on the two leading CAs she works havoc on them. The latter, feeling the punishing effects of her fire, turn to close the range for torpedo fire. In so doing, the division comes under enfilade fire with devastating effect. CAs 38 and 39 were quickly sunk. Then CA-37 & 36 took the brunt of this fire, CA-37 being sunk by the end of the move.

Here was a violation of a well established rule, that of keeping the line of bearing normal to the enemy bearing line.

The CAs could have closed just as rapidly by a simultaneous movement, would have escaped enfilade fire and would have avoided blanketing their own fire. BB-33 was not escaping unharmed. By the end of the move she was 50% damaged. A little more patience on the part of ORANGE CAs and they could have accomplished her destruction.

The three BLUE CAs have fallen into the trap set by ORANGE, they are now out of support of BLUE BB-33. ORANGE opens up with a triple concentration of CA-36, divided fire on CA-34 & 32 and keeps this fire distribution throughout the period.

Damage mounts rapidly. CA-36 being 60% damaged at the end of the period, slowed to 26 knots; the other two BLUE CAs being each 10% damaged.

ORANGE submarines have finally gotten into action. They have been coming at best speed from the southward and are now in position to threaten BLUE CAs. I-64 fired 6 Gx torpedoes at the long range of 13,700 yards. Five ran and passed ahead of BLUE CAs which did not see them.

It is worthy of comment, that in most games, and in battle,

once action is joined, the battle hovers in a more or less static area. This plays right into the hands of the submarines.

Those in position get repeated opportunities to attack, those out of position, get time to get into position.

If submarines of the enemy are known to be in the neighborhood it is well for a fleet to keep going, and not to mull around in an area. Those subs in the area are thus dropped astern, and the others may be avoided.

Ammunition expenditure is now becoming a serious matter. ORANGE heavy ships have expended more than half of their ammunition while BLUE CAs are running low.

DIAGRAM 12.

In this period ORANGE planes take the offensive and attack BLUE spotting planes. The type of planes used in this action have a higher defensive than offensive value. As a result, ORANGE loses 9 VS to 2 VS and one VO for BLUE.

ORANGE can ill afford to lose planes for all of her remaining heavy guns require plane spot to operate efficiently against BLUE battleships. This action was, in my opinion, ill advised.

ORANGE CCs get a pretty heavy pounding from BLUE BBs in the northern area, CC-1 has received one torpedo hit and more BLUE DD threaten, so the CCs retire to the northward. By the end of the game, ORANGE CC-1 is 40% damaged; CC-3 30%; and CC-4, 20%.

BLUE BBs are behind smoke and the retirement of the CCs results in another lull in gunfire. However, BB-35 has a total damage of 50%; BB-34 is in very good shape, as all of the CC fire has been directed at BB-35 for the last half hour. In the Northern area the situation would appear to be in BLUE favor, 1½ effective battleships against 2 effective CCs, with 7 DD and a damaged CL against 4 ORANGE DDs.

In the Southern area, what was a very favorable BLUE situation has changed to a critical one.

BLUE BB-33 has finished off Crudiv 6 and turns back to support BLUE CAs, thereby escaping the ORANGE torpedoes fired in the last dying gasp of ORANGE Crudiv 6.

But BLUE CAs have gone too far from the convoy and are in no position to be supported. BLUE CAs try to cover themselves with smoke, BLUE Desdiv 9 rushes to their aid, but it is too late. ORANGE Crudiv 7 has them in their grasp and wont let go.

ORANGE sub I-64 also takes a hand. She fires 6 Gx torpedoes at 3300 yards. CA-32, retiring behind smoke, does not see these torpedoes as they come up astern at 37 knots. CA-32 is struck aft, and this damage together with the gun damage already suffered, causes her to blow up and sink. BLUE CA-36, already 70% damaged and retiring towards the convoy at 16 knots, sees torpedoes overtake and pass her.

BLUE CA-34, with 80% of her ammunition expended, 20% of damage, turns toward the ORANGE CAs in a last dying effort, comes under a triple concentration and is sinking at the end of the period.

ORANGE CAs fire a salvo of 21 torpedoes toward CA-34, range 8400 yards, 14 of these torpedoes run.

Before they can arrive, CA-34 is sinking. Will these torpedoes be missed by ORANGE CAs if they get a chance to raid the convoy?

ORANGE ammunition is running low and they will have to hurdle BB-33 to get to the convoy. If ORANGE has no 8" ammunition and no torpedoes, the convoy/defense guns may yet save the day.

BLUE Desdiv 9 has laid smoke and fired a salvo of 24 torpedoes across the advance of the ORANGE CAs holding another 24 to cover any move of the ORANGE cruisers. These torpedoes may make no hits but they will delay the CAs from closing the convoy and give BB-33 a better chance to get in position. The

latter, although 60% damaged, has 5 effective heavy guns. ORANGE CAs still have a problem on their hands.

The game was called at 1100, game time. The battle lasted one hour and 30 minutes, and of that the first 20 minutes was free of gun fire. It was a hot action. Was the game worth the trouble?

Let us see what seems evident from the playing of this game.

Take communications, BLUE sent 46 messages in 90 minutes, nearly half of these concerned the conduct of the train. Roughly speaking 25 messages were sent by BLUE on normal combatant functions. This is reasonable. By simplifying the train formations, probably five or six messages would have sufficed for the train.

ORANGE sent 100 messages in 90 minutes, a heavy load on the communication service. A large number were service of information and position signals of O.T.C. and subs. However, a considerable number were to aircraft in order to readjust the plane spot situation.

Generally speaking, there is too much signalling in the tactical games. A well thought out battle plan will do away with a lot of signalling. Information is necessary but a well indoctrinated force and a good plan of action should require little in the way of action orders. In addition to the possibility of these signals not getting through, subordinates in the habit of getting orders, get the habit of waiting for orders.

We have seen the difficulties of handling an unwieldy train. We see the necessity for a simple train formation which permits mobility within the capacity of the ships concerned.

We have seen the difficulty of co-ordinating the efforts of widely separated forces; no separation of forces is war-

ranted unless it results in superiority at a vital point. This is a rather broad statement, but tactically speaking, it appears sound.

We again have seen the uncertainty of torpedo fire. ORANGE fired 99 torpedoes from surface craft and got no hits. The firing was at ranges from 7600 to 11,000 yards and the attacks were unsupported. The answer is self evident.

BLUE fired 90 torpedoes from surface craft at still greater ranges. BLUE got one hit on a battle cruiser, but simply because the CCs rushed in in the face of this fire.

We cannot always estimate the effect of torpedoes from the hits alone; if they cause the enemy to leave favorable gun situations, the torpedoes have saved their own ships from disadvantageous gun fire.

We have seen the difficulties of operating planes for a common purpose. ORANGE, needing plane spot for her plan of battle, has it broken up by BLUE who would prefer a top spot action.

We saw BLUE abandon her own subs and mill around in a static battle area, allowing ORANGE subs a chance to get in. Certainly BLUE was not making full use of all of his forces.

We have seen gunfire nullified by rapid changes of range and we are faced with the problem of keeping a favorable target angle and yet avoiding rapid changes of range. The two objects are opposed to each other, so we will have to compromise according to the relative importance of each.

The other evening I sat at a movie and saw French heavy cruisers, going through fast maneuvers, firing long range fire, laying smoke screens; French aircraft launching torpedoes at what seemed a height of 100 feet, French aircraft laying smoke screens. It all might as well have been the U.S. Fleet in maneuvers.

Other navies are doing the things we are doing, they may be doing some of them better.

It is up to us to solve our problems if we hope to be in the van of improved naval tactics, if we hope to make full use of the weapons of war.

For this reason these game board battles are useful.
