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RESEARCH ON STRIKING FORCE TACTICS

YOKOSUKA Naval Air Group
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	Page
Chapter 1 Introduction	1
Chapter 2 Battle Experiences	3
Chapter 3 Methods of Fighting Decisive Battles	4
Chapter 4 Tactics	7
Chapter 5 Conclusions	32

For Battle Charts, see enclosure.

CHAPTER I- INTRODUCTION

In studying striking force tactics we must consider the following main points:

A - Extension of Attack Range

The attack range of a battleship fleet is limited to 30,000 - 40,000 meters. For an aircraft carrier fleet, the attack range is extended to several hundred nautical miles. Elements of a carrier fleet may be advanced separately, avoiding vulnerable concentration, without being deprived of capabilities for concentrated attack on the objective. The development of the carrier fleet closely parallels the transition from massed land warfare in the days of spears and swords to modern, open land warfare brought about by the use of firearms.

B - Vulnerability of Carriers

Modern carriers have been disabled by a few direct hits by 250 kg (550 pound) bombs. Battle experiences prove that carriers cannot escape damage even when AA and fighter plane cover are excellent. Despite present and future plans to strengthen AA, carriers cannot be safeguarded against air attack unless some epochal AA equipment makes its appearance. Because of this, carriers are forced to use a combination of negative means of defense: dispersion and deception. This partially offsets the advantage of attack range.

C - Importance of Decisive Battle

Plan for the destruction of the enemy's units on every occasion in which they appear and vital when viewed in the light of his great military expansion. When he is not completely annihilated, the comparative ease and speed of his recuperative powers is apparent from successive battle experiences.

Historically, there are two general patterns followed in decisive battles:

Cut off the enemy's retreat by bold turning and envelopment and destroy the enemy main body on the battle field, pursuit then being simply the mopping up of a routed enemy; or

Defeat the enemy on the field of battle and, after he has fallen into a disadvantageous situation, carry out a fierce, resolute pursuit and annihilate him.

Analysis of past naval battles in which battleships constituted the most important fleet element indicates that the second pattern was generally followed. The tactical principle involved specifies the use of gunnery and torpedo fire to destroy the balance of power. Thereafter, annihilation is effected gradually during a resolute pursuit.

Decisive battles involving a preeminently carrier fleet - a striking force - will follow the first pattern. The distance between the opposing fleets at the crucial moment is very great. The difficulties of pursuit are greatly increased. The reserve power to pursue is often lacking because of the enormous plane losses sustained even by the victor in a single engagement (see tabulation which follows). Increased effectiveness of AA fire is a further factor. Without a capable reserve force retained in the rear, pursuit will be difficult. Pursuit from the spot of the attack will usually result only in the disposal of damaged enemy ships.

Judging from decisive battles in the history of land warfare, we find that most generals have won their great victories by flanking and envelopment. Napoleon alone, at JENA, achieved success by following the second pattern.

AIRPLANE LOSSES IN AERIAL BATTLES AT SEA

Battle	CORAL SEA	STEWART ISLANDS (TW: 2nd SOLO- MONS Battle)	SANTA CRUZ (TW: South Pacific Battle)
Carriers	SHOKAKU(CV) ZUIKAKU(CV)	SHOKAKU(CV) ZUIKAKU(CV) RYUJO(CV)	SHOKAKU(CV) ZUIKAKU(CV) ZUIHO(CVL) JUNYO(XCV)
Usable planes after battle	Carrier fighters: 24/36	Carrier fighters: 41/73	Carrier fighters: 44/90
Usable planes before battle	Carrier bombers: 9/36	Carrier bombers: 25/54	Carrier bombers: 18/72
	Carrier attack: 6/36	Carrier attack: 34/45	Carrier attack: 24/54

CHAPTER 2 - BATTLE EXPERIENCE

Indications of the revolution in naval warfare are contained in the sea battles which have occurred since the beginning of the Greater East Asia War. Former naval theories of battles in which the contestants, striving for victory, concentrate their forces, meet within sight of each other, and exhaust all methods of gunnery and torpedo warfare, one might even say "slug it out", are felt to be obsolete in military art. The new naval theories, which employ the aircraft carrier as a capital ship, and which are based on the considerations set forth in Chapter 1, resemble methods applied to land rather than sea war. We realize that we have now stumbled upon the anticipated revolution in the art of war.

In considering the evidence of tactics in successive naval battles we have not abandoned the conventional conception of naval warfare. A situation in which the contestants concentrate the strength on hand and engage each other cannot be considered new tactics. However, the change in the capital ships naturally suggests the appearance of new tactics.

On 7 May 1942, in the Battle of the CORAL SEA, CarDiv 5 seized an excellent opportunity for a surprise attack, taking advantage of the enemy's preoccupation with the SHOKO (CVL), but we lost our chance to seize the initiative in attack because of an unfortunate mistake made by a reconnaissance seaplane in the identification of a large tanker as a CV. (See Chart 1, Battle of the CORAL SEA.) The enemy also, directing his full strength toward attack on the SHOKO, lost an excellent opportunity to attack CarDiv 5.

On 5 June 1942, in the Battle of MIDWAY, when our striking force was restrained by the attack on MIDWAY, we let an enemy fleet which appeared on our flank seize the initiative for attack. (See Chart 2, Battle of MIDWAY.)

On 24 August 1942, in the Battle of the STEWART ISLANDS, our fleet was restrained by GUADALCANAL and the RYUJO (CV) was damaged, but by sacrificing her the main force of the Third Fleet succeeded in gaining the initiative for attack on the enemy fleet. (See Chart 3, Battle of the STEWART ISLANDS.)

On 26 October 1942, in the Battle of SANTA CRUZ, the enemy sent out a BatDiv in the area south of the SOLOMONS to divert our fleet, planning a surprise attack. Instead they were diverted and absorbed by the advance guard of our striking force and brought upon themselves a crushing defeat.

In surveying these battles we discover that the secret of successful striking force battles is to divert and restrain the enemy on one side, and then to attack suddenly from the flank. This discovery was a product of chance in successive battles. We must deliberately develop such situations and, advancing, destroy the enemy on the field of battle.

CHAPTER 3 - METHODS OF FIGHTING DECISIVE BATTLES

Let us survey the methods of fighting decisive battles in land operations, methods which we must now adopt as reference material for the new striking force tactics.

We can best check and destroy the enemy on the battlefield by an enveloping attack, after cutting off his retreat by envelopment on both flanks, turning, or both. In many cases the application of these common principles is accompanied by great danger. Therefore, the trend of the military world in general is toward the safe method of merely repelling the enemy or occupying territory. We are even apt to neglect studies which, although risking some danger, may lead to destruction or severe damage to the enemy. All gifted generals of the past have unhesitatingly planned and properly executed conclusive battles when annihilation of the enemy was strategically necessary, even though, considering the perils involved, this would have seemed absurd to the average man.

Such methods are outlined below.

Envelopment on both flanks

This is the method adopted by Hannibal at CANNAE about 200 B.C. An army can envelop both enemy flanks at once, with forces equal or inferior to those of the enemy, because an army which has major anchor points on either flank can sustain an all out frontal assault even with a slightly weakened front.

Hannibal, with twenty-two thousand men, secured his front against a Roman army of fifty-five thousand, and then enveloped and destroyed both Roman flanks. Since then the remarkable advances made in weapons and in fortifications have resulted in the stiffening of frontal resistance, and it has been possible further to decrease frontal strength. In 1914, in the Battle of TANNENBERG, the Germans with sixteen thousand men completely repelled the main body of SAMSONOV's army of two hundred thirty thousand Russians. Subsequently, with slightly over one hundred thousand men they were able to envelop and destroy the Russian army in the marshy forest region. This was but the endorsement of the principle of CANNAE in the modern age. Sufficient strength must be reserved for the enveloping movements. When strength is poured into the front, pressure may be alleviated here but the result of the battle can only force the enemy to the rear.

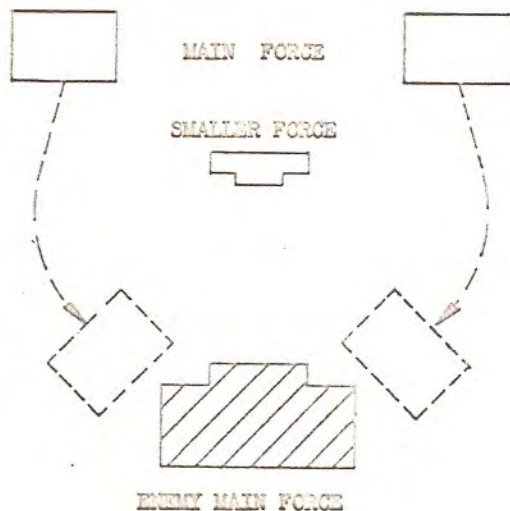


Figure 1.

If the forces stationed on either wing fiercely, resolutely and swiftly envelop the enemy's flank, without concern for the situation at the center, the danger of collapse of the front will be avoided, and a brilliant conclusive battle will be achieved.

In planning enveloping movements three general plans can be followed:

Turning or flanking with a force stationed on both wings;

The movement of units from the center force to the flanks of the front line, as in the Battle of MUKDEN, and

Converging on the field of battle forces which were stationed strategically on exterior lines.

Which of these plans should be adopted depends on the tactical situation.

Envelopment with your main strength on one flank

In applying this tactic, a frontal attack with the lesser force facilitates a flank attack with the main force. It, as well as envelopment from both flanks, is an excellent method of inflicting destructive blows on the enemy. However, inconclusive envelopment - as when the enemy's flank is turned with the lesser force in order to facilitate the frontal attack - will not inflict a conclusive blow, although it may repel the enemy (as at the Battle of LIAOYANG).

Envelopment on one flank was the common method of both Frederick the Great and Napoleon. Frederick usually fought with numbers which were inferior to those of the enemy, and were insufficient for immediate double envelopment. He would first execute a flank attack, and then, taking advantage of the situation while the enemy was shifting his front, would embark on a plan of envelopment on both flanks. (Such a maneuver occurred on 5 December 1757, when with only thirty-five thousand men he shattered an Austrian army of eighty thousand at the Battle of LEUTHEN.) Napoleon stressed pursuit, and was content to envelop on one flank, holding a crack army in reserve up to the last moment for this.

This method takes advantage of the fact that the enemy cannot completely reform on a new front. Though the method does not equal envelopment on both flanks in effectiveness, it is possible to attain conclusive results with it. Yet it is very difficult to inflict a completely decisive blow when the enemy has retreat routes on the other flank which was not enveloped. However, when there are obstacles on the un-enveloped flank which cannot be by-passed, a situation similar to that created by envelopment on

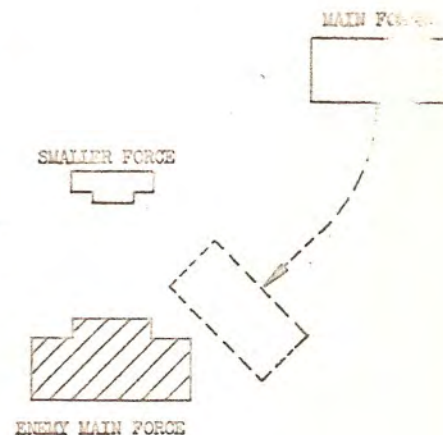


Figure 2.

Both flanks exist.

Turning

The tactic by which you try to turn the enemy's rear with your main force should be termed strategic envelopment. By advancing to his rear with your main force you attempt to cut off all retreat. If you wish to inflict a direct decisive blow, you must in addition tactically envelop.

Conclusive results can be achieved by turning when the enemy fails to guess our plans, or when we do not vacillate although he does know them. However, today's developments in radio, reconnaissance, communications, etc., require a highly favorable tactical situation to attempt turning.

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CHAPTER 4 - TACTICS

The following is an investigation of the tactics of the striking force, using as a basis the observations of the previous chapter.

Principles of Task Organization

We must, by the use of enveloping dispositions, seize the enemy and destroy him on the battlefield or cut him from his home base by pressure on his rear communication lines. Whether to envelop from both, or from only one flank depends primarily on the situation. But you must plan to destroy him with one blow, diverting and containing him with a small force on the front, and directing your main attack at one or both flanks, threatening his flanks and rear.

Originally, striking force battles differed from land battles. Topography was not a factor. Striking forces were weak in defense and lacked toughness. As a result, when the enemy attacked our important installations and bases his activities were restricted and he lost freedom of movement.

(TN: This next paragraph is not clear. It discusses, however, the ways by which striking forces have grown stronger and tougher. The concept of flank envelopment is cited as one cause. The principle of surprise is another. The chance of surprise is recognized as much greater if the approaching force stays beyond the range of enemy land-based planes. It is also recognized that searches of the approaching force will probably be limited to one direction.)

In your diversion force, it is profitable to use a division of battleships and decoy carriers if possible. Or, when luring the enemy into a trap through the use of a small, advance carrier force, keeping at a suitable distance from the main force, carry out the diversion by skillful maneuvering and the use of tracking planes.

The views of CarDiv 2 on decoy carriers follow:

In view of the weaknesses of carriers, when large enemy carrier forces are anticipated, it is extremely profitable to use decoy carriers in order to limit losses and to assure battle results. Battle lessons of operations in the CORAL SEA and in the INDIAN OCEAN teach us that camouflaging tankers is unwise, due to their slowness. Should they be discovered by the enemy they will inevitably sustain staggering losses. As a result, application of this method may be negative due to the necessity of extreme caution. Decoy carriers are effective when one begins to use them aggressively, and so high speed decoys are essential. The following is a plan for such use:

Temporarily camouflage a light cruiser as a decoy carrier. (The simplest method is to spread canvas over its bridge and stacks to simulate a flight deck and to camouflage it.) Attach two screening destroyers, and send them out ahead of your carriers.

Methods of Use

Coordinating the movements of diversion force with those of the force directly under the task force commander:

One example is as in Figure 3. When the search planes are launched, CarDivs 1 and 2 change course 60° to port and starboard of the base course and proceed at a fixed speed for two hours. (To illustrate, at a hypothetical speed of twenty knots.) They then return to the base course, and take formation preparatory to dispersal.

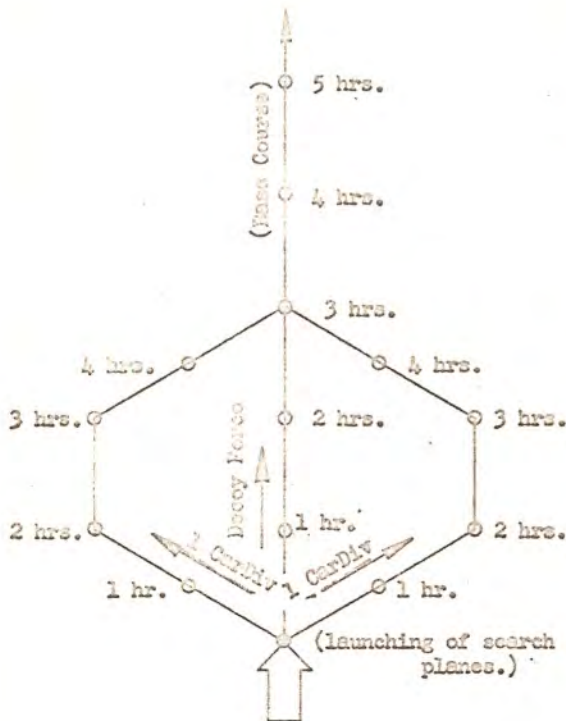


Figure 3.

If the search planes have not contacted the enemy after three hours the carriers change course 60° toward the base course; and after five hours, without further orders, they join up.

The decoy unit continues along the base course, and if it does not contact the enemy after five hours it reverses course and forms the line of return of the search planes.

If the search planes contact the enemy the decoy unit will advance toward him according to orders. The CarDiv on the enemy side will alter course to the opposite side at once, and, with the decoy carrier in the lead, will generally take station astern.

Coordinating the movements of the diversion force with those of the vanguard:

Until contact, the decoy unit will operate in conjunction with the vanguard. Upon contact, it will keep station midway between our carrier force and the enemy striking force.

No matter what the situation, the decoy unit will advance between the enemy and our carrier force, and will endeavor to attract the enemy planes.

When the enemy search planes are contacted, the screening destroyers and the decoy carrier will lay smoke screens to conceal the ship's type. Should the enemy attack unit approach, take evasive measures swiftly, and also try to repel enemy planes with AA gunfire.

We need not dwell on the fact that the great principle in the utilization of military power is the assembly of maximum power at the point of principal attack.

However, the success or failure of a conclusive battle is intimately related to the thoroughness with which this principle is applied and requires special attention. You must economize on power in the secondary attack area (where diversionary and containing movements are executed).

The movement of forces in the secondary attack area is extremely difficult, and the fortunes of war are often controlled by the battle situation in this area. Therefore, it is vital to facilitate the operations in the main attack area by endeavoring to achieve the objective of diversion and containment by suitable maneuver. It is necessary to maneuver aggressively and lose no opportunity to shift to attack. When carriers are disposed in the secondary attack area and maneuvered negatively throughout, not only is the objective of the operation not attained but also losses will be inactively incurred. Therefore, in accordance with circumstances, it is necessary to consider advancing and making a surprise thrust at the enemy; or, using the advance attack units, make a one-way attack and neutralize many enemy carriers, thus making the engagement advantageous for the force directly under the CinC.

Enveloping the enemy depends primarily on the situation. You can envelop by means of tactical movements such as turning or flanking movements from your existing approach disposition, or you can envelop by means of strategical movements, that is, by the use of forces which have previously been disposed on exterior lines and are converged on the field of battle. However, in general, when you have the initiative in controlling the operation and can anticipate the time and place of the engagement, the latter method is advantageous. In leading and controlling movements of all units it is necessary to specify precisely the main force and the secondary force. For coordination, clearly assign the missions of all detached forces.

When your forces are dispersed, never forget the danger of piecemeal destruction. Especially in this so when planning strategic envelopment. Therefore, conceal your own plans carefully, while trying to learn the enemy's situation in advance by exhaustive searches. A detailed explanation concerning this appears later in the text. In envelopment on both flanks it is certain that the enemy will fall into the evil practice of dividing his forces, unless they are inferior to ours or unless he has massed them. Theoretically it is hazardous to plan such envelopment with less or equal power against an enemy deployed on a suitable front. Yet there are many historical precedents of blows inflicted on a superior enemy by this method. In the long run, the real error in war is the commonplace. The most important factor in striking force battle tactics is surprise attack. You must try for complete surprise of the enemy by bold maneuvers.

Although we should study tactical fleet movements (both before and after contact) in greater detail, it must be remembered that in striking force warfare situations change quickly and the issue is resolved in a moment. Therefore, set up a preparatory enveloping disposition during your approach so that you can envelop immediately after contact. The fleet which cruises massed is likely to lose the benefits of the initiative when it attempts to envelop by shifting its strength after contact. There is also the danger of exposing plans by such sudden maneuvers. Since you will be at a disadvantage in responding to changes in the situation, it is necessary to consider holding suitable forces in the rear and, by maneuvering them in response to the enemy situation, complete the envelopment.

When planning envelopment by strategic maneuvers, you must: (1) direct all units to the anticipated battle area; (2) suitably contract the operational front; (3) make inter-unit communications reliable; and (4), once you see an opportunity to overwhelm the enemy immediately, strive to annihilate him with one blow. Historically, the dangers of operations on exterior lines have often been traceable to hesitation or negligence. Take particular notice of this.

In the case of either strategic or tactical maneuvers, deliberation is important. If, after evening contact, you plan an attack for the following morning, moving into position during the night, and if the enemy's movements are not clear, consider his possible shifts. Such deliberation enables you to restrict your morning searches to one direction, and leaves you at a suitable distance from him.

Neither frontal attack nor inconclusive envelopment on one flank have the possibilities of a surprise attack. Although it is possible to destroy the enemy, you will probably only repulse him. Since this tactic does not promise decisive results, plan on conclusive envelopment on one or both flanks. But when you have discovered the enemy within attack distance, freedom of movement vanishes, and it is difficult to take a suitable enveloping disposition. You must then be content with a frontal attack or an inconclusive single flank attack.

Since an assault will often be unavoidable under such conditions, dispose in depth as much as possible, offsetting the enemy attack by an attack of your own by advance forces, supported by rear forces.

As previously stated, it is difficult to achieve conclusive results by pursuit.

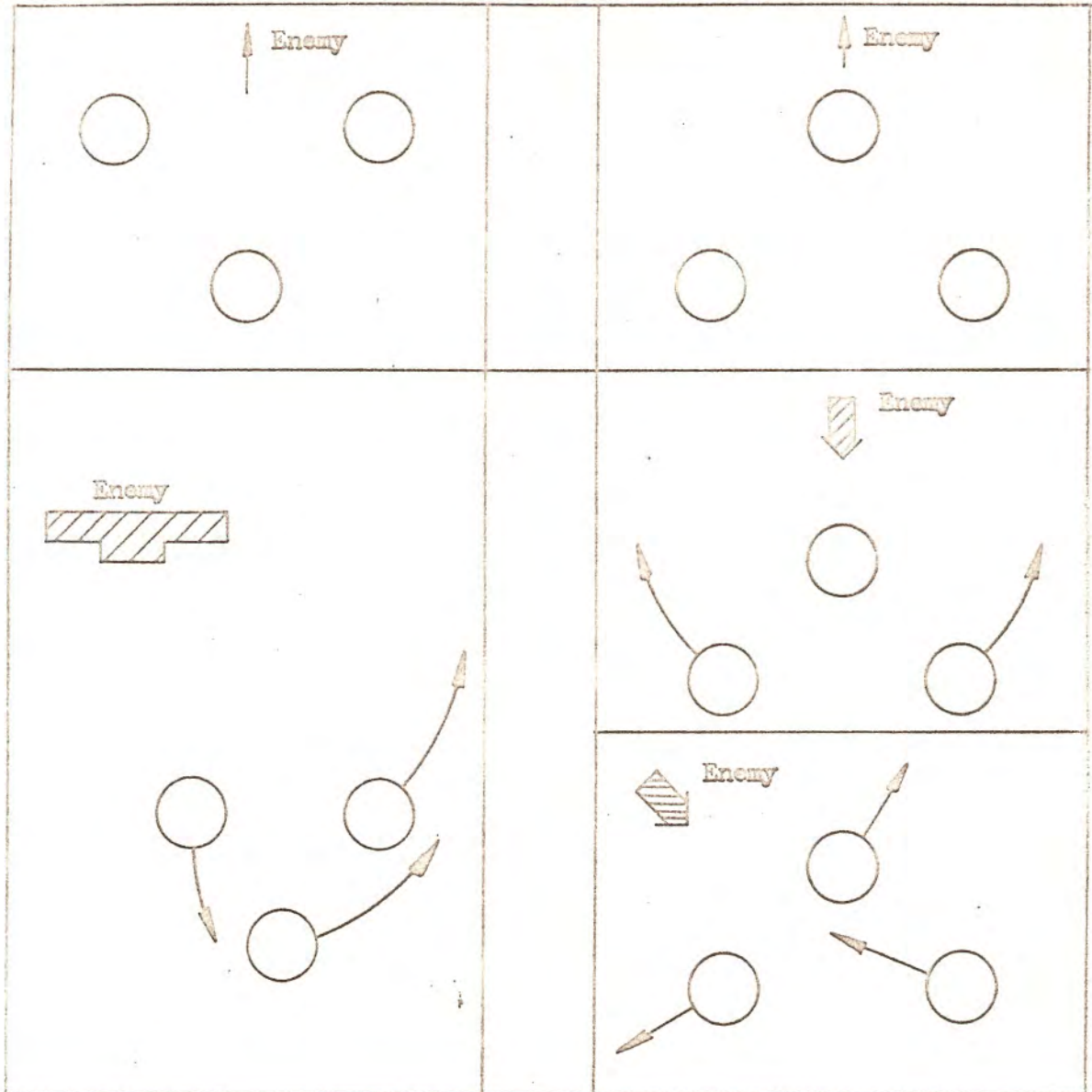
Victory or defeat turn on the initial phases of battles, particularly striking force battles. Often both forces are separated by a considerable distance at the crucial moment. Pursuit becomes increasingly difficult, and we must therefore often be content with disposing of crippled enemy ships.

In striking force battles in which plane losses are severe, a great deal depends on the rear force which is disposed in depth for a pursuit engagement. There is a danger that it may advance too soon, becoming confused with the advance force and creating a vulnerable concentration of ship targets, thus increasing the losses incurred. On the other hand, if you lose the chance to initiate the pursuit you cannot catch the enemy. We recognize these tactics to be unsatisfactory, but should you sometime face such a situation you must try to overcome the disadvantages by violent resolute attacks.

Battle experiences teach us that carriers have great weaknesses on one hand, and on the other have inordinate destructive power. Cover these weaknesses by dispersing your carriers, thus reducing the damage risk. At the same time, render the enemy's carriers inoperative by attacking his main force with a part of your force, and then utilize the remainder of your strength to inflict further damage. The extent of your dispersion of carriers varies, and depends on difficulty of communications and command, the enemy situation, etc. Generally, the units of a striking force disposed in one area should be able to execute necessary searches unaided, and have sufficient strength to carry out air attacks which are capable of rendering several enemy ships inoperative in one blow. Generally, it is advisable

FIGURE IV

(The significance of the sketches below is not explained in the text. Presumably they illustrate preparatory enveloping dispositions set up during approach.)



(Note: Each circle represents one CarDiv.)



to attach the necessary screening units to each CarDiv of three carriers and disperse these CarDivs at a suitable distance. This distance must be determined in the light of the enemy situation, field of vision, and aircraft potentialities, in order to reap full results of the battle and at the same time avoid simultaneous discovery and attack. The Battle of SANTA CRUZ indicates the best distance to be at least one hundred miles.

Organization and number of planes required for an Air Attack Unit

Battle experiences of air attack against fleets which maintain a heavy AA screen give us the following basic statistics:

POWER

To damage an enemy carrier until it is inoperational for planes - about three 250 kg (550 pound) bombs

To sink a carrier - about seven Mod 3 torpedoes (?)

To sink or render inoperative a screening destroyer - about one 250 kg bomb

PERCENTAGE OF HITS

Dive bombing: 40-50%

Torpedoes: 50-60%

LOSSES

We anticipate losses of 33%

It is estimated (for this hypothetical operation) that the strength of one enemy group consists of a nucleus of three carriers, with 18 screening destroyers and 40 planes for air cover. Computing the number of planes required for an Air Attack Unit to annihilate this enemy group, we arrive at the following:

VF (to "control the air") - about 40 planes.

VB - about 81 planes (to neutralize carriers @ 9 planes for one ship, total 27 planes; to neutralize gunfire of screening ships @ 3 planes for one ship, total 54 planes).

VT - 54 planes (to sink carriers @ 18 planes for one ship, total 54 planes).

The standard number of planes which present carriers are capable of carrying:

Large class carriers (SHOKANU (CV) and larger)

27 VF
45 VT and VB
9 VSO

Total: 81 planes.

Intermediate class carriers (HITAKA (XCV) class)

27 VF
18 VB and VT
9 VSO

Total: 54 planes.

Two operations are required to launch all of a carrier's planes, and there is usually a 30-45 minute delay between launchings.

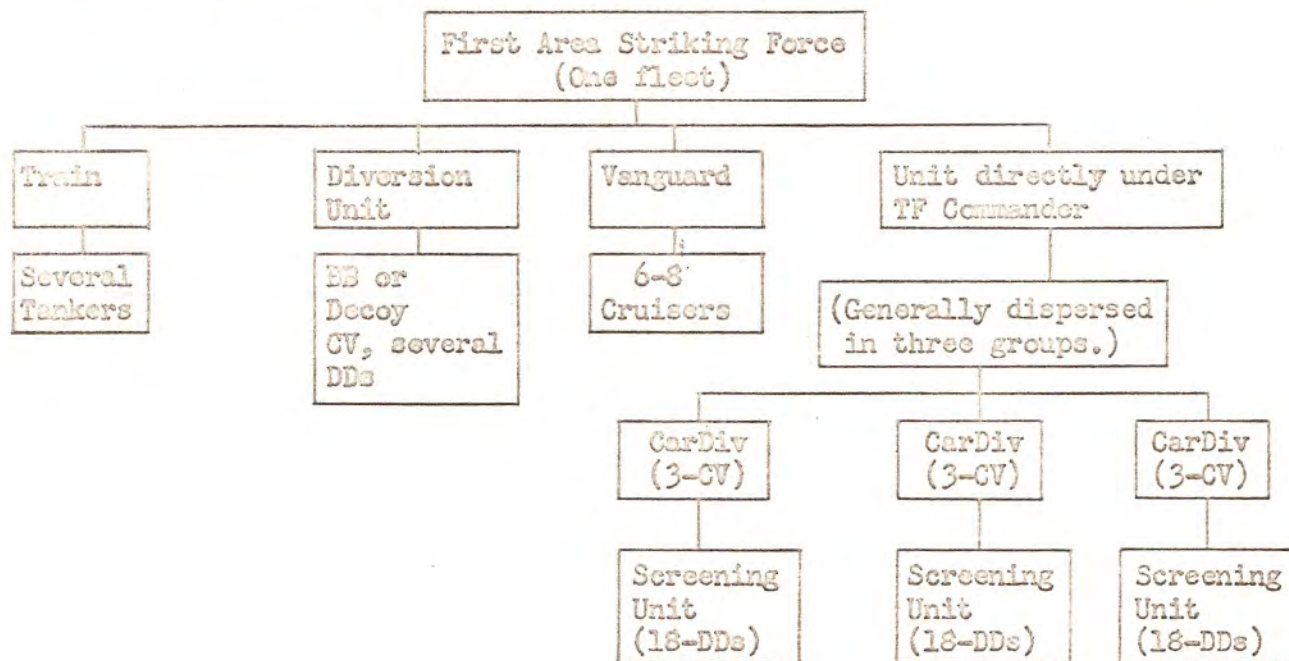
In a daylight assault against a fleet with strong AA protection, coordinated VT, VB and VF attacks in sufficient force would be highly desirable. This is, however, prohibited by existing restrictions in carrier plane-carrying and launching capacity. Massing carriers to compensate for this is contrary to tactics requiring carrier dispersion. Consequently, in general the first attack, consisting of many VF units and VBs, will wipe out the enemy's air cover, wreck his carrier's facilities for handling planes, and cripple the protective screen of DDs. A second attack, composed of VTs, will attack and sink the enemy's carriers under cover of the confusion. Adopting this method enables you to reconcile the discrepancy in the planes hypothetically necessary for a decisive victory and the planes actually available from three CVs.

One plan for an air attack force organization follows:

Type of attacking unit Type of plane	Combat Air Patrol	Reconnaissance Unit	Attack Units launched in first attack		Attack Units launched in second attack		Sub-total	Total
			Fighter Striking Unit	Dive Bomber Unit	Fighter Striking Unit	Torpedo Bomber Unit		
Carrier 1 Carrier fighter Dive bombers Torpedo bombers Recce planes	9	9	12	27	6	18	27 27 18 9	81
Carrier 2 Carrier fighters Dive bombers Torpedo bombers Recce planes	9	9	12	27	6	18	27 27 18 9	81
Carrier 3 Carrier fighters Dive bombers Torpedo bombers Recce planes	9	9	12	27	6	18	27 27 18 9	81
Total	27	27	36	81	18	54	243	

When engaging the enemy, the striking force will disable the launching facilities of a number of enemy carriers with one attack. The air attack unit as outlined meets this demand. One CarDiv of 3 CVs as a dispersed unit has the strength to eliminate nine (certain) to fifteen (maximum) enemy aircraft carriers simultaneously.

Plan of organization of a fleet as a striking force:



(See also Figures V and VI.)

Dispersal distances for a fleet:

Hypothesis: You are in a situation in which it is difficult to make suitable enveloping dispositions by maneuver. Submarines, land-based planes, and the vanguard have failed to give advance information on the situation as expected. While avoiding discovery and attack, through the search of the units directly under the task force commander, you plan to achieve success by bringing the rear forces into battle.

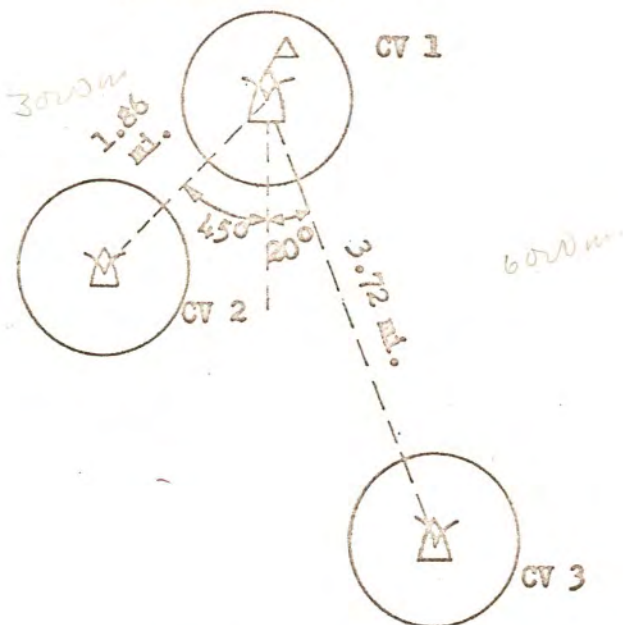
Aircraft speed - 200 kts
 A/C search radius - 600 nautical miles
 A/C attack radius - 500 nautical miles
 Carrier speed during approach - 24 kts
 Carrier speed at high speed - 30 kts
 Field of vision - 20 nautical miles

(the same conditions apply to the enemy as to us)

(Editor's note: See introduction for comments on this fanciful estimate of carrier plane radii.)

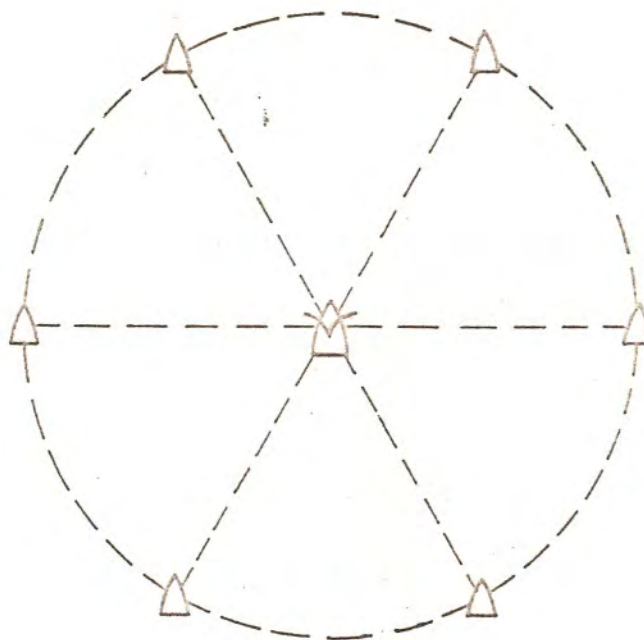
FIGURE V

EXAMPLE OF CARDIV
APPROACH ORDER



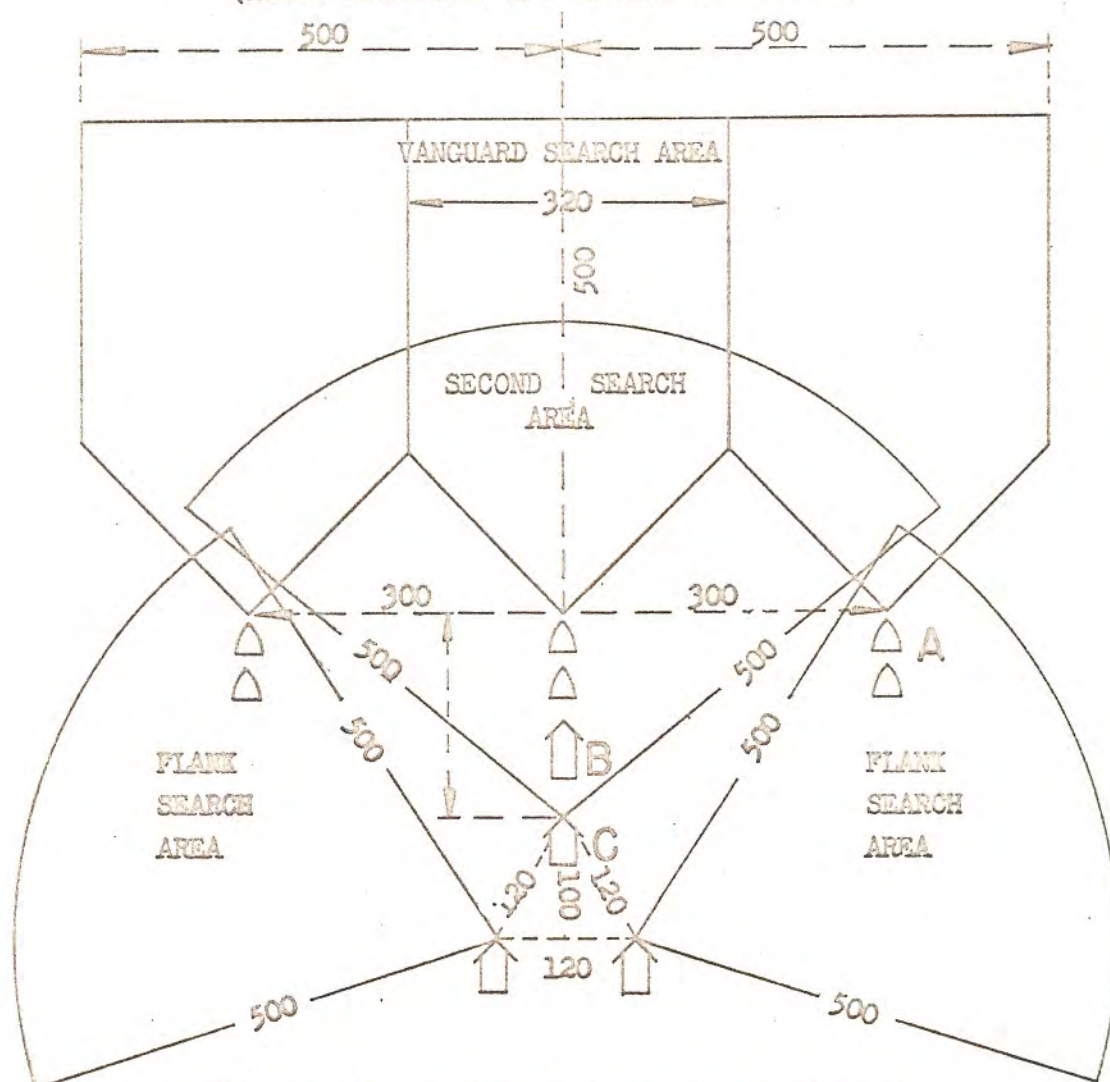
("CV 3 will be responsible for launching combat air patrols and recce planes while attack units of CV's 1 and 2 are held in readiness.")

EXAMPLE DISPOSITION OF
SCREENING DD's



EXAMPLE OF SEARCH FORMATION

(Note: distances are in nautical miles)

HYPOTHETICAL STRENGTH OF UNITS SHOWN ON CHART

- A. Vanguard: 6 cruisers with 8 recce seaplanes each.
- B. Probably indicates diversion unit, which consists of 2 ISE class BBs carrying dive-bombers, 1 TAIHO class CV carrying fighters and recce planes, 18 DDs.
- C. Main Fleet: 3 CarDives, each including 3 CVs and 18 DDs.
- D. Train (Not shown on chart) accompanies various units at their discretion.

FIGURE VI

Night attack in which fleet converges on enemy (see Figure VII)

Hypothesis: Vanguard reconnaissance planes discover the enemy in the afternoon. You intend to maneuver in the night so as to envelop and annihilate him early the following morning.

Plane performance (own and enemy):

A/C search radius - 500 miles
A/C attack radius - 400 miles

Your strength:

Unit under TF Commander	Two CarDive
Diversion Unit	Two BBs (ISE Class)
	One CV (TAIHO Class)
Vanguard	Six cruisers (each with 8 VSO)

Enemy situation:

Spotted at 1500 while moving in a group; nucleus of some nine CVs; speed of 20 knots. You can anticipate his position by means of night tracking.

Sunset - 1800
Sunrise - 0600

Chart of Operation:

Plan to neutralize all enemy carriers with some 45 VB launched from diversion unit at 0300 (you can expect to neutralize five).

By 0700 the unit under TF Commander will launch its attack unit and destroy the enemy carriers.

Time schedule (see Figure VIII and editorial note in introduction).

We are to avoid giving the enemy the initial attack. The following formula has distance from the enemy force indicated by D.

Vf = speed of search planes
When Ve = speed of enemy fleet
Vs = speed of our fleet
Db = operational radius of enemy attack planes

Then $D = \frac{Vf \text{ plus } Ve}{Vf \text{ minus } Vs} \times Db$

$$D = \frac{200 \text{ plus } 24}{200 \text{ minus } 24} \times 500 \quad \geq \underline{640 \text{ (Miles)}}$$

FIGURE VII

NIGHT ATTACK IN WHICH FLEET CONVERGES ON ENEMY

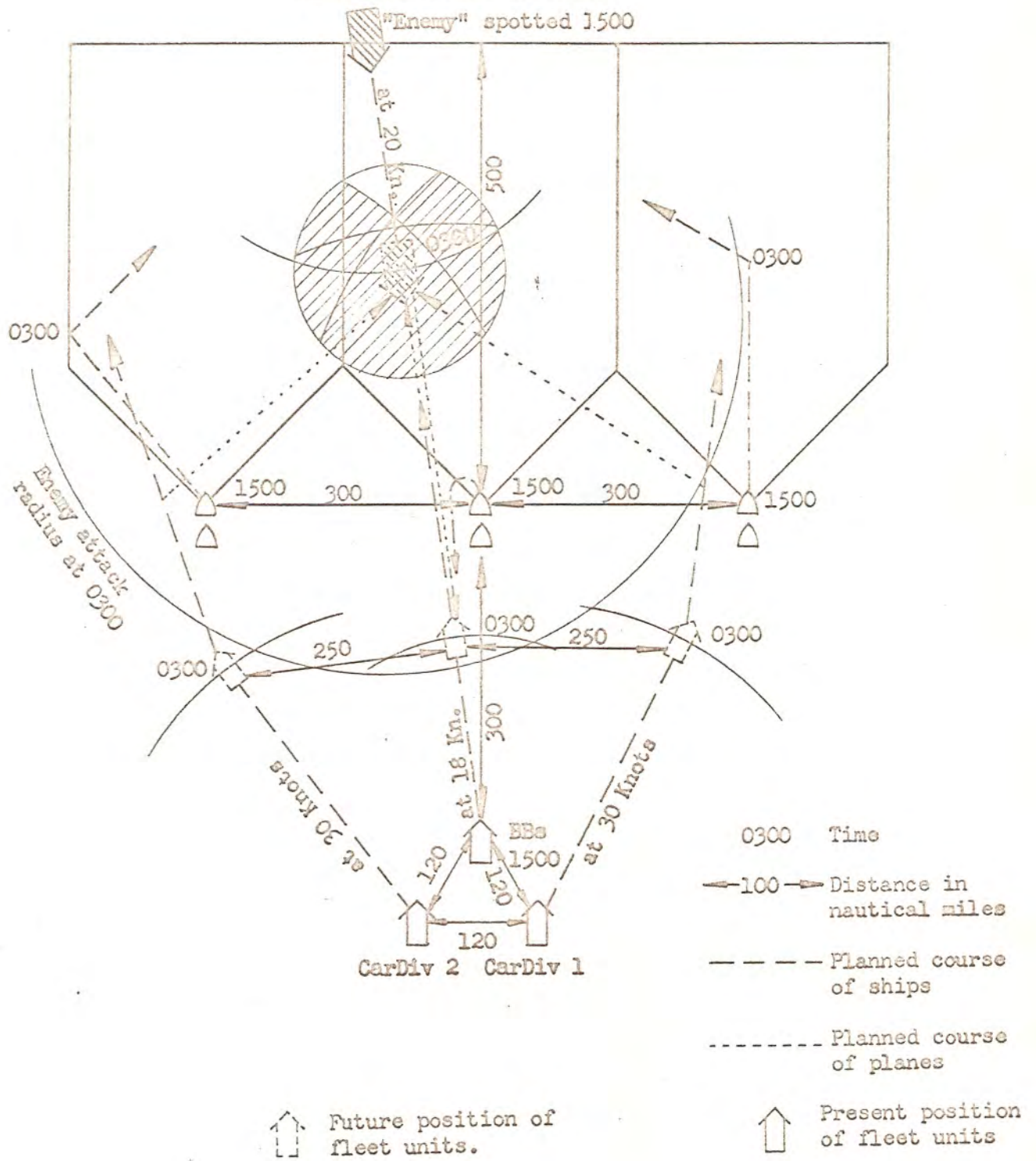
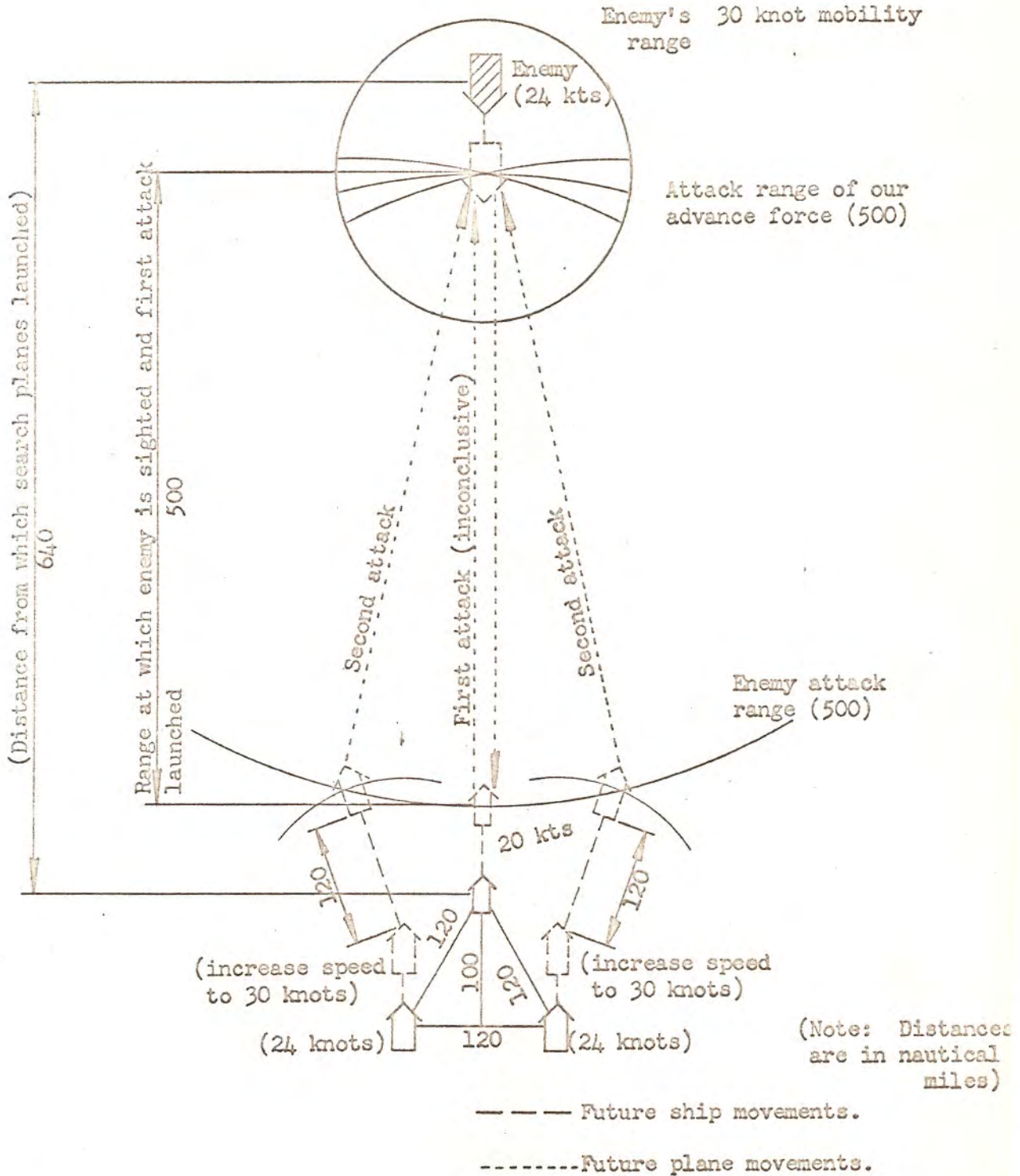


FIGURE VIII

CHART OF OPERATION



The search planes launched when D equals 640 miles should sight the enemy after three hours, when the opposing forces are at 500 miles - in attack range. At this time the advance force will launch its attack unit. The first attack will occur two hours and 20 minutes later. When conditions are the same for both the enemy and us, the first attack will be inconclusive. Meanwhile, our rear force is out of range and can avoid the enemy's attack.

The elapsed time between the launching of the first and second attacks by the same units will generally be six hours and thirty minutes.

To destination:	2 hr. 30 min.
Action	30 min.
Return	2 hr. 30 min.
Recovery	30 min.
Preparation	30 min.

Total 6 hr. 30 min.

Your rear force will advance at high speed for four hours (immediately after contact has been established), entering within range of attack in order to strike the enemy with a second attack before he can launch his second. Execution of this operation is facilitated by dispersion of carrier units in an equilateral triangle with legs of 120 nautical miles.

Computation tables

The following text explains Figures IX, X, and XI.

Directions for using following diagrams.

- Vf = Speed of carrier planes
- R = Their operational radius
- Vs = Speed of carrier
- Ve = Speed of enemy ship

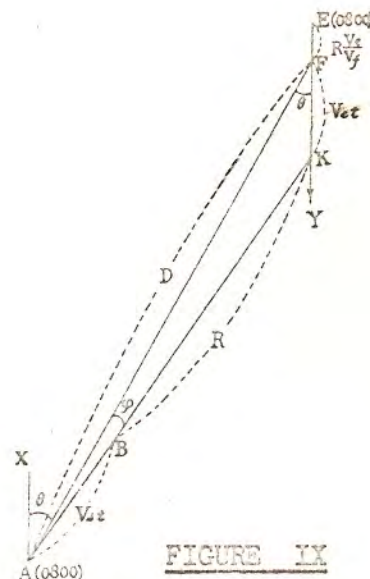


FIGURE IX

In Figure IX the position of the enemy ship at 0600 is E, and its course is EY. At the same hour the position of our carrier is A. Construct a line, AX, parallel to EY through A. Select a point F so that $EF = Ve \frac{R}{Vf} = R \frac{Ve}{Vf}$, and connect points A and F. The angle formed by AX and AF is θ ; $AF = D$.

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In Figure X connect Scale D and Scale R by a straight line (1). Then connect Scale θ and the point of intersection of line (1) and Scale $\frac{D}{R}$ by a straight line (2). The value of φ is determined by the point of intersection of line (2) and Scale $V\varphi$.

In Figure XI connect Scale D and Scale $(\theta + \varphi)$ by a straight line (3). Connect Scale φ and the point of intersection of line (3) and the diagonal 45° to the abscissa $(\theta + \varphi)$ by line (4). Line (4) determines the value of Vet . Connect Vet and V_e by a straight line (5). This gives us the launching time, t .

Example: When $D = 650$ nautical miles, $R = 400$ nautical miles, $\theta = 30^\circ$,

$V_e = 20$ knots, $V = 30$ knots

Then $\varphi =$ a little over 5° employing Figure X

And $t = 5$ hours and 14 minutes employing Figure XI

Gathering Intelligence

Seizing the initiative and catching the enemy by surprise is a prerequisite of carrier warfare.

Before the start of operations, clarify the enemy's disposition by sub reconnaissance and Base Air Force searches and patrols.

Plan to improve aerial reconnaissance, for we can clearly see that operational requirements have not been fulfilled in the past. Also, plan to increase the number of recce planes on cruisers; by disposing cruisers in advance of the CarDiv, reconnaissance will be accelerated and the attacks of the CarDiv expedited.

Caution is needed to avoid blunders - such as the following:

At the opening of the MORESBY operation we lacked a means for reconnaissance, and so an unforeseen battle arose in the CORAL SEA and forced us to abandon the aims of the operation;

At MIDWAY, no accurate search existed on one flank of our striking force, and the basis for an operational blunder was thus created;

In the Battle of SANTA CRUZ, liaison between the enemy fleet and the base aircraft which attacked us was poor; they were diverted by our vanguard forces and suffered a great defeat.

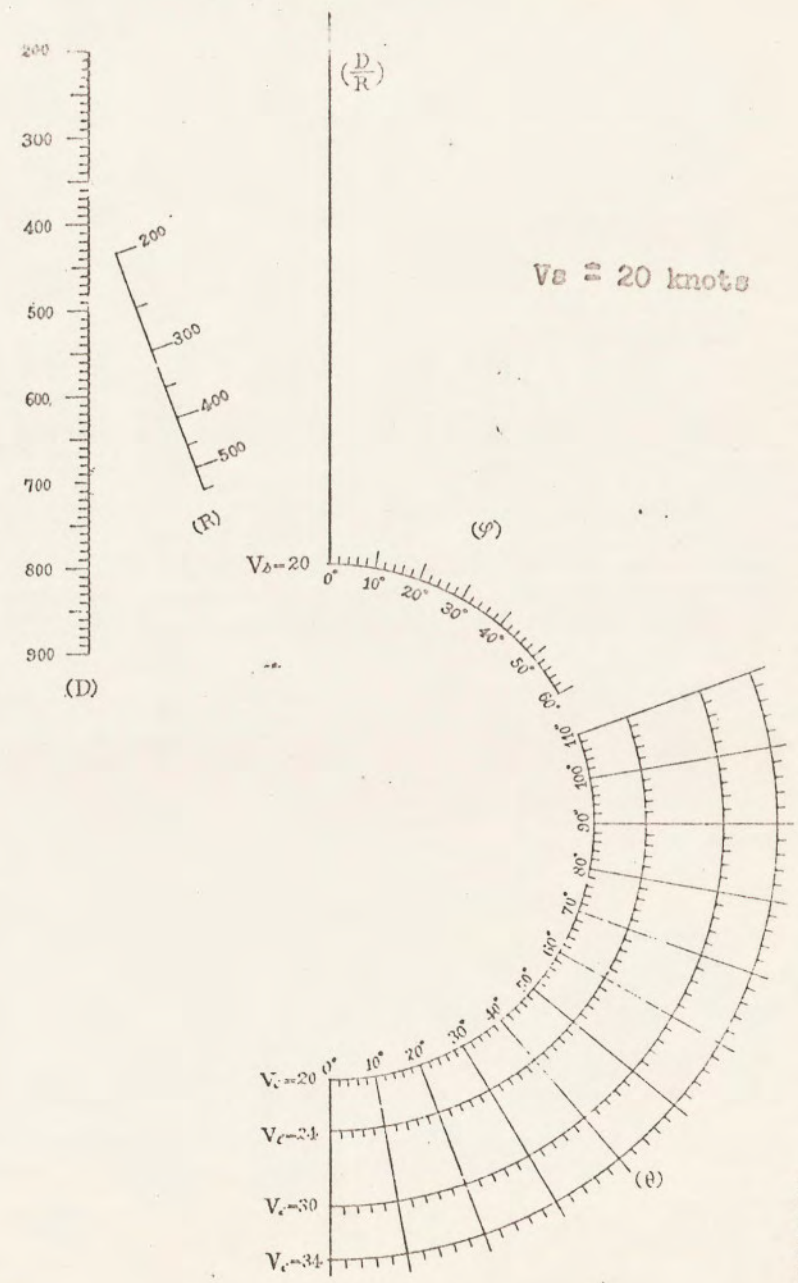
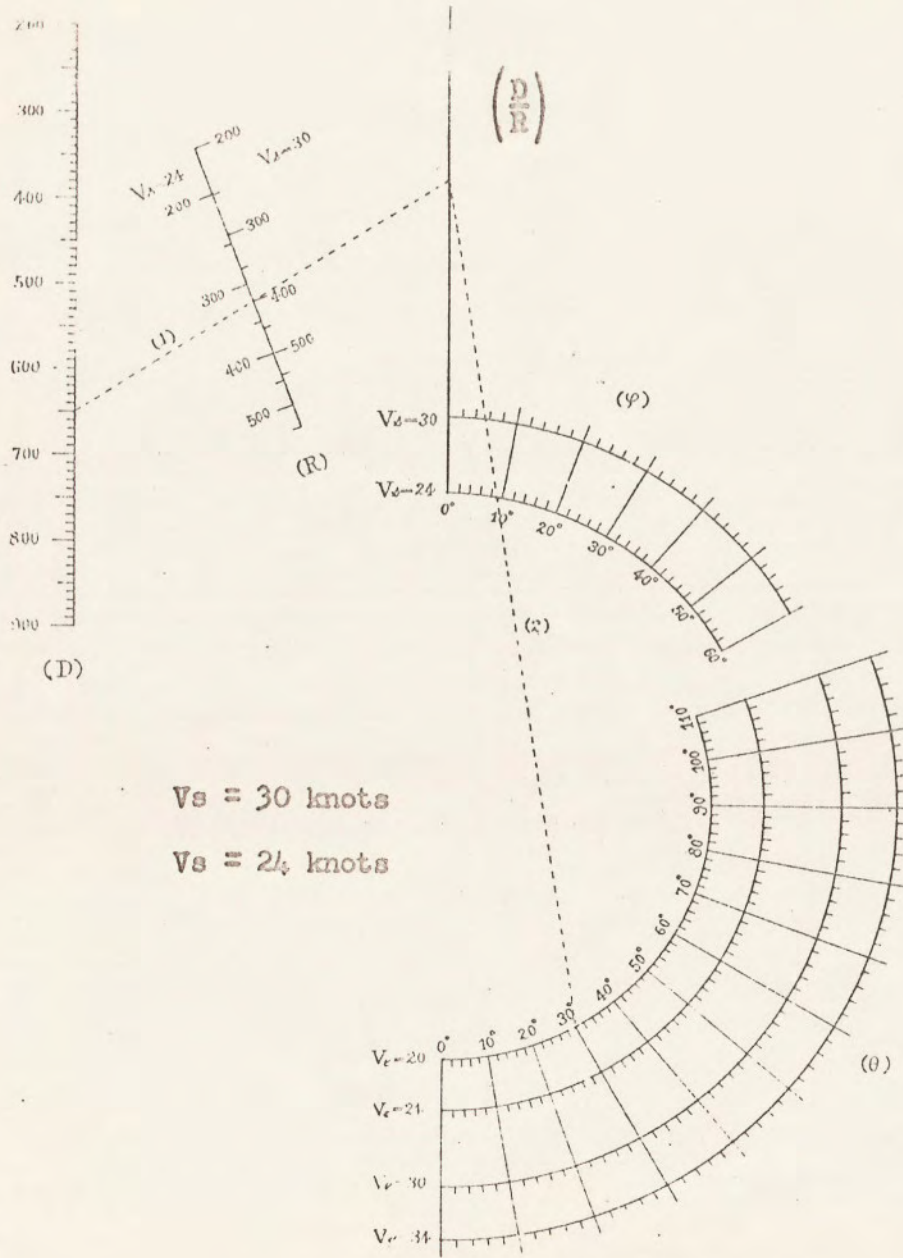
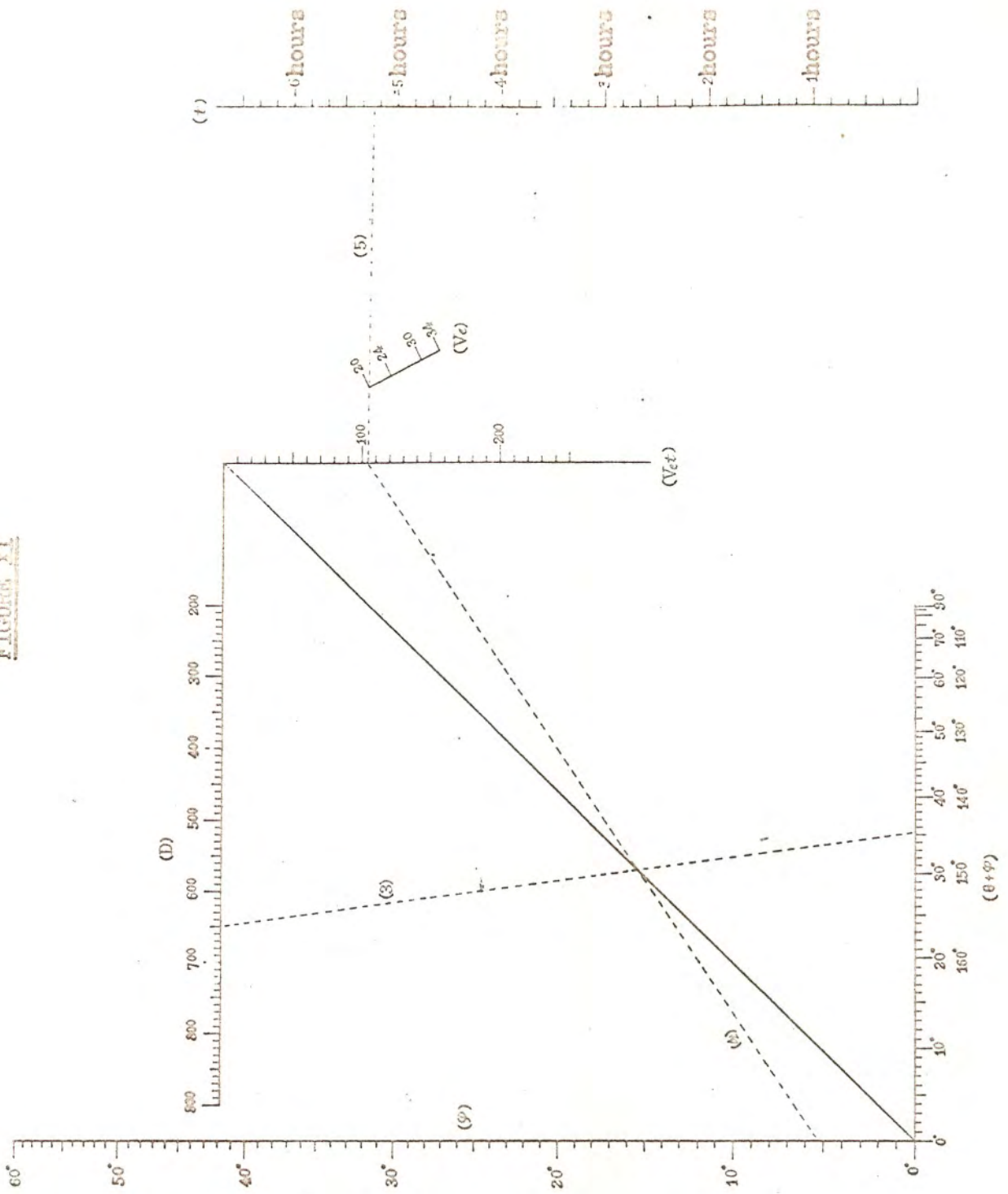


FIGURE X

FIGURE XI



Sub Searches:

Reconnaissance and observation of strategic places by submarines dispatched in advance;

Sweeping and search of the seas in the area of a projected operation;

Sweeping in advance of a fleet.

Search and Patrol of Base Air Forces:

A plan for the daily patrols of a Base Air Force which uses radar, vs a US Fleet planning an air attack against TOKYO. (See Figure XII).

Fly patrol planes continuously from Base A to Base B in column patrol, with an interval set so that the enemy cannot slip through the patrol line.

The time of the plane's departure, T, will be given as follows:

$$T \text{ equals } \frac{2d}{V_e}$$

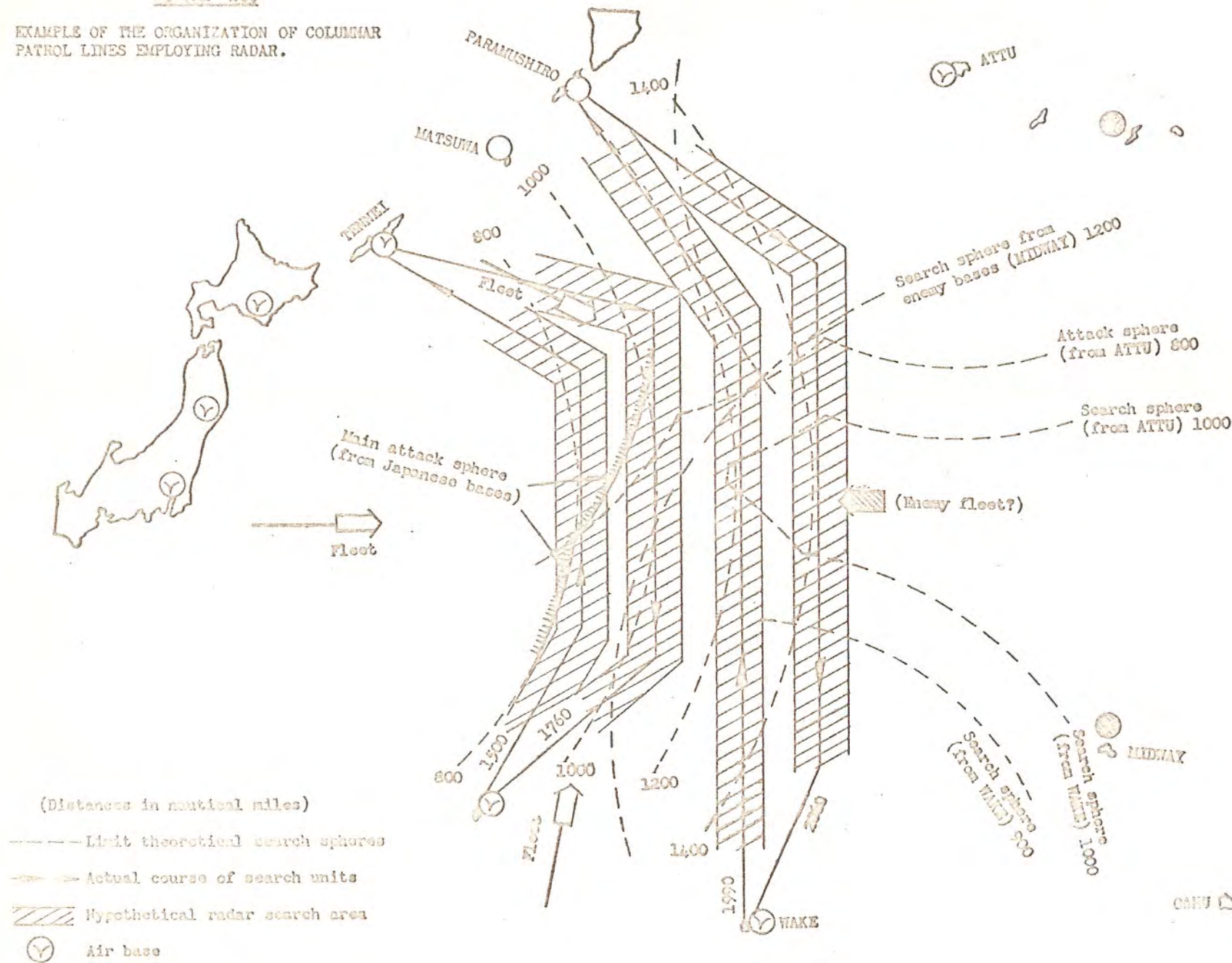
When V_e equals the speed of the enemy
d equals the radar performance

For an example of patrol lines, see the following tabulation, and Figure XIII.

Patrol Sphere (Center, TOKYO)	1400 nautical miles	1200 nautical miles	1000 nautical miles	800 nautical miles
Bases Employed	PARAMUSHIRO-WAKE	WAKE-PARAMUSHIRO	TENNEI-MARCUS	MARCUS-TENNEI
Distance (Nautical miles)	2060	1990	1760	1560
Flight time At cruising speed of about 150 knots	14.0	13.0	12.0	10.5
Estimated Enemy Speed	Approximately 30 knots			
Radar performance	Approximately 50 nautical miles			
Interval of Departures	Three hours			
Planes Used per Day	Eight planes per /patrol/ line			
Planes Simul- taneously in Air	4-5	4	3-4	3

FIGURE XII

EXAMPLE OF THE ORGANIZATION OF COLUMNAR PATROL LINES EMPLOYING RADAR.



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Remarks: The interval of departure and the number of patrol planes used depends solely on the speed of the enemy and the power of your radar. When the enemy's speed can be estimated at 20 knots it is possible to make the interval of departure five hours. To reduce the number of planes employed you must increase the power of your radar. These patrols must be continuous. However, some interruptions are possible, depending on the situation. There will be little change in the number of planes used.

Example of vanguard search and sweep employing ship-borne reconnaissance planes (see following text and Figure XIII):

Speed of our search planes (V_f) = 200 knots.

Operational radius of enemy attack planes (D_b) = 500 nautical miles.

Speed of our fleet (V_s) = 14 knots.

Estimated speed of enemy fleet (V_e) = 24 knots.

In attempting to get in the initial attack under the above estimates, the requisite search distance (D) at the beginning of search operations, will be:

$$D = \frac{V_f \text{ plus } V_e}{V_f \text{ minus } V_s} \times D_b = \frac{200 \text{ plus } 24}{200 \text{ minus } 14} \times 500 = 600$$

Each of the six cruisers in your vanguard carries 8 recce planes. Estimated their cruising speed at 200 knots, and their operational radius at 500 miles, the vanguard will have a sweep as shown in Figure XIII.

In this case:

The first search planes will be launched two hours before sunrise;

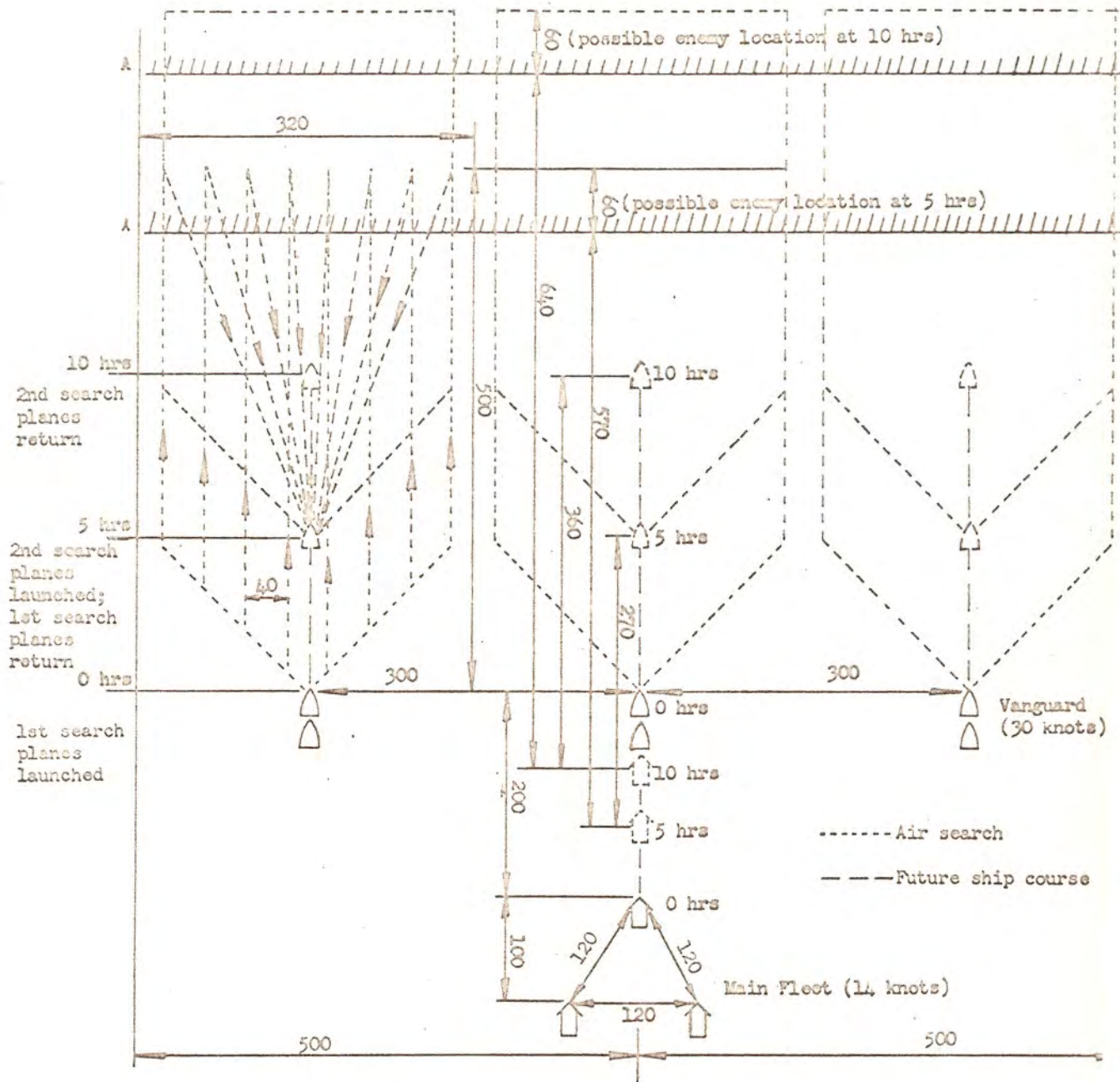
Flank searches and second stage advance searches will be conducted by recce planes from the unit directly under the TF Commander;

If the second search does not make contact with the enemy, withdraw at nightfall and take a suitable distance until the next morning.

Figure XIII is an example of a daylight search, visibility 20 nautical miles, radar not used.

FIGURE XIII

EXAMPLE OF VANGUARD SEARCH AND SWEEP EMPLOYING SHIP-BORNE RECONNAISSANCE SEAPLANES



(Note: Distances are in nautical miles. Meaning of lines AA is not clear; they may indicate estimated range of "enemy" ship-borne radar.)

It is self-evident that in order to catch the enemy unaware and win a decisive battle through skilful tactics, we must know the enemy situation at all times. This is, in turn, done by continuous tracking. Yet since the beginning of the war there have been few instances when we have been able to track an enemy striking force efficiently. It has been like a game of tag, and we have no taste for such constant insecurity. The situation is caused primarily by insufficient research in the methods of tracking, and by unsatisfactory tools. There is a pressing need for research on concealed tracking and reconnaissance methods and for development of an adequate tracking plane.

Should you contact the enemy and find you have not time to attack the same day, track him with radar, and get in the initial attack the following morning. Situations such as that at CORAL SEA, when we lost the enemy until the following morning, should be minimized.

You will not always obtain the desired results in gathering intelligence in spite of your utmost effort. But as aerial victory or defeat is decided in only a few moments, all officers should gather and digest the smallest bits of information, attempt to intercept communications, evaluate enemy power, and take advantage of every opportunity offered.

Therefore, each fleet will maintain a permanent intelligence unit and a permanent MI unit, and continuous training will be strictly enforced.

But, when TF Commanders wait to act until they have judged the enemy situation from all such sources, it often results in following the enemy's lead. So do not wait vainly for the results of reconnaissance. Without hesitation resolutely take the lead in action pursuant to your mission. Bear in mind that in the history of war there have been many times when a plan has been forced on an enemy, once he has been engaged, because the attacking force retained the initiative. In the Battle of the STEWART ISLANDS, for example, there was a dispatch from a recce seaplane from the CA CHIKUMA reading, "Spotted large enemy force. Being pursued by enemy fighters." (Subsequently communications were broken.) On the basis of this dispatch alone we launched an attack unit. This is a good example of seizing the initiative.

Security:

Security regarding our own activities is as important in striking force warfare as intelligence regarding the enemy's position. Do not content yourself with merely withholding data from the enemy. Harass his recce planes, submarines, etc. Employ to the utmost strategic and tactical diversion and demonstration to deceive and trap the enemy. Spread wild rumors. By concealing your true aims, baffle the enemy.

Napoleon, in a period when devices for reconnaissance and communication were imperfect, worked hard to conceal his plans by spreading false rumors through the press which he controlled. Hindenburg, at the battle of TANNENBERG, deceived Rennenkampf when he concealed the shift of the 1st Reserve Corps and the 17th Corps to the south. He delayed the movement as long as possible, and then moved a force toward Rennenkampf in the daytime, only to return it that night. The whole appeared as a shift to the north. All the famous generals of history have endeavored

to conceal their plans and movements, and have consequently effected surprise attacks.

Give full play to the striking power of your striking force in carrying out a mission. In planning an operation do not require superfluous movements of the various units. Though a number of changes occur in the situation, do not restrict your own mobility by taking the defensive, or because of an excess of time hesitate and loiter unnecessarily in an area in which enemy submarines and reconnaissance planes are active.

Therefore, as circumstances dictate, when attacking a strategic area with a striking force, maintain a screen on the flanks of the attack force, and hold in reserve another force capable of coping with an enemy fleet, should it appear.

Since radio transmission will more than likely betray your plans and movements set up in advance detailed operational plans and doctrine, and so guarantee security of the location of your principal operations. Maintain strict radio discipline by use of plane-ground communication units and suitable communications control.

The application of the above methods in striking force combat increases the complexity of warfare, and command communications become increasingly difficult. Yet the fate of the whole force is decided by the quality of their communications. Therefore we are pushing research in secret communications, directional communications, and high speed communications, and we are cognizant of the necessity of developing new fields in fleet communications.

At TAMMENBERG, the Russian Army neglected to encode its military orders. As a result, the German Army learned of the isolation of the Niemen Army and judged that it could gain a victory as desired against the Narew Army. In the same battle, the German Army was fully equipped with telephone, telegraph, and radio equipment, and each corps and division had exchanged liaison officers. Hence coverage of communications was extremely thorough. In contrast, the Russian Army often neglected its communications at crucial moments, and so the news of the plight of the Narew Army was not transmitted to either the Niemen or the Area Army, and the chance to reinforce it was lost. The Narew Army was enveloped and destroyed.

Research on secret communications, directional communications, and high speed communications:

Research on these types of ship-borne transmitting devices has been carried on for years. The chief problem remaining unsolved is that of their weight and volume. It is, as yet, impossible to equip every ship completely with such communications devices in addition to the complete military and other equipment necessary to the ship's function. Yet recent developments in warfare have made such equipment indispensable. As a temporary solution, we could install this sort of communications gear as a main item of equipment on ships of approximately destroye size. These ships would be entrusted with the communications necessary for accompanying flagships of striking forces. In this way we would achieve our objective in communication and prevent (TN: enemy) detection of radio transmission. This would be an important contribution to security.

Ships to be furnished with this equipment will be chosen with the following requirements in mind: (1) feasibility of installation and (2) whether or not the ship has sufficient maneuverability and speed to accompany carriers. Ships thus selected will also be considered AA ships and equipped with a maximum of AA firepower. They will be available for use as temporary flagships in case flagships are lost out of action.

The independent authority of officers and the cooperation of units:

Officers must often act on their own initiative in striking force warfare, for the movements of each unit are complex and ingenious, and the chance of victory is momentary. Probably even the highest commanders are unable to estimate complex operations for all units and to direct them point by point, and opportunities are likely to be missed when officers simply wait for instructions before taking action. The TF Commander will brief his subordinates as to the plan which must be carried out, relying on their judgment for the details of execution. Thus each officer will have an idea of the TF Commander's plan, and will act independently to carry it out, making courageous or prudent decisions as called for, and losing no favorable opportunities. Therefore a force which has contacted the enemy shall not neglect the necessary reports at the proper time, thus establishing a foundation for cooperation among the various units.

Pursuit:

Since the beginning of the Greater East Asia War there have been no examples of successful pursuits in striking force battles. There have been a series of inconclusive envelopments on one flank or frontal attacks, with no examples of complete envelopment wherein the enemy's line of retreat was cut off. The loss of planes has been great and therefore the reserve power for pursuit lacking. Thus it is important to effect complete envelopment, harass the enemy's retreat, and seize the most favorable moment for pursuit. The outcome of striking force battles is usually determined at the start of the battle; and at the critical moment the two fleets are often widely separated. The best opportunity for an attack is thus often lost. All officers should take an overall view of the situation and seize the best opportunity to launch pursuit. Force commanders who have contacted the enemy will endeavor to rush in and overwhelm him, unfettered by higher orders, and regardless of the type of weapon. The rear force commander will dispose his forces for pursuit at the proper moment. Bring carrier replacement base units into play, and accelerate replenishment of power.

The relationship between striking forces and base air forces:

One of the weaknesses of today's carriers is their unsatisfactory defense. Pitting a carrier against land-based aircraft is like fighting a fortress with a surface craft. This is even more true when the land air bases are so located that they can cooperate with each other. Examples of striking forces alone destroying air bases exist in the HAWAIIAN and INDIAN OCEAN theatres. But these must be termed highly unique examples, caused either by the fact that the enemy was surprised and eliminated at one blow, or by the weakness of his base air force and his lack of fighting spirit. It is a great error to be dazzled by the magnificent results

attained by carriers in sea battles, and to disregard their essential defects.

The quantity and maneuverability of base air power certainly do not fulfill the requirements imposed by an operation. Again, the base establishment hampers rapid movement and concentration. It is important to make up for these weaknesses by exploiting to the full the characteristic maneuverability of the striking force, using it to supplement the deficiencies of base air power, and driving for a co-operating, dominant organization. Bear in mind that close cooperation and liaison must exist in operations. Fundamentally, we should recognize these defects in carriers when striking forces are operating outside the range of land based aircraft. We must plan to make surprise attacks on the enemy, utilizing all possible methods, compensating for weakness in search performance by using submarines and surface craft, etc.

Compensation for carrier deficiencies consists only in negatively concealing your whereabouts by means of dispersal, or by making a surprise attack on the enemy by the use of carefully hidden plans. Strict radio discipline and unbridled carrier movement are essential to application of these points. Consequently it usually results in restricting the range of carrier planes.

Today's carrier planes have a range of about five hundred nautical miles. Comparing this to the spectacular capabilities of land planes, the tremendous differences between the two are apparent. The short range of carrier planes limits observation, and is a vital defect in carrier force operations. It is necessary to develop counter-measures to increase the range of reconnaissance. It is advisable that carriers rely on the reconnaissance of base air forces. Operating with this assistance is advantageous. The chief assignment of land based planes will be the attack of enemy surface forces.

CHAPTER 5 - CONCLUSIONS

In today's warfare, the importance of deception and of new developments in weapons and tactics is obvious. Yet we do not abandon ourselves to extravagant plans which ignore the theories of war, entrusting victory to chance.

We feel it a dangerous doctrine to adopt a new policy which has relinquished all obligation to old sea warfare. In discussing the methods of striking force warfare we have merely detailed the military principles with which all famous generals have won brilliant victories in land warfare. We have done no more than pose the question, "To what extent should these methods be applied in sea battles?" Since the opening of the war, the enemy, unable to check his warship losses, has adopted methods which resemble the new warfare, taking carriers as his capital ships. But though we examine his disposition of power, we have not yet abandoned all conventions.

We have examined the fundamentals of conclusive battles, investigated the psychology of the battlefield; we are convinced that courageous and thorough application of the results leads the way to certain victory. Of course, the need for research relating to methods of communication, liaison, tracking, and reconnaissance is great. But the truly great necessity is planning for a speedy decision by utilizing our whole power, unifying the military concepts of our officers, grasping the new methods of warfare, and briefing each force on its movements and on co-operative action.

BATTLE CHARTS

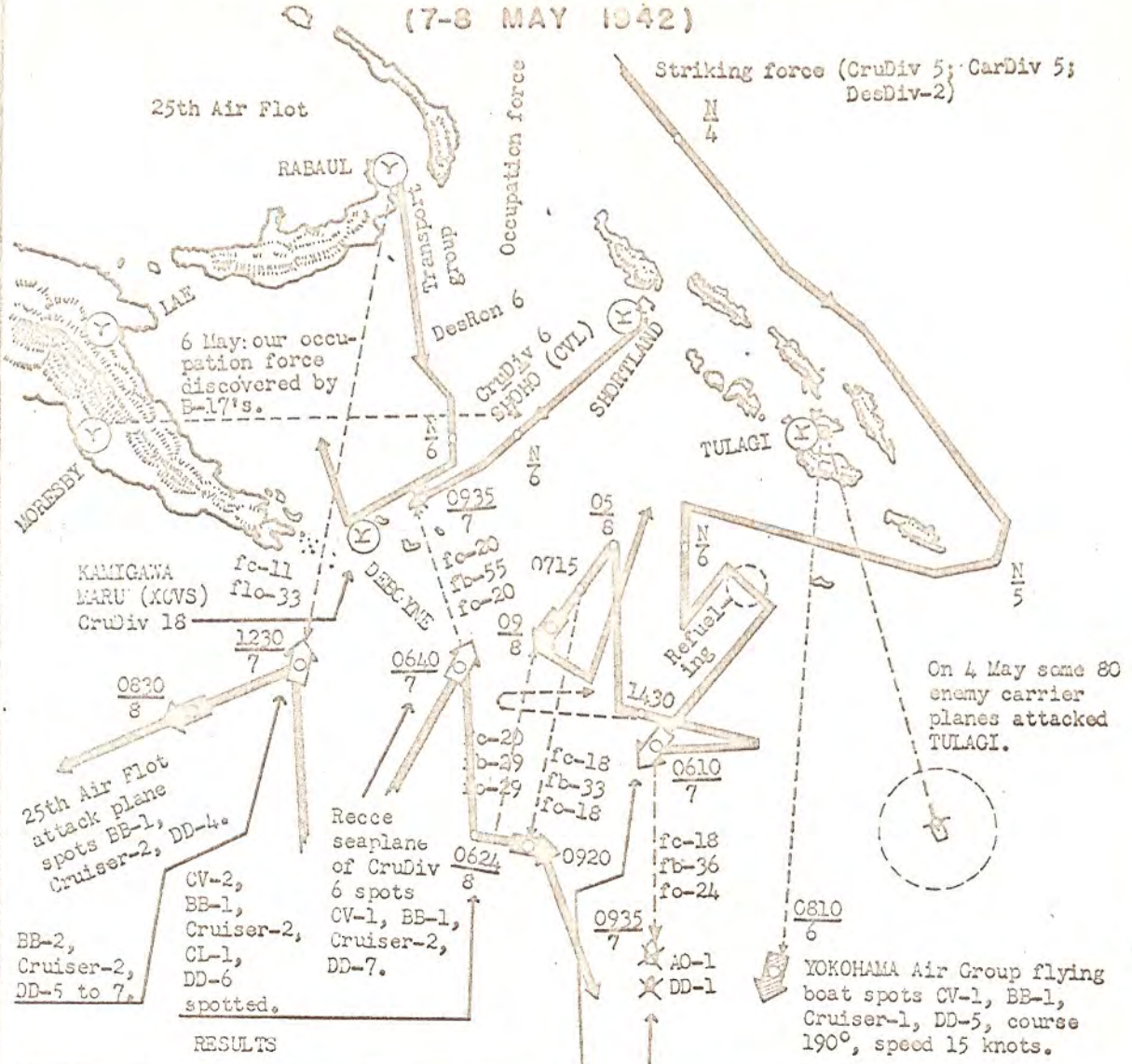
- Chart 1 Battle of CORAL SEA, 7-8 May 1942 .
- Chart 2 Battle of MIDWAY, 5 June 1942
- Chart 3 Battle of the EASTERN SOLOMONS (STEWART Islands), 24 August 1942
- Chart 4 Battle of SANTA CRUZ, 26 October 1942

Errata: In the charts which follow, "flo" has been incorrectly translated as "reconnaissance seaplane". It should be translated as "land-based bomber".

(Enclosure to Weekly Intelligence Addendum
on Japanese Striking Force Tactics)

BATTLE OF THE CORAL SEA

(7-8 MAY 1942)



RESULTS

	Enemy Losses	Our Losses
Airplanes	148 shot down	12 forced down; 36 blew up
CV	1 heavily damaged; 1 sunk	1 moderately damaged; 1 sunk
BB	2 heavily damaged; 1 sunk	
Cruisers	1 moderately damaged; 1 sunk?	
DD	1 sunk	
Tankers	1 sunk?	

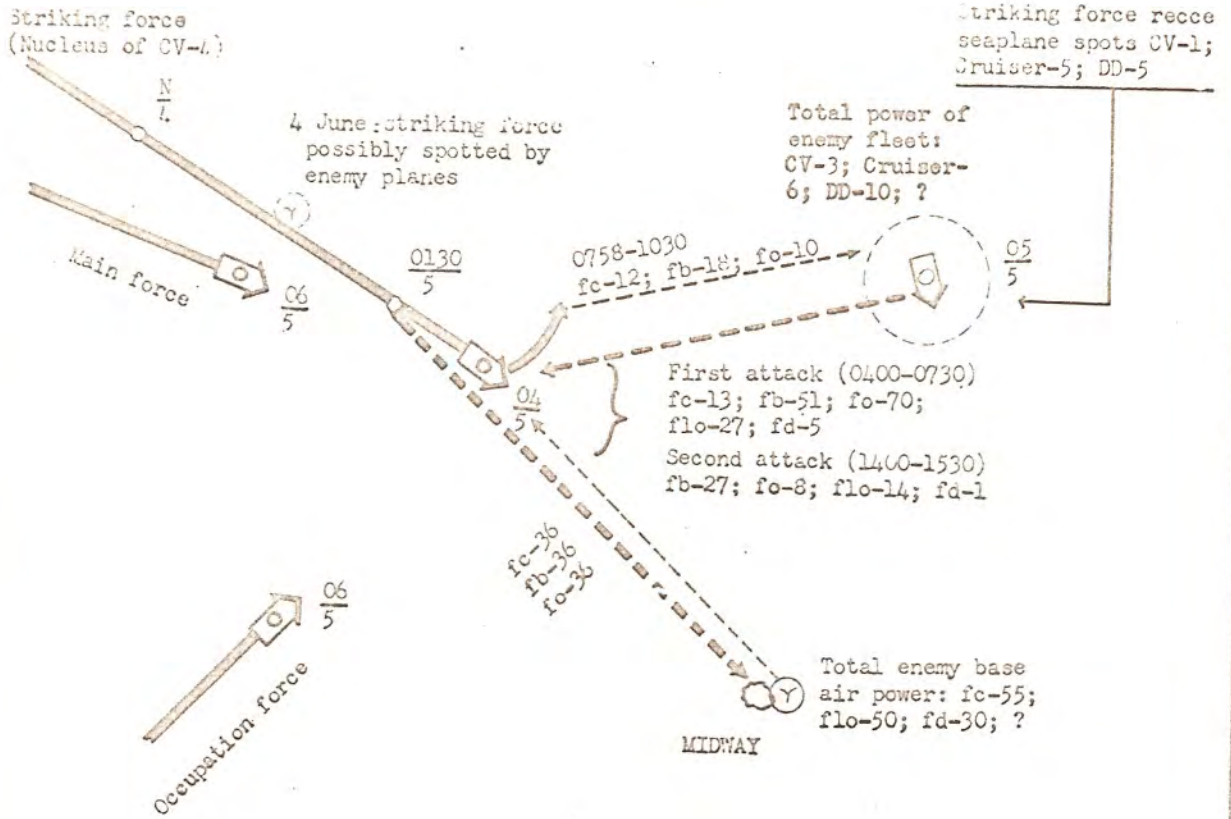
CarDiv 5 search plane erroneously reports large tanker NEOSHO as CV. We direct principal attack against it, and lose opportunity of attack on enemy striking force.

fb-12, fo-15 fail to locate target in second attack.

LEGEND	
fb	Dive bomber
fc	Fighter plane
fd	Flying boat
flo	Recce seaplane
fo	Attack plane

BATTLE OF MIDWAY

5 JUNE 1942



RESULTS

Base Installations	Bombed and left in flames
Cruisers	One heavily damaged
CV	One heavily damaged One sunk
Airplanes	190 shot down

LEGEND

fb	Dive bomber
fc	Fighter plane
fd	Flying boat
fio	Recce seaplane
fo	Attack plane

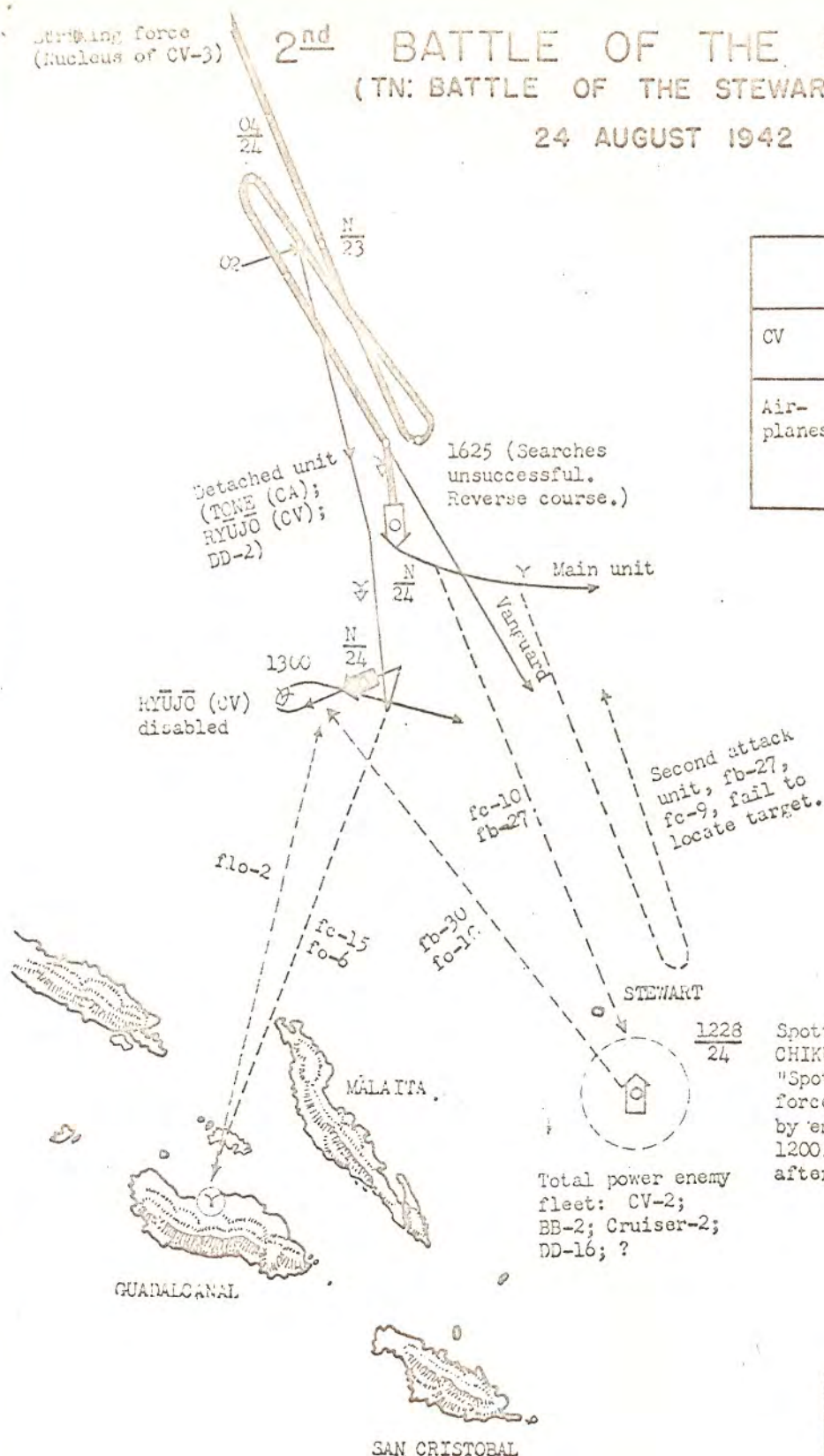
striking force
(Nucleus of CV-3)

2nd

BATTLE OF THE SOLOMONS

(TN: BATTLE OF THE STEWART ISLANDS)

24 AUGUST 1942



RESULTS

	Enemy Losses	Our Losses
CV	2 heavily damaged	1 disabled
Air-planes	28 shot down	12 forced down; 26 blew up

Spotted by plane from CHIKUMA (CA). (Message: "Spotted large enemy force. Being pursued by enemy fighters. 1200." Silence thereafter.)

LEGEND

fb	Dive bomber
fc	Fighter plane
flo	Recce seaplane
fo	Attack plane

BATTLE OF THE SOUTH PACIFIC

(TN: BATTLE OF SANTA CRUZ)

26 OCTOBER 1942

RESULTS

