

2864
6-24-33

DEPARTMENT OF OPERATIONS

BLUE

SCHEDULE OF EMPLOYMENT

SENIOR CLASS OF 1934

1849

TACTICS

Period 7-15 July 1933

This period will be devoted to Demonstrative Exercises designed to familiarize officers with the Rules and Mechanics of the Board Maneuver. The prescribed exercises are sufficiently inclusive to emphasize only the more important Rules and practices and students should take advantage of this period to study War College Publications on the Tactical Maneuver and to refresh their knowledge of Service Tactical Publications.

<u>Date</u>	<u>Hour</u>	<u>Place of Assembly</u>	<u>Dem.Tact.Ex.No.</u>
Friday July 7	0905	East Game Board	1
Sat. July 8	"	Own Room	2 & 3
Mon. July 10	"	Lecture Room	4
Tue. July 11	"	Own Room	5
Wed. July 12	"	Own Room	Review Conduct of the Maneuver and Maneuver Rules.
Thur. July 13	"	East Game Board	6 1st playing
Fri. July 14	"	" " "	6 2nd playing
Sat. July 15	"	" " "	6* 3d playing

*For Exercise No. 6 - Section One - BLUE

Section Two - ORANGE

R.B. COFFEY
Captain, U.S.N.
Head of Department.

DEMONSTRATIVE TACTICAL EXERCISE NO. 1

Motive:- Explanation of Maneuver Board and its equipment;
exercise in use of
(1) Fire Distribution and move sheets.

Bring "Maneuver Rules"
"The Conduct of Maneuvers"
BLUE Fleet
This program

Situation: Batdiv 4 (BBs 48, 46, 45) steaming in column,
distance 500 yards, speed 16 knots. Ideal
weather conditions. Three minute moves.
Move One begins at 0930, game time. (Rules
B-200, 201, 203, 204).

Move 1. Ahead 16 knots; course zero. (Rule B-204,
B-210 (a), (b), (c)).

Move 2. Head of column right 45 degrees. Speed 16.
(Use capital ship turning cards).

Move 3. Continue as before at speed 16.

Move 4. Head of column left 90 degrees. Speed 16.

Move 5. Continue course, Execute signal "Speed 12"
(Rules C-201, 202, 203, 204).

Move 6. Head of column right 165 degrees. Speed 12.

Move 7. Continue course and speed, Execute signal
"Open fire with main battery on two enemy BBs
bearing 170 degrees, natural concentration".
(Direct method, plane spot, director lay).

Move 8. Continue course, speed 12. Continue main bat-
tery fire.

Move 9. Continue course and speed. Execute signal
"Cease fire on enemy BBs to Southward". At
0955 execute signal "Open fire with main bat-
tery on four enemy BBs bearing 64 degrees,
course East. BB-45 divide fire on two rear
enemy ships, other BBs fire ship for ship".
Use direct method, plane spot, and director
lay; only one spotting plane for each
firing ship is available. (Rule F-27 (a), (b)).
A modified move is required for opening fire
at this time. (Rule B-208).

Move 10. Continue course and main battery fire. Execute
signal "Speed 20". (Rules C-202, 203, 204).

Move 11. Continue speed 20 (average 18). Continue
main battery fire.

- Move 12. Speed 20. Execute signal "Ships right 60 degrees". Enemy BBs now bear 7 degrees.
- Move 13. Continue course and speed. Execute signal "Open fire with secondary battery on three enemy destroyers bearing 233 degrees". Use direct method, top spot, director lay. Continue major gunfire. Separate fire sheets must be submitted for Major and Minor fire.
- Move 14. Continue speed 20. Execute signal "Ships left 30 degrees". Enemy DDs now bear 257 degrees. Continue fire on DDs. Cease fire on enemy BBs.
- Move 15. Continue course and speed. Cease firing on DDs, bearing 291^o.
- Move 16. Continue speed 20. Execute signal "Ships left 39 degrees".

Note: For the purpose of conducting the Exercise, the Senior Class will be divided into four groups of approximately twelve students. Group lists are appended hereto.

Group A will take the N.E. corner of Game Room.

Group B will take the N.W. corner of Game Room.

Group C will take the S.E. corner of Game Room.

Group D will take the S.W. corner of Game Room.

Each student will be required to hand in a move sheet (Form T-4) for each move; these move sheets may be prepared in advance in the students' rooms, or in the game room, at the discretion of the students.

A member of the Staff will examine the move sheets for each move, as they are handed in, for the purpose of noting errors or omissions; the move will then be made on the board.

The senior line officer of each group will detail a member of his group to make each move on the board in rotation.

DEMONSTRATIVE TACTICAL EXERCISE NO. I

GROUP ASSIGNMENT

GROUP A - Comdr. Battle

Captain Richardson
Comdr. Shonerd
Comdr. Carpenter
Comdr. James
Comdr. Maloney
Comdr. Van Valkenburgh
Comdr. Gray
Comdr. Smith
Comdr. Nixon
Captain Holeman (MC)
Lt.Col. Utley (USMC)
Major Hartle, (USA)
Major Jones (USA)

GROUP B - Comdr. Rankin

Captain Furlong
Comdr. Emmerson
Comdr. Hilliard
Comdr. Waddell
Comdr. Cooke
Comdr. MacFarlane
Comdr. Hein
Comdr. Zacharias
Lt.Comdr. McGuigan (CC)
Lt.Col. Matthews, (USMC)
Lt.Col. Baird(USA)
Major Coulter, (USA)

GROUP C - Colonel Cutts

Captain Stewart
Captain Bemis
Comdr. Clement
Comdr. Van de Carr
Comdr. Le Clair
Comdr. Dessez
Comdr. Barry
Comdr. Gillam
Comdr. Wood
Comdr. Riefkohl
Comdr. Barr
Major Jenkins, (USMC)
Major Strong, (USA)

GROUP D - Lt.Cdr. Moon

Captain Towers
Comdr. Coffman
Comdr. Kauffman
Comdr. Hedrick
Comdr. Leighton
Comdr. Coman
Comdr. Deem
Comdr. Bright
Comdr. Esler
Comdr. Hogg
Capt. Hine (SC)
Major Stephenson, (USMC)
Major Bull, (USA)

DEMONSTRATIVE TACTICAL EXERCISE NO. 2

Assemble as directed.

(I) Motive: Explanation and use of Torpedo Fire Cards.

Bring : Torpedo Fire Cards.

Receive: One Plotting Sheet.

Problem: (a) Vessel "A" is steaming West, speed 20. Vessel "B" fires a torpedo, (Type C), when vessel "A" bears 60 degrees true. Required: Sight angle, tracks of target and torpedo, and effective range.

(b) Vessel "A" is steaming West, speed 20. Vessel "B" fires a torpedo, (Type C), when vessel "A" bears 15 degrees true. Required: Sight angle, tracks of torpedo and target, and effective range.

(II) Motive: Exercise in plotting a salvo of torpedoes fired at a group of vessels.

Bring: (1) Maneuver Rules
(2) "The Conduct of Maneuvers"
(3) Torpedo Fire Cards.

Receive: One Plotting Sheet.

Problem: (a) Five BBs are in column, distance 500 yards, course West, speed 20. Six DDs in column, distance 250 yards, course East; tracks of the two forces are 6,000 yards apart. When the center BB bears 60 degrees from the third DD, each DD fires six torpedoes (Type C), dispersion 10° right and 10° left.

(Note: BBs are 200 yards long, 32 yards beam).

The sight angle and effective range will be the same as in Exercise I (a), above.

Required: Read Rules G-215, 219 and plot the run of the salvo of torpedoes. Read Rules 220, 224, and 225 to get general idea of the manner in which torpedo hits are scored. Actual scoring is not required.

What should be the depth setting of the above torpedoes? (War Inst. Art. 1303).

DEMONSTRATIVE TACTICAL EXERCISE NO. 3

Motive: Method of plotting Smoke Screens.

Bring : (1) This paper
(2) Maneuver Rules.

Receive: Plotting Sheet.

Explanation: (1) Maneuver Rules, Smoke Screens, Rules D-200
to D-208, incl.
(2) Situation and Moves.

Situation A division of 5 DD, in column, distance 250
yards, is steaming on course 270, speed 25.
The wind is SW, force 4. Smoke will lie.
Three minute moves, commencing at 0930.

Move 1: Continue course and speed. All ships commence
laying smoke at the beginning of the move.

Move 2: Continue course, speed and smoke.

Move 3: Execute column right 30 degrees, continue speed
and smoke.

Move 4: Execute column right 30 degrees, continue speed
and smoke.

Move 5: Execute ships right 30 degrees, continue speed.
Cease making smoke at end of move.

Move 6: Continue course and speed.

Move 7: Continue course and speed.

NOTE: (a) Changes of course and line of bearing are
effective at commencement of move.
(b) Turning circles, etc., will be disregarded
in this plotting, although used on the game
board.

Demonstrative Tactical Exercise No. 4

Construction of Fighting Strength Comparison Curves

Motive:

To explain the method of construction of fighting strength comparison curves showing the per cent damage inflicted by each opponent on the other at selected ranges and target angles, under normal firing conditions.

Theory:

Under the Gunfire Rules "fighting strength" of a vessel or a group of vessels can be computed only for a gunfire battle against a particular opponent and under a particular set of conditions. A measure of this "fighting strength" is the product: "fire effect" inflicted by one firing ship on its target under the stated conditions, times the "life" of the firing ship. The opponent's "fighting strength" can be computed similarly. For ship (a) vs ship (b):-

$$(1) \begin{cases} f.s._{(a)} = f.e._{(a) \text{ on } (b)} \times life_{(a)} \\ f.s._{(b)} = f.e._{(b) \text{ on } (a)} \times life_{(b)} \end{cases}$$

Comparison of fighting strengths can be expressed by the ratio:

$$(2) \frac{f.s._{(a)}}{f.s._{(b)}} = \frac{f.e._{(a) \text{ on } (b)} \times life_{(a)}}{f.e._{(b) \text{ on } (a)} \times life_{(b)}} = \frac{\frac{f.e._{(a) \text{ on } (b)}}{life_{(b)}}}{\frac{f.e._{(b) \text{ on } (a)}}{life_{(a)}}} =$$

$$\frac{\frac{\text{damage inflicted by (a) on (b)}}{life_{(b)}}}{\frac{\text{damage inflicted by (b) on (a)}}{life_{(a)}}} = \frac{\text{per cent damage inflicted by (a) on (b)}}{\text{per cent damage inflicted by (b) on (a)}}$$

If the per cent damage, inflicted by each ship on its opponent, be plotted against range, the two curves resulting will show graphically the comparative fighting strengths of the two ships engaged for the assumed conditions.

This theory can be extended to make a "fighting strength" comparison of two opposing groups of vessels. In this case, the group "fighting strength" is measured by the product: group "fire effect" times the group "life". This product is the "per cent damage inflicted" on the opponent.

For A-Group composed of n ships(a1), (a2), (a3),---(an).

For B-Group composed of m ships(b1), (b2), (b3),---(bm).

$$\text{A-Group "fire effect"} = F.E._A = f.e._{(a1)} + f.e._{(a2)} + f.e._{(a3)} \text{---} + f.e._{(an)}$$

$$\text{A-Group "life"} = LIFE_A = life_{(a1)} + life_{(a2)} + life_{(a3)} \text{---} + life_{(an)}$$

$$(3) \text{ B-Group "fire effect"} = F.E._B = f.e._{(b1)} + f.e._{(b2)} + f.e._{(b3)} \text{---} + f.e._{(bm)}$$

$$\text{B-Group "life"} = LIFE_B = life_{(b1)} + life_{(b2)} + life_{(b3)} \text{---} + life_{(bm)}$$

$$(4) \frac{F.S._A}{F.S._B} = \frac{F.E._A \times LIFE_A}{F.E._B \times LIFE_B} = \frac{\frac{F.E._A}{LIFE_B}}{\frac{F.E._B}{LIFE_A}}$$

NOTE: If forces are homogeneous, and vessels which compose the opposing forces are identical,

$$(5) \frac{F.S._A}{F.S._B} = \frac{nx f.e._{(a)} \text{ times } n \times life_{(a)}}{mx f.e._{(b)} \text{ times } m \times life_{(b)}} = \frac{n^2 \times f.e._{(a)} \times life_{(a)}}{m^2 \times f.e._{(b)} \times life_{(b)}} = \frac{n^2}{m^2}$$

(5) states the familiar N² Law which is a special case of the more general principal stated by (4).

Per cent damage inflicted by A-Group on B-Group can be plotted against range to give one curve. The companion curve, showing the corresponding values of per cent damage inflicted by B-Group on A-Group, can be similarly plotted on the same sheet. Together, these will show graphically the relative values of the fighting strengths of the two forces.

Data:

1. Plotting Sheet - indicates composition of forces, fire distribution and firing conditions.
2. Computation Blank - fire effect has been computed for ranges 33,000 - 30,000 - 18,000 - 15,000 yards and target angles 90° and 60°. Lives are tabulated.

Required:

(a) Compute Fire Effect for ranges 27,000, 24,000, 21,000 yards and fill in proper columns of Computation Blank. Compute Percent Damage Inflicted on ORANGE and BLUE respectively by use of formula:

$$\text{Percent Damage Inflicted on B (or A)} = \frac{\text{F.E.}_{A(\text{or } B)}}{\text{Life}_{B(\text{or } A)}}$$

(b) Plot the curves for ranges 30,000 to 15,000 yards and target angles 90° and 60° for both BLUE and ORANGE.

Use plotting sheets provided and show damage on BLUE in blue pencil and on ORANGE in RED pencil; - 90° target angle in full lines and 60° in broken lines.

Class of 1934 Sr.

DEMONSTRATIVE TACTICAL EXERCISE NO. 4.

Fighting Strength Comparison Curves.

8 BLUE BBs (48 to 40, except 47) against 6 ORANGE BBs (1-5) and 3 CCs (1,3,4)

Curves show damage received in 3 min. move, in percentage of original life.

Target angles, fire distribution, and ranges as indicated.

Plane Spot.

— 90° Target angle.

- - - 60°

PER CENT DAMAGE INFLICTED

%

18

16

14

12

10

8

6

4

2

0

15000

18000

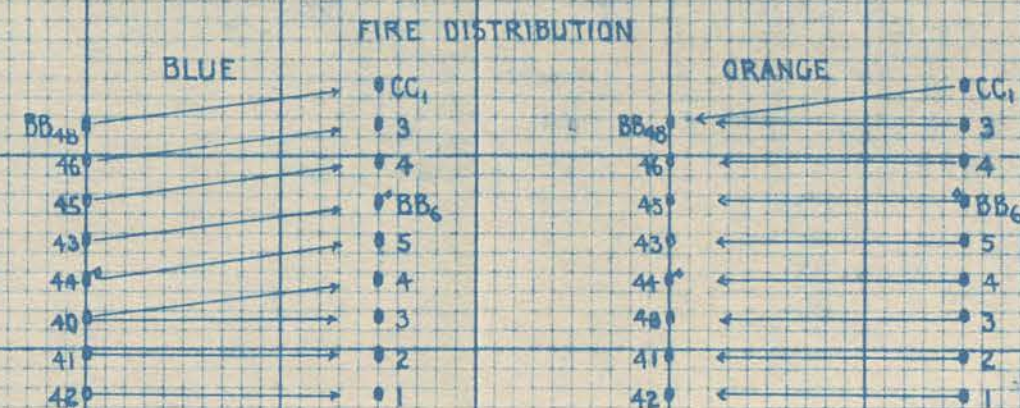
21000

24000
RANGE

27000

30000

33000 RANGE



Note: (1) At 31000 yds and above all BLUE BBs except BBs 45 and 43, get 20% increase in fire effect, due to not being under fire.

(2) At 30000 yds and under, BB48 loses 10% in fire effect upon CC1, due to being under concentration of 2 ships.

(3) At 30000 yds and under, ORANGE BBs 4 and 3 get 10% increase in fire effect due to being under less than normal fire.

(See Rule F-29)

2730
6-13-32

Demonstrative Tactical Exercise No. 5

Gunfire Scoring

Motive: To illustrate application of Gunfire Rules and to exercise in scoring gunfire.

Data:

Move 4
(One typical three minute move
of a Tactical Maneuver)

1. BLUE Move Blank) Filled out with data for
ORANGE Move Blank) use in scoring
BLUE Damage Report) Move 4;
2. Range for the preceding move was 22,000 yards.
3. Wind from 350°, force 4; sea, moderate.
Visibility, normal; weather, clear, no haze.
Sun rose at 0600; at 0703, sun bears 090°. At 0703,
BB-6 bears 080° from BB-48.
4. Fire Sheet, blank - will be distributed for use in
scoring Move 4.

Required: Complete the Fire Sheet for Move 4, obtaining damage inflicted by BLUE BB-48 on ORANGE BB-6.

FORCE: BB-48
 COMDR: (NAME)

MOVE No. 4 BLUE
 TIME 0700 to 0703

Form T-4
 10-1929

FIRE DISTRIBUTION DATA

SYMBOLS: D-Direct T-Top Spot Q-Pointer
 I-Indirect P-Plane Spot R-Director
 Z-Zone L-Local S-Stab.
 B-Bombardment Control Director

Indicate: Major Fire Vs Capital Ships
 Minor Other Types

Note: Separate sheets for Major and Minor Fire.

Unit	Guns Firing		FIRE CONTROL			TARGET	Filled in by UMPIRE	
	Cal.	No.	Method	Spot	Lay		Range	Target Angle
BB-48	16	8	D	P	R	BB-6	21,000	75°
	No smoke		No gases		Sun glare	Pitch		

Authority for FIRE ACTION: As before

MOVE DATA

NOTE: In column movements, course changes of leading vessels of each unit only, are indicated.
 In simultaneous movements, course changes of each vessel starting the movement on execution of signal are indicated.
 In destroyer tactics, a destroyer division's movements are indicated as a single vessel.

MAN. RULES	SPEEDS					COURSES			
	C-203 F-33		C-204	C-4		F-31	F-32		
Speed at start, due to engines	Speed change due to engines	Speed at end, due to engines	Av. Speed during move due to engines	Reduction on account of sea	Final Av.Sp. during move	At Start	Change Agg. Net	At End	
16	-	16	16	2	14	000	35 35	325	

General Description of MOVE: CC to 325 and continue fire
 Authority for Changes: signal to CC.

MEMORANDUM IN CONNECTION WITH DEMONSTRATIVE TACTICAL EXERCISE NO.6

1. Demonstrative Tactical Exercise No. 6 will be played as a Board Maneuver in the East Game Room. Players will assemler with Move Sheets and Communication Blanks for Move One ready to hand in. First Section will have the BLUE side and the Second Section will have the ORANGE side for all playings. Each Section will be divided into three details. The details will have the following assignments in turn:-(a) Maneuver Staff, (b) Surface Craft, (c) Air and Submarine.
2. One day will be allowed for each playing.
3. The purpose of the Exercise is to consolidate in the minds of students the knowledge of the Board Maneuver, and of the rules, which they have gained during the preliminary instruction period. There will be no discussion or critique following the Exercise.
4. The Details for the three playings are different and are so arranged that each student has three different assignments. When detailed on the Maneuver Staff, students should take the opportunity to observe the Master Chart, all scoring, the methods of plotting torpedo fire, submarines and aircraft. The tracks of torpedoes, submarines and aircraft do not appear on the Maneuver Board, nor do the officers in command of submarines see the board. Students detailed as umpires and scorers for this Exercise should familiarize themselves with their respective duties prior to the commencement of the playings.
5. Neither the initial situation nor the playing is intended to demonstrate tactical principles. The forces in each playing will be at about extreme gun range, with the submarines in favorable positions from which to attack, so that the maximum amount of practice may be had in scoring gun and torpedo fire.

6-13-32

6. It is not required that the BLUE and ORANGE Commanders make any formal Estimate of the Situation in this Exercise, so, in each case, the Battle Order is stated. Players are required merely to execute the Battle Orders as given. A brief time is available before each playing, during which it is suggested that the BLUE and ORANGE commanders assemble their subordinates for the purpose of conferring on the Exercise.

7. A limited number of plots of the initial situation for each player have been made and will be furnished to the principal players on each side. The positions of the submarines on these plots are approximate. Exact positions of submarines will be given to submarine commanders only. The Players on each side should exercise care that players on the other side do not see these plots.

8. Fuel account is not required for this exercise.

9. The Maneuver Detail for the Exercise and Assignment of Rooms and Tables, are appended.

BLUE SITUATION

MOTIVE:

Practice in playing a Board Maneuver and in scoring gun and torpedo fire.

GENERAL SITUATION:

War between BLUE and ORANGE. ORANGE has captured GUAM and is proceeding with the conquest of the PHILIPPINES. The MANILA BAY area, thirty days after the main landing at LINGAYEN, is still holding out. A BLUE Expeditionary Force and the Main Body of the BLUE Fleet is assembling in HAWAIIAN waters. The ORANGE Main Body is held in complete readiness in the INLAND SEA area. A BLUE Advance Force composed of Batdiv Three less BB 36; Crudiv Four plus CA 25 and Crudiv Two plus CL 13; Desron Two and Desdiv Ten, Subdiv Twelve less SS 125, is proceeding to the westward to secure suitable fueling localities for the Main Body. It stopped at TAONGI ISLAND on 12 October to fuel. An ORANGE Striking Force composed of Batcrudiv One; Crudivs Six, Seven; Desrons Two and Three less CLs 16, 15; Subdiv Ten, has taken part in the capture of GUAM and has fueled and was prepared to sail from there on 13 October.

SPECIAL SITUATION:

The Commander BLUE Advance Force was informed by his Commander-in-Chief, 14 October, of the general situation, and was told that the destruction of the ORANGE Striking Force was of great importance. Commander BLUE Advance Force took as his MISSION: "To destroy the ORANGE Striking Force in order to reduce ORANGE Fleet strength"; and 14 October, 1500, sailed with all his force, cruisers proceeding as scouts to locate the enemy, and other units remaining tactically concentrated.

On 16 October planes from cruisers located ORANGE proceeding eastward, course was laid to intercept, and scouts rejoined. Submarines were disposed towards ORANGE.

On 17 October it was hazy, but early morning plane flights developed the ORANGE Forces to the Southward and several ORANGE submarines were seen at various times.

At 0845 the haze had entirely cleared. BLUE is disposed as shown on the accompanying plot, which also shows the positions of ORANGE vessels sighted. All BLUE units have just received the BLUE Commander's battle order as follows:

TO : TASK GROUP COMMANDERS
FROM: OTC

0217 INFORMATION ENEMY IN SIGHT TO SOUTHWARD HOSTILE SUBMARINES PRESENT PARAGRAPH GENERAL PLAN WILL ENGAGE DECISIVELY PARAGRAPH TASKS BATTLE LINE WILL DELAY ACTION TO DRAW ENEMY OVER OUR SUBMARINES AND WILL THEN ENGAGE AT MODERATE RANGES FORCES RIGHT BATTLE FLANK DEFEND RIGHT FLANK OF BATTLE LINE FORCES LEFT BATTLE FLANK DEFEND LEFT FLANK OF BATTLE LINE AIRCRAFT MAINTAIN PLANE SPOT FOR BATTLE LINE PATROL AGAINST SUBMARINES PERIOD SUBMARINES ATTACK ENEMY BATTLE LINE PARAGRAPH X RAY OTC WILL INITIATE OFFENSIVE BY SURFACE FORCES AGAINST ENEMY BATTLE LINE BY SIGNAL DO NOT REPEAT NOT USE SMOKE SCREEN PARAGRAPH USE BATTLE RADIO PLAN OTC IN BB FORTY 0830

ASSUMPTIONS:

- (1) Plane losses to date have reduced BLUE air force to two VC per battleship, two VS per cruiser. No planes carry bombs or smoke apparatus. At 0845 all planes are on board, fully fueled and ready for launching.
- (2) All BLUE ships have steam for maximum speed and are making 18 knots. Personnel at battle stations. They have adequate fuel, and there is no speed loss for overdraft or fouling.
- (3) All BLUE submarines submerged at 0845. Their batteries were fully charged.
- (4) No BLUE vessels carry mines.
- (5) Weather at 0845 clear, wind N.F., force 3, sea smooth, barometer 29.90.

ORGANIZATION

BLUE

Batdiv Three (BBs 39, 43)
Crudiv Four (CAs 24, 25, 26, 27)
Crudiv Two (CLs 9, 11, 12, 13)
Desron Two DL 2, Flag
Desdiv Four (DDs 133, 132, 131, 134)
Desdiv Five (DDs 117, 146, 118, 147)
Desdiv Six (DDs 78, 76, 214, 75)
Desdiv Ten (DDs 340, 339, 338, 337)
Subdiv ~~Three~~ (SSs 163, 169, 165, 168)
TWELVE

ORANGE

Batcrudiv One (CCs 1, 3, 4)
Crudiv Six (CAs 32, 33, 34, 35)
Crudiv Seven (CAs 36, 37, 38, 39)
Desron Two
Desdiv Four (DDs 79, 80, 93, 94)
Desdiv Five (DDs 95, 96, 99, 98)
Desdiv Six (DDs 75, 76, 77, 78)
Desron Three
Desdiv Seven (DDs 71, 72, 73, 74)
Desdiv Eight (DDs 48, 46, 47, 70)
Desdiv Nine (DDs 63, 64, 50, 49)
Subdiv Ten (SFs 17, 18, 19)

ANNEX

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

FIRST PLAYING

MANEUVER DETAIL

Maneuver Staff

Director	- - - - -	Capt. MacFall
Asst. for Moves	- - - - -	Comdr. Battle
Communications	- - - - -	Comdr. Battle
Gunnery	- - - - -	Col. Cutts.
Air	- - - - -	Comdr. Douglas
Torpedoes and Mines	- - - - -	Comdr. Rankin
Submarines	- - - - -	" "
Plotting	- - - - -	" "
Ass't for Plotting	- - - - -	Mr. Wilson

Aides to Assistant for Moves and Communications:

Umpires: Moves: BLUE	- - - - -	Capt. Richardson
ORANGE	- - - - -	Capt. Furlong
Communications: BLUE	- - - - -	Lt.Col. Utley
ORANGE	- - - - -	Lt.Col. Baird

Aides to Assistant for Gunnery:

Chief Scorer	- - - - -	Lt.Comdr. Moon
Gunfire Scorers	- - - - -	Comdr. Gray
		Comdr. Cooke
		Comdr. Smith
		Comdr. Deem
		Comdr. Nixon
		Comdr. Bright
		Major Jones
Damage Recorders	- - - - -	Comdr. Shonerd
		Capt. Bemis
		Comdr. Wood
		Comdr. Hein

Aides to Assistant for Submarines
and Air

- - - - -	Comdr. Leighton
- - - - -	Comdr. Zacharias
- - - - -	Comdr. MacFarlane
- - - - -	Comdr. Barr

PLAYER DETAIL

BLUE

OTC and Combatdiv Three	- - - - -	Capt. Stewart
Staff: Moves and Gunnery	- - - - -	Comdr. Barry
Plotter and Communications	- - - - -	Major Hartle
Comdr. Forces LBF and ComCrudiv Four	- - - - -	Comdr. Clement
Comdr. Forces RBF ComCrudiv Two	- - - - -	Cdr. Carpender
		Cdr. Riefkohl
Comdesron Two	- - - - -	Comdr. Van de Carr
Comdesdiv Ten	- - - - -	Comdr. James
Comairrons	- - - - -	Cdr. Le Clair
Flight Commanders	- - - - -	Cdr. Dessez
		Major Strong

Comsubdiv Twelve	- - - - -	Comdr. Maloney
C.O. BARRACUDA	- - - - -	Capt. Holeman
C.O. DOLPHIN	- - - - -	Cdr. Van Valkenburgh
C.O. NAUTILUS	- - - - -	Cdr. Gillam
C.C. ARGONAUT	- - - - -	Major Jenkins

BONITA

ORANGE

CTC and ComBatCrudiv One	- - - - -	Capt. Towers
Staff: Moves and Gunnery	- - - - -	Cdr. Coman
Plotter and Communications	- - - - -	Major Bull

Comdr. Forces REF and ComCrudiv Six	- - - - -	Comdr. Coffman
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Comdr. Forces LBF ComCrudiv Seven	- - - - -	Comdr. Emmerson Lt.Col. Matthews
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Comdesron Two	- - - - -	Comdr. Kauffman
Comdesron Three	- - - - -	Comdr. Hilliard
Comdesdiv Nine	- - - - -	Major Stephenson

Comairrons Flight Commanders	- - - - -	Comdr. Hedrick Major Coulter Capt. Hine (SC)
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Comsubdiv Ten	- - - - -	Comdr. Waddell
C.O. SS-17	- - - - -	Comdr. Hogg
C.O. SS-18	- - - - -	Comdr. Esler
C.O. SS-19	- - - - -	Lt.Cdr. McGuigan

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

SECOND PLAYING

MANEUVER DETAIL

MANEUVER STAFF

Director - - - - -	Capt. MacFall
Asst. for Moves - - - - -	Comdr. Battle
Communications - - - - -	Comdr. Battle
Gunnery - - - - -	Col. Cutts
Air - - - - -	Comdr. Douglas
Torpedoes and Mines - - - - -	Comdr. Rankin
Submarines - - - - -	" "
Plotting - - - - -	" "
Ass't for Plotting - - - - -	Mr. Wilson

Aides to Assistant for Moves and Communications:

Umpires: Moves: BLUE - - - - -	Comdr. Clement
ORANGE - - - - -	Comdr. Coffman
Communications: BLUE - - - - -	Comdr. Carpender
ORANGE - - - - -	Comdr. Emmerson

Aides to Assistant for Gunnery:

Chief Scorer - - - - -	Lt.Cdr. Moon
Gunfire Scorers - - - - -	Comdr. Van de Carr
	Comdr. James
	Comdr. Kauffman
	Comdr. Barry
	Comdr. Hilliard
	Major Stephenson
	Major Bull
Damage Recorders - - - - -	Capt. Stewart
	Capt. Towers
	Comdr. Riefkohl

Aides to Assistant for Submarines
and Air - - - - -

Comdr. Coman
Major Hartle

PLAYER DETAIL

BLUE

OTC and Combatdiv Three - - - - -	Comdr. Le Clair
Staff: Moves and Gunnery - - - - -	Comdr. Gillam
Plotter and Communications - - - - -	Major Strong
	Capt. Holeman
Comdr. Forces LBF and ComCrudiv Four - - - - -	Comdr. Maloney
Comdr. Forces RBF - - - - -	Capt. Benis
ComCrudiv Two - - - - -	Comdr. Dessez
Comdesron Two - - - - -	Cdr. Van Valkenburgl
Comdesdiv Ten - - - - -	Major Jenkins
ComAirrons - - - - -	Comdr. Shonerd
Flight Commanders - - - - -	Comdr. Nixon
	Major Jones
	Comdr. Gray

Comsubdiv Twelve - - - - - Capt. Richardson
 C.O. BARRACUDA - - - - - Lt.Col. Utley
 C.O. DOLPHIN - - - - - Comdr. Barr
 C.O. NAUTILUS - - - - - Comdr. Smith
 C.O. ARGONAUT - - - - - Comdr. Wood

BONITA

ORANGE

OTC and ComBatCrudiv One - - - - - Comdr. Hedrick
 Staff: Moves and Gunnery - - - - - Comdr. Esler
 Plotter and Communications - - - - - Major Coulter
 Comdr. Hogg

Comdr. Forces RBF and
 ComCrudiv Six - - - - - Comdr. Waddell

Comdr. Forces LBF - - - - - Comdr. Leighton
 ComCrudiv Seven - - - - - Comdr. Bright

Comdesron Two - - - - - Comdr. Hein
 Comdesron Three - - - - - Capt. Hine
 Comdesdiv Nine - - - - - Lt.Cdr. McGuigan

ComAirrons - - - - - Lt.Col. Matthews
 Flight Commanders - - - - - Lt.Col. Baird
 Comdr. Zacharias

Comsubdiv Ten - - - - - Capt. Furlong
 C.O. SS-Seventeen - - - - - Comdr. Deem
 C.O. SS-Eighteen - - - - - Comdr. Cooke
 C.O. SS-Nineteen - - - - - Comdr. MacFarlane

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

THIRD PLAYING

MANEUVER DETAIL

MANEUVER STAFF

Director	- - - - -	Capt. MacFall
Asst. for Moves	- - - - -	Comdr. Battle
Communications	- - - - -	Comdr. Battle
Gunnery	- - - - -	Col. Cutts
Air	- - - - -	Comdr. Douglas
Torpedoes and Mines	- - - - -	Comdr. Rankin
Submarines	- - - - -	" "
Plotting	- - - - -	" "
Ass't for Plotting	- - - - -	Mr. Wilson

Aides to Assistant for Moves and Communications:

Umpires: Moves: BLUE	- - - - -	Comdr. Le Clair
ORANGE	- - - - -	Comdr. Hedrick
Communications: BLUE	- - - - -	Comdr. Gillam
ORANGE	- - - - -	Lt.Cdr. McGuigan

Aides to Assistant for Gunnery:

Chief Scorer	- - - - -	Lt.Comdr. Moon
Gunfire Scorers	- - - - -	Comdr. Maloney
		Comdr. Dessez
		Cdr. Van Valkenburgh
		Comdr. Waddell
		Comdr. Esler
		Comdr. Hogg
		Major Jenkins
		Major Coulter
Damage Recorders	- - - - -	Capt. Holeman (MC)
		Capt. Hine (SC)
		Lt.Col. Matthews
		Comdr. Leighton

Aides to Assistant for Submarines

and Air	- - - - -	Comdr. Bright
		Comdr. Riefkohl
		Major Strong
		Major Bull

PLAYER DETAIL (BLUE)

OTC and Combatdiv Three	- - - - -	Capt. Richardson
Staff: Moves and Gunnery	- - - - -	Comdr. Wood
Plotter and Communications	- - - - -	Major Jones
		Lt.Col. Utley
Comdr. Forces LBF and		
ComCrudiv Four	- - - - -	Comdr. Shonerd
Comdr. Forces RBF	- - - - -	Comdr. Gray
ComCrudiv Two	- - - - -	Comdr. Barr
Comdesron Two	- - - - -	Comdr. Smith
Comdesdiv Ten	- - - - -	Comdr. Nixon
ComAirrons	- - - - -	Capt. Bemis
Flight Commanders	- - - - -	Comdr. Clement
		Comdr. Barry

ComSubdiv Twelve - - - - - Capt. Stewart
 C.O. BARRACUDA -- - - - - Comdr. Carpender
 C.O. DOLPHIN - - - - - Cdr. Van de Carr
 C.O. NAUTILUS - - - - - Major Hartle
 C.O. ~~ARGONAUT~~ - - - - - Comdr. James
 BONITA

ORANGE

OTC and ComBatCrudiv One - - - - - Capt Furlong
 Staff: Moves and Gunnery - - - - - Comdr. MacFarlane
 Plotter and Communications - - - Major Stephenson

Comdr. Forces RBF and
 ComCrudiv Six - - - - - Comdr. Bright

Comdr. Forces LBF and
 ComCrudiv Seven - - - - - Comdr. Cooke

Comdesron Two - - - - - Comdr. Deen
 Comdesron Three - - - - - Comdr. Zacharias

Comdesdiv Nine - - - - - Lt.Col. Baird

ComAirrons - - - - - Comdr. Coffman
 Flight Commanders - - - - - Comdr. Hilliard
 Comdr. Hein

Comsubdiv Ten - - - - - Capt. Towers
 C.O. SS-17 - - - - - Comdr. Coman
 C.O. SS-18 - - - - - Comdr. Emmerson
 C.O. SS-19 - - - - - Comdr. Kauffman

2864
6-24-33

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

Assignment of Rooms and Tables

Maneuver Staff

<u>Director</u>	Desk	North Center, E Game Room
<u>Master Plot</u>		Room E-27
<u>Asst. for (Moves, etc.)</u>		Game Board
(Subs., Air, Torp.)		Room E-27
(Guns)		Room E-26

Move Umpires:

BLUE	Desk	NE Corner Game Board
ORANGE	Desk	SE " " "

Communication Umpires:

BLUE	Desk	With BLUE Move Umpire
ORANGE	Desk	With ORANGE Move Umpire

Chief Scorer and Ass'ts.

Room E-28

Damage Recorders

Room E-26

Ass'ts. for Submarines and Air

Room E-27

PLAYERS (BLUE)

OTC and Staff	<u>Table</u>	NW Corner Game Room
Comdr. RBF	"	West Side " "
Comdr. LBF	"	" " " "
Comdesron Two	"	" " " "
Comdesdiv Ten	"	" " " "
ComAirrons	"	North Side " "
Flight Commanders		E-15 and " "
ComSubdiv Twelve and		
C.O. BARRACUDA		E-11
DOLPHIN		
C.O. NAUTILUS		E-12
ARGONAUT		
BONITA		

PLAYERS (ORANGE)

OTC and Staff	<u>Table</u>	S.W. Corner Game Room
Comdr. RPF	"	West Side " "
Comdr. LBF	"	" " " "
Comdesron Two	"	" " " "
Comdesron Three	"	" " " "
Comdesdiv Nine	"	" " " "
ComAirrons	"	South " " "
Flight Commanders		C-11 and " "
ComSubdiv Ten and		
C.O. SS-Seventeen		C-12
C.O. SS-Eighteen		C-12
C.O. SS-Nineteen		C-12

2864
6-24-33

DEPARTMENT OF OPERATIONS

ORANGE

SCHEDULE OF EMPLOYMENT

SENIOR CLASS OF 1934

TACTICS

Period 7-15 July 1933

This period will be devoted to Demonstrative Exercises designed to familiarize officers with the Rules and Mechanics of the Board Maneuver. The prescribed exercises are sufficiently inclusive to emphasize only the more important Rules and practices and students should take advantage of this period to study War College Publications on the Tactical Maneuver and to refresh their knowledge of Service Tactical Publications.

<u>Date</u>	<u>Hour</u>	<u>Place of Assembly</u>	<u>Dem.Tact.Ex.No.</u>
Friday July 7	0905	East Game Board	1
Sat. July 8	"	Own Room	2 & 3
Mon. July 10	"	Lecture Room	4
Tue. July 11	"	Own Room	5
Wed. July 12	"	Own Room	Review Conduct of the Maneuver and Maneuver Rules.
Thur. July 13	"	East Game Board	6 1st playing
Fri. July 14	"	" " "	6 2nd playing
Sat. July 15	"	" " "	6* 3d playing

*For Exercise No. 6 - Section One - BLUE

Section Two - ORANGE

R.B. COFFEY
Captain, U.S.N.
Head of Department.

DEMONSTRATIVE TACTICAL EXERCISE NO. 1

Motive:- Explanation of Maneuver Board and its equipment;
exercise in use of
(1) Fire Distribution and move sheets.

Bring "Maneuver Rules"
"The Conduct of Maneuvers"
BLUE Fleet
This program

Situation: Batdiv 4 (BBs 48, 46, 45) steaming in column,
distance 500 yards, speed 16 knots. Ideal
weather conditions. Three minute moves.
Move One begins at 0930, game time. (Rules
B-200, 201, 203, 204).

Move 1. Ahead 16 knots; course zero. (Rule B-204,
B-210 (a), (b), (c)).

Move 2. Head of column right 45 degrees. Speed 16.
(Use capital ship turning cards).

Move 3. Continue as before at speed 16.

Move 4. Head of column left 90 degrees. Speed 16.

Move 5. Continue course, Execute signal "Speed 12"
(Rules C-201, 202, 203, 204).

Move 6. Head of column right 165 degrees. Speed 12.

Move 7. Continue course and speed. Execute signal
"Open fire with main battery on two enemy BBs
bearing 170 degrees, natural concentration".
(Direct method, plane spot, director lay).

Move 8. Continue course, speed 12. Continue main bat-
tery fire.

Move 9. Continue course and speed. Execute signal
"Cease fire on enemy BBs to southward". At
0955 execute signal "Open fire with main bat-
tery on four enemy BBs bearing 64 degrees,
course East. BB-45 divide fire on two rear
enemy ships, other BBs fire ship for ship".
Use direct method, plane spot, and director
lay; only one spotting plane for each
firing ship is available. (Rule F-27 (a), (b)).
A modified move is required for opening fire
at this time. (Rule B-208).

Move 10. Continue course and main battery fire. Execute
signal "Speed 20". (Rules C-202, 203, 204).

Move 11. Continue speed 20 (average 18). Continue
main battery fire.

- Move 12. Speed 20. Execute signal "Ships right 60 degrees". Enemy BBs now bear 7 degrees.
- Move 13. Continue course and speed. Execute signal "Open fire with secondary battery on three enemy destroyers bearing 233 degrees". Use direct method, top spot, director lay. Continue major gunfire. Separate fire sheets must be submitted for Major and Minor fire.
- Move 14. Continue speed 20. Execute signal "Ships left 30 degrees". Enemy DDs now bear 257 degrees. Continue fire on DDs. Cease fire on enemy BBs.
- Move 15. Continue course and speed. Cease firing on DDs, bearing 291^o.
- Move 16. Continue speed 20. Execute signal "Ships left 39 degrees".

Note: For the purpose of conducting the Exercise, the Senior Class will be divided into four groups of approximately twelve students. Group lists are appended hereto.

Group A will take the N.E. corner of Game Room.

Group B will take the N.W. corner of Game Room.

Group C will take the S.E. corner of Game Room.

Group D will take the S.W. corner of Game Room.

Each student will be required to hand in a move sheet (Form T-4) for each move; these move sheets may be prepared in advance in the students' rooms, or in the game room, at the discretion of the students.

A member of the Staff will examine the move sheets for each move, as they are handed in, for the purpose of noting errors or omissions; the move will then be made on the board.

The senior line officer of each group will detail a member of his group to make each move on the board in rotation.

DEMONSTRATIVE TACTICAL EXERCISE NO. I

GROUP ASSIGNMENT

GROUP A - Comdr. Battle

Captain Richardson
Comdr. Shonerd
Comdr. Carpenter
Comdr. James
Comdr. Maloney
Comdr. Van Valkenburgh
Comdr. Gray
Comdr. Smith
Comdr. Nixon
Captain Holeman (MC)
Lt.Col. Utley (USMC)
Major Hartle, (USA)
Major Jones (USA)

GROUP B - Comdr. Rankin

Captain Furlong
Comdr. Emmerson
Comdr. Hilliard
Comdr. Waddell
Comdr. Cooke
Comdr. MacFarlane
Comdr. Hein
Comdr. Zacharias
Lt.Comdr. McGuigan (CC)
Lt.Col. Matthews, (USMC)
Lt.Col. Baird(USA)
Major Coulter, (USA)

GROUP C - Colonel Cutts

Captain Stewart
Captain Bemis
Comdr. Clement
Comdr. Van de Carr
Comdr. Le Clair
Comdr. Dessez
Comdr. Barry
Comdr. Gillam
Comdr. Wood
Comdr. Riefkohl
Comdr. Barr
Major Jenkins, (USMC)
Major Strong, (USA)

GROUP D - Lt.Cdr. Moon

Captain Towers
Comdr. Coffman
Comdr. Kauffman
Comdr. Hedrick
Comdr. Leighton
Comdr. Coman
Comdr. Deem
Comdr. Bright
Comdr. Esler
Comdr. Hogs
Capt. Hine (SC)
Major Stephenson, (USMC)
Major Bull, (USA)

DEMONSTRATIVE TACTICAL EXERCISE NO. 2

Assemble as directed.

(I) Motive: Explanation and use of Torpedo Fire Cards.

Bring : Torpedo Fire Cards.

Receive: One Plotting Sheet.

Problem: (a) Vessel "A" is steaming West, speed 20. Vessel "B" fires a torpedo, (Type C), when vessel "A" bears 60 degrees true. Required: Sight angle, tracks of target and torpedo, and effective range.

(b) Vessel "A" is steaming West, speed 20. Vessel "B" fires a torpedo, (Type C), when vessel "A" bears 15 degrees true. Required: Sight angle, tracks of torpedo and target, and effective range.

(II) Motive: Exercise in plotting a salvo of torpedoes fired at a group of vessels.

Bring: (1) Maneuver Rules
(2) "The Conduct of Maneuvers"
(3) Torpedo Fire Cards.

Receive: One Plotting Sheet.

Problem: (a) Five BBs are in column, distance 500 yards, course West, speed 20. Six DDs in column, distance 250 yards, course East; tracks of the two forces are 6,000 yards apart. When the center BB bears 60 degrees from the third DD, each DD fires six torpedoes (Type C), dispersion 10° right and 10° left.

(Note: BBs are 200 yards long, 32 yards beam).

The sight angle and effective range will be the same as in Exercise I (a), above.

Required: Read Rules G-215, 219 and plot the run of the salvo of torpedoes. Read Rules 220, 224, and 225 to get general idea of the manner in which torpedo hits are scored. Actual scoring is not required.

What should be the depth setting of the above torpedoes? (War Inst. Art. 1303).

DEMONSTRATIVE TACTICAL EXERCISE NO. 3

- Motive: Method of plotting Smoke Screens.
- Bring : (1) This paper
(2) Maneuver Rules.
- Receive: Plotting Sheet.
- Explanation: (1) Maneuver Rules, Smoke Screens, Rules P-200
to D-208, incl. . . .
(2) Situation and Moves..
- Situation A division of 5 DD, in column, distance 250
yards, is steaming on course 270, speed 25.
The wind is SW, force 4. Smoke will lie.
Three minute moves, commencing at 0930.
- Move 1: Continue course and speed. All ships commence
laying smoke at the beginning of the move.
- Move 2: Continue course, speed and smoke.
- Move 3: Execute column right 30 degrees, continue speed
and smoke.
- Move 4: Execute column right 30 degrees, continue speed
and smoke.
- Move 5: Execute ships right 30 degrees, continue speed.
Cease making smoke at end of move.
- Move 6: Continue course and speed.
- Move 7: Continue course and speed.

- NOTE: (a) Changes of course and line of bearing are
effective at commencement of move.
(b) Turning circles, etc., will be disregarded
in this plotting, although used on the game
board.

Demonstrative Tactical Exercise No. 4

Construction of Fighting Strength Comparison Curves

Motive:

To explain the method of construction of fighting strength comparison curves showing the per cent damage inflicted by each opponent on the other at selected ranges and target angles, under normal firing conditions.

Theory:

Under the Gunfire Rules "fighting strength" of a vessel or a group of vessels can be computed only for a gunfire battle against a particular opponent and under a particular set of conditions. A measure of this "fighting strength" is the product: "fire effect" inflicted by one firing ship on its target under the stated conditions, times the "life" of the firing ship. The opponent's "fighting strength" can be computed similarly. For ship (a) vs ship (b):-

$$(1) \begin{cases} f.s._{(a)} = f.e._{(a) \text{ on } (b)} \times life_{(a)} \\ f.s._{(b)} = f.e._{(b) \text{ on } (a)} \times life_{(b)} \end{cases}$$

Comparison of fighting strengths can be expressed by the ratio:

$$(2) \frac{f.s._{(a)}}{f.s._{(b)}} = \frac{f.e._{(a) \text{ on } (b)} \times life_{(a)}}{f.e._{(b) \text{ on } (a)} \times life_{(b)}} = \frac{\frac{f.e._{(a) \text{ on } (b)}}{life_{(b)}}}{\frac{f.e._{(b) \text{ on } (a)}}{life_{(a)}}} =$$

$$\frac{\frac{\text{damage inflicted by (a) on (b)}}{life_{(b)}}}{\frac{\text{damage inflicted by (b) on (a)}}{life_{(a)}}} = \frac{\text{per cent damage inflicted by (a) on (b)}}{\text{per cent damage inflicted by (b) on (a)}}$$

If the per cent damage, inflicted by each ship on its opponent, be plotted against range, the two curves resulting will show graphically the comparative fighting strengths of the two ships engaged for the assumed conditions.

This theory can be extended to make a "fighting strength" comparison of two opposing groups of vessels. In this case, the group "fighting strength" is measured by the product: group "fire effect" times the group "life". This product is the "per cent damage inflicted" on the opponent.

For A-Group composed of n ships(a1), (a2), (a3),---(an).

For B-Group composed of m ships(b1), (b2), (b3),---(bm).

$$\text{A-Group "fire effect"} = F.E._A = f.e._{(a1)} + f.e._{(a2)} + f.e._{(a3)} \text{---} + f.e._{(an)}$$

$$\text{A-Group "life"} = LIFE_A = life_{(a1)} + life_{(a2)} + life_{(a3)} \text{---} + life_{(an)}$$

(3)
$$\text{B-Group "fire effect"} = F.E._B = f.e._{(b1)} + f.e._{(b2)} + f.e._{(b3)} \text{---} + f.e._{(bm)}$$

$$\text{B-Group "life"} = LIFE_B = life_{(b1)} + life_{(b2)} + life_{(b3)} \text{---} + life_{(bm)}$$

$$(4) \frac{F.S._A}{F.S._B} = \frac{F.E._A \times LIFE_A}{F.E._B \times LIFE_B} = \frac{\frac{F.E._A}{LIFE_B}}{\frac{F.E._B}{LIFE_A}}$$

NOTE: If forces are homogeneous, and vessels which compose the opposing forces are identical,

$$(5) \frac{F.S._A}{F.S._B} = \frac{nx f.e._{(a)} \text{ times } n \times life_{(a)}}{mx f.e._{(b)} \text{ times } m \times life_{(b)}} = \frac{n^2 \times f.e._{(a)} \times life_{(a)}}{m^2 \times f.e._{(b)} \times life_{(b)}} = \frac{n^2}{m^2}$$

(5) states the familiar N² Law which is a special case of the more general principal stated by (4).

Per cent damage inflicted by A-Group on B-Group can be plotted against range to give one curve. The companion curve, showing the corresponding values of per cent damage inflicted by B-Group on A-Group, can be similarly plotted on the same sheet. Together, these will show graphically the relative values of the fighting strengths of the two forces.

Data:

1. Plotting Sheet - indicates composition of forces, fire distribution and firing conditions.
2. Computation Blank - fire effect has been computed for ranges 33,000 - 30,000 - 18,000 - 15,000 yards and target angles 90° and 60°. Lives are tabulated.

Required:

(a) Compute Fire Effect for ranges 27,000, 24,000, 21,000 yards and fill in proper columns of Computation Blank. Compute Percent Damage Inflicted on ORANGE and BLUE respectively by use of formula:

$$\text{Percent Damage Inflicted on B (or A)} = \frac{\text{F.E.}_{A(\text{or } B)}}{\text{Life}_{B(\text{or } A)}}$$

(b) Plot the curves for ranges 30,000 to 15,000 yards and target angles 90° and 60° for both BLUE and ORANGE.

Use plotting sheets provided and show damage on BLUE in blue pencil and on ORANGE in RED pencil; - 90° target angle in full lines and 60° in broken lines.

Class of 1934 Sr.

DEMONSTRATIVE TACTICAL EXERCISE No. 4.

Fighting Strength Comparison Curves.

8 BLUE BBs (48 to 40, except 47) against 6 ORANGE BBs (1-6) and 3 CCs (1,3,4)

Curves show damage received in 3 min. move, in percentage of original life.

Target angles, fire distribution, and ranges as indicated.

Plane Spot.

— 90° Target angle.

- - - 60°

PER CENT DAMAGE INFLICTED

%

18

16

14

12

10

8

6

4

2

0

15000

18000

21000

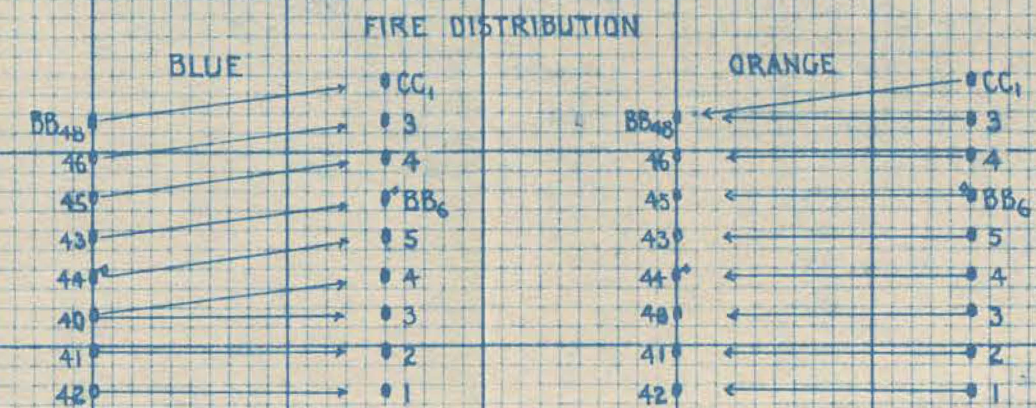
24000
RANGE

27000

30000

RANGE

33000 RANGE



Note: (1) At 31000 yds and above all BLUE BBs except BBs 45 and 43, get 20% increase in fire effect due to not being under fire.

(2) At 30000 yds and under, BB₄₈ loses 10% in fire effect upon CC₁, due to being under concentration of 2 ships

(3) At 30000 yds and under, ORANGE BBs 4 and 3 get 10% increase in fire effect due to being under less than normal fire.

(See Rule F-29)

2730
6-13-32

Demonstrative Tactical Exercise No. 5

Gunfire Scoring

Motive: To illustrate application of Gunfire Rules and to exercise in scoring gunfire.

Data:

Move 4
(One typical three minute move
of a Tactical Maneuver)

1. BLUE Move Blank) Filled out with data for
ORANGE Move Blank) use in scoring
BLUE Damage Report) Move 4;
2. Range for the preceding move was 22,000 yards.
3. Wind from 350° , force 4; sea, moderate.
Visibility, normal; weather, clear, no haze.
Sun rose at 0600; at 0703, sun bears 090° . At 0703,
BB-6 bears 080° from BB-48.
4. Fire Sheet, blank - will be distributed for use in
scoring Move 4.

Required: Complete the Fire Sheet for Move 4, obtaining damage inflicted by BLUE BB-48 on ORANGE BB-6.

FORCE: BB-48
 COMDR: (NAME)

MOVE No. 4 BLUE
 TIME 0700 to 0703

Form T-4
 10-1929

FIRE DISTRIBUTION DATA

SYMBOLS: D-Direct T-Top Spot Q-Pointer
 I-Indirect P-Plane Spot R-Director
 Z-Zone L-Local S-Stab.
 B-Bombardment Control Director

Indicate: Major Fire Vs Capital Ships
 Minor Other Types

Note: Separate sheets for Major and Minor Fire.

Unit	Guns Firing		FIRE CONTROL			TARGET	Filled in by UMPIRE	
	Cal.	No.	Method	Spot	Lay		Range	Target Angle
BB-48	16	8	D	P	R	BB-6	21,000	75°
	No smoke		No gases		Sun glare	Pitch		

Authority for FIRE ACTION: As before

MOVE DATA

NOTE: In column movements, course changes of leading vessels of each unit only, are indicated.
 In simultaneous movements, course changes of each vessel starting the movement on execution of signal are indicated.
 In destroyer tactics, a destroyer division's movements are indicated as a single vessel.

MAN. RULES	SPEEDS					COURSES			
	C-203 F-33		C-204	C-4			F-31	F-32	
Speed at start, due to engines	Speed change due to engines	Speed at end, due to engines	Av. Speed during move due to engines	Reduction on account of sea	Final Av.Sp. during move	At Start	Change Agg.	Net	At End
16	-	16	16	2	14	000	35	35	325

General Description of MOVE: CC to 325 and continue fire
 Authority for Changes: signal to CC.

FORCE: BBS- 5, 6
 COMDR: (NAME)

MOVE No: 4
 TIME:

0700 to 0703 ORANGE

Form T-4
 10-1929

FIRE DISTRIBUTION DATA

SYMBOLS: D-Direct T-Top Spot Q-Pointer
 I-Indirect P-Plane Spot R-Director
 Z-Zone L-Local S-Stab.
 B-Bombardment Control Director

Indicate: Major ✓ Capital Ships ✓
 Minor Fire Vs Other Types
 Note: Separate Sheets for Major and Minor Fire

MOVE DATA

NOTE: In column movements, course changes of leading vessels of each unit only, are indicated.
 In simultaneous movements, course changes of each vessel starting the movement on execution of signal are indicated.
 In destroyer tactics, a destroyer division's movements are indicated as a single vessel.

Unit	Guns Firing		FIRE CONTROL			TARGET	Filled in by UMPIRE	
	Cal.	No.	Method	Spot	Lay		Range	Target Angle
BB-6	16	8	D	P	R	BB-48		
5	"	"	"	"	"	"		

MAN.RULES	SPEEDS		COURSES					
	C-203 F-33		C-204	C-4			F-31	F-32
Speed at start, due to engines	Speed change due to engines	Speed at end, due to engines	Av. speed during move due to engines	Reduction on account of sea	Final Av.Sp. during move.	At Start	Change Agg. Net	At End
20	4	16	18	2	16	330	-	- 330

Authority for FIRE ACTION
 As before

General Description of MOVE:
 Slowed to 16 kts and continued fire.
 Authority for Changes: signal

MEMORANDUM IN CONNECTION WITH DEMONSTRATIVE TACTICAL EXERCISE NO. 6

1. Demonstrative Tactical Exercise No. 6 will be played as a Board Maneuver in the East Game Room. Players will assemble with Move Sheets and Communication Blanks for Move One ready to hand in. First Section will have the BLUE side and the Second Section will have the ORANGE side for all playings. Each Section will be divided into three details. The details will have the following assignments in turn:-(a) Maneuver Staff, (b) Surface Craft, (c) Air and Submarine.

2. One day will be allowed for each playing.

3. The purpose of the Exercise is to consolidate in the minds of students the knowledge of the Board Maneuver, and of the rules, which they have gained during the preliminary instruction period. There will be no discussion or critique following the Exercise.

4. The Details for the three playings are different and are so arranged that each student has three different assignments. When detailed on the Maneuver Staff, students should take the opportunity to observe the Master Chart, all scoring, the methods of plotting torpedo fire, submarines and aircraft. The tracks of torpedoes, submarines and aircraft do not appear on the Maneuver Board, nor do the officers in command of submarines see the board. Students detailed as umpires and scorers for this Exercise should familiarize themselves with their respective duties prior to the commencement of the playings.

5. Neither the initial situation nor the playing is intended to demonstrate tactical principles. The forces in each playing will be at about extreme gun range, with the submarines in favorable positions from which to attack, so that the maximum amount of practice may be had in scoring gun and torpedo fire.

6. It is not required that the BLUE and ORANGE Commanders make any formal Estimate of the Situation in this Exercise, so, in each case, the Battle Order is stated. Players are required merely to execute the Battle Orders as given. A brief time is available before each playing, during which it is suggested that the BLUE and ORANGE commanders assemble their subordinates for the purpose of conferring on the Exercise.

7. A limited number of plots of the initial situation for each player have been made and will be furnished to the principal players on each side. The positions of the submarines on these plots are approximate. Exact positions of submarines will be given to submarine commanders only. The Players on each side should exercise care that players on the other side do not see these plots.

8. Fuel account is not required for this exercise.

9. The Maneuver Detail for the Exercise and Assignment of Rooms and Tables are appended.

ORANGE SITUATION

MOTIVE:

Practice in playing a Board Maneuver and in scoring gun and torpedo fire.

GENERAL SITUATION:

War between BLUE and ORANGE. ORANGE has captured GUAM and is proceeding with the conquest of the PHILIPPINES. The MANILA BAY area, thirty days after the main landing at LINGAYEN, is still holding out. A BLUE Expeditionary Force and the Main Body of the BLUE Fleet is assembling in HAWAIIAN waters. The ORANGE Main Body is held in complete readiness in the INLAND SEA. A BLUE Advance Force composed of Batdiv Three less BB 36, Crudivs Four plus CA 25 and Two plus CL 13, Desron Two and Desdiv Ten, Subdiv Twelve less SS 125 is proceeding to the Westward to secure suitable fueling localities for the Main Body. It stopped at TAONGI ISLAND on 12 October to fuel. An ORANGE Striking Force, composed of BatCrudiv One, Crudivs Six, Seven, Desrons Two and Three less CLs 16, 15, Subdiv Ten, has taken part in the capture of GUAM and has fueled and was prepared to sail from there on 13 October.

SPECIAL SITUATION:

The Commander ORANGE Striking Force was informed by his Commander-in-Chief, 12 October, of the general situation; was told that the capture of MANILA depended on stopping the BLUE advance, and was ordered to bring the BLUE Advance Force to decisive action.

He took as his MISSION: "The destruction of the BLUE Advance Force in order to stop the BLUE advance", and sailed with his whole force at 1300, 12 October, Crudivs Six and Seven scouting, other units tactically concentrated.

On 16 October planes from scouts located BLUE at sea. Course was laid to intercept, and scouts rejoined. Submarines

were disposed toward BLUE.

On 17 October it was hazy, but early morning plane flights developed the BLUE Force to the Northward and several BLUE submarines were seen at various times.

At 0845 the haze had entirely cleared. ORANGE is disposed as shown on the accompanying plot, which also shows the positions of BLUE vessels sighted. All ORANGE units have just received the ORANGE Commander's battle order, as follows:

TO : TASK GROUP COMMANDERS
FROM : OTC

0217 INFORMATION ENEMY WITHDRAWING TO NORTHWARD HOSTILE SUBMARINES PRESENT PARAGRAPH GENERAL PLAN WILL ENGAGE DECISIVELY PARAGRAPH TASKS BATTLE LINE CLOSE TO MODERATE RANGES FORCES RIGHT BATTLE FLANK ATTACK NEAREST FLANK ENEMY BATTLE LINE FORCES LEFT BATTLE FLANK ATTACK NEAREST FLANK ENEMY BATTLE LINE AIRCRAFT MAINTAIN PLANE SPOT FOR BATTLE LINE PATROL AGAINST SUBMARINES PERIOD SUBMARINES ATTACK ENEMY BATTLE LINE PARAGRAPH X RAY DO NOT REPEAT NOT USE SMOKE SCREEN PARAGRAPH USE BATTLE RADIO PLAN OTC IN CC ONE 0830

ASSUMPTIONS:

(1) Plane losses to date have reduced ORANGE air force to two V9 per battle cruiser, two VS per light cruiser. No planes carry bombs or smoke apparatus. At 0845 all planes are on board, fully fueled, and ready for launching.

(2) All ORANGE ships have steam for maximum speed and are making 21 knots. Personnel at battle stations. They have adequate fuel, and there is no speed loss for overdraft or fouling.

(3) All ORANGE submarines submerged at 0845. Their batteries were fully charged.

(4) No ORANGE vessels carry mines.

(5) Weather at 0845 clear, wind NE, force 3, sea smooth, barometer 29.90.

ORGANIZATION

BLUE

Batdiv Three (BBs 39, 43)
Crudiv Four (CAs 24, 25, 26, 27)
Crudiv Two (CLs 9, 11, 12, 13)
Desron Two DL 2, Flag
Desdiv Four (DDs 133, 132, 131, 134)
Desdiv Five (DDs 117, 146, 118, 147)
Desdiv Six (DDs 78, 76, 214, 75)
Desdiv Ten (DDs 340, 339, 338, 337)
Subdiv ~~Three~~ (SSs 163, 169, 165, 168)
Twelve

ORANGE

Batcrudiv One (CCs 1, 3, 4)
Crudiv Six (CAs 32, 33, 34, 35)
Crudiv Seven (CAs 36, 37, 38, 39)
Desron Two
Desdiv Four (DDs 79, 80, 93, 94)
Desdiv Five (DDs 95, 96, 99, 98)
Desdiv Six (DDs 75, 76, 77, 78)
Desron Three
Desdiv Seven (DDs 71, 72, 73, 74)
Desdiv Eight (DDs 48, 46, 47, 70)
Desdiv Nine (DDs 63, 64, 50, 49)
Subdiv Ten (SFs 17, 18, 19)

ANNEX

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

FIRST PLAYING

MANEUVER DETAIL

Maneuver Staff

Director - - - - -	Capt. MacFall
Asst. for Moves - - - - -	Comdr. Battle
Communications - - - - -	Comdr. Battle
Gunnery - - - - -	Col. Cutts.
Air - - - - -	Comdr. Douglas
Torpedoes and Mines - - - - -	Comdr. Rankin
Submarines - - - - -	" "
Plotting - - - - -	" "
Ass't for Plotting - - - - -	Mr. Wilson

Aides to Assistant for Moves and Communications:

Umpires: Moves: BLUE - - - - -	Capt. Richardson
ORANGE - - - - -	Capt. Furlong
Communications: BLUE - - - - -	Lt.Col. Utley
ORANGE - - - - -	Lt.Col. Baird

Aides to Assistant for Gunnery:

Chief Scorer - - - - -	Lt.Comdr. Moon
Gunfire Scorers - - - - -	Comdr. Gray
	Comdr. Cooke
	Comdr. Smith
	Comdr. Deem
	Comdr. Nixon
	Comdr. Bright
	Major Jones
Damage Recorders - - - - -	Comdr. Shonerd
	Capt. Bemis
	Comdr. Wood
	Comdr. Hein

Aides to Assistant for Submarines
and Air - - - - -

Comdr. Leighton
Comdr. Zacharias
Comdr. MacFarlane
Comdr. Barr

PLAYER DETAIL

BLUE

OTC and Combatdiv Three - - - - -	Capt. Stewart
Staff: Moves and Gunnery - - - - -	Comdr. Barry
Plotter and Communications - - - - -	Major Hartle
Comdr. Forces LBF and ComCrudiv Four - - - - -	Comdr. Clement
Comdr. Forces RBF ComCrudiv Two - - - - -	Cdr. Carpender
	Cdr. Riefkohl
Comdesron Two - - - - -	Comdr. Van de Carr
Comdesdiv Ten - - - - -	Comdr. James
Comairrons - - - - -	Cdr. Le Clair
Flight Commanders - - - - -	Cdr. Dessez
	Major Strong

Comsubdiv Twelve	- - - - -	Comdr. Maloney
C.O. BARRACUDA	- - - - -	Capt. Holeman
C.O. DOLPHIN	- - - - -	Cdr. Van Valkenburgh
C.O. NAUTILUS	- - - - -	Cdr. Gillam
C.O. ARGONAUT	- - - - -	Major Jenkins

BONITA

ORANGE

CTC and ComBatCrudiv One	- - - - -	Capt. Towers
Staff: Moves and Gunnery	- - - - -	Cdr. Coman
Plotter and Communications	- - -	Major Bull

Comdr. Forces REF and ComCrudiv Six	- - - - -	Comdr. Coffman
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Comdr. Forces LEF ComCrudiv Seven	- - - - -	Comdr. Emmerson Lt.Col. Matthews
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Comdesron Two	- - - - -	Comdr. Kauffman
Comdesron Three	- - - - -	Comdr. Hilliard
Comdesdiv Nine	- - - - -	Major Stephenson

Comairrons Flight Commanders	- - - - -	Comdr. Hedrick Major Coulter Capt. Hine (SC)
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Comsubdiv Ten	-- - - -	Comdr. Waddell
C.O. SS-17	- - - - -	Comdr. Hogg
C.O. SS-18	- - - - -	Comdr. Esler
C.O. SS-19	- - - - -	Lt.Cdr. McGuigan

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

SECOND PLAYING

MANEUVER DETAIL

MANEUVER STAFF

Director	- - - - -	Capt. MacFall
Asst. for Moves	- - - - -	Comdr. Battle
Communications	- - - - -	Comdr. Battle
Gunnery	- - - - -	Col. Cutts
Air	- - - - -	Comdr. Douglas
Torpedoes and Mines	- - - - -	Comdr. Rankin
Submarines	- - - - -	" "
Plotting	- - - - -	" "
Ass't for Plotting	- - - - -	Mr. Wilson

Aides to Assistant for Moves and Communications:

Umpires: Moves: BLUE	- - - - -	Comdr. Clement
ORANGE	- - - - -	Comdr. Coffman
Communications: BLUE	- - - - -	Comdr. Carpender
ORANGE	- - - - -	Comdr. Emmerson

Aides to Assistant for Gunnery:

Chief Scorer	- - - - -	Lt. Cdr. Moon
Gunfire Scorers	- - - - -	Comdr. Van de Carr
		Comdr. James
		Comdr. Kauffman
		Comdr. Barry
		Comdr. Hilliard
		Major Stephenson
		Major Bull
Damage Recorders	- - - - -	Capt. Stewart
		Capt. Towers
		Comdr. Riefkohl

Aides to Assistant for Submarines
and Air

- - - - -	Comdr. Coman
- - - - -	Major Hartle

PLAYER DETAIL

BLUE

OTC and Combatdiv Three	- - - - -	Comdr. Le Clair
Staff: Moves and Gunnery	- - - - -	Comdr. Gillam
Plotter and Communications	- - - - -	Major Strong
		Capt. Holeman
Comdr. Forces LBF and ComCrudiv Four	- - - - -	Comdr. Maloney
Comdr. Forces RBF	- - - - -	Capt. Benis
ComCrudiv Two	- - - - -	Comdr. Dessez
Comdesron Two	- - - - -	Cdr. Van Valkenburg
Comdesdiv Ten	- - - - -	Major Jenkins
ComAirrons	- - - - -	Comdr. Shoner
Flight Commanders	- - - - -	Comdr. Nixon
		Major Jones
		Comdr. Gray

DEMONSTRATIVE TACTICAL EXERCISE NO. 6

THIRD PLAYING

MANEUVER DETAIL

MANEUVER STAFF

Director - - - - -	Capt. MacFall
Asst. for Moves - - - - -	Comdr. Battle
Communications - - - - -	Comdr. Battle
Gunnery - - - - -	Col. Cutts
Air - - - - -	Comdr. Douglas
Torpedoes and Mines - - - - -	Comdr. Rankin
Submarines - - - - -	" "
Plotting - - - - -	" "
Ass't for Plotting - - - - -	Mr. Wilson

Aides to Assistant for Moves and Communications:

Umpires: Moves: BLUE - - - - -	Comdr. Le Clair
ORANGE - - - - -	Comdr. Hedrick
Communications: BLUE - - - - -	Comdr. Gillam
ORANGE - - - - -	Lt.Cdr. McGuigan

Aides to Assistant for Gunnery:

Chief Scorer - - - - -	Lt.Comdr. Moon
Gunfire Scorers - - - - -	Comdr. Maloney
	Comdr. Dessez
	Cdr. Van Valkenburgh
	Comdr. Waddell
	Comdr. Esler
	Comdr. Eogg
	Major Jenkins
	Major Coulter
Damage Recorders - - - - -	Capt. Holeman (MC)
	Capt. Hine (SC)
	Lt.Col. Matthews
	Comdr. Leighton

Aides to Assistant for Submarines

and Air - - - - -	Comdr. Bright
	Comdr. Riefkohl
	Major Strong
	Major Bull

PLAYER DETAIL (BLUE)

OTC and Combatdiv Three - - - - -	Capt. Richardson
Staff: Moves and Gunnery - - - - -	Comdr. Wood
Plotter and Communications - - - - -	Major Jones
	Lt.Col. Utley

Comdr. Forces LBF and ComCrudiv Four - - - - -	Comdr. Shonerd
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Comdr. Forces RBF - - - - -	Comdr. Gray
ComCrudiv Two - - - - -	Comdr. Barr

Comdesron Two - - - - -	Comdr. Smith
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Comdesdiv Ten - - - - -	Comdr. Nixon
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ComAairrons - - - - -	Capt. Bemis
Flight Commanders - - - - -	Comdr. Clement
	Comdr. Barry

ComSubdiv Twelve	- - - - -	Capt. Stewart
C.O. BARRACUDA	-- -- --	Comdr. Carpender
C.O. DOLPHIN	- - - - -	Cdr. Van de Carr
C.O. NAUTILUS	- - - - -	Major Hartle
C.O. ARGONAUT	- - - - -	Comdr. James
<i>BONITA</i>		

ORANGE

OTC and ComBatCrudiv One	- - - - -	Capt Furlong
Staff: Moves and Gunnery	- - - - -	Comdr. MacFarlane
Plotter and Communications	- - -	Major Stephenson

Comdr. Forces RBF and ComCrudiv Six	- - - - -	Comdr. Bright
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Comdr. Forces LBF and ComCrudiv Seven	- - - - -	Comdr. Cooke
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Comdesron Two	- - - - -	Comdr. Deem
Comdesron Three	- - - - -	Comdr. Zacharias

Comdesdiv Nine	- - - - -	Lt.Col. Baird
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ComAirrons	- - - - -	Comdr. Coffman
Flight Commanders	- - - - -	Comdr. Hilliard
		Comdr. Hein

Comsubdiv Ten	- - - - -	Capt. Towers
C.O. SS-17	- - - - -	Comdr. Coman
C.O. SS-18	- - - - -	Comdr. Emmerson
C.O. SS-19	- - - - -	Comdr. Kauffman

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DEMONSTRATIVE TACTICAL EXERCISE NO. 6

Assignment of Rooms and Tables

Maneuver Staff

<u>Director</u>	Desk	North Center, E Game Room
<u>Master Plot</u>		Room E-27
<u>Asst. for (Moves, etc.)</u>		Game Board
(Subs., Air, Torp.)		Room E-27
(Guns)		Room E-26

Move Umpires:

BLUE	Desk	NE Corner Game Board
ORANGE	Desk	SE " " "

Communication Umpires:

BLUE	Desk	With BLUE Move Umpire
ORANGE	Desk	With ORANGE Move Umpire

Chief Scorer and Ass'ts.

Room E-28

Damage Recorders

Room E-26

Ass'ts. for Submarines and Air

Room E-27

PLAYERS (BLUE)

OTC and Staff	<u>Table</u>	NW Corner Game Room
Comdr. RBF	"	West Side " "
Comdr. LBF	"	" " " "
Comdesron Two	"	" " " "
Comdesdiv Ten	"	" " " "
ComAirrons	"	North Side " "
Flight Commanders		E-15 and " "
ComSubdiv Twelve and		
C.O. BARRACUDA		E-11
DOLPHIN		
C.O. NAUTILUS		E-12
ARGONAUT		
BONITA		

PLAYERS (ORANGE)

OTC and Staff	<u>Table</u>	S.W. Corner Game Room
Comdr. RBF	"	West Side " "
Comdr. LBF	"	" " " "
Comdesron Two	"	" " " "
Comdesron Three	"	" " " "
Comdesdiv Nine	"	" " " "
ComAirrons	"	South " " "
Flight Commanders		C-11 and " "
ComSubdiv Ten and		
C.O. SS-Seventeen		C-12
C.O. SS-Eighteen		C-12
C.O. SS-Nineteen		C-12