Surface Torpedo Tactics: Rules & Reality

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Cold Wars 2010

Admiralty Trilogy Seminar

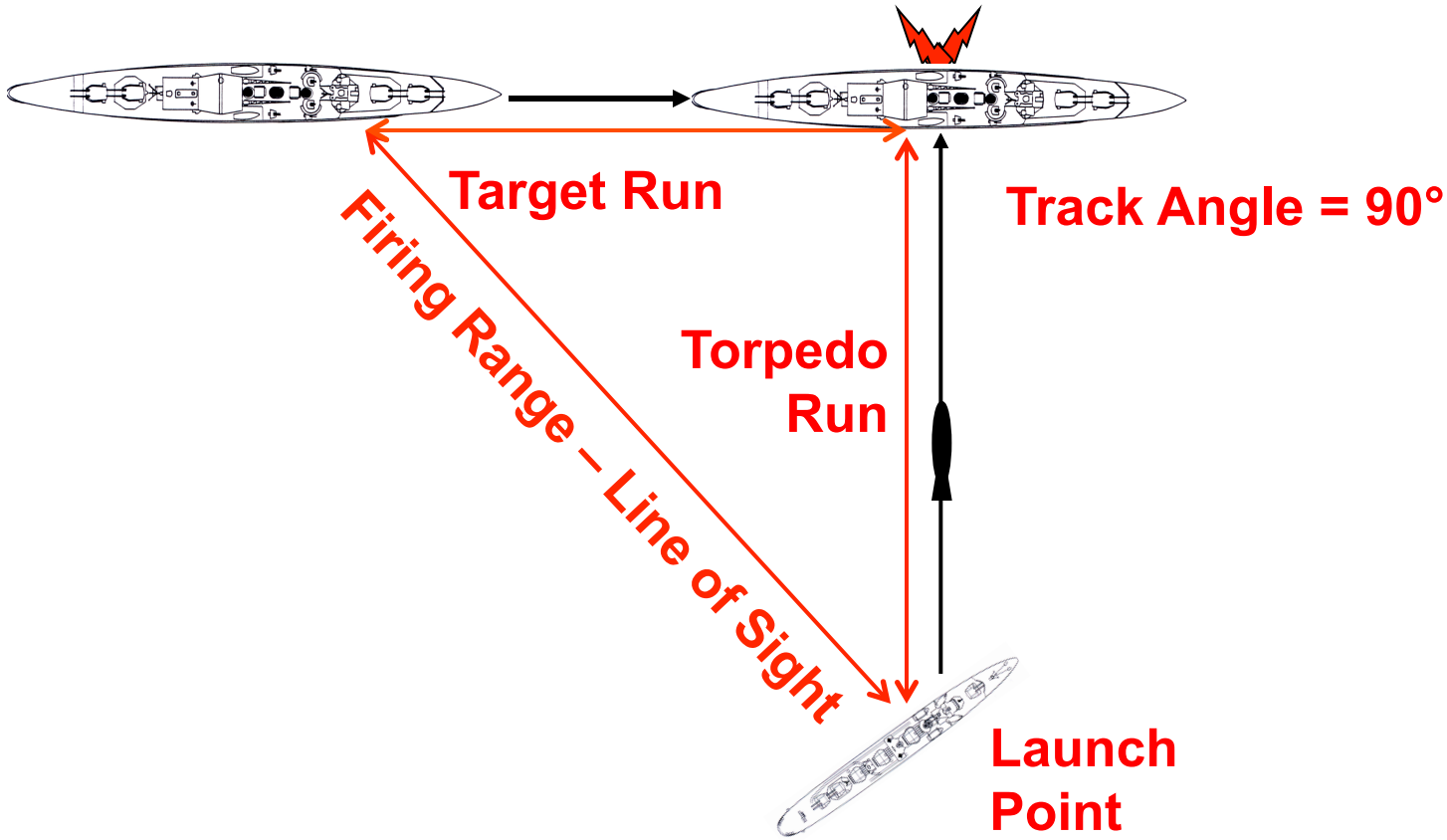
Outline

- Basic Considerations
- Planning an Attack
- Aiming the Torpedo
- What are Torpedo Tactics really all about?
- World War I
- World War 2
- Modern (not really)
- Conclusion

Torpedo Attack - Basic Considerations

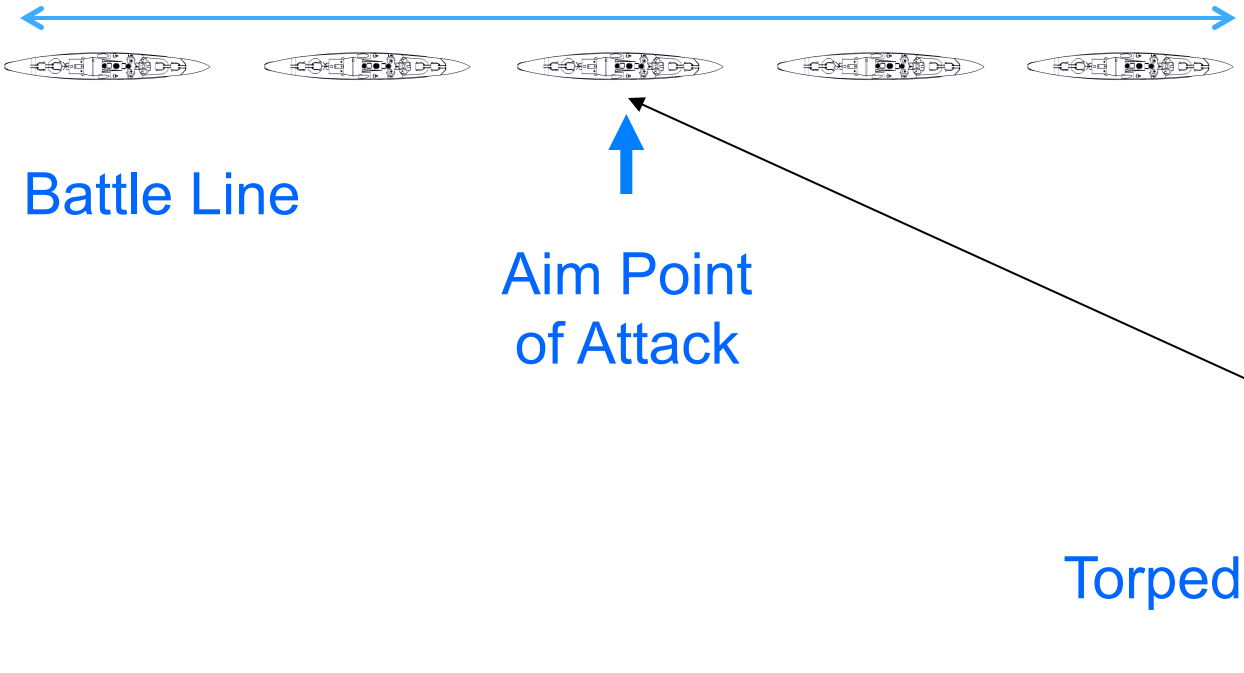
Basic Intercept Triangle

- Launch Point (Bearing and Range of Shooter to Target)
- Torpedo Run (Distance and Speed Torpedo Travels)
- Target Run (Distance and Speed Target Travels)



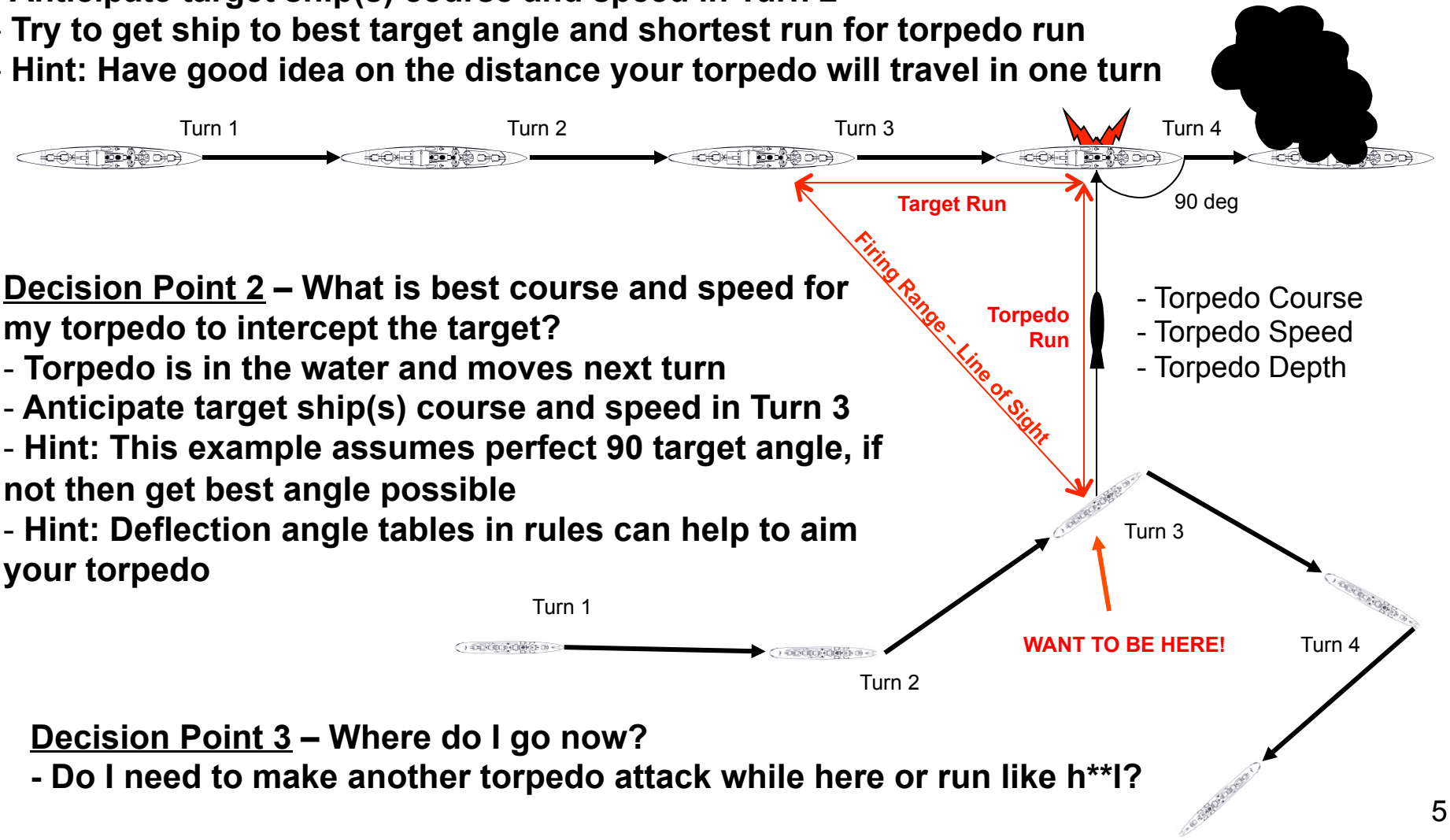
Torpedo Attack - Basic Considerations (cont.)

- Single Target vs Target Area (i.e. Battle Line)
- Single Shot vs Salvo (dispersion)
- Single Shooter vs Multiple Shooters
  - By Division
  - Separate Angles



Planning a Model Torpedo Attack

<u>Decision Point 1/Turn 1</u> – Where do I need to be for best torpedo attack?
- **Must log ship course and speed for next turn**
- **Anticipate target ship(s) course and speed in Turn 2**
- **Try to get ship to best target angle and shortest run for torpedo run**
- **Hint: Have good idea on the distance your torpedo will travel in one turn**



<u>Decision Point 2</u> – What is best course and speed for my torpedo to intercept the target?
- **Torpedo is in the water and moves next turn**
- **Anticipate target ship(s) course and speed in Turn 3**
- **Hint: This example assumes perfect 90 target angle, if not then get best angle possible**
- **Hint: Deflection angle tables in rules can help to aim your torpedo**

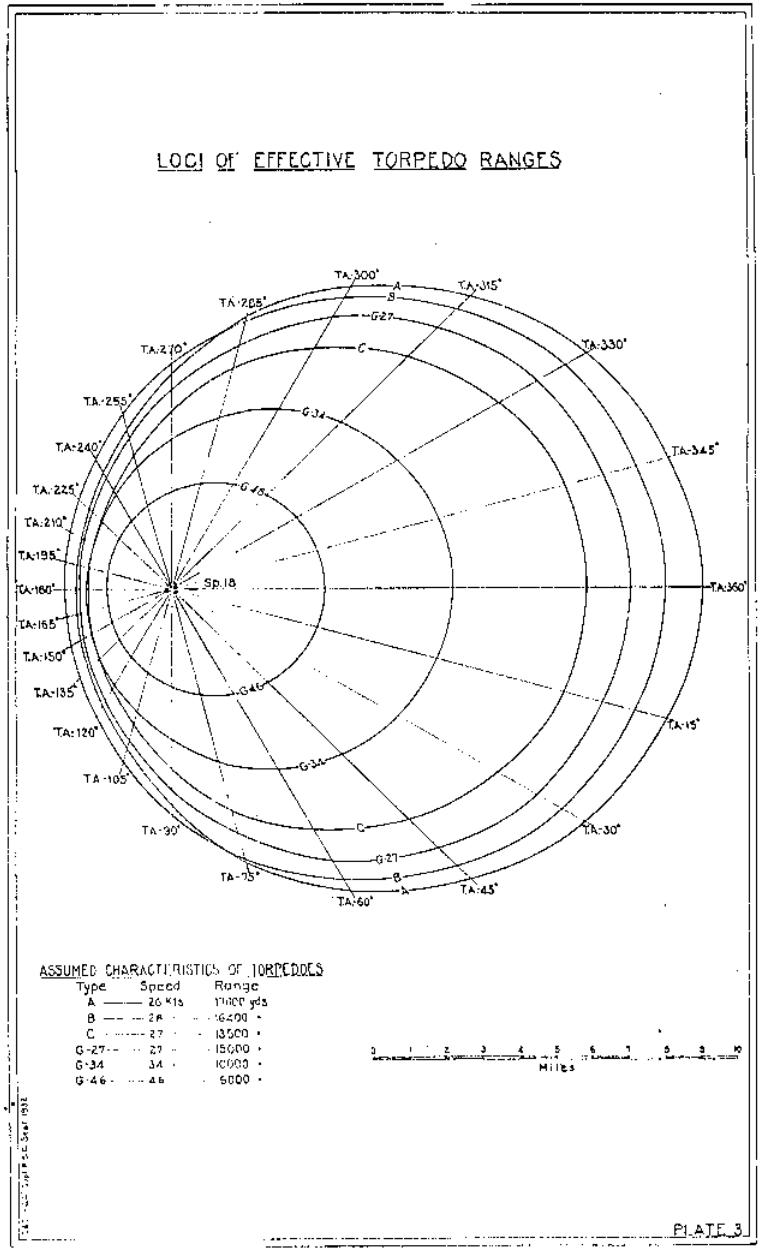
<u>Decision Point 3</u> – Where do I go now?
- **Do I need to make another torpedo attack while here or run like h**l?**

Tactics in Your Plan

How to get to Launch Point

. . . and Survive?

- Go Fast
- Zig Zag
- Make Smoke (maybe)
- Shoot Back
- Cover Fire
- Attack at Night
- Have a <u>Plan</u>

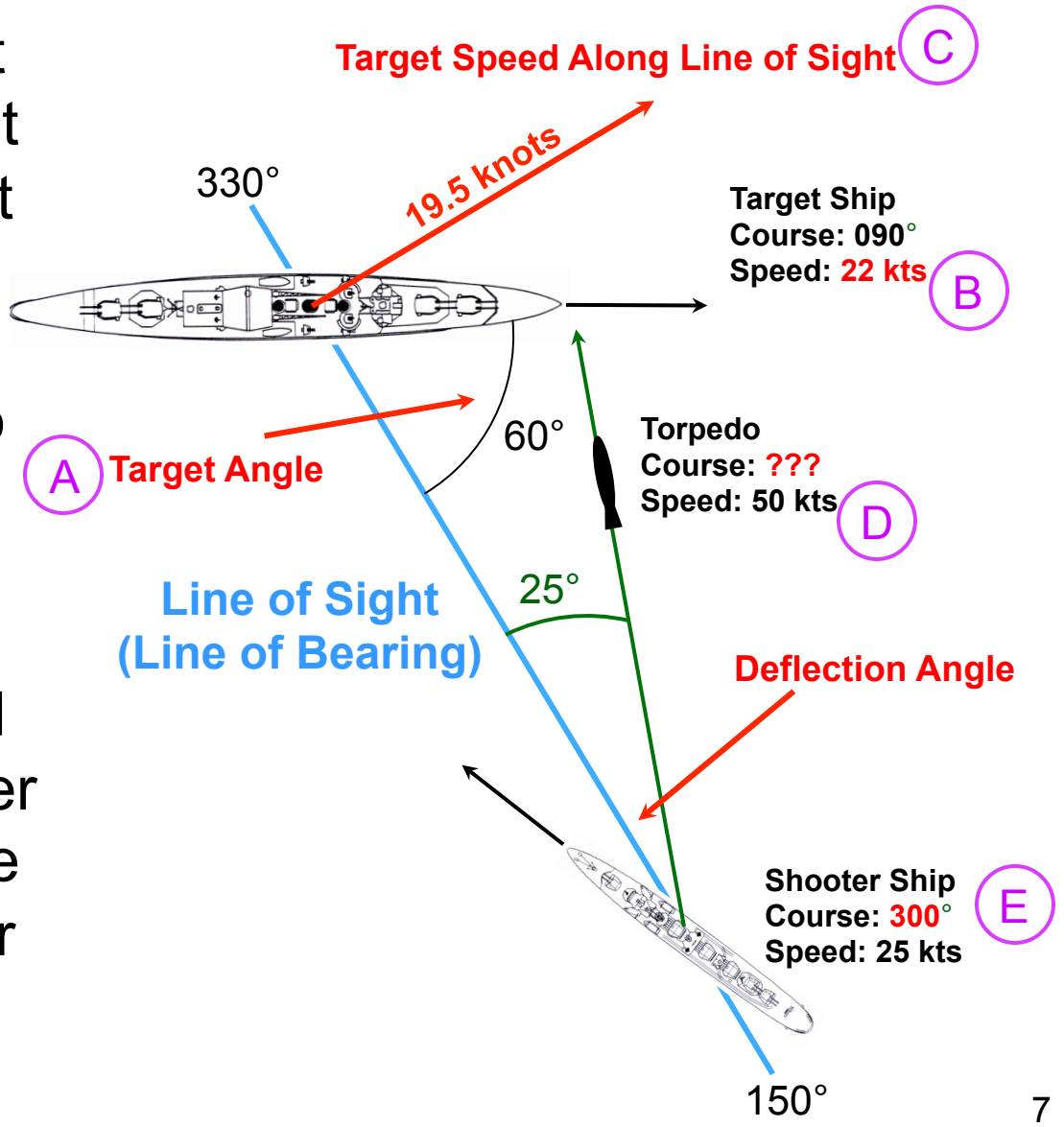


Aiming the Torpedo – From Where I am NOW

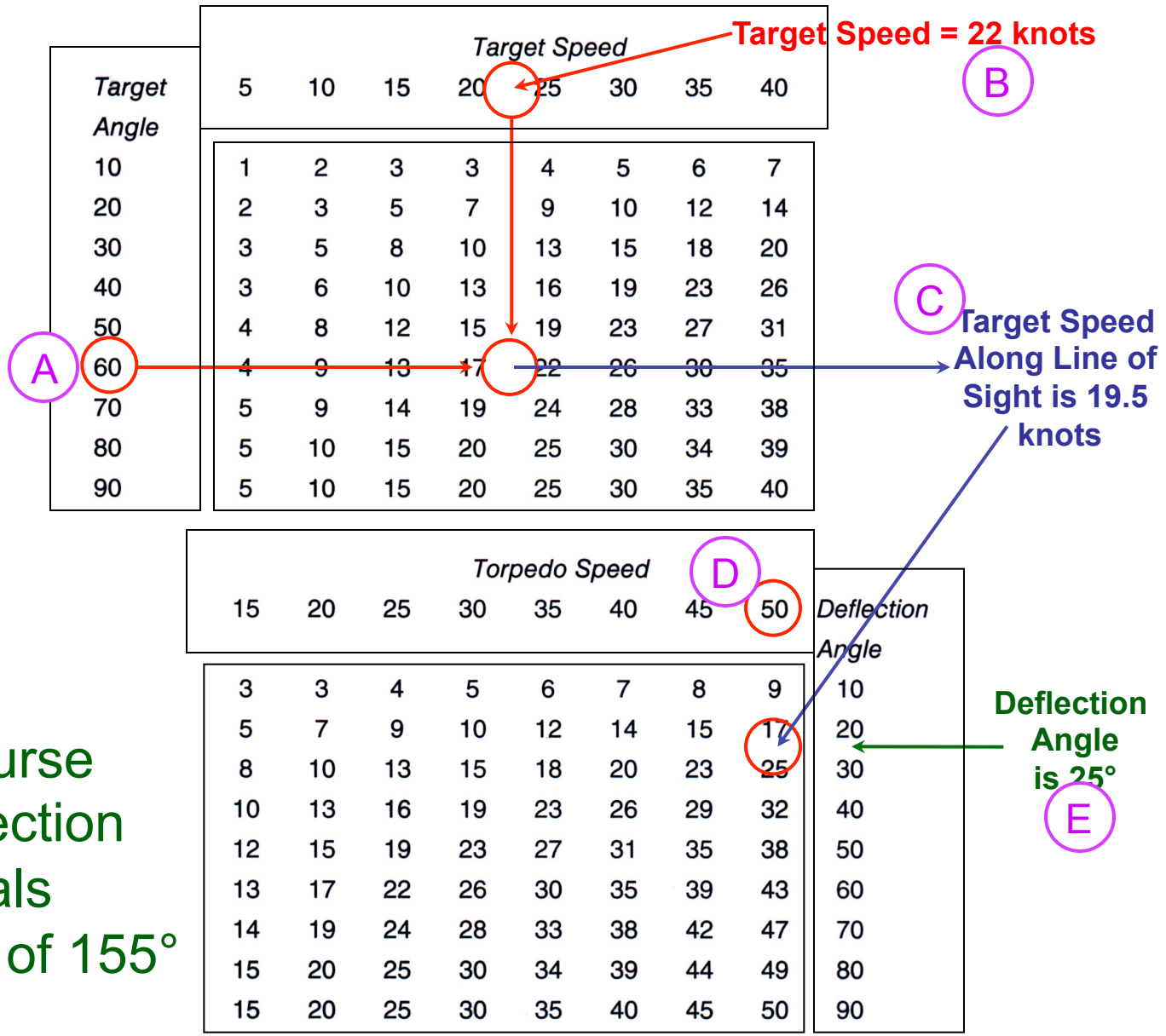
1. Target Angle and Target Speed will give you Target Speed Along Line of Sight

2. Target Speed Along Line of Sight and Torpedo Speed will give you Deflection Angle

3. Deflection Angle added or subtracted from Shooter Ship Line of Sight will give you Course of Torpedo for best intercept



Calculating the Torpedo Course



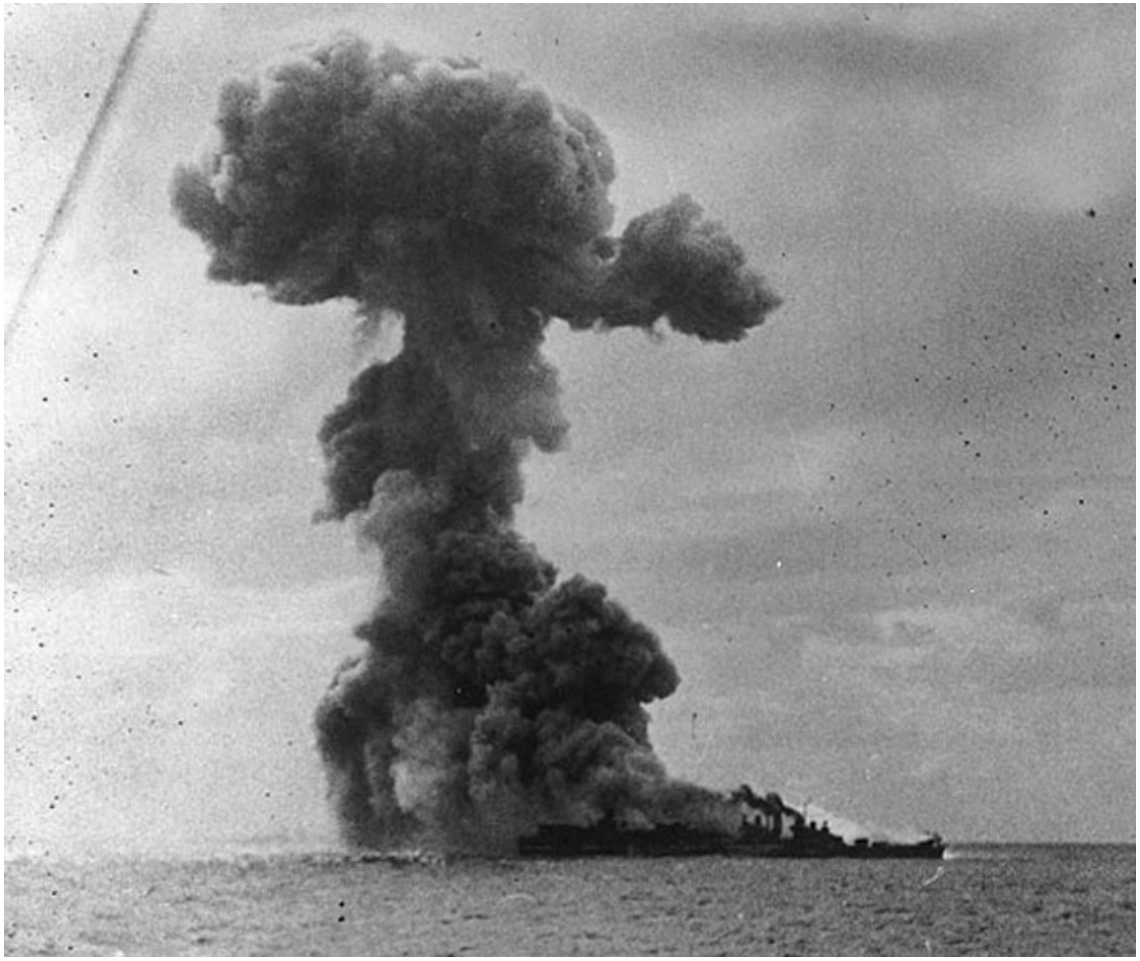
The Shooter Course (130°) plus Deflection Angle (25°) equals Torpedo Course of 155°

What are Torpedo Tactics really all about?

Reach the Target

&

Hit the Target



You Control:

- Your Ship
- Your Torpedo

Bottom Line

- Get in Position
- Shoot your Torpedoes

What are Torpedo Tactics really all about?

Tactical Considerations

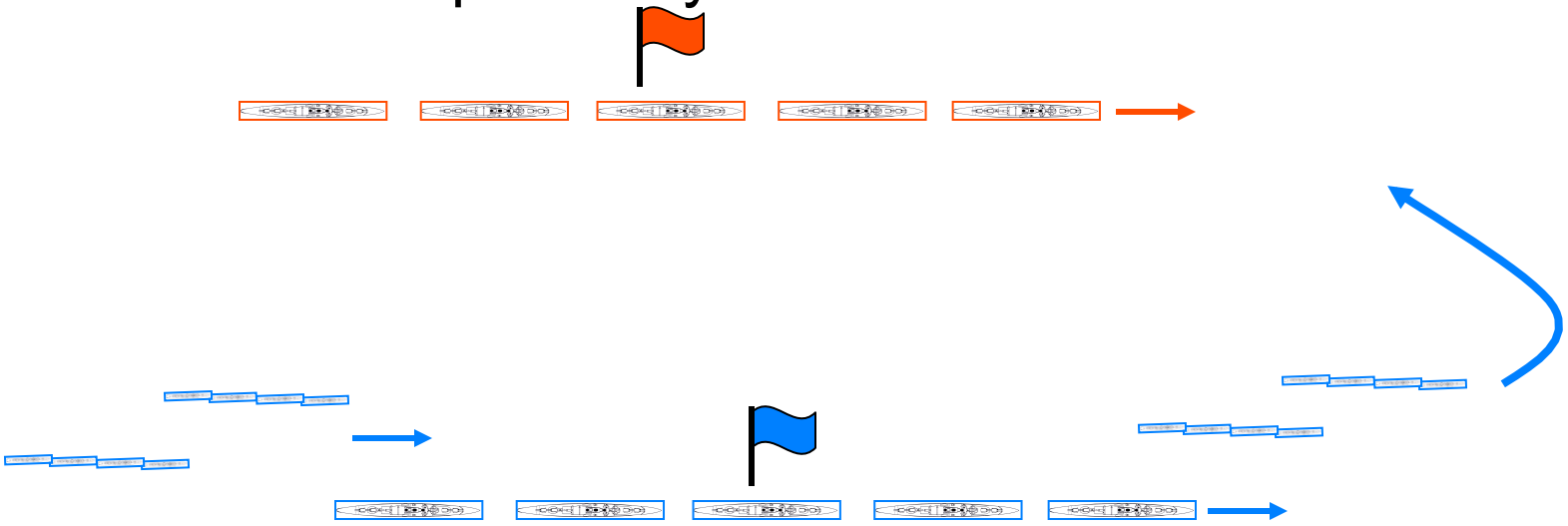
WW I	WW II
• Short range torpedoes	• Longer range torpedoes
• Smaller salvoes	• Larger salvoes
• Rudimentary Fire Control	• Computer Fire Control

Destroyers ordered to attack enemy battle line

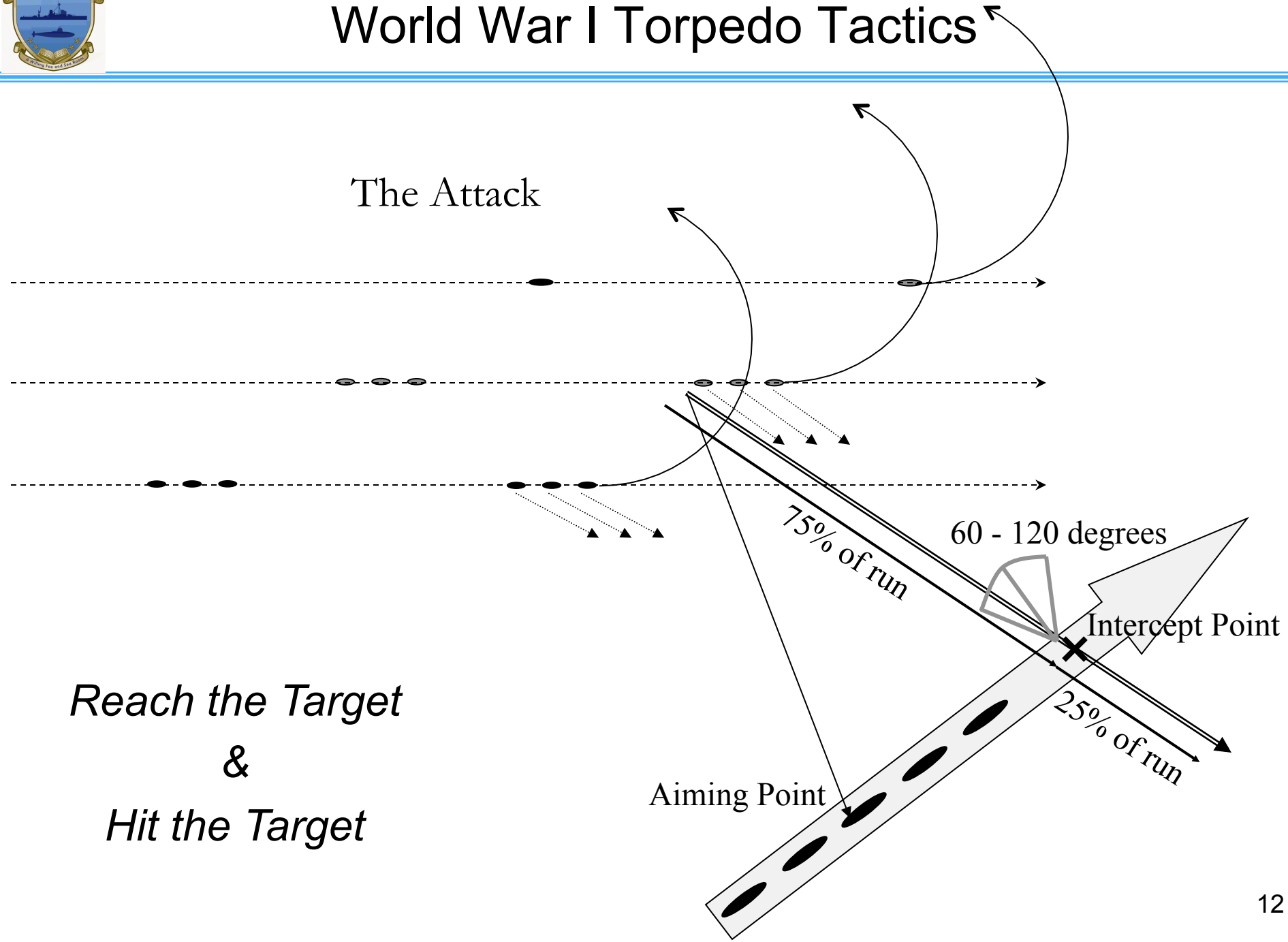
• 4 ships per Division		• 4 ships per Division
• 2(2) torpedoes per ship		• 3(4) torpedoes per ship
• 4x4 = 16 torpedoes	*Example*	• 4x12 = 48 torpedoes
• 3 Divisions per Flotilla		• Single division only
• 24 2-torpedo salvoes		• 12 4-torpedo salvoes
• Total of 48 torpedoes		• Total of 48 torpedoes

World War I Torpedo Tactics

- Flotilla Attack from Battle Formation
  - Use destroyers advanced of enemy battle line, speed to close does not need to include ‘catching up’
  - Pre-determine where attacking destroyers will go after attack
- Real attack or feint?
  - Feint can disrupt enemy battle line as bad as real attack



World War I Torpedo Tactics

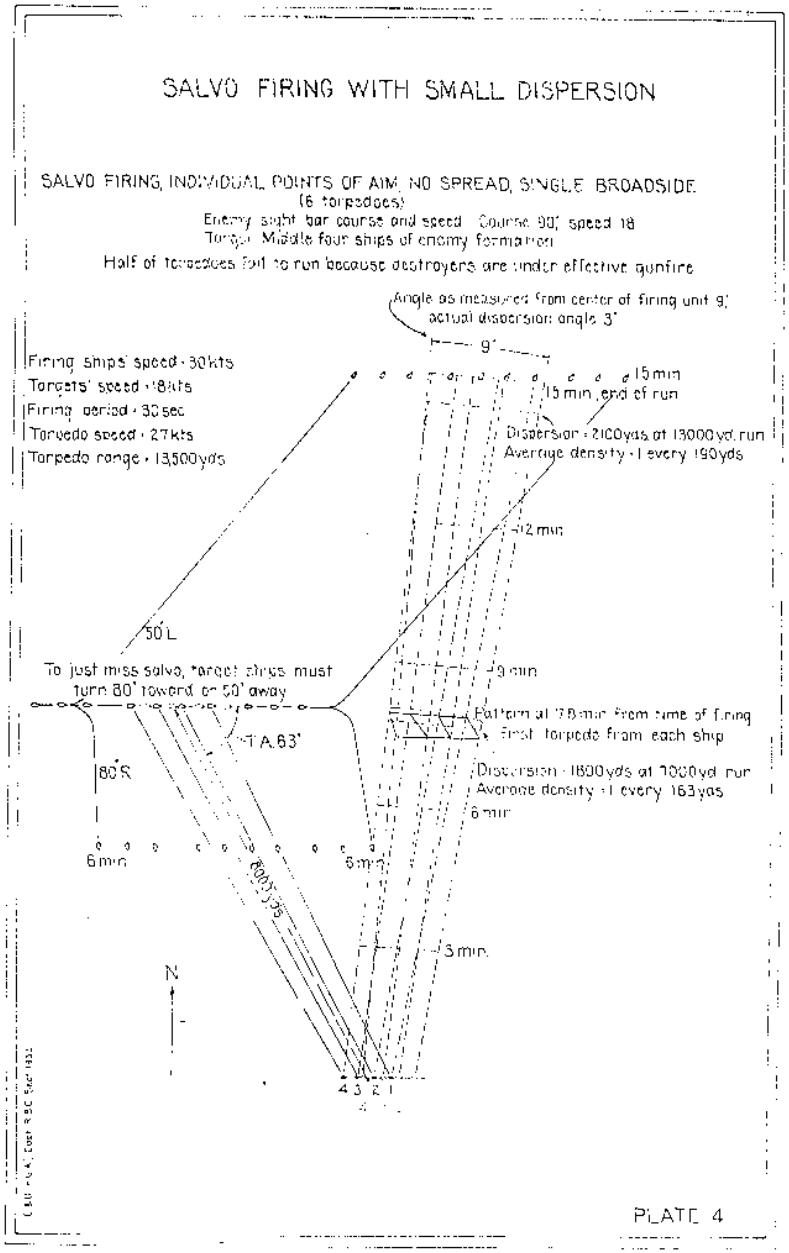


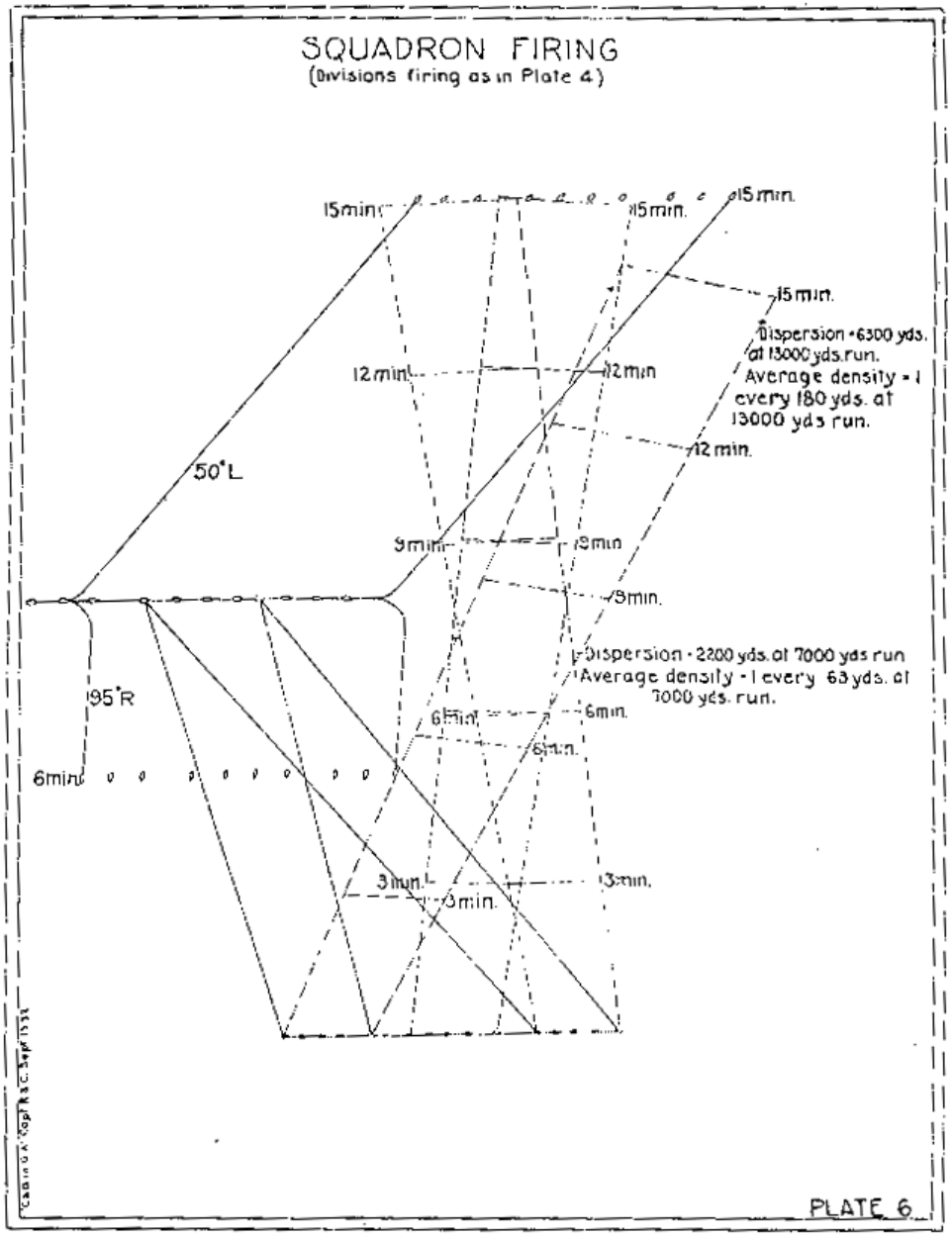
Reach the Target

&

Hit the Target

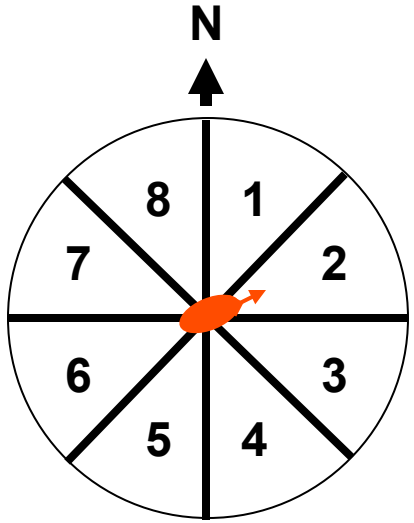
World War I Torpedo Tactics – Actual Plans

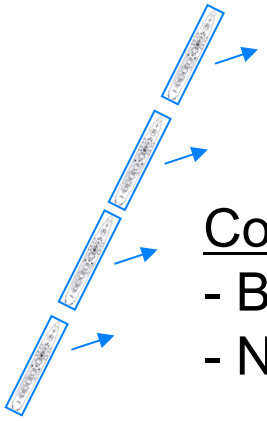




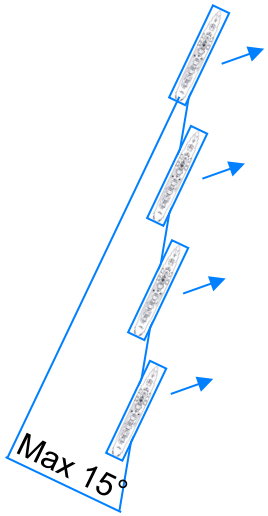
World War 2 Torpedo Tactics

- Attack by independent division (no more flotillas)
- Longer range attacks
  - Still want to be attacking off target bow
- Radar assisted if possible
  - Helps for positive target position
- Multiple attacks from different directions
  - Sector attack
- Firing Formations





Column Formation
- Best overall approach
- No risk of self-attack



Line of Bearing Formation
- Rear ship see target
- All ships can also use guns
- No more than 15° bearing

World War 2 Torpedo Tactics – Actual Plan

ATTACK PLAN:

(1) When contact is made, the senior destroyer officer will, when sufficient data have been obtained to develop the contact, designate as Division ABLE that division which can most easily reach firing position, and will release it.

(2) Each division commander will inform all ships of his division of his solution of the enemy's course and speed. Any ship of his division obtaining radically different information of enemy course and speed will inform the division commander. Division ABLE will head for an optimum position about 30° on the enemy's bow, at a distance to give about a 6,000-yard torpedo run.

(3) When the firing position is reached, Division ABLE take reverse of enemy course and fire torpedoes, as previously directed. When torpedoes are fired, immediately retire on course from 70° to 90° away from enemy course to clear enemy's most probable torpedo water. As the range opens to about 9,000 yards, come to enemy course and be prepared to cover torpedo attack of other division or to fire a second torpedo broadside. If a ship is disabled, and if practicable, she will immediately fire all remaining torpedoes at the enemy, clear of own ships, selecting a speed setting which will insure torpedoes reaching the enemy.

(4) If, during approach of Division ABLE while Division ABLE is still outside our high-speed torpedo range, there is cause to believe that the enemy has fired torpedoes and he does not open with gunfire, Division ABLE will change course away briefly to avoid enemy torpedoes and will then resume the attack. If enemy opens effective gunfire on Division ABLE before Division ABLE fires torpedoes, the Division will take up evasive maneuvers and fight its way to the torpedo firing position. Commanders of Divisions ABLE and SUGAR will keep careful plot of each other to avoid taking each other under fire.

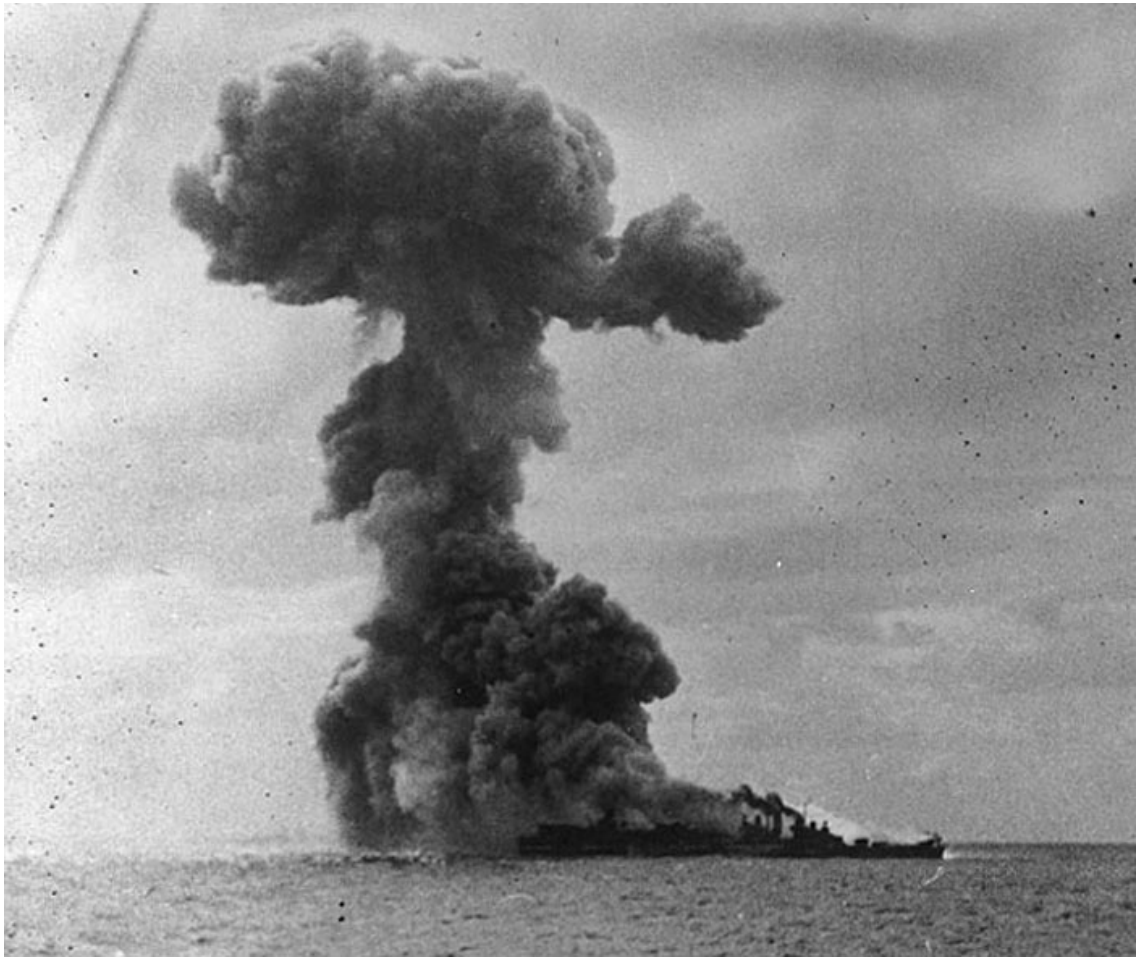
(5) Division SUGAR shall take position to support Division ABLE with gunfire and shall be alert to prevent surprise by other enemy units. After Division ABLE has fired its torpedoes, Division SUGAR will make a similar torpedo attack covered by Division ABLE. If enemy retires and pursuit action follows, ABLE and SUGAR keep each other fully informed of own movements. If enemy movement places Division SUGAR in a better position, Division SUGAR may be ordered to make the first torpedo attack in which case Division Able will assume the supporting role.

Conclusion

Want More Hits?

- Get in Closer – The quicker the torpedo gets to target, the better, less reaction time for target, less dispersion
- Shoot More Torpedoes – The more attacks you make, the better the odds of getting hits
- Attack from Different Directions – Chances for target to turn away from attack decrease if attacked from more than one angle
- Attack from the Bow – Use target's course and speed to help torpedo get to target faster

Questions?



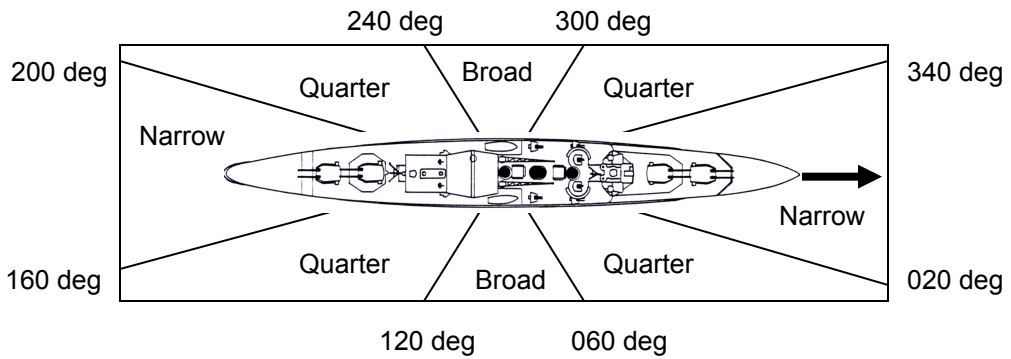
Backups/Extras

AT Rules on Torpedo Attacks

- Turn X – Aim Torpedo (6.3.1) – Along with Planned Fire, log intended course, speed and depth of torpedo for next Turn
- Turn X – Movement (6.3.1) – Shooting Ship is allowed to make one turn (per normal maneuvering limits) at the beginning of the Tactical Turn, but *afterwards* must steer in a straight line.
- Turn X – Planned Fire (6.3.1) – Place torpedo counter alongside the shooting ship
- Turn X + 1 – Movement (6.3.1) – Shooting Ship, Target Ship and Torpedo all move at logged course and speed.
- Torpedo Danger Zone (6.3.1) – Determine if torpedo gets within 500 yards of a target (like a collision)
- If within Danger Zone, chance for a hit exists - percentage is based on target angle, salvo size & distance of torpedo run

AT Rules on Torpedo Attacks (cont.)

- Target Aspect (6.3.2) – Determine the angle of torpedo attack
- Combat Results Table (CRT) (6.3.2) – Table determines the percentage chance of getting a torpedo hit



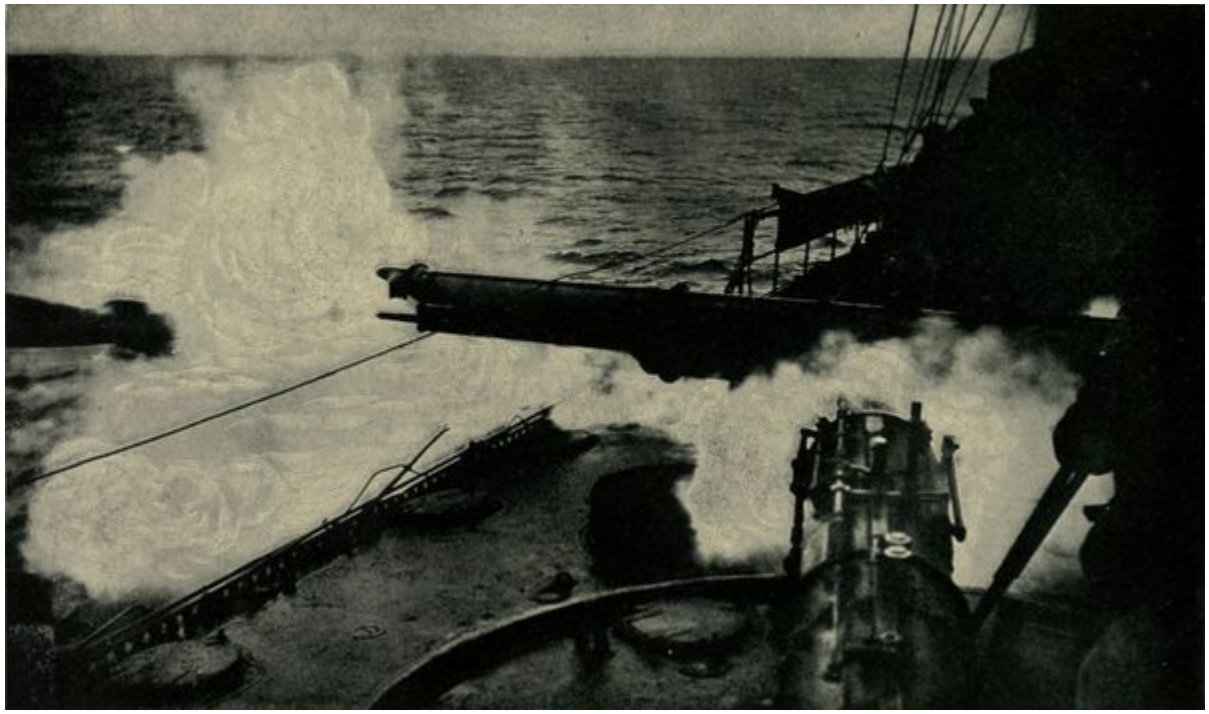
Target Aspects – Relative Bearings

Torpedo CRT Determiner

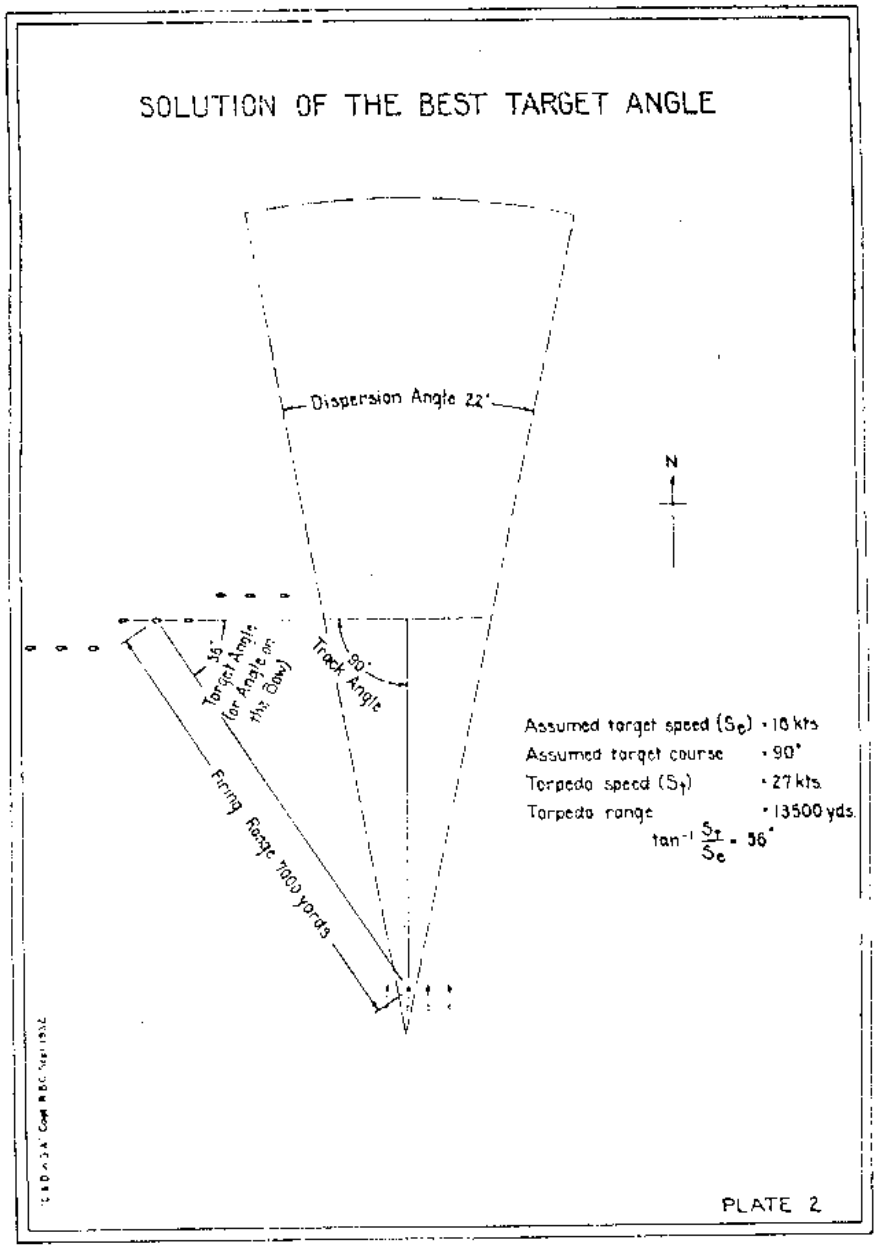
	Ship Class Size			
Aspect	A	B	C	D&E
Broad	I	II	III	III
Quarter	II	III	IV	IV
Narrow	IV	V	VI	VI

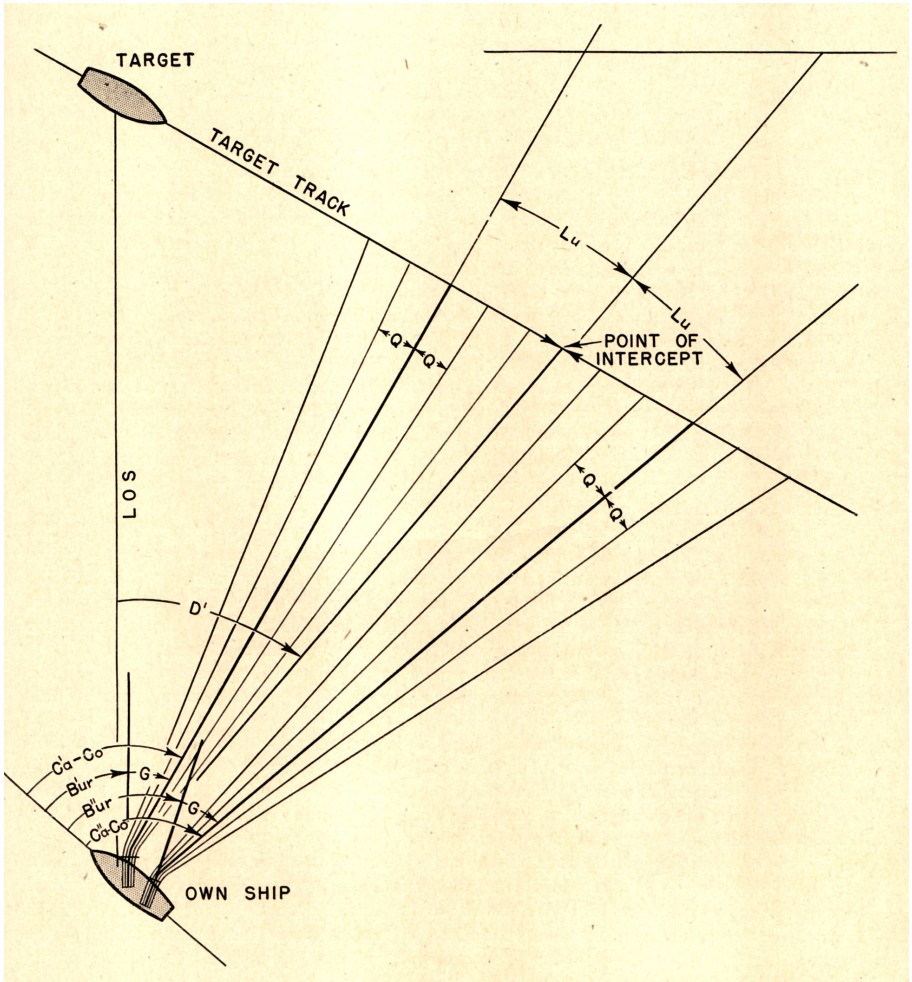
AT Rules on Torpedo Attacks (cont.)

- WW I – Possibility of Torpedo Nets (6.3.4 FGDN)
- WW II – Possibility of Homing Torpedoes (6.3.4 CaS)
- WW II – Possibility of Countermeasures (6.3.6 CaS)



Core of Torpedo Tactics





World War 2 Torpedo Developments

- Earlier advancements concentrated on propulsion and stability
- WWII improvements concentrated more on the improving accuracy and lethality
  - Electric propulsion
  - Influence (magnetic) fuze perfected
  - New explosive “Torpex” - about 1.5 times as powerful as TNT

Modern Torpedo Tactics

- Predominately used by submarines only
- Replaced by cruise missile as weapon of choice by surface ships
- Used by ships to go after submarines

Introduction to the Torpedo

- Prior to self-propelled torpedo, generic term used to cover all forms of underwater weapons and explosives
- 1775 - Early submarine *Turtle* attacked using an explosive very similar in intent and function
- 1800 –Fulton's submarine *Nautilus* - demonstrated method of attack with a floating explosive charge Fulton called a 'torpedo'
- 1860 CDR Giovanni de Luppis, developed small self-propelled boat with explosives, *Der Küstenbrander* (coastal fireship)
- 1864 - Battle of Mobile Bay - Tethered & floating contact mine defense – Farragut - "*Damn the torpedoes, full speed ahead!*"
- 1864 - CSS Hunley uses spar torpedo - first torpedo designed to attack a specific target
- 1866 - Whitehead's first "Fish" torpedo – self-propelled explosive weapon

Early Torpedoes

- 1895 - Gyros introduced
- 1870 - Depth keeping problems fixed
- 1904 - Heated propulsion plants produced an order of magnitude increase in range
  - Speed had increased by almost a factor of two
- 1910 - Wet gun cotton was replaced by TNT
  - 200 lbs of wet gun cotton replaced by 400 lbs of TNT = 4 times more deadly

Headed into World War with self-propelled torpedoes fired from sea-going surface ships

World War 2 Torpedo Developments

- Improved torpedo range
- Improved torpedo damage
- Improved torpedo accuracy
- Improved torpedo fire control

- Changed battle formations – fewer ships in a fleet, less destroyers in formation

- However, still same basic concept– launch torpedoes into water at target on intercept course to get hits

- Optimum range gets to 4-6 kyds for good chance of hits