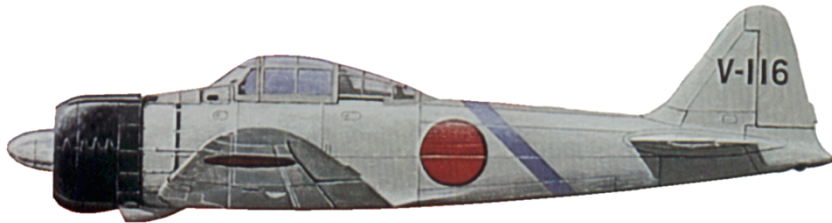


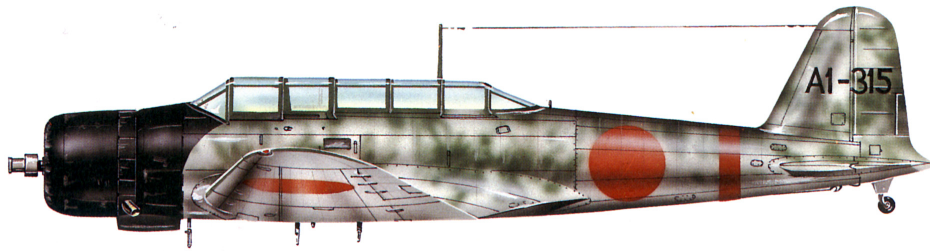


Rising Sun!

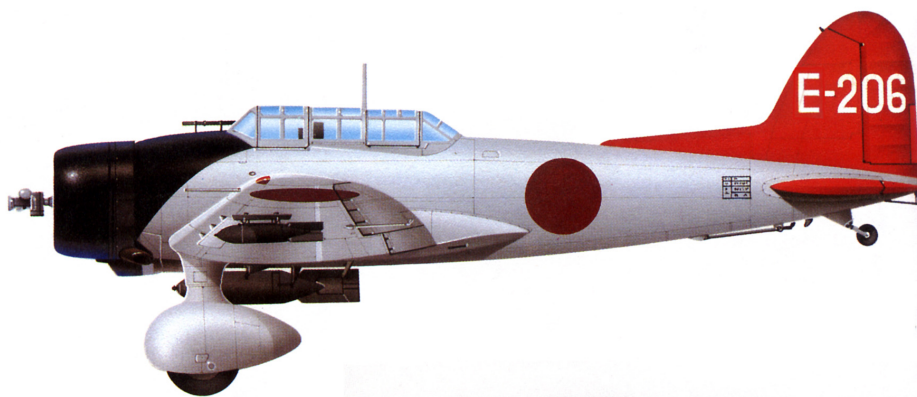
The Japanese Attack on Pearl Harbor



*Larry Bond and
Christopher Carlson*



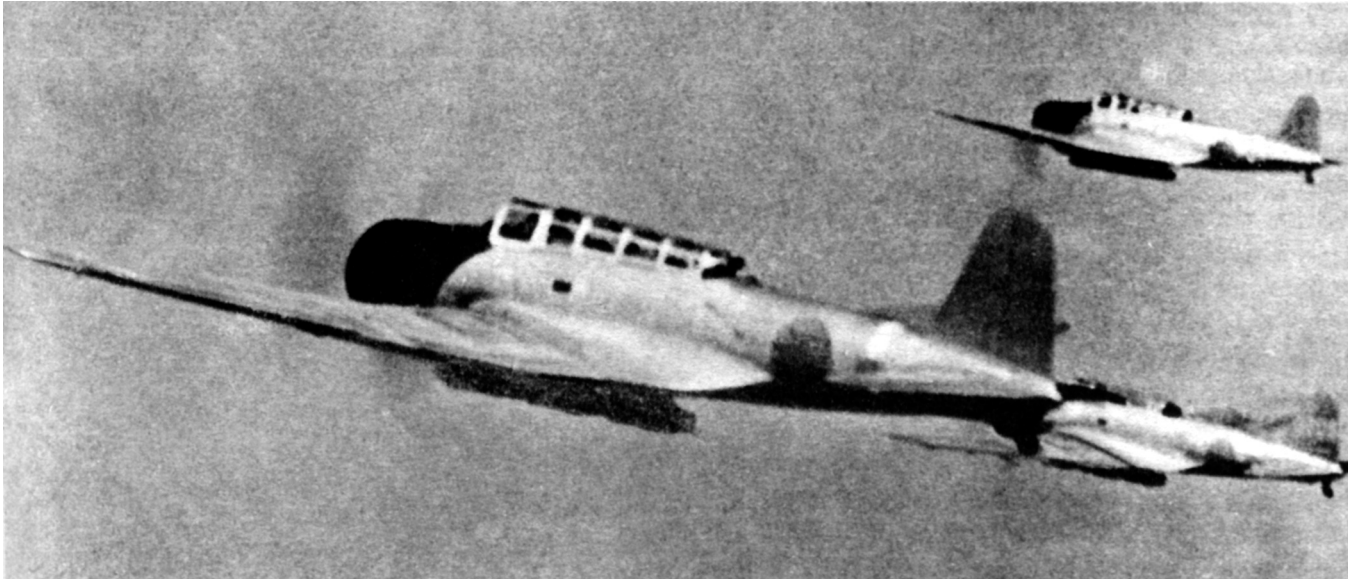
*Admiralty Trilogy Seminar
Presented by:
Clash of Arms Games*





Outline

- ◆ Target: Pearl Harbor
- ◆ Japanese naval strike force
- ◆ Japanese carrier aircraft
- ◆ Japanese air-delivered weapons
- ◆ Japanese strike organization
- ◆ Strike wave routes
- ◆ Attack results
- ◆ Alternative scenario
- ◆ Scenario assumptions



Navy Type 97 Carrier Attack Bomber, B5N2 KATE



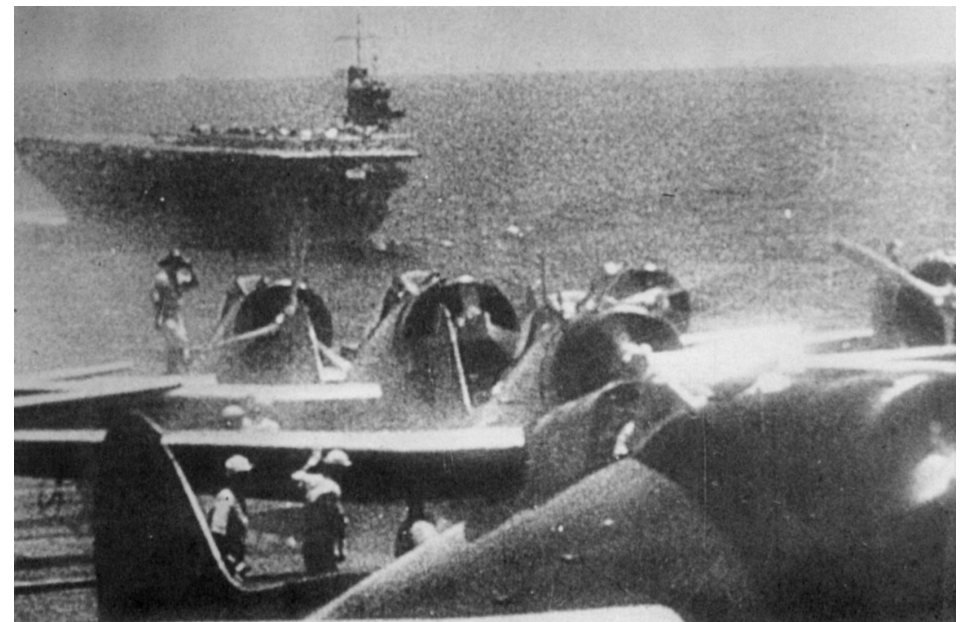
Japanese Naval Strike Force

◆ Pearl Harbor Strike Force

- Air Attack Force
 - Carrier Division 1
 - *Akagi, Kaga*
 - Carrier Division 2
 - *Hiryu, Soryu*
 - Carrier Division 5
 - *Shokaku, Zuikaku*
- Support Force
 - Battleship Division 3
 - *Hiei, Kirishima*
 - Cruiser Division 8
 - *Tone, Chikuma*
- Screen Force
 - Destroyer Squadron 1
 - Nine destroyers
- Logistics Force
 - Eight tankers
- Advanced Expeditionary Force
 - 27 submarines
 - 5 midget submarines

◆ Air Assets

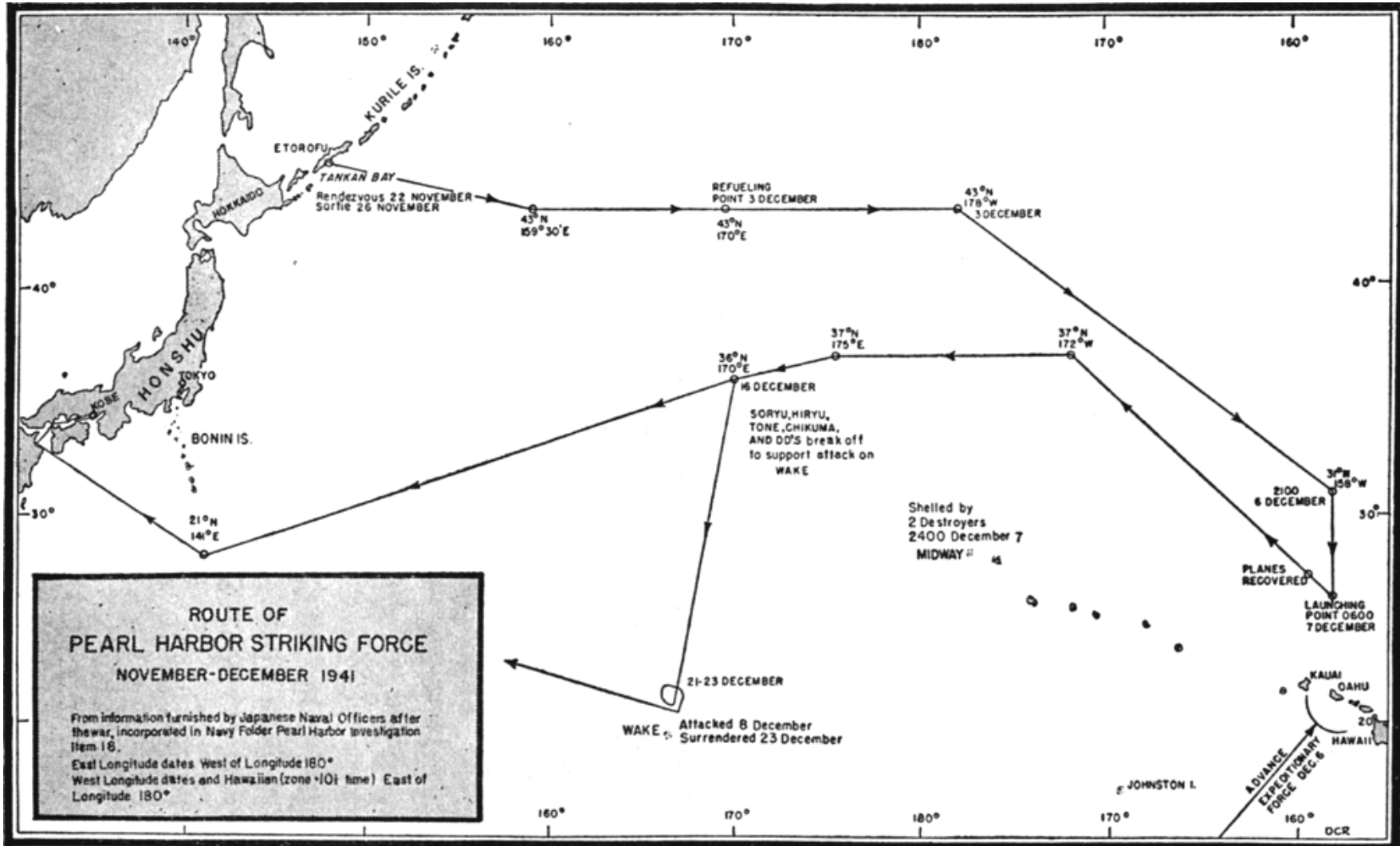
- 423 carrier-based aircraft
 - 360 assigned to Pearl Harbor attack
 - 81 Type Zero [ZEKE] fighters
 - 144 Type 97 [KATE] torpedo bombers
 - 135 Type 99 [VAL] dive-bombers
 - 54 Type Zero [ZEKE] fighters on CAP
- 13 recon float planes on BBs and CAs



Japanese B5N2 KATEs preparing to takeoff.

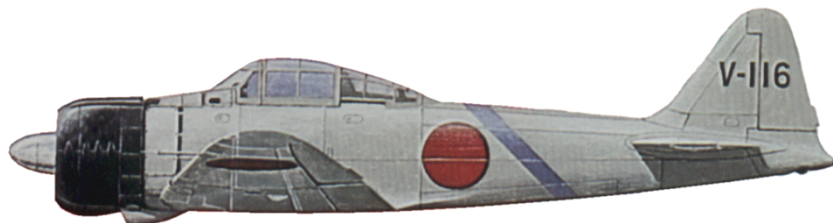
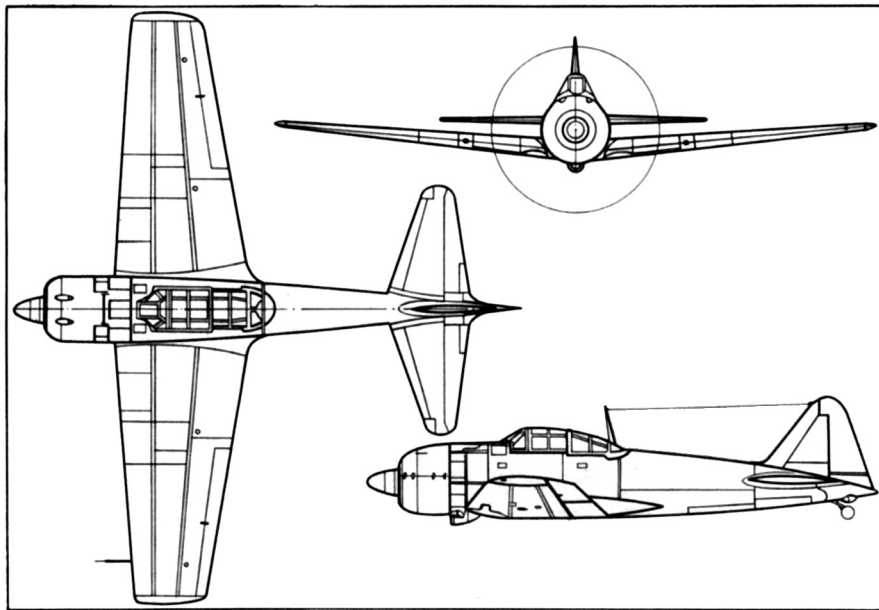


Japanese Naval Strike Force Track





Japanese Carrier Aircraft



◆ Type Zero fighter

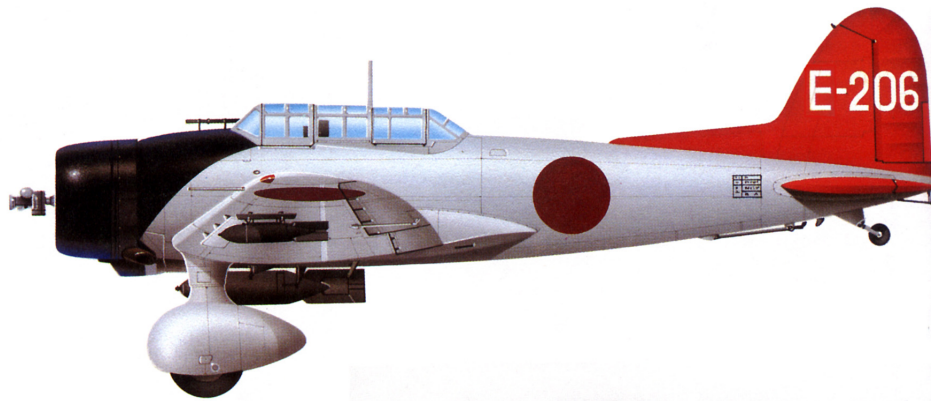
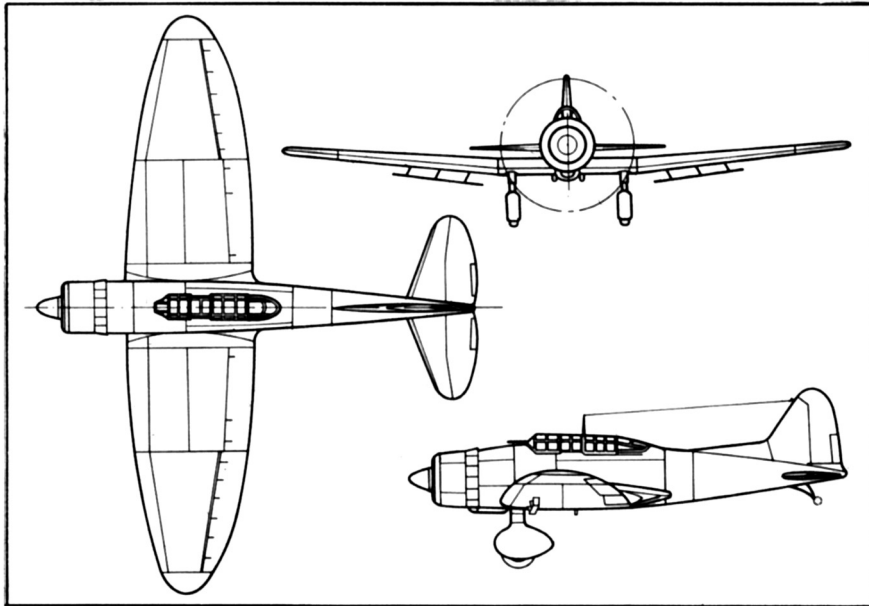
- Mitsubishi A6M2 Model 21
- Maximum Speed: 288 knots
- Combat Range: 1,010 NM
- Weapons:
 - 2 x Type 97 7.7 mm MG
 - 2 x Type 99 20 mm cannon
 - 2 x 30 kg or 60 kg bombs

◆ Disposition on December 7th

- First attack wave: 45
- Second attack wave: 36
- Combat air patrol: 54



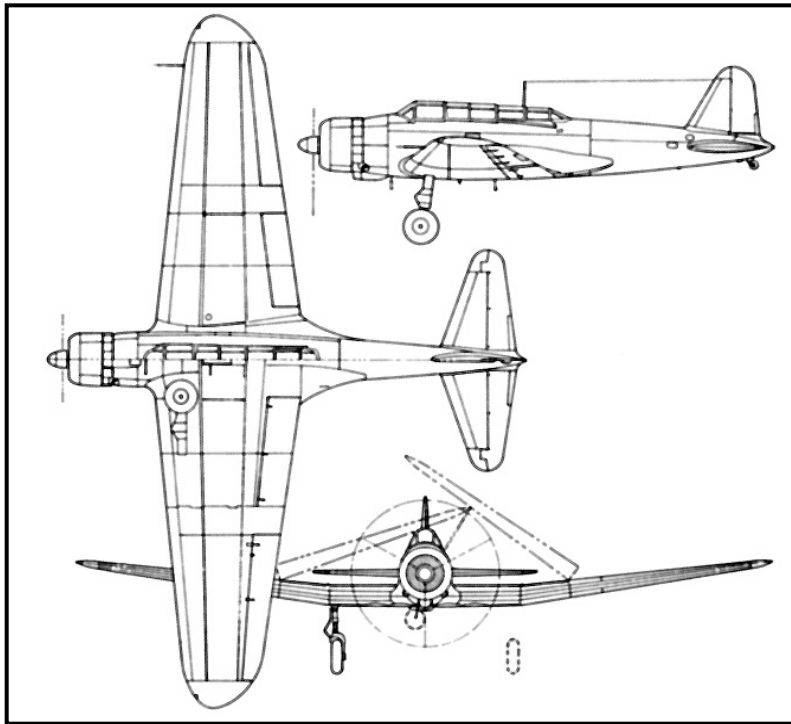
Japanese Carrier Aircraft



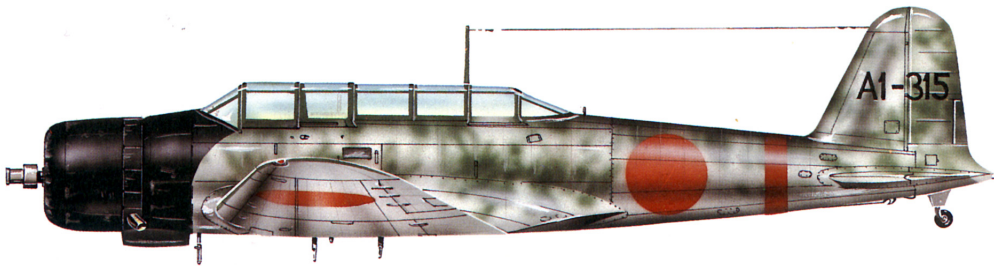
- ◆ Type 99 Model 11 dive bomber
 - Aichi D3A1
 - Maximum Speed: 244 knots
 - Combat Range: 795 NM
 - Weapons:
 - 2 x Type 97 7.7 mm MG
 - 1 x Type 92 7.7 mm flex MG
 - 1 x 250 kg and 2 x 30 kg bombs
- ◆ Disposition on December 7th
 - First attack wave: 54
 - Second attack wave: 81



Japanese Carrier Aircraft

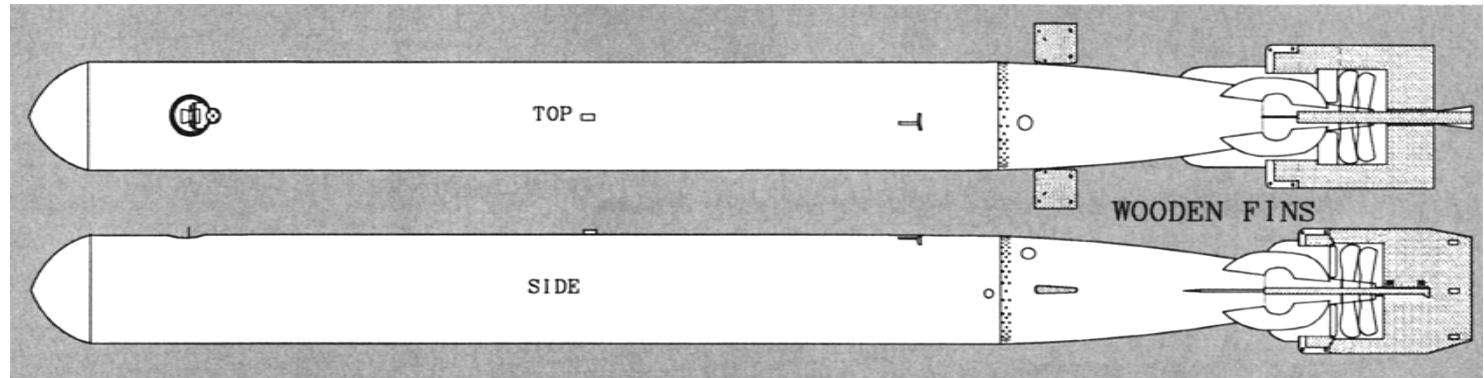


- ◆ Type 97 Model 2 torpedo bomber
 - Nakajima B5N2
 - Maximum Speed: 204 knots
 - Combat Range: 590 NM
 - Weapons:
 - 2 x Type 97 7.7 mm MG
 - 1 x Type 92 7.7 mm flex MG
 - 1 x Type 91 torpedo
 - 1 x 800 kg AP bomb
 - 1 x 250 kg and 6 x 60 kg bombs
- ◆ Disposition on December 7th
 - First attack wave: 90
 - Second attack wave: 54





Japanese Air-Delivered Weapons



◆ Type 91 Mod 2 aerial torpedo

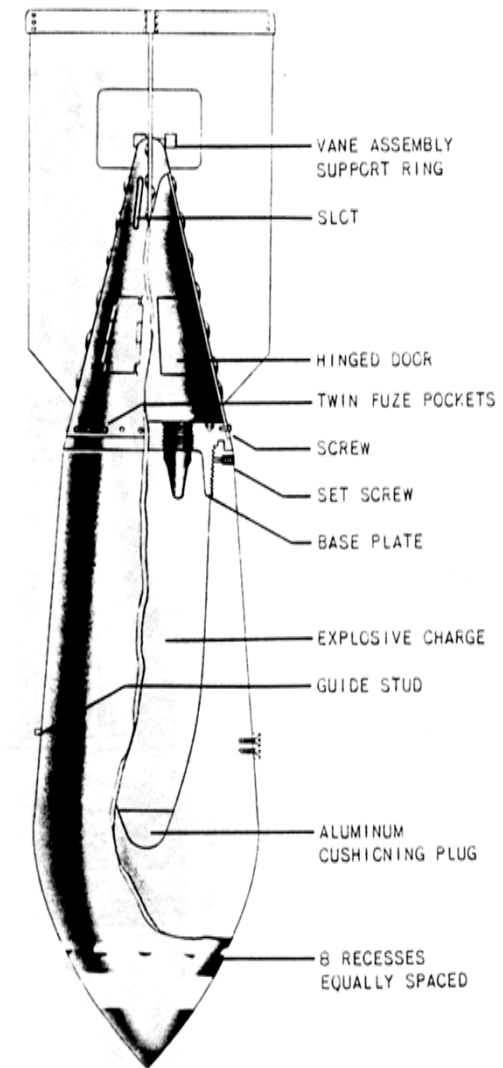
- Weight: 935 kg
- Warhead: 205 kg HE
- CaS Damage Points: 51
- Speed: 42 knots
- Range: 2,200 yards
- Specially modified for use in the very shallow waters of Pearl Harbor. Breakaway wooden fins added to help prevent the torpedo from diving too deep upon release.
- Strict release criteria: 20 meter altitude, 160 knots air speed
- Carried by 40 B5N2 KATEs in the first wave.



Japanese Air-Delivered Weapons

◆ Type 99 No. 80 Mk 5

- Ordnance Type: Armor-piercing bomb
- Weight: 797 kg
- Warhead: 30 kg HE
- CaS Damage Points: 10
- Armor Penetration DB: 8/10
- Armor Penetration LB: 8/15/17
- Modified 16 inch armor-piercing shell. Very low explosive loading.
- Carried by 50 B5N2 KATEs in the first wave



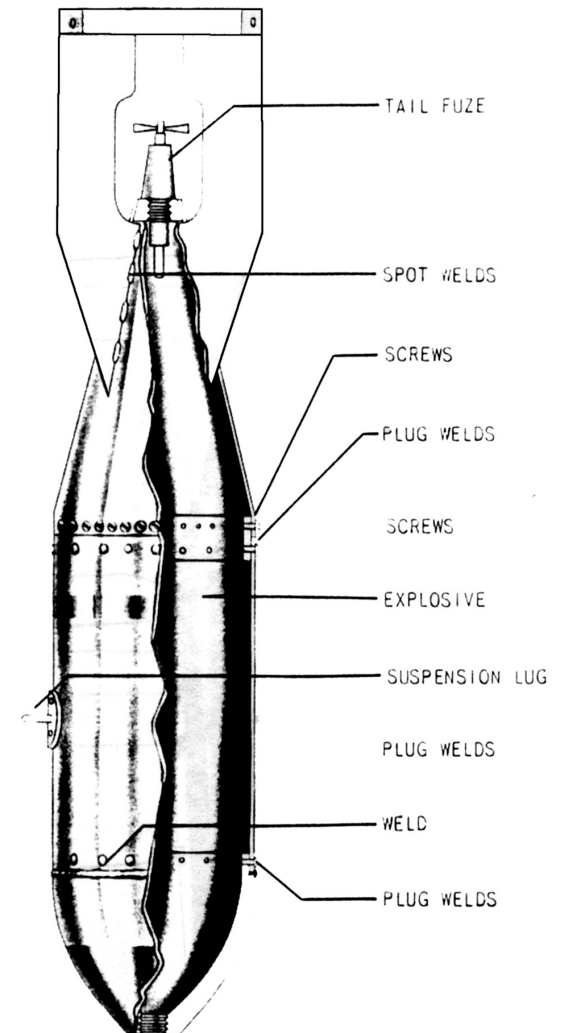
Type 99 No. 80 Mk 5 Bomb.



Japanese Air-Delivered Weapons

◆ No. 25 Land Bomb

- Ordnance Type: General purpose bomb
- Weight: 250 kg
- Warhead: 150 kg HE
- CaS Damage Points: 30
- Armor Penetration DB: NA
- Armor Penetration LB: 3/3/3
- Probably carried by 54 D3A1 VALs in the first wave.
- Probably carried by 54 B5N2 KATEs in the second wave.
- Less likely option is the Type 98 No. 25.

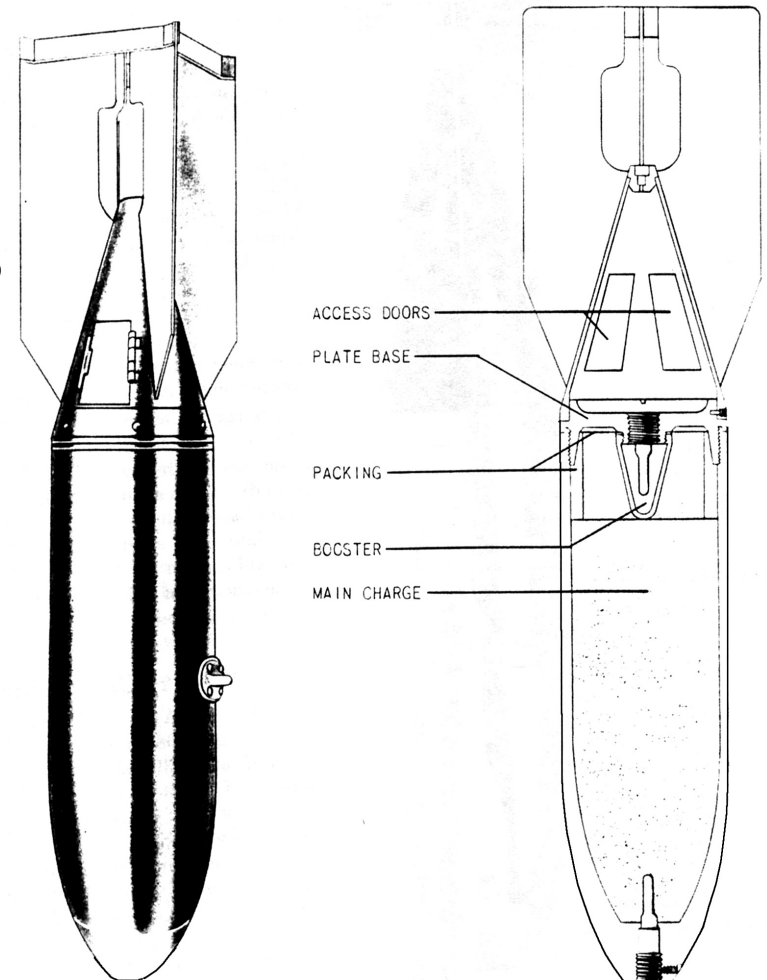


No. 25 Land Bomb



Japanese Air-Delivered Weapons

- ◆ Type 99 No. 25 Model 1 Ordinary Bomb
 - Ordnance Type: Semi-armor piercing bomb
 - Weight: 250 kg
 - Warhead: 60 kg HE
 - CaS Damage Points: 20
 - Armor Penetration DB: 6/7
 - Armor Penetration LB: 6/9/9
 - Probably carried by 81 D3A1 VALs in the second wave.
 - Less likely option is the No. 25 Ordinary Bomb Model 2.

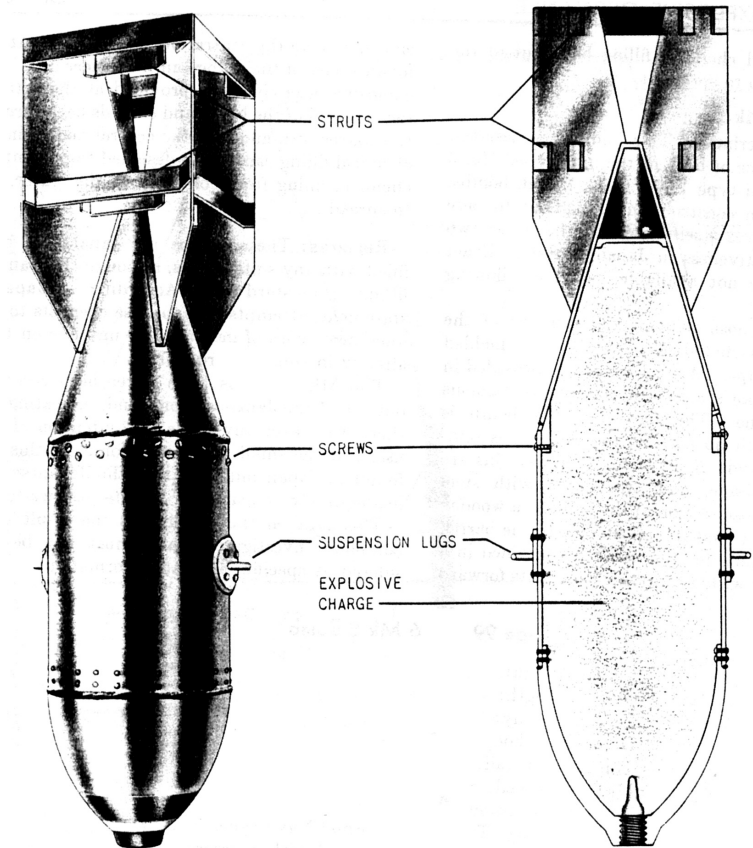


Type 99 No. 25 Ordinary Bomb Model 1.



Japanese Air-Delivered Weapons

- ◆ Type 99 No. 6 Mk 2 Ordinary Bomb
 - Ordnance Type: Anti-ship bomb
 - Weight: 69 kg
 - Warhead: 39 kg HE
 - CaS Damage Points: 7
 - Armor Penetration DB: NA
 - Armor Penetration LB: 2/2/2
 - Possibly carried by 54 B5N2 KATEs in the second wave.
 - Other option is the No. 6 Ordinary Bomb Model 2.



Type 99 No. 6 Mk 2 Bomb.



Japanese Strike Organization

AIRCRAFT ATTACK ORGANIZATION

UNIT		COMMANDER	TYPE OF AIRPLANE	NUMBER OF AIRPLANES	TYPE OF ATTACK	ARMAMENT EACH AIRPLANE	TARGET																	
FIRST ATTACK UNIT	1 GROUP SHUDANG	COMDR. FUCHIDA	TYPE 97 CARRIER ATTACK PLANE (Correction from original table.)	15	HORIZONTAL BOMBING ATTACK	ONE 800-KG. ARMOR PIERCING BOMB	BATTLESHIPS																	
		LT. COMDR. HASHI GUCHI		15																				
		LT. ABE		10																				
		LT. COMDR. KUSUMI		10																				
	LT. COMDR. MURATA	12																						
	LT. KITAJIMA	12																						
	LT. NAGAI	8																						
	LT. MATSUMURA	8																						
	1 SPECIAL ATTACK UNIT	COMDR. FU- CHIDA		TYPE 99 CARRIER BOMBER	27	54	TORPEDO ATTACK	ONE 800-KG. AERIAL TORPEDO	BATTLESHIPS AIRCRAFT CARRIERS															
	2 SPECIAL ATTACK UNIT									27														
	3 SPECIAL ATTACK UNIT				LT. COMDR. ITAYA	TYPE ZERO CARRIER FIGHTER	9	45	DIVE BOMBING ATTACK	250-KG. LAND BOMB	AIR BASES FORD ISLAND WHEELER													
	4 SPECIAL ATTACK UNIT											9												
	2 GROUP	15 ATTACK UNIT	LT. COMDR. TAKAHASHI	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED PLANES. FORD ISLAND HICKHAM WHEELER EWA KANEHOE																
		16 ATTACK UNIT	LT. SAKAMOTO						9															
	3 GROUP	1 FIGHTER STRIKING UNIT	LT. SHIGA	TYPE ZERO CARRIER FIGHTER	6	HORIZONTAL BOMBING ATTACK	ONE 250-KG. LAND BOMB. SIX 60-KG. ORDINARY BOMBS	AIR BASES HICKHAM KANEHOE FORD ISLAND EWA																
2 FIGHTER STRIKING UNIT		LT. SUGANAMI	LT. COMDR. EGUSA						TYPE 99 CARRIER BOMBER	18	DIVE BOMBING ATTACK	ONE 250-KG. ORDINARY BOMB	AIRCRAFT CARRIERS CRUISERS											
3 FIGHTER STRIKING UNIT		LT. OKAJIMA												LT. COMDR. SHIMAZAKI	TYPE 97 CARRIER ATTACK PLANE	27	HORIZONTAL BOMBING ATTACK	ONE 250-KG. LAND BOMB. SIX 60-KG. ORDINARY BOMBS	AIR BASES HICKHAM KANEHOE FORD ISLAND EWA					
4 FIGHTER STRIKING UNIT		LT. KANEKO																		LT. ICHIHARA	27	DIVE BOMBING ATTACK	ONE 250-KG. ORDINARY BOMB	AIRCRAFT CARRIERS CRUISERS
5 FIGHTER STRIKING UNIT		LT. SATO																						
1 GROUP	6 ATTACK UNIT	LT. COMDR. SHIMAZAKI	TYPE 97 CARRIER ATTACK PLANE	27	HORIZONTAL BOMBING ATTACK	ONE 250-KG. LAND BOMB. SIX 60-KG. ORDINARY BOMBS	AIR BASES HICKHAM KANEHOE FORD ISLAND EWA																	
	5 ATTACK UNIT	LT. ICHIHARA						LT. COMDR. EGUSA	TYPE 99 CARRIER BOMBER	18	DIVE BOMBING ATTACK	ONE 250-KG. ORDINARY BOMB	AIRCRAFT CARRIERS CRUISERS											
	2 GROUP	13 ATTACK UNIT												LT. KOBAYASHI	LT. COMDR. SHIMAZAKI	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED AIRPLANES HICKHAM FORD ISLAND WHEELER KANEHOE				
		14 ATTACK UNIT												LT. CHIHAYA							LT. SHINDO	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK
11 ATTACK UNIT		LT. MAKINO	LT. NIKAIODO	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED AIRPLANES HICKHAM FORD ISLAND WHEELER KANEHOE																
12 ATTACK UNIT	LT. SHINDO	LT. NONO							TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED AIRPLANES HICKHAM FORD ISLAND WHEELER KANEHOE											
3 GROUP	1 FIGHTER STRIKING UNIT		LT. NIKAIODO	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED AIRPLANES HICKHAM FORD ISLAND WHEELER KANEHOE																
	2 FIGHTER STRIKING UNIT	LT. IIDA	LT. COMDR. SHIMAZAKI						TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED AIRPLANES HICKHAM FORD ISLAND WHEELER KANEHOE											
	3 FIGHTER STRIKING UNIT	LT. NONO												LT. SHINDO	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.	1. AIRBORNE AIRPLANES 2. STRAFING OF GROUNDED AIRPLANES HICKHAM FORD ISLAND WHEELER KANEHOE					
	4 FIGHTER STRIKING UNIT	LT. NONO																		LT. SHINDO	TYPE ZERO CARRIER FIGHTER	9	AIR CONTROL AND STRAFING ATTACK	TWO 20-MM MGS. TWO 7.7-MM MGS.



Attack Results

- ◆ Japanese strike had complete surprise
- ◆ Little resistance from US forces
- ◆ US Losses
 - 4 x BBs sunk
 - 3 x BBs heavily damaged
 - 1 x BB damaged
 - 3 x CLs damaged
 - 3 x DDs sunk
 - 155 aircraft
 - 2,403 killed
 - 1,178 wounded
- ◆ Japanese Losses
 - 29 aircraft
 - 1 I-Type submarine
 - 5 midget submarines



USS West Virginia and USS Tennessee burning after the attack



Alternative Scenario

- ◆ The attack on Pearl Harbor allows for a number of “what if” scenarios
 - What if the US forces were ready for the Japanese attack
 - Numerous indications and warning of an impending attack
 - Better defenses vs almost none
 - US ships at General Quarters with 100% AA guns manned and Condition Z set, preparations to get underway
 - US Army AA batteries deployed and manned
 - Land-based fighter opposition



SCR-270-B radar antenna



Alternative Scenario Assumptions

Pearl Harbor Timeline:

0600 - Japanese striking force begins launching the first wave (230 nm north of Oahu).
0620 - 1st wave starts on its way to Oahu.
0626 - Civil Twilight
0633 - A PATWING TWO PBY-5 detects a midget submarine trailing *USS Antares*, drops smoke markers.
0637 - *USS Ward* spots midget submarine.
0645 - *USS Ward* engages midget submarine.
0654 - *USS Ward* notifies Commander, 14th Naval District.
0656 - Sunrise
0702 - Army SCR-270 radar at Opana Station, Kahuku Point detects a large echo bearing approximately north at a range of 118 nm.
0712 - *Ward* report reaches Commander, 14th Naval District Duty Officer. Requests confirmation.
0715 - Japanese striking force begins launching the second wave.
0730 - Japanese striking force arrives at its holding area 200 nm North of Oahu.
0732 - PATWING TWO confirms the sighting of a midget submarine.
0740 - 1st wave sights coast of Oahu and begins deploying the attack groups. Opana radar station loses 1st wave due to ground clutter interference.
0750 - 1st wave begin attack runs.
0755 - 1st wave begins attack on Ford Island. (Phase I)
0756 - 1st wave torpedo bombers begin runs on battleship row.
0758 - First alert message sent from Pearl Harbor
“Air Raid, Pearl Harbor - This is no drill.”
0825 - Phase I ends (torpedo attacks and attacks against airfields).
0825 - 0840 - Phase II: Lull in the action.
0840 - Phase III attacks begin (high-level bombing attacks on Pearl Harbor)
0850 - 2nd wave sights coast of Oahu and begins deploying the attack groups.
0855 - 2nd wave begin attack runs.
0915 - Phase III ends and Phase IV begins (high-level and dive bombing attacks on Pearl Harbor).
0945 - Phase IV attacks end.

- ◆ Stark issues another warning on 6 Dec, instead of vacillating
- ◆ Kimmel and Short keep their staffs alert, rather than growing complacent with the numerous alerts and warnings
- ◆ The PATWING TWO PBY-5 reports the presence of a submarine expeditiously
- ◆ *USS Ward* reports sighting its submarine expeditiously
- ◆ 14th Naval District Staff is more competent in turning the reports around into warning orders
- ◆ The Opana radar station report is believed and acted on