


By  
Larry Bond

GDW 0715

Author of the best-selling *Red Phoenix*

# DATA ANNEX

  
HARPOON



**GDW**

**HARPOON**® SHIP, SUB, AIRCRAFT, WEAPONS  
AND ELECTRONICS DATA

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*Larry Bond*

# **HARPOON**

**Modern ● Naval ● Wargame ● Rules**

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**1990-91 DATA ANNEX**

1990-91 **Data Annex** is an updated version of the *Data Annex* included with the boxed **Harpoon** game and supercedes that book. 1990-91 **Data Annex** does not stand on its own; you must have **Harpoon** to use it. The data and rules provided here bring **Harpoon** up to edition 3.2 standards.

Designed by Larry Bond.  
Art Direction by Amy Doubet.  
Cover Painting by Steve Venters.  
Text Management by Michelle Sturgeon.  
Text Processing by Julia Martin.

## 1990-91 DATA ANNEX

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**Harpoon®** is GDW's registered trademark for its modern naval wargame.

The designer of **Harpoon** is prepared to answer questions about play of the game system. He can be reached in care of GDW.





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## Introduction

This is a fully revised and updated data annex. There are a lot of new systems and countries covered, and I've tried to clarify the annexes as much as possible. By substituting this booklet for the one in versions 3.0 to 3.1 of the third edition, your game will officially be version 3.2.

Annex A has a few changes in notation. If a ship class is out of service, the number of units in the class will be surrounded by [ ]. Otherwise, the number of active units in the class will be shown, and any out of service units will be listed in the remarks, as before.

Because so many countries use other countries' equipment on their ships, I have changed the annex notation at the end of each weapons and sensors line. Now, if the weapon or sensor is not manufactured by the same country as the ship, it will be listed after the annex letter. For example, Japanese destroyers use the US Mk42 127mm gun. The annex notation will be "C/USA."

One new wrinkle: I have split the torpedo tubes on submarines so that most boats with forward tubes have two "mounts," representing the port and starboard side tube nests. Unlike other shipboard weapons, the weapons listed after submarine torpedo tubes are for all mounts on that line, not per mount as is normally the case.

Annex B has a real change: The aircraft are now provided with all the data needed to compute endurance and range during game play. The rules needed to do this are provided at the end of the booklet.

In Annex C, the damage listed is for each mount, not each barrel. Some of the guns are used in mounts with varying numbers of barrels. These are now listed separately.

In Annex D, if a SAM needs an HF radar to engage an air target, this will be listed in a separate column.

Annex G has been further split: Unguided ordnance, airborne electronics pods, cannon, and missiles are each listed separately so that they can be better described.

**Harpoon** has been in existence almost 10 years now. We are continuing to work to expand and improve the game system, while keeping it as playable as possible. There is a fine balance between not enough data and too much data. I want to thank you for giving me the opportunity to make adjustments to the game system in successive editions.

I also want to thank Marc Miller and Michelle Sturgeon for their assistance and guidance in preparing this booklet, and Les Hill for doing so much to clear up errors in the data.

As always, if you have any questions about the information in this booklet or the game system in general, please let me know.



# Annex A—Ships

## Argentina

### Almirante Brown

Displacement: 2900  
Damage Points: 106  
Damage Modifier: 1.00  
Propulsion: COGOG

#### Weapons:

A(8)1 Albatros w/8 Aspide//1 STIR  
F(1)1 Compact 127mm/54//1 WM25  
F/A(2)4 Dardo 40mm/70//2 LIROD  
PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s torp  
Aft Pad(1)2 SA.319B Alouette III  
PB&SB(4)2 MM40 Exocet w/4 msls

#### Sensors:

DA.08, ZW.06  
Decca 1226  
DSQS-21B (ASO 85)

#### Remarks:

MEKO 360 class. 24 msls total for Aspide. 16 reloads in rapid-reload magazine. 10 AS.244s for helicopter; total of 18 for 324mm TT. Albatros ROF 2 msls per turn at same target. MM40 ROF 8 msls per turn (both mounts) at same target. Helicopter type estimated.

#### Damage and Speed Breakdown:

Damage Points:	0	26	53	80	95	106
Surface Speed:	30	22	15	8	0	Sinks

### Bahia Aguirre

Displacement: 3100  
Damage Points: 84  
Damage Modifier: 1.00  
Propulsion: Diesel

#### Weapons:

P/S(1)2 Mk3 40mm/60  
P/S(1)2 20mm/80

#### Sensors:

Nav radar

#### Remarks:

Ex-US Army cargo ships. *Bahia Thetis* struck in 1973; *Bahia Aguirre* struck in 1981; *Bahia Buen Suceso* struck in 1982 (left as derelict during Falklands War, and later sunk). Original weapons fit 2 105mm, 2 40mm, 2 20mm guns.

#### Damage and Speed Breakdown:

Damage Points:	0	21	42	63	76	84
Surface Speed:	15	11	8	4	0	Sinks

### Cabo San Antonio

Displacement: 4300  
Damage Points: 152  
Damage Modifier: 1.00  
Propulsion: Diesel

#### Weapons:

2F/A(4)3 Mk2 40mm/60//3 Mk5 optical  
P/S(1)2 Mk1 20mm/60  
2 LCUP

#### Sensors:

AWS-1  
Nav radar

#### Remarks:

Can carry a helicopter on aft pad.

#### Damage and Speed Breakdown:

Damage Points:	0	38	76	114	137	152
Surface Speed:	16	12	8	4	0	Sinks

DD

In Class: 4  
In Service: 1983  
Speed: 30 kts  
Crew: 200  
Total Mounts: 12

D/Italy  
C/Italy  
C/Italy  
F/Italy  
B/Frn  
D/Frn

J/Nethl  
J/UK  
M/FRG

### Comodoro Py

Displacement: 2425  
Damage Points: 67  
Damage Modifier: 0.75  
Propulsion: Steam

#### Weapons:

2F/A(2)3 Mk38 127mm/38//1 Mk25  
PB/SB(3)2 Mk32 324mm TT w/3 A.244s  
PB&SB( 24)2 Mk10 Hedgehog w/6 salvoes  
Aft pad(1)1 SA.319B Alouette III  
PB&SB(1)4 MM38 Exocet w/1 msl

#### Sensors:

SPS-10, SPS-40  
SQS-23

#### Remarks:

Gearing (FRAM II) class. Ex-USS *Perkins*. Transferred, 1973; struck, 1984. Mk10 Hedgehog takes 5 min to reload.

#### Damage and Speed Breakdown:

Damage Points:	0	17	34	50	60	67
Surface Speed:	32	24	16	8	0	Sinks

In Class: [1]  
In Service: 1945-83  
Speed: 32 kts  
Crew: 275  
Total Mounts: 12  
C/USA

F/Italy  
E/USA  
B/Frn  
D/Frn

J/USA  
M/USA

### Costa Sur

Displacement: 4600 grt  
Damage Points: 122  
Damage Modifier: 1.00  
Propulsion: Diesel

#### Weapons:

None

#### Sensors:

None

#### Remarks:

5800T dwt. 9700 m³ cargo.

#### Damage and Speed Breakdown:

Damage Points:	0	30	61	92	110	122
Surface Speed:	15	11	8	4	0	Sinks

In Class: 3  
In Service: 1978  
Speed: 15 kts  
Crew: ?  
Total Mounts: 0

AK

### Drummond

Displacement: 1100 std  
Damage Points: 46  
Damage Modifier: 1.00  
Propulsion: Diesel

#### Weapons:

F(1)1 M1968 100mm/55//1 DRBC 32C  
A(2)1 Bofors 40mm/70  
P/S(1)2 DCN 20mm/80  
PB/SB(3)2 Mk32 324mm TT w/3 A.244s  
PB&SB(1)4 MM38 Exocet w/1 msl

#### Sensors:

Decca 1226

Diodon

DRBV 51A

#### Remarks:

French A-69 class. MM38 ROF 8 msls per turn (both mounts) at same target. *Guerrico* damaged on 3 Apr 1982 during Argentine occupation of Grytviken harbor.

#### Damage and Speed Breakdown:

Damage Points:	0	12	23	35	41	46
Surface Speed:	24	18	12	6	0	Sinks

In Class: 3  
In Service: 1978  
Speed: 24 kts  
Crew: 93  
Total Mounts: 10

C/Frn  
C/Sweden  
C/Intl  
F/Italy  
D/Frn

J/UK  
M/Frn  
J/Frn

FF

### Espora

Displacement: 1560  
Damage Points: 61  
Damage Modifier: 1.00  
Propulsion: Diesel

#### Weapons:

F(1)1 Compact 76mm/62//1 WM28  
F/A(2)2 Dardo 40mm/70//2 WM28  
PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s  
Aft pad(1)1 SA.319B Alouette III  
PB&PQ/SB&SQ(4)2 MM40 Exocet w/4 msls

In Class: 4+2  
In Service: 1985  
Speed: 27 kts  
Crew: 93  
Total Mounts: 8

C/Italy  
C/Italy  
F/Italy  
B/Frn  
D/Frn

FF

**Sensors:**

Decca 1226

DSQS-21B (ASO 85)

DA.05/2

**Remarks:**

MEKO 140 type. W28 controls 76mm and 40mm guns at same target. Telescoping helo hangar and helicopter on last 3 units only. Fitted with stabilizers.

**Damage and Speed Breakdown:**

Damage Points:	0	15	31	46	55	61
Surface Speed:	27	20	14	7	0	Sinks

**Ex-US Allen M. Sumner****DD**

Displacement: 2200

Damage Points: 82

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

F/A(2)3 Mk38 127mm/38//1 Mk25

A(2)2 Mk33 76mm/50//1 Mk35

PB/SB(3)2 Mk32 324mm TT w/3 A.244s

(24)2 Mk10 Hedgehog w/6 salvoes

Aft pad(1)1 SA.319B Alouette III

PB&amp;SB(1)4 MM38 Exocet w/1 msl

**Sensors:**

SPS-10, SPS-40

SQS-30, SQA-10

**Remarks:**

Four units transferred—3 commissioned and fourth cannibalized for spares. Segui has SPS-6C, vice SPS-40; 2F/1A(2)3 127mm/38 vice F/A(2)2. Does not have Exocet or VDS; is only unit with 76mm/50 & Mk35 radar; does not have pad aft or helicopter. Segui struck in 1983, *Hipolito Bouchard* and *Piedra Buena* struck in 1984. Mk10 Hedgehog takes 5 min to reload. MM38 ROF 8 msls per turn (both mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	20	41	62	74	82
Surface Speed:	30	22	15	8	0	Sinks

**Ex-US Achomawi****ATF**

Displacement: 1235 std

Damage Points: 38

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

P/S(1)2 Mk3 40mm/60

F/A(2)2 Mk1 40mm/60

P/S(1)2 Mk1 20mm/80

**Sensors:**

None

**Remarks:**

Transferred to Argentina in 1961. *Francisco De Churruga* has F(2) 1 Mk3 40mm/60 only. Fitted with pumps and other salvage equipment. Used as patrol vessels when not engaged in salvage or towing duties.

**Damage and Speed Breakdown:**

Damage Points:	0	10	19	28	34	38
Surface Speed:	16	12	8	4	0	Sinks

**Ex-US Fletcher****DD**

Displacement: 2050

Damage Points: 77

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P/S(2)2 Mk33 76mm/50//2 Mk34

A(2)1 Mk 34 76mm/50//1 Mk35

P&amp;S(4)1 533mm TT w/4 Mk14 torp

PB/SB(3)2 Mk32 324mm TT w/3 A.244s

1 Mk3 DC rail

2 DC Proj

(24)2 Mk10 Hedgehog w/6 salvoes

F/A(1)4 Mk30 127mm/38//1 Mk25

In Class: [4]

In Service: 1943-83

Speed: 30 kts

Crew: 262

Total Mounts: 15

C/USA

C/USA

F/USA

F/Italy

E/USA

E/Intl

E/USA

C/USA

**Sensors:**

SPS-10, SPS-6C

SQS-4

**Remarks:**

Four units transferred to Argentina in 1962-63 and 1971-72. Fifth unit purchased for parts. *Brown* struck in 1980. *Almirante Storni* and *Rosales* struck in 1981. *Almirante Domecq Garcia* repaired after collision with CV *Veinticinco De Mayo* in May 1980; sunk as Exocet target on 7 Nov 1983. Mk10 Hedgehog takes 5 min to reload.

**Damage and Speed Breakdown:**

Damage Points:	0	19	38	58	69	77
Surface Speed:	30	22	15	8	0	Sinks

**General Belgrano****CL**

Displacement: 10800

Damage Points: 292

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

F/A(3)4 Mk16 152mm/47//2 Mk28

P&amp;S(3)1 Mk16 152mm/47

F/A(1)8 Mk27 127mm/25//2 Mk28

F/A(4)2 Mk2 40mm/60

P/S(2)6 Mk1 40mm/60

P/S(4)2 Sea Cat w/4 msls//2 RTN-10X

P/S(1)2 Mk10 20mm/80

**Sensors:**

LW.01, DA.02, SGR.110

**Remarks:**

Ex-USS *Phoenix* (Brooklyn class). Transferred in 1951. 70 Sea Cat msls on board (manual reload). Helo pad aft; hangar can hold 2 helicopters. Armor 102mm belt thinning to 36mm at ends. 76mm decks. 127mm-76mm turrets. 203mm conning tower. Sunk on 2 May 1982 by 2 Mk8 torpedoes fired by HMS *Conqueror* during Falklands War. Armor: General rating is M. CHP Factors: Bridge and 152mm turret, M; engineering is L.

**Damage and Speed Breakdown:**

Damage Points:	0	73	146	219	263	292
Surface Speed:	25	19	12	6	0	Sinks

**Hercules****DDG**

Displacement: 3150

Damage Points: 114

Damage Modifier: 1.00

Propulsion: COGOG

**Weapons:**

F(2)1 Sea Dart w/24 msls//2 Type 909

P/S(1)2 Mk7 20mm/80

Aft Pad(1)1 SA.319B Alouette III

PQ&amp;SQ(3)2 ILAS-3 324mm TT w/3 A.244s

P/S(1)4 MM38 Exocet w/1 msl

F(1)1 Mk8 114mm/55//1 Type 909

**Sensors:**

Type 992Q, Type 1006, Type 965M

Type 184M, Type 162M

**Remarks:**

Single Type 909 forward controls either Mk8 gun or Sea Dart missile. Other Type 909 has aft arc for missile only. MM38 ROF 8 msls per turn (both mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	28	57	86	103	114
Surface Speed:	30	22	15	8	0	Sinks

**Intrepida****PT**

Displacement: 240 std

Damage Points: 12

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

A(1)2 Mk3 40mm/60//1 WM22

PB&amp;SB(1)2 533mm TT w/1 SST-4 torp

In Class: 2

In Service: 1974

Speed: 40 kts

Crew: 8

Total Mounts: 5

C/USA

F/FRG

F(1)1 Compact 76mm/62

**Sensors:**

Decca 101 (Decca Series)

ESM

**Remarks:**

Type TNC 45 class. Fitted with stabilizers.

**Damage and Speed Breakdown:**

Damage Points:	0	3	6	9	11	12
Surface Speed:	40	30	20	10	0	Sinks

**Islas De Los Estados**

Displacement: 3840

Damage Points: 103

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

None

**Sensors:**

None

**Remarks:**Ex-MV *Trans Botica*. Built in 1975. Sunk on 10 May 1982 during Falklands War.**Damage and Speed Breakdown:**

Damage Points:	0	26	52	77	93	103
Surface Speed:	14	10	7	4	0	Sinks

**King**

Displacement: 913 std

Damage Points: 39

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

A(2)1 MK1 40mm/60

P/S(1)2 MK3 40mm/60

4 DC Proj

2F/1A(1)3 105mm

**Sensors:**

None

**Remarks:**

Normally used for cadet training. Due for disposal.

**Damage and Speed Breakdown:**

Damage Points:	0	10	20	29	35	39
Surface Speed:	18	14	9	4	0	Sinks

**Punta Alta**

Displacement: 1600

Damage Points: 47

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

None

**Sensors:**

None

**Remarks:**

Used for harbor storage. Struck in 1987.

**Damage and Speed Breakdown:**

Damage Points:	0	12	24	35	42	47
Surface Speed:	8	6	4	2	0	Sinks

**Punta Delgada**

Displacement: 5930

Damage Points: 146

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

None

**Sensors:**

None

**Remarks:**Ex-US *Klickitat* class. Three units transferred; struck in 1964, 1966, and 1983 (*Punta Delgada*).

C/Italy

J/UK

—

**Damage and Speed Breakdown:**

Damage Points:	0	36	73	110	131	146
Surface Speed:	11	8	6	3	0	Sinks

**Punta Medanos**

Displacement: 14352

Damage Points: 266

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

None

**Sensors:**

None

**Remarks:**

Helo pad aft. Struck in 1984.

**Damage and Speed Breakdown:**

Damage Points:	0	66	133	200	239	266
Surface Speed:	18	14	9	4	0	Sinks

**Salta**

Displacement: 1230 subm

Damage Points: 25

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&amp;SB(4)2 533mm TT w/14 see remarks

**Sensors:**

CSU 3-4

Calypso III

**Remarks:**German-built *Type 209* class. Carries SST-4 and Mk37 torpedoes. *Salta* undergoing mid-life refit. Sensors and weapons being upgraded. New configuration unknown. Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar.**Damage and Speed Breakdown:**

Damage Points:	0	6	12	19	22	25
Surface Speed:	10	8	5	2	0	Sinks
Submerged Speed:	22	16	11	6	0	Sinks

**San Julian**

Displacement: 930

Damage Points: 30

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

None

**Sensors:**

None

**Remarks:**

Ex-FS-281 (US Army cargo ship). Struck in early 1980s but used as buoy-tender.

**Damage and Speed Breakdown:**

Damage Points:	0	8	15	22	27	30
Surface Speed:	10	8	5	2	0	Sinks

**Santa Cruz**

Displacement: 2364 subm

Damage Points: 44

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&amp;SB(3)2 533mm TT w/22 SST-4 torp

**Sensors:**

DBQS-21 (CSU 83)

SMA Periscope radar

**Remarks:**German-built *TR1700* class. Fitted with DUUX 5 Fenelon passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar.

AK

In Class: [1]

In Service: 1980-82

Speed: 14 kts

Crew: ?

Total Mounts: 0

PC

In Class: 2

In Service: 1945

Speed: 18 kts

Crew: 100

Total Mounts: 10

C/USA

C/USA

E/Intl

C

AOR

In Class: 1

In Service: 1938-87

Speed: 8 kts

Crew: 40

Total Mounts: 0

AOR

In Class: [3]

In Service: 1945-83

Speed: 11 kts

Crew: 72

Total Mounts: 0

AOR

In Class: [1]

In Service: 1950-84

Speed: 18 kts

Crew: 99

Total Mounts: 0

SS

In Class: 2

In Service: 1974

Speed: 10/22 kts

Crew: 32

Total Mounts: 2

F/FRG

M/FRG

J/FRG

AK

In Class: 1

In Service: 1945

Speed: 10 kts

Crew: 40

Total Mounts: 0

SS

In Class: 2+3+(1)

In Service: 1984

Speed: 15/25 kts

Crew: 35

Total Mounts: 2

F/FRG

M/FRG

J/Intl



**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	11	22	33	40	44
<b>Surface Speed:</b>	15	11	8	4	0	Sinks
<b>Submerged Speed:</b>	25	19	12	6	0	Sinks

**Santa Fe**

**Displacement:** 2420 subm  
**Damage Points:** 45  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel-Electric  
**Weapons:**  
 PB&SB(3)2 533mm TT w/16 Mk14 torp  
 PQ&SQ(2)2 533mm TT w/8 Mk14 torp  
**Sensors:**  
 BQR-2  
 Periscope radar  
**Remarks:**

Both units transferred in 1971. *Santa Fe* is *Guppy II*; *Santiago Del Estero* is *Guppy IA*. *Santiago Del Estero* cannibalized to provide parts for *Santa Fe*. *Santa Fe* damaged on 25 Apr 1982 in retaking of South Georgia. Beached; later scrapped.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	11	22	34	40	45
<b>Surface Speed:</b>	18	14	9	4	0	Sinks
<b>Submerged Speed:</b>	15	11	8	4	0	Sinks

**Veinticinco De Mayo.**

**Displacement:** 15892  
**Damage Points:** 381  
**Damage Modifier:** 1.00  
**Propulsion:** Steam  
**Weapons:**  
 2F/2A/4S/1P(1)9 Mk3 40mm/60  
 12 Super Etendard  
 6 S-2E Tracker  
 4 SH-3D Sea King  
 1 SA.319B Alouette III  
 1 Catapult  
 2 Elevator  
**Sensors:**  
 DA.08, ZW.01, VI.01, LW.01, DA.02, LW.08  
**Remarks:**

Transferred to Argentina in 1968; commissioned in 1969. Operated Super Etendard for the first time in Apr 1983. Speed limited to 18 kts by severe engineering problems (treat as nonreparable critical hit). Started two-year modernization in late 1988. Will have steam turbines replaced by diesels.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	95	190	286	343	381
<b>Surface Speed:</b>	24	18	12	6	0	Sinks

**Belgium****Tripartite**

**Displacement:** 511 std  
**Damage Points:** 20  
**Damage Modifier:** 0.75  
**Propulsion:** Diesel  
**Weapons:**  
 F(1)1 DCN 20mm/80  
 2 PAP104  
**Sensors:**  
 Decca 1229  
 DUBM 21, DUBM 41 (to be fitted)  
**Remarks:**

Hull constructed of GRP. DUBM 21 and DUBM 41 sonars, and PAP104 mine disposal vehicles are for mine hunting only.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	5	10	15	18	20
<b>Surface Speed:</b>	15	11	8	4	0	Sinks

**Weilingen**

**Displacement:** 1880 std  
**Damage Points:** 72  
**Damage Modifier:** 1.00  
**Propulsion:** CODOG

**Weapons:**

PB&SB(2)2 MM38 Exocet w/2 msls  
 F(1)1 M1968 100mm/55//1 WM25  
 A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 WM25  
 F(6)1 Bofors 375mm mortar  
 PB/SB(1)2 533mm TT w/1 L5 torp

**Sensors:**

Raytheon 1645 (Raytheon series)  
 DA.05  
 SQS-505 hull

**Remarks:**

Fitted with fin stabilizers. WM 25 can control either 100mm gun or two NATO Sea Sparrow (RIM-7M) missiles at one target. TT to be replaced in 1990 with 324mm diameter for Mk46 torp. Mk29 NATO SS ROF 15 per turn.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	18	36	54	65	72
<b>Surface Speed:</b>	28	21	14	7	0	Sinks

**Canada****Annapolis**

**Displacement:** 2400 std  
**Damage Points:** 89  
**Damage Modifier:** 1.00  
**Propulsion:** Steam

**Weapons:**

F(2)1 Mk33 76mm/50//1 SPG-515  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
 Aft Pad(1)1 CH-124A Sea King

**Sensors:**

SPS-10  
 Sperry MK2, SPS-503  
 SQS-505 hull, SQR-501 CANTASS, SQS-501

**Remarks:**

HMCS *Nipigon* trials ship; fitted with SQS-510 vice SQS-505. Mk60 GFCS increases Air Pk of Mk33 76mm to 20%. Limbo and SQR-504 VDS replaced by trials SQR-501 CANTASS in 1987/88.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	22	44	67	80	89
<b>Surface Speed:</b>	28	21	14	7	0	Sinks

**Halifax**

**Displacement:** 3866 std  
**Damage Points:** 151  
**Damage Modifier:** 1.00  
**Propulsion:** CODAG

**Weapons:**

Aft Pad(1)1 CH-124A Sea King  
 PB&SB(4)2 Mk141 w/4 Harpoon  
 F&A(8)2 Mk48 VL Sea Sparrow w/8 RIM-7M//2 STIR  
 F(1)1 Bofors Mk2 57mm/70//1 STIR  
 A(R)1 Mk15 Phalanx Block 1 w/5 bursts  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

**Sensors:**

SPS-49, Raytheon 1629C (Rayth. series)  
 SAR-8 (IR sensor)  
 SQS-505, SQR-501 CANTASS  
 Sea Giraffe 150HC

**Remarks:**

12 manual reloads carried for Sea Sparrow. 24 Mk46 torpedoes carried for helicopter and torpedo tubes. Fitted with Bear Trap and stabilizers. Bubbler noise reduction system (quieted). Harpoon ROF 8 msls per turn (both mounts) at same target. Sea Sparrow ROF 15 per turn (each mount).

FF

**In Class:** 4  
**In Service:** 1978  
**Speed:** 28 kts  
**Crew:** 160

**Total Mounts:** 7

D/Frn  
 C/Frn  
 D/USA  
 E/Sweden  
 F/Frn

J/USA  
 J/Nethl  
 M/Can

SS

**In Class:** [2]  
**In Service:** 1944-82  
**Speed:** 18/15 kts  
**Crew:** 84

**Total Mounts:** 4

F/USA  
 F/USA

M/USA  
 J/Intl

CVL

**In Class:** 1  
**In Service:** 1945  
**Speed:** 24 kts  
**Crew:** 1500  
**Total Mounts:** 12

C/UK  
 B/Frn  
 B/USA  
 B/USA  
 B/Frn

—  
 —  
 J/Nethl

FF

**In Class:** 2  
**In Service:** 1964  
**Speed:** 28 kts  
**Crew:** 228

**Total Mounts:** 4

C/USA  
 F/USA  
 B

J/USA  
 J  
 M

MH

**In Class:** 7+3  
**In Service:** 1985  
**Speed:** 15 kts  
**Crew:** 34  
**Total Mounts:** 3

C/Frn

—  
 J/UK

**Total Mounts:** 9

B  
 D/USA  
 D/USA  
 C/Sweden  
 C/USA  
 F/USA

J/USA  
 —  
 M  
 J/Sweden

**Damage and Speed Breakdown:**

Damage Points:	0	38	76	113	136	151
Surface Speed:	30	22	15	8	0	Sinks

**Iroquois**

Displacement: 3551 std

Damage Points: 127

Damage Modifier: 1.00

Propulsion: COGOG

Weapons:

F(1)1 Compact 127mm/54//1 SPG-53

A(3)1 Mk10 Limbo w/17 salvoes//1 SQS-502

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Aft Pad(1)2 CH-124A Sea King

PB/SB(4)2 Sea Sparrow w/16 RIM-7M/2 WM22

Sensors:

SPQ 2D

SPS-501

SQS-505 hull, SQS-505 VDS, SQS-501

Remarks:

DD 280 or *Tribal* class. Has Bear Trap helo recovery system; fitted w/stabilizers. Ships receiving TRUMP upgrade. Removes Limbo, 127mm gun, Sea Sparrow. Will get F&A(29)1 Mk41 VLS w/29 SM2MR Block II, F(1)1 Super Rapid 76mm/62, A(R)1 Mk15 Phalanx 20mm/76 Block I w/5 bursts. SM2 and 76mm will be controlled by 2 STIR. SPS-501 replaced by LW.08. Add DA.05 radar. Sea Sparrow ROF 15 msls per turn per mount. *Algonquin* finishing TRUMP mid-1990; *Iroquois* starting. Last unit complete by 1992.

**Damage and Speed Breakdown:**

Damage Points:	0	32	64	95	114	127
Surface Speed:	30	22	15	8	0	Sinks

**Mackenzie**

Displacement: 2380 std

Damage Points: 88

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

A(2)1 Mk33 76mm/50//1 SPG-34

A(3)2 Mk10 Limbo w/17 salvoes//1 SQS-502

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

F(2)2 Mk6 76mm/70//1 SPG-48

Sensors:

SPS-10, SPS-12

Raytheon 1629C (Rayth. series)

SQS-505 hull, SQS-501

Remarks:

*Qu'Appelle* has F(2)1 76mm/50 vice 76mm/70. Configuration is as of completion of DELEX on all units. Last unit finished by 1987. Will remain in service until 1993.

**Damage and Speed Breakdown:**

Damage Points:	0	22	44	66	79	88
Surface Speed:	28	21	14	7	0	Sinks

**Mod Restigouche**

Displacement: 2390 std

Damage Points: 89

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

A(8)1 Mk16 w/8 ASROC

A(3)1 Mk10 Limbo w/17 salvoes//1 SQS-502

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

F(2)1 Mk6 76mm/70//1 SPG-515

Sensors:

SPS-10, SPS-12

Sperry MK2

SQS-501, SQS-503, SQS-505 VDS

Remarks:

DD 236 and 257 do not have Mk32 TT. 8 manual reloads for ASROC. Mk60 GFCS gives Mk6 76mm air Pk of .4. Under DELEX all units will get Raytheon

In Class: 4

In Service: 1972

Speed: 30 kts

Crew: 319

Total Mounts: 8

C/Italy

E/UK

F/USA

B

D/USA

J/Italy

J

M

DD

FF

In Class: 4

In Service: 1962

Speed: 28 kts

Crew: 210

Total Mounts: 7

C/USA

E/UK

F/USA

C/UK

J/USA

J/USA

M

1629C radar, CMR1820 radar, SQS-505 vice SQS-503 hull sonar, SPS-503 vice SPS-12.

**Damage and Speed Breakdown:**

Damage Points:	0	22	44	66	79	89
Surface Speed:	28	21	14	7	0	Sinks

**Ojibwa**

Displacement: 2410 subm

Damage Points: 45

Damage Modifier: 1.00

Propulsion: Diesel-Electric

Weapons:

PB&amp;SB(3)2 533mm TT w/18 see remarks

PQ&amp;SQ(2)1 533mm TT w/4 NT-37C

Sensors:

CSU 3-41

Type 2007

Type 1006

Remarks:

UK *Oberon* class. Can carry Mk48 torp and Harpoon in forward TT. Normal TT loadout is 12 Mk48 and 4 Harpoon IB. Configuration is after SOUP refit. All units have been converted. Fitted with USA BQG-501 Micropuffs passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar.

**Damage and Speed Breakdown:**

Damage Points:	0	11	22	34	40	45
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	17	13	8	4	0	Sinks

**Protecteur**

Displacement: 8389 lt

Damage Points: 183

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

Aft Pad(1)3 CH-124A Sea King

4 LCVF

Sensors:

Decca series, Decca 969 (Decca series)

SQS-505

Remarks:

Previously fitted with F(2)1 Mk33 76mm/50 under local control. Removed in 1983; could be reinstalled. Four RAS stations.

**Damage and Speed Breakdown:**

Damage Points:	0	46	91	137	165	183
Surface Speed:	21	16	10	5	0	Sinks

**Restigouche**

Displacement: 2370

Damage Points: 88

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(2)1 Mk6 76mm/70//1 SPG-48

A(2)1 Mk33 76mm/50//1 SPG-48

A(3)2 Mk10 Limbo w/17 salvoes//1 SQS-502

Sensors:

SPS-10, SPS-12

SQS-501, SQS-503

SQS-10/11

Remarks:

Single SPG-48 controls both gun mounts at single target. All units in reserve since 1974.

**Damage and Speed Breakdown:**

Damage Points:	0	22	44	66	79	88
Surface Speed:	28	21	14	7	0	Sinks

In Class: 3

In Service: 1965

Speed: 15/17 kts

Crew: 65

Total Mounts: 3

F, D/USA

F/USA

M/FRG

M/UK

J/UK

SS

AOR

In Class: 2

In Service: 1969

Speed: 21 kts

Crew: 284

Total Mounts: 7

B

—

J/UK

M

FF

In Class: [3]

In Service: 1959-74

Speed: 28 kts

Crew: 248

Total Mounts: 4

C/UK

C/USA

E/UK

J/USA

M

M/USA

**St. Laurent**

Displacement: 2260

Damage Points: 84

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

A(3)1 Mk10 Limbo w/17 salvoes//1 SQS-502

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Alt Pad(1)1 CH-124A Sea King

F(2)1 Mk33 76mm/50//1 SPG-48

Sensors:

SPS-10, SPS-12

Sperry Mk2

SQS-503, SQS-501, SQS-504 VDS

Remarks:

Fitted with stabilizers. Under DELEX program will get Raytheon 1629C radar. Use statistics for generic nav radar in Annex L for Sperry Mk2 radar. Additional unit *St. Laurent* struck in 1974; sunk in 1979. Additional unit *Assiniboine* entered period of reduced operations in July 1988, started 12-month decommission process on 1 Jan 1989. Unless used as training ship, will decommission in 1990.

Damage and Speed Breakdown:

Damage Points:	0	21	42	63	76	84
Surface Speed:	28	21	14	7	0	Sinks

DDH

In Class: 5

In Service: 1956

Speed: 28 kts

Crew: 228

Total Mounts: 5

E/UK

F/USA

B

C/USA

J/USA

J

M

SS, 533mm TT. Mk29 NATO SS ROF 15 msls per turn. Both units in reserve early 1987.

Damage and Speed Breakdown:

Damage Points:	0	19	38	58	69	77
Surface Speed:	28	21	14	7	0	Sinks

**Willemoes**

Displacement: 232 std

Damage Points: 12

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

PB&amp;SB(4)2 Mk141 w/2 Harpoon

F(1)1 Compact 76mm/62//1 9LV200

PB/SB(1)2 533mm TT w/1 Tp617 torp

Sensors:

NWS-3

9GR600

ESM

Remarks:

Normally operate with only two Harpoon fitted. Can carry 20 mines instead of SSMs or TT, or 4 533mm TT and no SSM launchers, or 8 Harpoon and no TT.

Damage and Speed Breakdown:

Damage Points:	0	3	6	9	10	12
Surface Speed:	40	30	20	10	0	Sinks

PTM

In Class: 10

In Service: 1977

Speed: 40 kts

Crew: 26

Total Mounts: 5

D/USA

C/Italy

F/Sweden

J

J/Sweden

**Denmark****Niels Juel**

Displacement: 1100 std

Damage Points: 46

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

PB&amp;SB/PQ&amp;SQ(4)2 Mk141 w/4 Harpoon

A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//2 RTN-10X

F(1)1 Compact 76mm/62//1 9LV200

1 DC Rail

P/S(1)4 20mm/80

Sensors:

AWS-5

Skanter 009

PMS 26

Remarks:

Only four Harpoon are normally carried. No reloads for Sea Sparrow. Burst speed of 30 kts for short periods. Mk91 Mod 1 MFCS has 2 RTN 10 directors. To be fitted with 2 RAM. Mk29 NATO SS ROF 15 msls per turn.

Damage and Speed Breakdown:

Damage Points:	0	11	23	34	41	46
Surface Speed:	30	22	15	8	0	Sinks

FF

In Class: 3

In Service: 1980

Speed: 30 kts

Crew: 92

Total Mounts: 9

D/USA

D/USA

C/Italy

E/Intl

C/Intl

J/UK

J/Sweden

M/UK

**France****Aconit**

Displacement: 3500

Damage Points: 126

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F/A(1)2 M1968 100mm/55//1 DRBC 32

P&amp;S(1)1 Malafon w/13 msls

P/S(1)2 533mm TT w/5 L5 torp

PB&amp;SB(4)2 MM40 Exocet w/4 msls

Sensors:

DRBN 32, DRBV 22, DRBV 15

DUBV 23/43

Remarks:

Type F65. Fitted with stabilizers. MM40 ROF is 8 msls per turn (both mounts) at same target. To be fitted with DSBV 61 towed array sonar. Originally fitted with 305mm ASW mortar; removed.

Damage and Speed Breakdown:

Damage Points:	0	32	63	94	113	126
Surface Speed:	27	20	14	7	0	Sinks

DD

In Class: 1

In Service: 1973

Speed: 27 kts

Crew: 228

Total Mounts: 7

C

E

F

D

J

M

**Peder Skram**

Displacement: 2030 std

Damage Points: 77

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

PB&amp;PQ/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//2 Mk91

F(2)1 Mk38 127mm/38//1 M46

P/S(1)4 20mm/80

PB/SB(1)4 533mm TT w/1 Tp617 torp

1 DC Rail

P/S(1)4 40mm/60//2 M46

Sensors:

Skanter 009

PMS 26

CWS-2, CWS-3

Remarks:

Triple TT replaced by PB/SB(2)2 533mm TT. Modernized 1976-78; one of 127mm mounts removed and replaced with Harpoon launchers, Mk29 NATO

FF

In Class: [2]

In Service: 1966-87

Speed: 28 kts

Crew: 200

Total Mounts: 17

D/USA

D/USA

C/USA

C/Intl

F/Sweden

E/Intl

C/Intl

J/Sweden

M/UK

J

**Agosta**

Displacement: 1740 subm

Damage Points: 34

Damage Modifier: 1.00

Propulsion: Diesel-Electric

Weapons:

PB&amp;SB(2)2 533mm TT w/20 see remarks

Sensors:

DRUA 33

DUUA 2D, DUUA 1, DSUV 22

DSUV 62 towed array

Remarks:

Normal TT loadout 8 F17 Mk2, 8 L5 torp, 4 SM39 Exocet. Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. Very Small sonar contact. -10% active sonar detection chance. Towed array to be fitted to all units by 1991.

Damage and Speed Breakdown:

Damage Points:	0	8	17	26	31	34
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

SS

In Class: 4

In Service: 1977

Speed: 12/20 kts

Crew: 52

Total Mounts: 2

F, D

J

M

M



**Amethyste**

**Displacement:** 2660 subm  
**Damage Points:** 49  
**Damage Modifier:** 1.00  
**Propulsion:** Nuclear-Electric  
**Weapons:**  
 PB&SB(2)2 533mm TT w/14 see remarks

**Sensors:**

DRUA 33

DMUX 20

DSUV 62 towed array

**Remarks:**

Normal TT loadout 10 F17 Mk2 torp, 4 SM39 Exocet. Has improved hull of HLES 80 steel. Hull form improved to reduce noise signature compared to *Rubis* class. Has natural circulation nuclear plant below 16 knots. (-10% passive sonar detection chance). Fitted with DUUX 5 Fenelon passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	12	24	37	44	49
<b>Surface Speed:</b>	18	14	9	4	0	Sinks
<b>Submerged Speed:</b>	25	19	12	6	0	Sinks

**Arethuse**

**Displacement:** 669 subm  
**Damage Points:** 16  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel-Electric  
**Weapons:**  
 PB&SB(2)2 550mm TT w/8 L5 torp

**Sensors:**

DUUA 2, DUUA 1

DRUA 31

**Remarks:**

Four units built. Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. *Arethuse* struck in Apr 1979; *Amazon*, Jun 1980; *Ariane*, Mar 1981; *Argonaute*, July 1982.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	4	8	12	14	16
<b>Surface Speed:</b>	13	10	6	3	0	Sinks
<b>Submerged Speed:</b>	16	12	8	4	0	Sinks

**Balny**

**Displacement:** 1750 std  
**Damage Points:** 64  
**Damage Modifier:** 1.00  
**Propulsion:** CODAG  
**Weapons:**  
 P/S(1)2 CAS 62 30mm/70  
 F(6)1 305mm Mortar w/18 salvoes//1 DUBA 3  
 P/S(3)2 550mm TT w/3 L3 torp  
 F/2A(1)3 M1953 100mm/55//1 DRBC 32

**Sensors:**

DRBN 32, DRBV 22

SQS-17

**Remarks:**

Modified *Commandant Riviere* class. Helo pad aft.  
**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	16	32	48	58	64
<b>Surface Speed:</b>	25	19	12	6	0	Sinks

**Bouganville**

**Displacement:** 4200 std  
**Damage Points:** 149  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
 Midships Pad(1)2 AS.322B Super Puma  
 2 LCU

**SSN**

**In Class:** 0+2  
**In Service:** 1991  
**Speed:** 18/25 kts  
**Crew:** 66  
**Total Mounts:** 2  
 F, D

J

M

M

**Sensors:**

DRBN 32

**Remarks:**

Specialized vessel designed to support nuclear tests between Papeete and Muraroa. Carries 70 cubic meters of helicopter fuel. Miniature LSD design. Can act as repair and stores ship. Super Pumas are cargo version; no ASW capability.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	37	74	112	134	149
<b>Surface Speed:</b>	14	10	7	4	0	Sinks

**Cassard****Displacement:** 3820 std**Damage Points:** 102**Damage Modifier:** 0.75**Propulsion:** Diesel**Weapons:**

P/S(1)2 533mm TT w/5 L5 torp

P&amp;PB/S&amp;SB(4)2 MM40 Exocet w/4 msl

A(1)1 Mk13 w/40 SM1MR//2 SPG-51

P/S(1)2 DCN 20mm/80

PQ/SQ(6)2 Sadral w/6 Mistral

Aft Pad(1)1 Lynx Mk4

F(1)1 M1968 100mm/55//1 DRBC 33

**Sensors:**

DRBV 26, DRBJ 11, 2 DRBN 32

DUBA 25 Tarpon

DIBV 10 Vampir (IR sensor)

**Remarks:**

Type F70AAW class. Mk13 rate of fire is 3 msls/turn. May be fitted later with DSBV 61 towed array sonar. MM40 ROF is 8/turn (both mounts) at same target. Aluminum superstructure. *Cassard* temporarily fitted with DRBV 15 until DRBJ 11 development completed. 16 manual reloads for Crotale.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	26	51	77	92	102
<b>Surface Speed:</b>	30	22	15	8	0	Sinks

**Charles de Gaulle****Displacement:** 35000 std**Damage Points:** 699**Damage Modifier:** 1.00**Propulsion:** Nuclear**Weapons:**

35 Aircraft

2 Catapult

SB/SQ/P(6)3 Sadral w/6 Mistral

F&amp;A(8)7 ASTER 15 w/8 msls//1 Arabel

P/S(1)8 DCN 20mm/80

2 Elevator

**Sensors:**

DRBJ 11B, DRBV 15, DRBV 27, 2 DRBN 32

DIBV 10 Vampir (IR Sensor)

**Remarks:**

Can carry Super Etendard and Rafale. Fitted with stabilizers. ASTER ROF is 15 msls per turn (all mounts).

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	175	350	524	629	699
<b>Surface Speed:</b>	27	20	14	7	0	Sinks

**Clemenceau****Displacement:** 22000 std**Damage Points:** 483**Damage Modifier:** 1.00**Propulsion:** Steam**Weapons:**

PB/S&amp;SQ(1)4 M1953 100mm/55 //2 DRBC 32

P&amp;PQ/S&amp;SB(6)2 Crotale EDIR w/6 msls//2 Mirador IV

2 Catapult

2 Elevator

10 F-8E (FN) Crusader

**DDG****In Class:** 1+1**In Service:** 1988**Speed:** 30 kts**Crew:** 241**Total Mounts:** 11

F

D

D/USA

C

D

B

C

J

M

—

**CVN****In Class:** 0+1+1**In Service:** 1996**Speed:** 27 kts**Crew:** 1950**Total Mounts:** 22

B

—

D

D

C

—

J

—

**CV****In Class:** 2**In Service:** 1964**Speed:** 32 kts**Crew:** 1338**Total Mounts:** 10

C

D

—

—

B

**SS**

**In Class:** [4]  
**In Service:** 1958  
**Speed:** 13/16 kts  
**Crew:** 40  
**Total Mounts:** 2  
 F

M

J

**FF**

**In Class:** 1  
**In Service:** 1970  
**Speed:** 25 kts  
**Crew:** 167  
**Total Mounts:** 8  
 C  
 E  
 F  
 C

J

M/USA

**LSD**

**In Class:** 1  
**In Service:** 1988  
**Speed:** 14 kts  
**Crew:** 52+500  
**Total Mounts:** 4  
 B  
 —

16 Super Etendard  
7 Alizé

2 SA.365 Dauphin 2  
3 Entendard IVP

**Sensors:**

DRBN 32, DRBV 23, 2 DRBI 10, DRBV 15

DRBV 50

SQS-503 hull

**Remarks:**

Deck angled port at 8°. Due to peacetime manning, only one carrier operates a full complement of fixed-wing aircraft. The other operates with reduced crew and helicopters, reverting to full manning in wartime. Carries mix of 30-40 helicopters, including Super Frelon, Lynx, Super Puma, Puma. The carriers switch status every few years. Can launch 10 small/med helos at once. Armored flight deck, bridge/island, machinery spaces, and magazines. CHP Factors: Bridge, flight deck, engineering, magazines are L. Crotale mounts each have 12 manual reloads.

**Damage and Speed Breakdown:**

Damage Points:	0	121	242	362	435	483
Surface Speed:	32	24	16	8	0	Sinks

**Colbert**

Displacement: 8500 std

Damage Points: 246

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

A(2)1 Masurca w/48 msls//2 DRBR 51

P/S(2)6 M1951 57mm/60//2 DRBR 31

PB&SB(1)4 MM38 Exocet w/1 msl

F(1)2 M1968 100mm/55//1 DRBR 32

**Sensors:**

DRBI 10, DRBV 20, DRBV 23, DRBN 32

DRBV 50

**Remarks:**

Armored deck 50mm; armored belt 50mm-80mm. General armor rating is L. CHP rating for engineering is L. Fitted with stabilizers. MM38 Exocet ROF 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	62	123	184	221	246
Surface Speed:	31	23	16	8	0	Sinks

**Commandant Riviere**

Displacement: 1750 std

Damage Points: 67

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

F/A(1)2 M1953 100mm/55//1 DRBC 32C

P/S(1)2 CAS 62 30mm/70

F(4)1 305mm Mortar w/18 salvoes//1 DUBA 3

P/S(3)2 550mm TT w/3 K2 & L3 torp

PB&SB(1)4 MM38 Exocet w/1 msl

**Sensors:**

DRBV 22, DRBN 32, DRBV 20

SQS-17

**Remarks:**

Some have 40mm/60 vice 30mm/80. MM38 Exocet ROF 8 msls per turn (all mounts) at same target. Helo pad aft. Additional unit *Victor Schoeler* (F 725) transferred to Uruguay Navy. *Commandant Riviere* completed refit at Lorient. Main armament removed; stern modified to increase the beam. Will serve as ASW trials ship.

**Damage and Speed Breakdown:**

Damage Points:	0	17	34	50	60	67
Surface Speed:	25	19	12	6	0	Sinks

**D'Estienne D'Orves**

Displacement: 1100

Damage Points: 46

Damage Modifier: 1.00

B

B

B

B

J

J

M/Can

CG

In Class: 1

In Service: 1959

Speed: 31 kts

Crew: 562

Total Mounts: 13

D

C

D

C

J

J

FF

In Class: 6

In Service: 1962

Speed: 25 kts

Crew: 166

Total Mounts: 11

C

C

E

F

D

J

M/USA

FFL

In Class: 17

In Service: 1976

Speed: 24 kts

Propulsion: Diesel

**Weapons:**

P/S(1)4 550mm TT w/1 L3 & L5 torp

F(1)1 M1968 100mm/55//1 DRBC 32E

P/S(1)2 DCN 20mm/80

A(6)1 Mk54 375mm Mortar

PB&SB(2)2 MM40 Exocet w/2 msls

**Sensors:**

DRBV 51, DRBN 32

DUBA 25 Tarpon

**Remarks:**

F 718, 783, 784, 786, and 787 have PB&SB(1)2 MM38 Exocet vice MM40. Will receive newer missile in refits. Fitted with stabilizers. MM38/MM40 ROF 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	12	23	34	41	46
Surface Speed:	24	18	12	6	0	Sinks

**Daphne**

Displacement: 1043 subm

Damage Points: 22

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&SB(4)2 550mm TT w/8 E15 torp

PQ&SQ(2)2 550mm TT w/4 E15 torp

**Sensors:**

DSUV 2, DUUA 2B

DRUA 31

**Remarks:**

Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. Six units struck in 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	6	11	16	20	22
Surface Speed:	14	10	7	4	0	Sinks
Submerged Speed:	16	12	8	4	0	Sinks

**Durance**

Displacement: 7600 std

Damage Points: 171

Damage Modifier: 1.00

Propulsion: Diesels

**Weapons:**

A(1)1 40mm/60

P/S(1)2 DCN 20mm/80

Aft Pad(1)1 Lynx Mk4

**Sensors:**

Nav radar

**Remarks:**

*Durance* (A 629) has 1(2) 40mm, no 20mm. Can supply two ships alongside, one astern. Helo pad can accommodate large helicopters. 40mm arc on Var (A 608) is F(1)1.

**Damage and Speed Breakdown:**

Damage Points:	0	43	86	128	154	171
Surface Speed:	19	14	10	5	0	Sinks

**La Fayette**

Displacement: 3200

Damage Points: 109

Damage Modifier: 1.00

Propulsion: Diesel-electric

**Weapons:**

Aft Pad(1)1 Helicopter (type unk)

PB&SB(4)2 MM40 Exocet w/4 msls

A(8)1 Crotale EDIR w/8 msls//1 Mirador IV

F/A(6)2 Sadral w/6 Mistral

F(1)1 Compact 100mm/55//1 DRBC 33

P/S(1)2 DCN 20mm/80

PB/SB(3)2 324mm TT w/18 Murene torp

Crew: 79

Total Mounts: 10

F

C

C

E

D

J

M

SS

In Class: 3+[6]

In Service: 1964

Speed: 14/16 kts

Crew: 45

Total Mounts: 4

F

F

M

J

AO

In Class: 5

In Service: 1976

Speed: 19 kts

Crew: 159

Total Mounts: 4

C/Intl

C

B

J/Intl

FF

In Class: 0+3

In Service: 1994

Speed: 26 kts

Crew: 164

Total Mounts: 11

B

D

D

D

C

C

F

**Sensors:**

DSBV 61 FLUTE towed array, DUBA 26  
 DRBV 15, DRBN 32, DRBV 26  
 DIBV 10 Vampir (IR sensor)

**Remarks:**

Quieted when cruising on electric drive; max speed 12 knots. 18 Murene torpedoes carried for TT and helicopter. MM40 ROF is 8 msls per turn (both mounts) at same target. Estimated 16 reloads for Crotale. DUBA 26 hull sonar estimated.

**Damage and Speed Breakdown:**

Damage Points:	0	27	54	82	98	109
Surface Speed:	26	20	13	6	0	Sinks

**Floreal**

Displacement: 2600

Damage Points: 72

Damage Modifier: 0.75

Propulsion: Diesel

**Weapons:**

F(1)1 M1968 100mm/55//1 Najir EO director  
 P/S(1)2 DCN 20mm/80  
 P/S(2)2 MM40 Exocet w/2 msls  
 P&PQ/S&SQ(6)2 Sadral w/6 Mistral  
 Aft Pad(1)1 AS.332F Super Puma

**Sensors:**

DRBV 15, DRBN 32

**Remarks:**

French *Frigates De Surveillance*. ESM, Exocet and Sadral would be fitted only in wartime. Follow-on to *Commandant Rivière* class. Mission is surveillance in low-threat areas. Hull and superstructure of steel. No ASW capability. Constructed to mercantile standards to reduce costs. Controllable-pitch propellers. Retractable stabilizers and helicopter haul-down system. All four diesels housed in single engineering room. 100mm gun has optical director only.

**Damage and Speed Breakdown:**

Damage Points:	0	18	36	54	65	72
Surface Speed:	20	15	10	5	0	Sinks

**Georges Leygues**

Displacement: 3810 std

Damage Points: 136

Damage Modifier: 1.00

Propulsion: CODOG

**Weapons:**

F(1)1 M1968 100mm/55//1 DRBC 32E  
 A(8)1 Crotale w/8 msls//1 Mirador IV  
 P/S(1)2 DCN 20mm/80  
 PB/SB(1)2 533mm TT w/5 L5 torp  
 Aft pad(1)2 Lynx Mk4  
 PB&SB(1)4 MM38 Exocet w/1 msl

**Sensors:**

DRBV 51, DRBV 26, DRBN 32  
 DUBV 23/43 or DRBV 23C/43C

**Remarks:**

Type F70 (ASW). Max speed with DUBV 43 streamed is 19 knots. Fitted with stabilizers. Unit #3 *Montcalm* and on have (4)2 MM40 Exocet vice (1)4 MM38. 18 reloads (manual) carried for Crotale. Can carry 4 Exocet msl reloads in wartime. Unit #5 and on much improved: 100mm Compact vice M1968, DIBV 10 Vampir IR sensor, Crotale EDIR, DRBV 15 vice 26, DRBC 33 vice 32, DSBV 61 towed array sonar. MM38/40 ROF 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	34	68	102	122	136
Surface Speed:	30	22	15	8	0	Sinks

**Jeanne D'Arc**

Displacement: 10000 std

Damage Points: 276

Damage Modifier: 1.00

Propulsion: Steam

M

J

—

FF

In Class: 0+2+4

In Service: 1991

Speed: 20 kts

Crew: 100+24

Total Mounts: 8

C

C

D

D

B

J

DDG

In Class: 6+1

In Service: 1979

Speed: 30 kts

Crew: 216

Total Mounts: 12

C

D

C

F

B

D

J

M

CVH

In Class: 1

In Service: 1964

Speed: 26 kts

Crew: 809

**Weapons:**

P&PQ/P&PB/S&SQ/S&SB(1)4  
 M1953 100mm/55//3 DRBC 32A  
 1 Elevator  
 8 Lynx Mk4  
 2 LCVP  
 PB&SB(1)6 MM38 Exocet w/1 msl

**Sensors:**

DRBV 50, DRBN 32, DRBI 10, DRBV 22  
 DUBV 24

**Remarks:**

Peacetime role is as a training ship with 4 Lynx and cadets embarked. Can carry a 700-man commando battalion. Can launch 4 small/med helos at once. MM38 ROF is 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	69	138	207	248	276
Surface Speed:	26	20	13	6	0	Sinks

**L'Inflexible**

Displacement: 8920 subm

Damage Points: 127

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&SB(2)2 533mm TT w/12 torp or SM39  
 (16)1 M4 w/16 msls

**Sensors:**

DRUA 33  
 DSUX 21, DSUV 61 towed array

**Remarks:**

TT can fire F17, L5 torp, and SM39. Fitted with DUUX 5 Fenelon passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar. Estimated loadout is 8 F17, 2 L5 torp, 2 SM39 Exocet. Improved *Le Redoutable* class. Quieter.

**Damage and Speed Breakdown:**

Damage Points:	0	32	64	95	114	127
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	25	19	13	6	0	Sinks

**Le Redoutable**

Displacement: 9000 subm

Damage Points: 128

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&SB(2)2 550mm TT w/18 see remarks  
 (16)1 M20 or M4 w/16 msls

**Sensors:**

DRUA 33  
 DSUV 23, DSUV 61

**Remarks:**

First two units initially carried the M1 msls. Converted in 1977 to carry M2/M20 msls of later boats. All will carry M4 msl except first unit, *Le Redoutable*. Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. Sonar suit will be upgraded by adding DSUX 21 multifunction system. TT can carry F17 and L5 torp, SM39 Exocet.

**Damage and Speed Breakdown:**

Damage Points:	0	32	64	96	115	128
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	25	19	13	6	0	Sinks

**Narval**

Displacement: 1910 subm

Damage Points: 36

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&SB(3)2 550mm TT w/14 E14 torp

Total Mounts: 13

C

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B

—

D

J

M

SSBN

In Class: 1

In Service: 1985

Speed: 20/25 kts

Crew: 135

Total Mounts: 3

F, D

—

J

M

SSBN

In Class: 5

In Service: 1971

Speed: 20/25 kts

Crew: 135

Total Mounts: 3

F

—

J

M

SS

In Class: 1

In Service: 1957

Speed: 15/18 kts

Crew: 64

Total Mounts: 2

F



**Sensors:**

DRUA 31  
DSUV 2, DUUA 2A

J  
M

**Remarks:**

Improved version of WWII German Type XXI. Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. Originally 6 built. Additional units *Requin* struck in 1985 (laid up in special reserve); *Marsouin*, 1982; *Narval*, 1983; *Espadon*, 1985; *Morse*, 1986. *Dauphin* used as trials platform.

**Damage and Speed Breakdown:**

Damage Points:	0	9	18	27	32	36
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	18	14	9	4	0	Sinks

**Ouragan**

LPD

Displacement: 5800 std  
Damage Points: 192  
Damage Modifier: 1.00  
Propulsion: Diesel

In Class: 2  
In Service: 1965  
Speed: 17 kts  
Crew: 211  
Total Mounts: 4

Weapons:  
PB&P/P&PQ/SB&S/S&SQ (1)4 40mm/70

C/Sweden

**Sensors:**

DRBN 32  
SQS-17 (L 9021)

J  
M/USA

**Remarks:**

*Ouragan* (L 9021) to be scrapped in 1990; *Orage* (L 9022) in 1993.

**Damage and Speed Breakdown:**

Damage Points:	0	48	96	144	173	192
Surface Speed:	17	13	8	4	0	Sinks

**Rubis**

SSN

Displacement: 2670 subm  
Damage Points: 49  
Damage Modifier: 1.00  
Propulsion: Nuclear-Electric

In Class: 4  
In Service: 1982  
Speed: 18/25 kts  
Crew: 65  
Total Mounts: 1

Weapons:  
PB&SB(4)1 533mm TT w/14 see remarks

F, D

**Sensors:**

DRUA 33  
DUUA 2B, DSUV 22, DSUV 62 towed array

J  
M

**Remarks:**

Normal TT loadout 8 F17 Mk2 torp, 2 L5 torp, and 4 SM39 Exocet. Fitted with DUUX 5 Fenelon passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar. Has natural-circulation nuclear plant, but inefficient hull form negates any advantage. This will be corrected in refits on the 4 units from 1989-95.

**Damage and Speed Breakdown:**

Damage Points:	0	13	25	37	44	49
Surface Speed:	18	14	9	4	0	Sinks
Submerged Speed:	25	19	13	6	0	Sinks

**Suffren**

DDG

Displacement: 5090 std  
Damage Points: 178  
Damage Modifier: 1.00  
Propulsion: Steam

In Class: 2  
In Service: 1967  
Speed: 34 kts  
Crew: 355  
Total Mounts: 14

Weapons:  
PB&SB(1)4 MM38 Exocet w/1 msl  
F(1)2 M1953 100mm/55//1 DRBC 32A  
P&S(1)1 Malafon w/13 msls  
P/S(2)2 533mm TT w/5 L5 torp  
P/S(1)4 DCN 20mm/80  
A(2)1 Masurca w/48 msls//2 DRBR 51

D  
C  
E  
F  
C  
D

**Sensors:**

DRBI 23, DRBV 15, DRBN 32  
DUBV 23/43

J  
M

**Remarks:**

MM38 ROF 8 msls per turn (all launchers) at same target. Fitted w/triple stabilizers (treat as duals).

**Damage and Speed Breakdown:**

Damage Points:	0	44	89	134	160	178
Surface Speed:	34	26	17	8	0	Sinks

**T47**

DDG

Displacement: 2750  
Damage Points: 101  
Damage Modifier: 1.00  
Propulsion: Steam

In Class: [4]  
In Service: 1956-88  
Speed: 32 kts  
Crew: 320  
Total Mounts: 7

**Weapons:**

F/P&PQ/S&SQ(2)3 M1951 57mm/60 //1 DRBC 31  
F(6)1 MK54 375mm Mortar//1 DUBA 1  
PB/SB(3)2 550mm TT w/3 L3 torp  
A(1)1 Mk13 w/40 SM1MR//2 SPG-51

C  
E  
F  
D/USA

**Sensors:**

SPS-39  
DRBV 31, DRBV 22  
DUBV 24

J/USA  
J  
M

**Remarks:**

Mk13 ROF 3 msls per turn. Four units built. *Bouvet* struck in 1982; *Kersaint*, 1983; *Dupetit Thouars*, 1987; *Du Chayla*, 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	25	50	76	91	101
Surface Speed:	32	24	16	8	0	Sinks

**T47 ASW**

FF

Displacement: 2750  
Damage Points: 101  
Damage Modifier: 1.00  
Propulsion: Steam

In Class: [5]  
In Service: 1957-88  
Speed: 32 kts  
Crew: 269  
Total Mounts: 8

**Weapons:**

P/S(1)2 DCN 20mm/80  
P&S(1)1 Malafon w/13 msls  
P/S(3)2 550mm TT w/3 K2 & L3 torp  
A(6)1 Mk54 375mm Mortar//1 DUBA 1  
F/A(1)2 M1953 100mm/55//1 DRBC 32

C  
E  
F  
E  
C

**Sensors:**

DRBV 50, DRBN 32, DRBV 22  
DUBV 23/43

J  
M

**Remarks:**

5 built. *Casabianca* struck in 1984; *D'Estreés* and *Guepratte*, 1985; *Maille Brézé* and *Vaquelin*, 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	25	50	76	91	101
Surface Speed:	32	24	16	8	0	Sinks

**T53**

DD

Displacement: 2750  
Damage Points: 101  
Damage Modifier: 1.00  
Propulsion: Steam

In Class: [2]  
In Service: 1958-81  
Speed: 32 kts  
Crew: 276  
Total Mounts: 10

**Weapons:**

P/S(2)2 M1951 57mm/60//1 DRBC 31  
P/S(3)2 550mm TT w/2 L3 torp  
A(6)1 Mk54 375mm Mortar//1 DUBA 1  
F/2A(2)3 M1948 127mm/54  
P/S(1)2 DCN 20mm/80

C  
F  
E  
C  
C

**Sensors:**

DRBV 31, DRBI 10, DRBV 23  
DUBV 24

J  
M

**Remarks:**

Two units built. *Tartu* struck in 1980; *Forbin* struck in 1981. *Forbin* had one aft 127mm mount removed and helo pad added to act as a training ship.

**Damage and Speed Breakdown:**

Damage Points:	0	25	50	76	91	101
Surface Speed:	32	24	16	8	0	Sinks

**T53 ASW**

DD

Displacement: 2750 std  
Damage Points: 101

In Class: 1  
In Service: 1957

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

PB&amp;SB(1)4 MM38 Exocet w/1 msl

P/S(1)2 550mm TT w/4 L5 torp

Aft Pad(1)1 Lynx Mk4

P/S(1)2 DCN 20mm/80

F(1)1 M1968 100mm/55//1 DRBC 32

Sensors:

DRBV 51, 2 DRBN 32, DRBV 22

DUBV 23/43

Remarks:

Fitted with Harpoon helo recovery system. MM38 ROF 8 msls per turn (all mounts) at same target. Due to be struck in 1990.

Damage and Speed Breakdown:

Damage Points:	0	25	50	76	91	101
Surface Speed:	32	24	16	8	0	Sinks

**Tourville**

Displacement: 4800

Damage Points: 169

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(1)2 M1968 100mm/55//1 DRBC 32D

PB&amp;SB(1)6 MM38 Exocet w/1 msl

P/S(1)2 533mm TT w/5 L5 torp

A(8)1 Crotale w/8 msls//2 Mirador IV

P/S(1)2 DCN 20mm/80

Aft Pad(1)2 Lynx MK4

P&amp;S(1)1 Malafor w/13 msls

Sensors:

DRBV 51, 2 DRBN 32, DRBV 26

DUBV 23/43

DIBV 10 Vampir (IR sensor)

Remarks:

Type F67. 26 Crotale msls in magazine (manual reload). Fitted with stabilizers. All units will get Crotale EDIR, DUBV 61 towed array, Murene torpedoes. MM38 ROF 8 msls per turn (all mounts) at same target.

Damage and Speed Breakdown:

Damage Points:	0	42	84	127	152	169
Surface Speed:	32	24	16	8	0	Sinks

**Trident**

Displacement: 115 std

Damage Points: 6

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

A(1)2 12.7mm mg

F(1)1 Type 107 40mm/70

Sensors:

DRBN 32

Remarks:

Patra class.

Damage and Speed Breakdown:

Damage Points:	0	2	3	4	5	6
Surface Speed:	35	26	18	9	0	Sinks

**Tripartite**

Displacement: 500 std

Damage Points: 19

Damage Modifier: 0.75

Propulsion: Diesel

Weapons:

F(1)1 DCN 20mm/80

2 PAP104

Sensors:

DRBN 32

DUBM 21 MH, DUBM 41B MH (to be fitted)

Speed: 32 kts

Crew: 259

Total Mounts: 10

D

F

B

C

C

J

M

DD

In Class: 3

In Service: 1974

Speed: 32 kts

Crew: 282

Total Mounts: 16

C

D

F

D

C

B

E

J

M

—

PT

In Class: 4

In Service: 1976

Speed: 35 kts

Crew: 19

Total Mounts: 3

C/Intl

C/Italy

J

MH

In Class: 8+2

In Service: 1984

Speed: 15 kts

Crew: 55

Total Mounts: 3

C

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J

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Remarks:

Eridan class. Hull constructed of GRP. DUBM 21 and DUBM 41 sonars and PAP104 mine disposal vehicles are for mine hunting only.

Damage and Speed Breakdown:

Damage Points:	0	5	9	14	17	19
Surface Speed:	15	11	8	4	0	Sinks

**Type E52**

Displacement: 1250

Damage Points: 51

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

P/S(1)2 DCN 20mm/80

P/S(3)4 550mm TT w/3 K2 &amp; L3 torp//1 DUBA 1

2F/A(2)3 M1951 57mm/60//1 DRBC 31

2 DC Proj

1 DC Rail

Sensors:

DRBV 31, DRBV 22

DUBV 24

Remarks:

8 units built. *L'Agenais* and *Le Picard* struck in 1977; *Le Normand*, *Le Provençal*, *Le Savoyard* and *Le Basque*, 1980; *L'Alsacien* and *Le Vendeen*, 1981. *Le Savoyard* and *Le Vendeen* also also P&S(4)1 305mm mortar. *Le Basque* and *Le Savoyard* have DUBV 1 vice DUBV 24.

Damage and Speed Breakdown:

Damage Points:	0	13	26	38	46	51
Surface Speed:	27	20	14	7	0	Sinks

**Type T56 ASW**

Displacement: 2750

Damage Points: 101

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

P/S(3)2 550mm TT w/3 K2 &amp; L3 torp

A(1)1 Malafor w/13 msls

Aft Pad(1)1 SA.319B Alouette III

F(1)2 M1953 100mm/55//1 DRBC 32

Sensors:

DRBV 50, DRBN 32, DRBV 22

DUBV 23/43

Remarks:

*La Galssonniere* is the last unit of the *Surcouf* class. Will be struck in 1990.

Damage and Speed Breakdown:

Damage Points:	0	25	50	76	91	101
Surface Speed:	32	24	16	8	0	Sinks

**Federal Republic of Germany (FRG)****Bremen**

Displacement: 2900 std

Damage Points: 106

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

F(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 WM25

PB&amp;SB(4)2 Mk141 w/4 Harpoon

F(1)1 Compact 76mm/62//1 STIR

PB/SB(2)2 Mk32 324mm TT w/2 Mk46 torp

Aft Pad(1)2 Lynx Mk88

Sensors:

DA.08

DSQS-21B

3RM20

Remarks:

16 manual reloads for Mk29 NATO Sea Sparrow. Has Prairie-Masker (quieted). Fitted with stabilizers, and a Bear Trap helo landing aid. Ships will re-

FF

In Class: [8]

In Service: 1960-81

Speed: 27 kts

Crew: 205

Total Mounts: 11

C

F

C

E/Intl

E/Intl

J

M

DD

In Class: 1

In Service: 1962

Speed: 32 kts

Crew: 272

Total Mounts: 6

F

E

B

C

J

M

FFG

In Class: 7+1

In Service: 1982

Speed: 30 kts

Crew: 204

Total Mounts: 8

D/USA

D/USA

C/Italy

F/USA

B

J/Nethl

M

J/Italy

ceive A(21)2 Mk43 launchers w/21 RIM-116A RAM per mount. Mk43 ROF 2 msls per turn at same target. Mk29 NATO SS ROF 15 msls per turn.

**Damage and Speed Breakdown:**

Damage Points:	0	26	53	80	95	106
Surface Speed:	30	22	15	8	0	Sinks

**Hamburg**

Displacement: 3500 std

Damage Points: 126

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

PB&amp;SB(2)2 MM38 Exocet w/2 msls

F(4)2 Bofors 375mm mortar w/18 salvoes

P/S(1)4 533mm TT w/1 Seeschlange torp

P/S(2)4 Type 106 40mm/70

2 DC Rail w/6 DC

2F/A(1)3 M1953 100mm/55//3 M45

Sensors:

LW.04, ZW.01, DA.08

ELAC 1BV

Kelvin-Hughes 14/9

Remarks:

MM38 ROF 8 msls per turn (both mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	31	63	94	113	126
Surface Speed:	35	26	18	9	0	Sinks

**Köln**

Displacement: 2425

Damage Points: 90

Damage Modifier: 1.00

Propulsion: CODAG

Weapons:

P/S(1)2 Type 107 40mm/70//2 M45

F/A(2)2 Type 106 40mm/70//2 M45

F(4)2 Bofors 375mm mortar w/18 salvoes

P/S(1)4 533mm TT w/1 Seeschlange torp

2 DC Proj w/6 DC

F/A(1)2 M1953 100mm/55//1 M45

Sensors:

ZW.01, DA.02

Kelvin-Hughes 14/9

EDO 610 (CWE 610)

PAE-1

Remarks:

Type 120 class. 2 M45s control all 40mm mounts. Three other units struck: *Köln* and *Karlsruhe* in 1982, *Emden* in 1983.

**Damage and Speed Breakdown:**

Damage Points:	0	22	45	68	81	90
Surface Speed:	30	22	15	8	0	Sinks

**Lutjens**

Displacement: 3370 std

Damage Points: 91

Damage Modifier: .75

Propulsion: Steam

Weapons:

A(1)1 Mk13 w/40 see remarks//2 SPG-51

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

P&amp;S(8)1 Mk16 w/8 ASROC

1 DC Proj

F/A(1)2 Mk42 127mm/54//1 SPG-60

Sensors:

SPS-10, SPS-52, SPS-40, SPQ-9A

Kelvin-Hughes 14/9

DSQS-21B

Remarks:

Mk13 launcher loadout 36 SM1MR and 4 Harpoon. Mk13 ROF 3 msls per turn. All units will receive F/A(21)2 Mk43 launchers w/21 RIM-116A RAM.

**DDG**

In Class: 4

In Service: 1964

Speed: 35 kts

Crew: 280

Total Mounts: 17

D/Frn

E/Sweden

F

C/Italy

E/Intl

C/Frn

J/Nethl

M

J/Intl

**Thetis**

Displacement: 575 std

Damage Points: 28

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F(4)1 Bofors 375mm Mortar w/5 salvoes

PB/SB(1)4 533mm TT w/1 Mk46 torp

2 DC Rail w/12 DC

A(2)1 Type 106 40mm/70

Sensors:

DRBV 15

ELAC 1BV

Kelvin-Hughes 14/9

ESM

**Damage and Speed Breakdown:**

Damage Points:	0	7	14	21	25	28
Surface Speed:	23	17	12	6	0	Sinks

**FFL**

In Class: 5

In Service: 1960

Speed: 23 kts

Crew: 64

Total Mounts: 8

E/Sweden

F/USA

E/Intl

C/Italy

J/Frn

M

J/Intl

—

**Type 143**

Displacement: 295

Damage Points: 15

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F/A(1)2 Compact 76mm/62//1 WM27

A(1)2 533mm TT w/1 Seel torp

PB&amp;SB(2)2 MM38 Exocet w/2 msls

Sensors:

3RM20

Remarks:

*Albatros* class. MM38 ROF 8 msls per turn (both mounts) at same target. After 76mm being replaced by A(21)1 Mk43 launcher w/21 RIM-116A RAM in 1990s. *Habicht* is fitted as trials ship.

**Damage and Speed Breakdown:**

Damage Points:	0	4	8	11	14	15
Surface Speed:	32	24	16	8	0	Sinks

**Type 143A**

Displacement: 300

Damage Points: 15

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

PB&amp;SB(1)4 MM38 Exocet w/1 msl

F(1)1 Compact 76mm/62//1 WM27

Sensors:

3RM20

ESM

Remarks:

*Gepard* class. Burst speed is 40 kts. To be fitted with A(21)1 Mk43 launcher w/21 RIM-116A RAM in 1990s. Hydrofoil. MM38 ROF 8 msls per turn (all mounts) at same target. Wooden hulls on aluminum frame.

**Damage and Speed Breakdown:**

Damage Points:	0	4	8	11	14	15
Surface Speed:	32	24	16	8	0	Sinks

**Type 148**

Displacement: 234

Damage Points: 12

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F(1)1 Compact 76mm/62 w/80 rounds//1 Pollux

**PTM**

In Class: 10

In Service: 1973

Speed: 32 kts

Crew: 40

Total Mounts: 6

C/Italy

F

D/Frn

J/Italy

**PHM**

In Class: 10

In Service: 1982

Speed: 32 kts

Crew: 34

Total Mounts: 5

D/Frn

C/Italy

J/Italy

—

**PTM**

In Class: 20

In Service: 1972

Speed: 35 kts

Crew: 30

Total Mounts: 4

C/Italy



A(1)1 Type 107 40mm/70  
PB&SB(2)2 MM38 Exocet w/2 msls

#### Sensors:

Triton G  
3RM20  
ESM

#### Remarks:

*Tiger* class. MM38 ROF 8 msls per turn (all mounts) at same target.

#### Damage and Speed Breakdown:

Damage Points:	0	3	6	9	11	12
Surface Speed:	35	26	18	9	0	Sinks

#### Type 205

Displacement: 450 subm

Damage Points: 11

Damage Modifier: 1.00

Propulsion: Diesel-Electric

#### Weapons:

PB&SB(4)2 533mm TT w/8 Seeal torp

#### Sensors:

SRS-M1H, CSU 3-4

Calypso II

#### Remarks:

Hull nonmagnetic. MAD detection range halved. Additional units *U3* struck in 1968; *U4* and *U8* struck in 1974; *U5* in 1975; *U6* and *U7* in 1974. Very Small sonar contact. -10% active sonar detection chance.

#### Damage and Speed Breakdown:

Damage Points:	0	3	6	8	10	11
Surface Speed:	10	8	5	2	0	Sinks
Submerged Speed:	17	13	8	4	0	Sinks

#### Type 206

Displacement: 500 subm

Damage Points: 12

Damage Modifier: 1.00

Propulsion: Diesel-Electric

#### Weapons:

PB&SB(4)2 533mm TT w/8 Seeal torp

#### Sensors:

CSU 3-4

Calypso III

#### Remarks:

Hull nonmagnetic. MAD detection range halved. Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. Can carry 24 mines in external containers. Six units modernized with DBQS-21D sonar, Seehecht torpedoes; another six will be upgraded. Designated *Type 206A*. Very Small sonar contact. -10% active sonar detection chance.

#### Damage and Speed Breakdown:

Damage Points:	0	3	6	9	11	12
Surface Speed:	10	8	5	2	0	Sinks
Submerged Speed:	17	13	8	4	0	Sinks

#### Z Class

Displacement: 2050

Damage Points: 77

Damage Modifier: 1.00

Propulsion: Steam

#### Weapons:

P&S(2)3 Mk33 76mm/50//1 SPG-34

PB/SB(1)2 533mm TT w/1 Seeschlange

F(24)2 Mk15 Hedgehog w/6 salvoes

1 DC Rail

F/A(4)1 Mk30 127mm/38//1 SPG-53

P&S(5)1 533mm TT w/1 Seeal torp

#### Sensors:

SPS-6C, SPS-10

SQS-29

#### Remarks:

Ex-US *Fletcher*. Hedgehog Mk estimated. 5 units transferred to FRG 1959-

C/Italy  
D/Frn

J/Frn

J/Italy

—

SS

In Class: 6

In Service: 1967

Speed: 10/17 kts

Crew: 20

Total Mounts: 2

F

M

J/Frn

SS

In Class: 18

In Service: 1973

Speed: 10/17 kts

Crew: 22

Total Mounts: 2

F

M

J/Frn

DD

In Class: [5]

In Service: 1942-82

Speed: 30 kts

Crew: 250

Total Mounts: 10

C/USA

F

E/USA

E/Intl

C/USA

F

J/USA

M/USA

60. *Z1* struck in 1979; *Z2* in 1981; *Z3* in 1981; *Z4* in 1980; *Z5* in 1982. *Z4* does not have aft 76mm mount. Mk15 Hedgehog takes 5 min to reload.

#### Damage and Speed Breakdown:

Damage Points:	0	19	38	58	69	77
Surface Speed:	30	22	15	8	0	Sinks

#### Zoebel

Displacement: 210

Damage Points: 10

Damage Modifier: 1.00

Propulsion: Diesel

#### Weapons:

A(1)2 533mm TT w/1 Seeal torp

F/A(1)2 Type 107 40mm/70//1 WM20

#### Sensors:

Kelvin-Hughes 14/9

#### Remarks:

*Type 142* class. Class struck in 1982-84.

#### Damage and Speed Breakdown:

Damage Points:	0	2	5	8	9	10
Surface Speed:	38	28	19	10	0	Sinks

## Italy

#### Alpino

Displacement: 2000 std

Damage Points: 76

Damage Modifier: 1.00

Propulsion: CODOG

#### Weapons:

F(1)1 K113 Menon

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Aft Pad(1)2 AB-212

F(1)2 Mk1 76mm/62//1 RTN-10X

P/S(1)2 Mk1 76mm/62//1 RTN-10X

P&PQ/S&SQ(1)2 Mk1 76mm/62 //1 RTN-10X

#### Sensors:

SPS-702, SPN-748, SPQ-2

DE1164 Hull, DE1164 VDS

SPS-12

#### Remarks:

Fitted with fin stabilizers. Class has 3 RTN-10X total.

#### Damage and Speed Breakdown:

Damage Points:	0	19	38	57	68	76
Surface Speed:	27	20	14	7	0	Sinks

#### Andrea Doria

Displacement: 6500

Damage Points: 206

Damage Modifier: 1.00

Propulsion: Steam

#### Weapons:

F/A(1)4 Mk1 76mm/62//2 RTN-10X

P/S(1)4 Mk1 76mm/62//2 RTN-10X

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Aft Pad(2)4 AB-212

F(2)1 Mk10 w/40 SM1ER//2 SPG-55

#### Sensors:

SPQ 2D, 3RM20

SPS-52, SPS-39

SQS-23 (A. Doria), SQS-39 (C. Dullio)

#### Remarks:

Fitted with stabilizers. *Caillo Dullio* refitted as training cruiser. Aft-facing 76mm and RTN-10X removed. Carries only 2 AB-212. RAN-20S vice SPS-52.

#### Damage and Speed Breakdown:

Damage Points:	0	52	103	154	185	206
Surface Speed:	31	23	16	8	0	Sinks

PT

In Class: [10]

In Service: 1961-84

Speed: 38 kts

Crew: 30

Total Mounts: 4

F

C/Italy

J/Intl

FF

In Class: 2

In Service: 1968

Speed: 27 kts

Crew: 264

Total Mounts: 11

E

F/USA

B

C

C

C

J

M/USA

J/USA

CG

In Class: 2

In Service: 1964

Speed: 31 kts

Crew: 514

Total Mounts: 15

C

C

F/USA

B

D/USA

J

J/USA

M/USA

**Animoso**

Displacement: 4500  
 Damage Points: 159  
 Damage Modifier: 1.00  
 Propulsion: CODOG

**Weapons:**

Aft pad(1)2 AB-212  
 F(1)1 Compact 127mm/54//1 RTN-30X  
 P&PB/S&SB/A(1)3 Super Rapid 76mm/62 //3 RTN-20X  
 PB&SB(2)4 Teseo w/2 Otomat Mk2  
 A(1)1 Mk13 w/40 SM2MR//2 SPG-51  
 F(8)1 Albatros w/8 Aspide//1 RTN-20X  
 PB/SB(3)2 ILAS-3 324mm TT w/3 Mk46 torp

**Sensors:**

SPS-52  
 DE 1164 Hull & VDS  
 RAN-3L, SPS-702, RAN-10S, 3RM20

**Remarks:**

Will replace *Impavido*. Teseo ROF 8 msls per turn (all mounts) at same target; Mk13 ROF is 3 msls per turn. Prairie-Masker fitted (quieted).

**Damage and Speed Breakdown:**

Damage Points:	0	40	80	119	143	159
Surface Speed:	31	23	16	8	0	Sinks

**Audace**

Displacement: 3950 std  
 Damage Points: 141  
 Damage Modifier: 1.00  
 Propulsion: Steam

**Weapons:**

F(1)1 Compact 127mm/54//1 RTN-10X  
 P/S(1)4 Compact 76mm/62//2 RTN-10X  
 PQ&SQ(3)2 Mk32 324mm TT w/3 Mk46 torp  
 PQ&SQ(4)1 533mm TT w/4 A.184 torp  
 Aft Pad(1)2 AB-212  
 A(1)1 Mk13 w/40 SM1MR//2 SPG-51  
 F(8)1 Albatros w/8 Aspide  
 PB&SB(2)4 Teseo w/2 Otomat Mk2

**Sensors:**

RAN-10S, SPQ-2, SPN-748, RAN-3L  
 SPS-52  
 EDO 610 (CWE 610)

**Remarks:**

Fitted with stabilizers. Can carry 1 Sea King in place of 2 AB-212. Mk13 ROF 3 msls per turn. Configuration is post-refit. *Ardito* already completed; *Audace* will finish in mid-1990.

**Damage and Speed Breakdown:**

Damage Points:	0	35	70	106	127	141
Surface Speed:	33	25	16	8	0	Sinks

**Bergamini**

Displacement: 1410  
 Damage Points: 56  
 Damage Modifier: 1.00  
 Propulsion: Diesel

**Weapons:**

F(1)1 K113 Menon  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
 Aft pad(1)1 AB-212  
 F(1)2 Mk1 76mm/62//1 RTN-10X

**Sensors:**

SPQ-2  
 SQS-30  
 SPS-12

**Remarks:**

Fitted with stabilizers. 4 units built. *Luigi Rizzo* struck in 1980; *Carlo Bergamini*, 1981; *Carlo Margottini* and *Virginio Fasan*, 1985.

**Damage and Speed Breakdown:**

Damage Points:	0	14	28	42	50	56
Surface Speed:	25	19	12	6	0	Sinks

**DDG**

In Class: 0+2  
 In Service: 1992  
 Speed: 31 kts  
 Crew: 400  
 Total Mounts: 14

B  
 C  
 C  
 D  
 D/USA  
 D  
 F/USA  
 J/USA  
 M/USA  
 J

**Cassiopea**

Displacement: 1002 std  
 Damage Points: 42  
 Damage Modifier: 1.00  
 Propulsion: Diesel

**Weapons:**

F(1)1 Compact 76mm/62//1 RTN-20X  
 Aft Pad(1)1 AB-212  
 P/S(1)2 20mm/80

**Sensors:**

Nav radar

**Remarks:**

Offshore patrol duties. Will be named *Cassiopea*, *Libra*, *Spica*, *Vega*, *Orione*.

**Damage and Speed Breakdown:**

Damage Points:	0	11	21	32	38	42
Surface Speed:	20	15	10	5	0	Sinks

**Centauro**

Displacement: 1807  
 Damage Points: 69  
 Damage Modifier: 1.00  
 Propulsion: Steam

**Weapons:**

F/2A(1)3 Mk1 76mm/62//1 RTN-10X  
 F(3)1 K113 Menon  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

**Sensors:**

SPS-6C  
 SQS-11  
 SPQ-2

**Remarks:**

Four units built. *Castore* struck in 1980; *Canopo*, 1981; *Cigno*, 1982; *Centauro*, 1984.

**Damage and Speed Breakdown:**

Damage Points:	0	17	34	52	62	69
Surface Speed:	26	20	13	6	0	Sinks

**Enrico Toti**

Displacement: 591 subm  
 Damage Points: 14  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric

**Weapons:**

PB&SB(2)2 533mm TT w/6 A.184 torp

**Sensors:**

IP 64  
 3RM20

**Remarks:**

Very small sonar contact. -10% active sonar detection chance.

**Damage and Speed Breakdown:**

Damage Points:	0	4	7	10	13	14
Surface Speed:	14	10	7	4	0	Sinks
Submerged Speed:	15	11	8	4	0	Sinks

**Ex-US Tang**

Displacement: 2700 subm  
 Damage Points: 50  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric

**Weapons:**

PB&SB(3)2 533mm TT w/ A.184 torp  
 PQ&SQ(2)1 533mm TT

**Sensors:**

BQR-3, BQS-4  
 BPS-12

**Remarks:**

Short TT aft, probably no longer used. Fitted with USA BQG-4 PUFFS passive ranging sonar (not a search sensor). Add 5% to Passive Fire Control solution chance if target detected by this sonar. S515 *Livio Piomarta* trans-

**OPV**

In Class: 3+1+4  
 In Service: 1989  
 Speed: 20 kts  
 Crew: 78

**Total Mounts: 4**

C  
 B  
 C/Intl  
 J/Intl

**FF**

In Class: [4]  
 In Service: 1958-1984  
 Speed: 26 kts  
 Crew: 207

**Total Mounts: 6**

C  
 E  
 F/USA  
 J/USA  
 M/USA  
 J

**SS**

In Class: 4  
 In Service: 1968  
 Speed: 14/15 kts  
 Crew: 26

**Total Mounts: 2**

F  
 M  
 J

**SS**

In Class: [2]  
 In Service: 1952-88  
 Speed: 16/16 kts  
 Crew: 81

**Total Mounts: 3**

F  
 F  
 M/USA  
 J/USA

ferred to Italy 10 July 1973; struck in 1986. S516 *Romeo Romai*, 20 Feb 1974; struck in 1988.

#### Damage and Speed Breakdown:

Damage Points:	0	12	25	38	45	50
Surface Speed:	16	12	8	4	0	Sinks
Submerged Speed:	16	12	8	4	0	Sinks

#### G. Garibaldi

Displacement: 10043 std

Damage Points: 277

Damage Modifier: 1.00

Propulsion: COGAG

Weapons:

F/A(8)2 Albatros w/24 Aspide//2 RTN-30X  
PQ&SQ(2)1 Dardo 40mm/70//1 RTN-20X  
PB/SB(2)2 Dardo 40mm/70//2 RTN-20X  
PB&SB(1)4 Teseo w/1 Otomat Mk2  
PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s torp  
18 SH-3D Sea King  
2 Elevators

Sensors:

RAN-10S, SPN-703, RAN-3L, SPS-702

DE 1164 Hull & VDS

SPS-52

Remarks:

Will be based at La Spezia as flagship of Italian Navy. Fitted with dual stabilizers. Hangar can accommodate 12 Sea King, or 10 Sea Harrier and 1 Sea King. Spots on deck for launch of 6 large helos at once. Six manual reloads carried for Otomat Mk2, 50-60 Sea Killer Mk2 for helicopters, large number of A.244s. Albatros ROF 2 msls per turn (each launcher) at same target. Teseo ROF 8 msls per turn (all mounts) at same target.

#### Damage and Speed Breakdown:

Damage Points:	0	69	138	208	249	277
Surface Speed:	29	22	14	7	0	Sinks

#### Impavido

Displacement: 3201 std

Damage Points: 116

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(2)1 Mk38 127mm/38//1 RTN-10X  
P/S(1)4 Compact 76mm/62//2 RTN-10X  
PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
A(1)1 Mk13 w/40 SM1MR//2 SPG-51

Sensors:

SPQ-2, SPN-748

SQS-39

SPS-39, SPS-52, SPS-12

Remarks:

Helopad aft, fitted with stabilizers. Mk13 ROF 3 msls per turn.

#### Damage and Speed Breakdown:

Damage Points:	0	29	58	87	104	116
Surface Speed:	33	25	16	8	0	Sinks

#### Impetuoso

Displacement: 2775

Damage Points: 102

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

A(4)2 Mk2 40mm/60//2 SPG-34  
P/S(2)4 Mk1 40mm/60//2 SPG-34  
F(3)1 K113 Menon  
PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
4 DC Proj  
1 DC Rail  
F/A(2)2 Mk38 127mm/38//1 Mk25

Sensors:

SPQ-2

In Class: 1

In Service: 1985

Speed: 29 kts

Crew: 560

Total Mounts: 13

D

C

C

D

F

B/USA

—

J

M/USA

J/USA

CVH

SQS-11

SPS-6C

Remarks:

Two units built. *Impetuoso* and *Indomito* both struck in 1983. *Indomito* does not have Menon.

#### Damage and Speed Breakdown:

Damage Points:	0	26	51	76	92	102
Surface Speed:	34	26	17	8	0	Sinks

M/USA

J/USA

#### Lupo

Displacement: 2208 std

Damage Points: 83

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

A(8)1 Mk29 NATO Sea Sparrow w/8 Aspide//1 Mk91  
F(1)1 Compact 127mm/54//1 RTN-10X  
P/S(2)2 Dardo 40mm/70//2 RTN-20X  
PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
Aft Pad(1)1 AB-212  
PB&SB(1)8 Teseo w/1 Otomat Mk2

Sensors:

RAN-10S, SPQ-2F, RAN-11L/X

3RM20, SPN-748

DE 1160B

Remarks:

Fitted with stabilizers. Can carry 2 small/med helos: one on deck, one in hangar. Mk29 NATO Sea Sparrow ROF 15 msls per turn. Teseo ROF 8 msls per turn (all mounts) at same target.

#### Damage and Speed Breakdown:

Damage Points:	0	21	42	62	75	83
Surface Speed:	35	26	18	9	0	Sinks

#### Maestrale

Displacement: 2500 std

Damage Points: 92

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

F(8)1 Albatros w/8 Aspide//1 RTN-30X  
F(1)1 Compact 127mm/54//1 RTN-10X  
P/S(2)2 Dardo 40mm/70//2 RTN-20X  
PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s torp  
Aft Pad(1)2 AB-212  
PB/SB(1)2 533mm TT w/1 A.184 torp  
PB&SB(1)4 Teseo w/1 Otomat Mk2

Sensors:

SPQ-2F, RAN-10S, SPS-702

DE 1164B Hull, DE 1164 VDS

Remarks:

Fitted with stabilizers. 16 reloads for Aspide (manual). Has Prairie-Masker (quieted). Will receive passive towed array during first refit. Teseo ROF 8 msls per turn (all mounts) at same targets. Albatros ROF 2 msls per turn.

#### Damage and Speed Breakdown:

Damage Points:	0	23	46	69	83	92
Surface Speed:	32	24	16	8	0	Sinks

#### Minerva

Displacement: 1025 lt

Damage Points: 43

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

A(8)1 Albatros w/8 Aspide//1 RTN-20X  
F(1)1 Compact 76mm/62//1 RTN-20X  
PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s torp  
PB&PQ/SB&SQ(2)2 Teseo w/2 Otomat Mk2

Sensors:

RAN-10S, SPN-728

DE 1167LF VDS

FFG

In Class: 4

In Service: 1977

Speed: 35 kts

Crew: 186

Total Mounts: 15

D

C

C

F/USA

B

D

J

J

M/USA

DDG

In Class: 2

In Service: 1963

Speed: 33 kts

Crew: 334

Total Mounts: 8

C/USA

C

F/USA

D/USA

J

M/USA

J/USA

FFG

In Class: 8

In Service: 1982

Speed: 32 kts

Crew: 213

Total Mounts: 14

D

C

C

F

B

F

D

J

M/USA

DD

In Class: [2]

In Service: 1958-83

Speed: 34 kts

Crew: 354

Total Mounts: 16

C/USA

C/USA

E

F/USA

E/Intl

E/Intl

C/USA

J

FFL

In Class: 4+4+4?

In Service: 1987

Speed: 24 kts

Crew: 123

Total Mounts: 6

D

C

F

D

J

M/USA

**Remarks:**

Fitted with stabilizers. Single RTN-20X directs both Aspid and 76mm at single target. Albatros ROF 2 msls per turn. Normally does not have Otomat loaded. Space and weight reserved for larger Aspid magazine and VDS.

**Damage and Speed Breakdown:**

Damage Points:	0	11	22	32	39	43
Surface Speed:	24	18	12	6	0	Sinks

**Pietro De Cristofaro**

Displacement: 850 std

Damage Points: 37

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F/A(1)2 Mk1 76mm/62//1 RTN-10X

A(1)1 K113 Menon

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Sensors:

SPQ-2

SQS-36 hull, SQS-36 VDS

Remarks:

No VDS on F540; no ASW TT on F541.

**Damage and Speed Breakdown:**

Damage Points:	0	9	18	28	33	37
Surface Speed:	22	16	11	6	0	Sinks

**Salvatore Pelosi**

Displacement: 1641 subm

Damage Points: 32

Damage Modifier: 1.00

Propulsion: Diesel-Electric

Weapons:

PB&amp;SB(3)2 533mm TT w/12 see remarks

Sensors:

BPS-704

IPD 70s, MD 100s

Remarks:

Improved Sauro class. Can carry A.184 torpedoes and Harpoon. Hull is HY80 steel. Very Small sonar contact. -10% active sonar detection chance. Normal TT loadout 8 A.184 torp, 4 Harpoon.

**Damage and Speed Breakdown:**

Damage Points:	0	8	16	24	29	32
Surface Speed:	11	8	6	3	0	Sinks
Submerged Speed:	19	14	10	5	0	Sinks

**Sauro**

Displacement: 1641 subm

Damage Points: 32

Damage Modifier: 1.00

Propulsion: Diesel-Electric

Weapons:

PB&amp;SB(3)2 533mm TT w/12 A.184 torp

Sensors:

MD100/s, IPD 70s

BPS-704

Remarks:

Very small sonar contact. -10% active sonar detection chance.

**Damage and Speed Breakdown:**

Damage Points:	0	8	16	24	29	32
Surface Speed:	11	8	6	3	0	Sinks
Submerged Speed:	19	14	10	5	0	Sinks

**Sparviero**

Displacement: 65 fl

Damage Points: 2

Damage Modifier: 0.75

Propulsion: CODOG

Weapons:

PB&amp;SB(1)2 Teseo w/1 Otomat Mk2

F(1)1 Compact 76mm/62 w/150 rds//1 RTN-10X

In Class: 4

In Service: 1965

Speed: 22 kts

Crew: 129

Total Mounts: 5

C

E

F/USA

J

M/USA

FFL

SS

In Class: 2+2

In Service: 1987

Speed: 11/19 kts

Crew: 45

Total Mounts: 2

F

J

M

SS

In Class: 4

In Service: 1979

Speed: 11/19 kts

Crew: 45

Total Mounts: 2

F

M

J

PHM

In Class: 7

In Service: 1974

Speed: 50 kts

Crew: 10

Total Mounts: 3

D

C

**Sensors:**

3RM7

J

**Remarks:**

Light aluminum construction. Total of 80+70 76mm rounds. Rooster tail enhances RCS. Treat as large target. Teseo ROF 8 msls per turn (both mounts) at same targets. No sleeping accommodation.

**Damage and Speed Breakdown:**

Damage Points:	0	1	2
Surface Speed:	50	25	Sinks

**Vittorio Veneto**

Displacement: 7500 std

Damage Points: 226

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F/A(2)2 Dardo 40mm/70//3 RTN-20X

PB&amp;PQ(2)1 Dardo 40mm/70//3 RTN-20X

PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s torp

aft pad(4)9 AB-212

2 Elevator

PB&amp;SB(1)4 Teseo w/1 Otomat Mk2

F(2)1 Mk10 w/60 see remarks//2 SPG-55

F/A(1)4 Mk1 76mm/62//2 RTN-10X

P/S(1)4 Mk1 76mm/62//2 RTN-10X

Sensors:

SPS-52

3RM7, SPS-702, RAN-3L

SQS-23

Remarks:

Can carry 4 Sea Kings in place of AB-212. Sea Kings will not fit in hangar; must be carried on flight deck. Mk10 loadout 40 SM1ER and 20 ASROC. Fitted with dual stabilizers. Can launch 2 small/med helos at once. Teseo ROF 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	56	113	170	203	226
Surface Speed:	30	22	15	8	0	Sinks

**Japan****Abukuma**

Displacement: 1900 std

Damage Points: 72

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

PB&amp;SB(4)2 Mk141 w/4 Harpoon

F(1)1 Compact 76mm/62//1 FCS-2-21

ZPB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

A(R)1 Mk15 Phalanx w/5 bursts

P&amp;S(8)1 Mk116 ASROC w/8 ASROC

Sensors:

OPS-28, OPS-14

OQS-4

SQR-19 towed array (possible)

**Damage and Speed Breakdown:**

Damage Points:	0	18	36	54	65	72
Surface Speed:	27	20	14	7	0	Sinks

**Aegis Destroyer**

Displacement: 7200 std

Damage Points: 206

Damage Modifier: 1.00

Propulsion: COGAG

Weapons:

PB&amp;PQ/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

F&amp;A(61)1 Mk41 VLS (aft) w/61 see remarks//3 SPG-62

F&amp;A(29)1 Mk41 VLS (fwd) w/29 see remarks//3 SPG-62

F/A(R)2 Mk15 Phalanx w/5 bursts

CHG

In Class: 1

In Service: 1969

Speed: 30 kts

Crew: 550

Total Mounts: 29

C

C

F

B

—

D

D/USA

C

C

J/USA

J

M/USA

FF

In Class: 1+3+2

In Service: 1989

Speed: 27 kts

Crew: 132

Total Mounts: 7

D/USA

C/Italy

F/USA

C/USA

E/USA

J

M

M/USA

DDG

In Class: 0+1+3

In Service: 1993

Speed: 31 kts

Crew: 310

Total Mounts: 9

D/USA

D/USA

D/USA

C/USA

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP  
F(1)1 Compact 127mm/54//1 FCS 2-21

**Sensors:**

OPS-19, OPS-28

SPY-1D

OQS-101

SQR-19 towed array

**Remarks:**

Helo pad aft, no hangar. Mk41 VLS fires SM2MR; VLS will carry VLASROC when available. Three Mk99 illuminators serve both forward and aft VLS.

**Damage and Speed Breakdown:**

Damage Points:	0	52	103	154	185	206
Surface Speed:	31	23	16	8	0	Sinks

**Amatsukaze**

Displacement: 3050 std

Damage Points: 111

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

A(1)1 Mk13 w/40 SM1MR//2 SPG-51

F(2)2 Mk33 76mm/50//1 FCS-2-21

P&S(8)1 Mk112 ASROC w/8 ASROC

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

F(24)2 Mk15 Hedgehog w/6 salvoes

**Sensors:**

OPS-17

SPS-29, SPS-52

SQS-23

**Remarks:**

No reloads for ASROC. Original Mk63 GFCS replaced w/FCS-2. Will be modernized with Compact 76mm/62 and Mk15 Phalanx.

**Damage and Speed Breakdown:**

Damage Points:	0	28	55	83	100	111
Surface Speed:	33	25	16	8	0	Sinks

**Asagiri**

Displacement: 3400 std

Damage Points: 122

Damage Modifier: 1.00

Propulsion: COGAG

**Weapons:**

F(1)1 Compact 76mm/62//1 FCS-2-22

PB&PQ/SB&SQ(4)2 Mk141 w/4 Harpoon

A(8)1 Mk29 NATO Sea Sparrow w/18 RIM-7M//1 FCS-2-12E

F(8)1 Mk112 ASROC w/8 ASROC

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

P/S(R)2 Mk15 Phalanx w/5 bursts

Aft Pad(1)1 HSS-2B Sea King

**Sensors:**

OPS-28, OPS-14 (DD-151 to 155), OPS-24 (DD-156 to 158)

OQS-4

**Remarks:**

Has Prairie-Masker bubbler (quieted). Will be fitted with fin stabilizers. Mk29 NATO SS ROF 15 msls per turn. Has Beartrap haul-down system. **Critical Hit Armor:** Sensors, L.

**Damage and Speed Breakdown:**

Damage Points:	0	31	61	92	110	122
Surface Speed:	30	22	15	8	0	Sinks

**Chikugo**

Displacement: 1470 std

Damage Points: 58

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

F(2)1 Mk33 76mm/50//1 FCS-1B

A(2)1 Mk1 40mm/60

P&S(8)1 Mk16 ASROC w/8 ASROC

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

F/USA  
C/Italy

J

J/USA

M

M/USA

**DDG**

In Class: 1

In Service: 1965

Speed: 33 kts

Crew: 290

Total Mounts: 8

D/USA

C/USA

E/USA

F/USA

E/USA

J

J/USA

M/USA

**DDG**

In Class: 4+4

In Service: 1988

Speed: 30 kts

Crew: 230

Total Mounts: 10

C/Italy

D/USA

D/USA

E/USA

F/USA

C/USA

B

J

M

**FF**

In Class: 11

In Service: 1970

Speed: 25 kts

Crew: 165

Total Mounts: 5

C/USA

C/USA

E/USA

F/USA

**Sensors:**

OPS-16, OPS-19, OPS-14

OQS-3

SQS-35 IVDS (5 units)

**Remarks:**

Mk51 optical director only for 40mm. SQS-35 to be fitted in other units.

**Damage and Speed Breakdown:**

Damage Points:	0	14	29	44	52	58
Surface Speed:	25	19	12	6	0	Sinks

**Haruna**

Displacement: 4700 std

Damage Points: 124

Damage Modifier: 0.75

Propulsion: Steam

**Weapons:**

F(1)2 Mk42 127mm/54//2 FCS-1A

A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 FCS-2-12

P/S(R)1 Mk15 Phalanx w/5 bursts

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

F(8)1 Mk112 ASROC w/8 ASROC

Aft Pad(1)3 HSS-2B Sea King

**Sensors:**

OPS-28 (141, 142), OPS-11 (141, 142)

OQS-3 (141, 142)

**Remarks:**

Fitted with dual fin stabilizers. Helicopter haul-down system. 8 RIM-7M manual reloads for Mk29 NATO SS. Fitted with Prairie-Masker bubbling system (quieted). FCS-1A can direct Mk42 gun or illuminate one target for Sea Sparrow msl. Mk29 NATO SS ROF 15 msls per turn. **Critical Hit Armor:** Sensors, L. Aluminum superstructure.

**Damage and Speed Breakdown:**

Damage Points:	0	31	62	93	111	124
Surface Speed:	32	24	16	8	0	Sinks

**Hatakaze**

Displacement: 4650 std

Damage Points: 164

Damage Modifier: 1.00

Propulsion: COGAG

**Weapons:**

F(1)1 Mk13 w/40 SM1MR//2 SPG-51

PB&PQ/SB&SQ(4)2 Mk141 w/4 Harpoon

P/S(R)2 Mk15 Phalanx w/5 bursts

F/A(1)2 Mk42 127mm/54//2 FCS-2-21C

F(8)1 Mk16 ASROC w/8 ASROC

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

Aft Pad(1)1 HSS-2B Sea King

**Sensors:**

OPS-28, OPS-11

SPS-52

OQS-4

**Remarks:**

No hangar for helicopter. ASROC launcher has reload magazine. SPG-51 can be used for gunfire control. FCS-2 has aft arc.

**Damage and Speed Breakdown:**

Damage Points:	0	41	82	123	148	164
Surface Speed:	30	22	15	8	0	Sinks

**Hatsuyuki**

Displacement: 2950 std

Damage Points: 81

Damage Modifier: .75

Propulsion: COGOG

**Weapons:**

PB&SB(4)2 Mk141 w/4 Harpoon

A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 FCS-2-12

F(1)1 Compact 76mm/62//1 FCS-2-21

P/S(R)2 Mk15 Phalanx w/5 bursts

F(8)1 Mk16 w/8 ASROC

J  
M  
M/USA

**DDH**

In Class: 2

In Service: 1973

Speed: 32 kts

Crew: 340

Total Mounts: 11

C/USA

D/USA

C/USA

F/USA

E/USA

B

J

M

**DDG**

In Class: 2

In Service: 1986

Speed: 30 kts

Crew: 260

Total Mounts: 11

D/USA

D/USA

C/USA

C/USA

E/USA

F/USA

B

J

J/USA

M

**DD**

In Class: 12

In Service: 1982

Speed: 30 kts

Crew: 190

Total Mounts: 10

D/USA

D/USA

C/Italy

C/USA

E/USA



## PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

Aft pad(1)1 HSS-2B Sea King

## Sensors:

OPS-18, OPS-14

OQS-4

## Remarks:

Has fin stabilizers. Has Beartrap haul-down system. Will get SQR-19. Unit #8 Yamayuki (129) and on have steel vice aluminum superstructure (3050-ton std displacement=107 dp). Unit #1 Hatsuyuki (122) and #2 Shirayuki (123) do not have Phalanx. 10 RIM-7M manual reloads available for Mk29 NATO SS launcher. Mk29 NATO SS ROF 15 msls per turn. Critical Hit Armor: Sensors, L.

## Damage and Speed Breakdown:

Damage Points:	0	20	40	60	72	81 (121-128)
Damage Points:	0	27	54	80	97	107 (129 and on)
Surface Speed:	30	22	15	8	0	Sinks

## Improved Yushio

Displacement: 2750 subm

Damage Points: 44

Damage Modifier: 1.00

Propulsion: Diesel-Electric

## Weapons:

PB&amp;SB(3)2 533mm TT w/18 see remarks

## Sensors:

ZQQ-5

ZPS-6

## Remarks:

TT can fire GRX-2 torp, Harpoon. Standard TT loadout 14 GRX-2, 4 Harpoon.

## Damage and Speed Breakdown:

Damage Points:	0	11	22	33	40	44
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

## Ishikari

Displacement: 1200 std

Damage Points: 37

Damage Modifier: 0.75

Propulsion: CODOG

## Weapons:

PB&amp;SB(4)2 Mk141 w/4 Harpoon

F(1)1 Compact 76mm/62//1 FCS-2-21

F(4)1 Type 71 375mm ASW RL w/9 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

## Sensors:

OPS-19, OPS-28

OQS-4

## Remarks:

Aluminum superstructure. Will be fitted with Phalanx.

## Damage and Speed Breakdown:

Damage Points:	0	9	18	28	33	37
Surface Speed:	25	19	12	6	0	Sinks

## Isuzu

Displacement: 1490 std

Damage Points: 59

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

F/A(2)2 Mk33 76mm/50//2 Mk34

F(4)2 Type 71 375mm ASW RL w/9 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

1 DC rail

## Sensors:

OPS-1, OPS-16

OQS-14, OQA-1 VDS (#213)

## Remarks:

No DC rail on 212, 213. Mogami (212) and Isuzu (211) designated as training ships.

F/USA

B

J

M

SS

In Class: 0+3+1

In Service: 1991

Speed: 12/20+ kts

Crew: 75

Total Mounts: 2

F,D/USA

M

J

FF

In Class: 1

In Service: 1981

Speed: 25 kts

Crew: 90

Total Mounts: 6

D/USA

C/Italy

E

F/USA

J

M

FF

In Class: 2

In Service: 1961

Speed: 25 kts

Crew: 180

Total Mounts: 7

C/USA

E

F/USA

E/Intl

J

M

## Damage and Speed Breakdown:

Damage Points:	0	15	29	44	53	59
Surface Speed:	25	19	12	6	0	Sinks

## Katori

Displacement: 3372 std

Damage Points: 121

Damage Modifier: 1.00

Propulsion: Steam

## Weapons:

F(2)2 Mk33 76mm/50//1 Mk34

F(4)1 Type 71 375mm ASW RL w/9 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

## Sensors:

OPS-2, OPS-15

OQS-3

## Remarks:

Cadet training ship. Helo pad aft.

## Damage and Speed Breakdown:

Damage Points:	0	30	61	91	109	121
Surface Speed:	25	19	12	6	0	Sinks

## Minegumo

Displacement: 2100 std

Damage Points: 79

Damage Modifier: 1.00

Propulsion: Diesels

## Weapons:

F/A(2)2 Mk33 76mm/50//2 see remarks

A(8)1 Mk16 ASROC w/8 ASROC

F(4)1 Type 71 375mm ASW RL w/9 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

## Sensors:

OPS-11, OPS-17

OQS-3

SQS-35 VDS (118)

## Remarks:

Reloads for ASROC launcher. Fire control systems 116: Mk35, SPG-34; 117: FCS-1, SPG-34; 118: FCS-2-12, FCS-1. Unit #3 Murakumo (118) has A(1)1 76mm/62 Compact vice aft Mk33 76mm gun mount.

## Damage and Speed Breakdown:

Damage Points:	0	20	40	59	71	79
Surface Speed:	27	20	14	7	0	Sinks

## Sagami

Displacement: 5000 std

Damage Points: 132

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

None

## Sensors:

OPS-16

## Remarks:

Large helo pad aft.

## Damage and Speed Breakdown:

Damage Points:	0	33	66	99	119	132
Surface Speed:	22	16	11	6	0	Sinks

## Shirane

Displacement: 5200 std

Damage Points: 135

Damage Modifier: 0.75

Propulsion: Steam

## Weapons:

F(1)2 Mk42 127mm/54//2 FCS-1A

A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 WM25

P/S(R)1 Mk15 Phalanx 20mm/76 w/5 bursts

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

In Class: 1

In Service: 1969

Speed: 25 kts

Crew: 460

Total Mounts: 5

C/USA

E

F/USA

J

M

TV

FF

In Class: 3

In Service: 1968

Speed: 27 kts

Crew: 215

Total Mounts: 6

C/USA

E/USA

E

F/USA

J

M

M/USA

AOE

In Class: 1

In Service: 1979

Speed: 22 kts

Crew: 130

Total Mounts: 0

J

DDH

In Class: 2

In Service: 1980

Speed: 32 kts

Crew: 370

Total Mounts: 10

C/USA

D/USA

C/USA

E/USA

F/USA

Aft Pad(1)3 HSS-2B Sea King

**Sensors:**

OPS-22, OPS-12, OPS-28

OQS-101

SQS-35 IVDS, SQR-18A towed array

**Remarks:**

Has Prairie-Masker bubbling system (quieted). Will eventually receive Harpoon msls. DDH 143 *Shirane* has not yet received Phalanx (1989). Refit delayed. Fitted with dual fin stabilizers and helo haul-down system. 8 reloads for ASROC launcher in belowdecks magazine. 16 RIM-7M manual reloads for Mk29 NATO SS launcher. Aluminum superstructure. FCS-1A can direct Mk42 gun or illuminate target for Sea Sparrow msl. Mk29 NATO SS ROF 15 msls per turn. **Critical Hit Armor:** Sensors, L.

**Damage and Speed Breakdown:**

Damage Points:	0	34	68	101	122	135
Surface Speed:	32	24	16	8	0	Sinks

**Tachikaze****Displacement:** 3850 std**Damage Points:** 137**Damage Modifier:** 1.00**Propulsion:** Steam**Weapons:**

A(1)1 Mk13 w/40 see remarks//2 SPG-51

F/A(1)2 Mk42 127mm/54//1 FCS-1A

F(8)1 Mk112 w/8 ASROC

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

P/S(R)2 Mk15 Phalanx w/5 bursts

**Sensors:**

OPS-28 (170), OPS-17 (not 170), OPS-11

SPS-52

OQS-3 (not 170), OQS-4 (170)

**Remarks:**

Mk13 launcher fires SM1MR and Harpoon. ASROC launcher auto reloads from belowdecks in DD 170 *Sawakaze* only. Mk13 ROF is 6 msls per minute.

**Damage and Speed Breakdown:**

Damage Points:	0	34	69	103	124	137
Surface Speed:	32	24	16	8	0	Sinks

**Takatsuki****Displacement:** 3200 std**Damage Points:** 116**Damage Modifier:** 1.00**Propulsion:** Steam**Weapons:**

F(1)1 Mk42 127mm/54//1 Mk35

F(8)1 Mk112 w/8 ASROC

A(8)1 Mk29 NATO Sea Sparrow w/16 RIM-7M//1 FCS-2-12B

PB&amp;PQ/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

A(R)1 Mk15 Phalanx w/5 bursts

P&amp;S(6)1 Type 71 375mm ASW RL w/9 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

**Sensors:**

OPS-11, OPS-17

OQS-3

SQR-18 towed array (164, 165)

SQS-35 VDS (166, 167)

**Remarks:**

Unit #3 *Mochizuki* (166) and #4 *Nagatsuki* (167) have F/A(1)2 Mk42 127mm, no Harpoon, no Mk29 NATO SS, no Phalanx. *Nagatsuki* has 2 FCS-1. Unit #3 *Kikizuki* (165) has fin stabilizers. Mk29 NATO SS ROF 15 msls per turn. No reloads for ASROC.

**Damage and Speed Breakdown:**

Damage Points:	0	29	58	87	104	116
Surface Speed:	32	24	16	8	0	Sinks

**Towada****Displacement:** 8300 std**Damage Points:** 182

B

J

M

M/USA

**Damage Modifier:** 1.00**Propulsion:** Diesel**Weapons:**

None

**Sensors:**

OPS-18

**Remarks:**

Large helo pad aft.

**Damage and Speed Breakdown:**

Damage Points:	0	45	91	136	163	182
Surface Speed:	22	16	11	6	0	Sinks

**Uzushio****Displacement:** 3600 subm**Damage Points:** 64**Damage Modifier:** 1.00**Propulsion:** Diesel-Electric**Weapons:**

PB&amp;SB(3)2 533mm TT w/ Mk48, Mk37

**Sensors:**

ZPS-4

ZQQ-4

SQS-36J hull

**Remarks:**Additional units *Uzushio* (566) struck in 1987; *Makishio* (567), 1988.**Damage and Speed Breakdown:**

Damage Points:	0	16	32	48	58	64
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

**Yamagumo****Displacement:** 2100 std**Damage Points:** 79**Damage Modifier:** 1.00**Propulsion:** Diesel**Weapons:**

F/A(2)2 Mk33 76mm/50//2 FCS-1

P&amp;S(8)1 Mk16 w/8 ASROC

F(4)1 Type 71 375mm ASW RL w/9 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

**Sensors:**

OPS-11, OPS-17

SQS-23 (113-115), SQS-35 VDS (not in 115)

OQS-3 (116-121)

**Damage and Speed Breakdown:**

Damage Points:	0	20	40	59	71	79
Surface Speed:	27	20	14	7	0	Sinks

**Yubari****Displacement:** 1470 std**Damage Points:** 58**Damage Modifier:** 1.00**Propulsion:** CODOG**Weapons:**

PB&amp;SB(4)2 Mk141 w/4 Harpoon

F(1)1 Compact 76mm/62//1 FCS-2-21

F(4)1 Type 71 375mm ASW RL w/12 salvoes

PB/SB(3)2 Type 68 324mm TT w/3 Mk46 NEARTIP

**Sensors:**

OPS-, OPS-28

OQS-4

**Remarks:**

Will be fitted with A(R)1 Mk15 Phalanx w/5 bursts.

**Damage and Speed Breakdown:**

Damage Points:	0	14	29	44	52	58
Surface Speed:	25	19	12	6	0	Sinks

**Yushio****Displacement:** 2730 subm**Damage Points:** 41**Speed:** 22 kts**Crew:** 140**Total Mounts:** 0

J

SS

**In Class:** 5**In Service:** 1972**Speed:** 12/20 kts**Crew:** 80**Total Mounts:** 2

F/USA

J

M

M/USA

DD

**In Class:** 6**In Service:** 1966**Speed:** 27 kts**Crew:** 210**Total Mounts:** 6

C/USA

E/USA

E

F/USA

J

M/USA

M

FF

**In Class:** 2**In Service:** 1983**Speed:** 25 kts**Crew:** 98**Total Mounts:** 6

D/USA

C/Italy

E

F/USA

J

M

DDG

**In Class:** 3**In Service:** 1976**Speed:** 32 kts**Crew:** 277**Total Mounts:** 8

D/USA

C/USA

E/USA

F/USA

C/USA

J

J/USA

M

DD

**In Class:** 4**In Service:** 1967**Speed:** 32 kts**Crew:** 270**Total Mounts:** 9

C/USA

E/USA

D/USA

D/USA

C/USA

E

F/USA

J

M

M/USA

M/USA

AOE

**In Class:** 1+2**In Service:** 1987

SS

**In Class:** 10**In Service:** 1980

**Damage Modifier:** 1.00  
**Propulsion:** Diesel-Electric  
**Weapons:**  
 PB&SB(3)2 533mm TT w/18 GRX-2, NT-37C  
**Sensors:**  
 ZPS-6  
 SQS-36J Hull  
 ZQQ-4  
**Remarks:**  
 Unit #5 *Nadashio* (577) and later can fire Harpoon. Others will be refitted.

**Damage and Speed Breakdown:**

<i>Damage Points:</i>	0	10	21	31	37	41
<i>Surface Speed:</i>	13	10	6	3	0	Sinks
<i>Submerged Speed:</i>	20	15	10	5	0	Sinks

**Speed:** 13/20 kts  
**Crew:** 80  
**Total Mounts:** 2  
 F/USA

J  
 M/USA  
 M

**Weapons:**  
 PB&SB(2)2 SS-N-2C w/2 Styx  
 F/A(2)2 76mm/60/1 Hawk Screech  
 F(12)1 RBU 6000  
 A(2)1 SA-N-4 w/20 Gecko/1 Pop Group  
 P/S(2)2 AK-230 30mm/65/1 Drum Tilt  
 2 DC Rail w/10 B-1 DC  
 PB/SB(1)4 406mm TT w/1 SET-40  
**Sensors:**  
 Plank Shave, Don 2, Strut Curve  
 Bull Horn  
**Remarks:**  
 USSR *Koni* Type III class. SS-N-2C ROF 4 msls per turn (both mounts) at same target.

**Damage and Speed Breakdown:**

<i>Damage Points:</i>	0	16	33	49	59	65
<i>Surface Speed:</i>	27	20	14	7	0	Sinks

**Total Mounts:** 14  
 D/USSR  
 C/USSR  
 E/USSR  
 D/USSR  
 C/USSR  
 E/USSR  
 F/USSR  
 J/USSR  
 M/USSR

## Libya

**Assad**  
**Displacement:** 670 fl  
**Damage Points:** 31  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
 PB&SB(1)4 Otomat w/1 msl  
 F(1)1 Compact 76mm/62/1 RTN-10X  
 A(2)1 OE/OTO 35mm/90  
 PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s  
 2 Minelaying chute's w/8 mines  
**Sensors:**  
 RAN-11L/X  
 Diodon  
 Decca 1226  
 ESM  
**Remarks:**  
 Previously *Wadi* class. Names changed in 1983. Fitted with stabilizers. Otomat ROF 8 msls per turn (all mounts) at same target. Poorly maintained; missiles not usually fitted.

**Damage and Speed Breakdown:**

<i>Damage Points:</i>	0	8	16	23	28	31
<i>Surface Speed:</i>	34	26	17	8	0	Sinks

**PTM**  
**In Class:** 4  
**In Service:** 1979  
**Speed:** 34 kts  
**Crew:** 88  
**Total Mounts:** 10  
 D/Italy  
 C/Italy  
 C/Italy  
 F/Italy  
 —  
 J/Italy  
 M/Frn  
 J/UK  
 —

**La Combantante IIG**  
**Displacement:** 258 std  
**Damage Points:** 13  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
 F(1)1 Compact 76mm/62 w/80 rds/1 Vega II  
 A(2)1 Dardo 40mm/70/1 Vega II  
 PB&SB(1)4 Otomat w/1 msl  
**Sensors:**  
 Triton  
**Remarks:**  
 Additional unit *Waheed* sunk on 24 May 1986. Otomat ROF 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

<i>Damage Points:</i>	0	3	6	10	12	13
<i>Surface Speed:</i>	39	29	20	10	0	Sinks

**PTG**  
**In Class:** 9  
**In Service:** 1981  
**Speed:** 39 kts  
**Crew:** 27  
**Total Mounts:** 6  
 C/Italy  
 C/Italy  
 D/Italy  
 J/Frn

**Nanuchka II**  
**Displacement:** 560 std  
**Damage Points:** 25  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
 PB&SB(2)2 SS-N-2C w/1 Styx  
 F(2)1 SA-N-4 w/20 Gecko/1 Pop Group  
 A(2)1 AK-257 57mm/80/1 Muff Cob  
**Sensors:**  
 Don 2, Square Tie  
 ESM  
**Remarks:**  
*Ean Mara* damaged on 25 Mar 1986. Additional unit *Ean Zaquit* #419 sunk 4 Mar 1986. SS-N-2C ROF 4 msls per turn (all mounts) at same targets.

**Damage and Speed Breakdown:**

<i>Damage Points:</i>	0	6	13	19	23	25
<i>Surface Speed:</i>	36	27	18	9	0	Sinks

**FFL**  
**In Class:** 3  
**In Service:** 1981  
**Speed:** 36 kts  
**Crew:** 60  
**Total Mounts:** 4  
 D/USSR  
 D/USSR  
 C/USSR  
 J/USSR  
 —

**Dat Assawari**  
**Displacement:** 1360  
**Damage Points:** 54  
**Damage Modifier:** 1.00  
**Propulsion:** CODOG  
**Weapons:**  
 PB&SB(1)4 Teseo w/1 Otomat Mk2  
 F(4)1 Albatros w/4 Aspide/1 RTN-10X  
 F(1)1 Mk8 114mm/55/1 RTN-10X  
 A(2)1 OE/OTO 35mm/90  
 P/S(1)2 20mm/80  
 PB/SB(3)2 ILAS-3 324mm TT w/3 A.244s  
 P/S(1)2 Bofors 40mm/70  
**Sensors:**  
 Diodon  
 RAN-10S, RAN-12L, SPQ-2  
**Remarks:**  
 Vosper Mk7 class. Teseo ROF 8 msls per turn at same target; Albatros ROF 2 msls per turn.

**Damage and Speed Breakdown:**

<i>Damage Points:</i>	0	14	27	40	49	54
<i>Surface Speed:</i>	35	26	18	9	0	Sinks

**FF**  
**In Class:** 1  
**In Service:** 1973  
**Speed:** 35 kts  
**Crew:** 130  
**Total Mounts:** 13  
 D/Italy  
 D/Italy  
 C/UK  
 C/Italy  
 C/Intl  
 F/Italy  
 C/Sweden  
 M/Frn  
 J/Italy

**Yugoslav Improved Koncar**  
**Displacement:** 385 std  
**Damage Points:** 12  
**Damage Modifier:** 1.00  
**Propulsion:** CODOG  
**Weapons:**  
 PB&SB(1)4 SS-N-2C w/1 Styx  
 F(1)1 Compact 76mm/62  
 A(1)1 Bofors 40mm/70  
 P/S(2)1 30mm  
**Sensors:**  
 Nav radar  
**Remarks:**  
 Yugoslav-built *Radf Koncar* class. Ordered in 1985. SS-N-2C ROF 4 msls per turn (all mounts) at same target.

**PTG**  
**In Class:** 0+4  
**In Service:** ?  
**Speed:** 40 kts  
**Crew:** 30  
**Total Mounts:** 7  
 D/USSR  
 C/Italy  
 C/Sweden  
 C  
 J/Intl

**Ei Hani**  
**Displacement:** 1700 std  
**Damage Points:** 65  
**Damage Modifier:** 1.00  
**Propulsion:** CODAG

**FF**  
**In Class:** 2+1  
**In Service:** 1986  
**Speed:** 27 kts  
**Crew:** ?

## Damage and Speed Breakdown:

Damage Points:	0	3	6	9	11	12
Surface Speed:	40	30	20	10	0	Sinks

## Netherlands

## Dolfijn/Potvis

Displacement: 1830 subm	In Class: 2	SS
Damage Points: 35	In Service: 1965	
Damage Modifier: 1.00	Speed: 14/17 kts	
Propulsion: Diesel-Electric	Crew: 67	
Weapons:	Total Mounts: 4	
PB&SB(2)2 533mm TT w/4 NT37E torp	F/USA	
PQ&SQ(2)2 533mm TT w/4 NT37E torp	F/USA	
Sensors:		
ZW.06	J	
Sonar ?	M	

## Remarks:

Additional units *Dolfijn* struck in 1985; *Zeehond*, 1987. Last two units will be struck in 1991 and 1992. Number of torps carried estimated. Sonar type unknown; use *Dolfijn/P* sonar in Annex M.

## Damage and Speed Breakdown:

Damage Points:	0	9	18	26	32	35
Surface Speed:	14	10	7	4	0	Sinks
Submerged Speed:	17	13	8	4	0	Sinks

## Friesland

Displacement: 2497 std	In Class: [8]	DD
Damage Points: 92	In Service: 1956	
Damage Modifier: 1.00	Speed: 36 kts	
Propulsion: Steam	Crew: 284	
Weapons:	Total Mounts: 12	
F/A(2)2 Bofors 120mm/50//1 M45	C/Sweden	
PB&P/P/P&PQ/SB&S/S/S&SQ(1)6 40mm/60//1 M45	C/Intl	
F(4)2 Bofors 375mm mortar//1 Type 170B	E/Sweden	
2 DC rail	E/Intl	
Sensors:		
LW.02, DA.01, ZW.01	J	
Type 162	M/UK	

## Remarks:

D817 *Utrecht* fitted with P/S (4)2 533mm TT with ASW torpedoes in 1960; D815 *Overijssel* in 1961. Torpedo type unknown. Tubes were later removed. Two 40mm mounts (PB&P, SB&S) removed in mid-1960s. FC radar for remaining 40mm removed in 1977-78. In early 1970s UK sonars replaced by EDO 610 (CWE 610). Replaced by *Standard* frigates. Have side armor as well as deck protection. General Armor Rating: L.

## Damage and Speed Breakdown:

Damage Points:	0	23	46	69	83	92
Surface Speed:	36	27	18	9	0	Sinks

## Jacob van Heemskerck

Displacement: 3000 std	In Class: 2	FFG
Damage Points: 109	In Service: 1986	
Damage Modifier: 1.00	Speed: 30 kts	
Propulsion: COGOG	Crew: 196	
Weapons:	Total Mounts: 7	
PB&SB(4)2 Mk141 w/4 Harpoon	D/USA	
A(1)1 Mk13 w/40 SM1MR//2 STIR 24	D/USA	
F(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 STIR 18	D/USA	
A(R)1 Goalkeeper 30mm w/6 bursts	C/Intl	
PB/SB(2)2 Mk32 324mm TT w/2 Mk46 NEARTIP	F/USA	
Sensors:		
ZW.06, DA.05, LW.08	J	
PHS 36	M	

## Remarks:

Total of 24 RIM-7M carried for NATO SS (manual reload). DA.05 may be replaced w/SMART radar later; also SQR-18 towed array sonar may be added.

## Damage and Speed Breakdown:

Damage Points:	0	27	54	82	98	109
Surface Speed:	30	22	15	8	0	Sinks

## Karel Doorman

Displacement: 2800 lt	In Class: 0+8	FF
Damage Points: 102	In Service: 1992	
Damage Modifier: 1.00	Speed: 29 kts	
Propulsion: CODOG	Crew: 141	
Weapons:	Total Mounts: 10	
PB&PQ/SB&SQ(2)2 Mk141 w/2 Harpoon	D/USA	
F&A(16)1 Mk48 VLS Sea Sparrow w/16 RIM-7M//1 STIR	D/Intl	
F(1)1 Super Rapid 76mm/62//1 STIR	C/Italy	
A(R)1 Goalkeeper 30mm w/6 bursts	C/Intl	
P/S(1)2 20mm/80	C/Intl	
PB/SB(2)2 324mm TT w/2 Mk46 NEARTIP	F/USA	
Aft Pad(1)1 SH-14 Lynx	B	
Sensors:		
DA.08, LW.08	J	
Decca 1226	J/UK	
PHS-36	M	
DSBV 610 towed array	M/Frn	

## Remarks:

M-class frigate. Low noise propellers (quieted). FC radars STIR 18, STIR 24. Stabilization system fitted. Mk43 ROF 15 ms/turn.

## Damage and Speed Breakdown:

Damage Points:	0	26	51	77	92	102
Surface Speed:	29	22	14	7	0	Sinks

## Kortenaer

Displacement: 3000 std	In Class: 10	FF
Damage Points: 109	In Service: 1978	
Damage Modifier: 1.00	Speed: 30 kts	
Propulsion: COGOG	Crew: 176	
Weapons:	Total Mounts: 9	
PB&SB(4)2 Mk141 w/4 Harpoon	D/USA	
F(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 STIR	D/USA	
F(1)1 Compact 76mm/62//1 WM25	C/Italy	
Aft Pad(1)2 SH-14 Lynx	B	
PB/SB(2)2 Mk32 324mm TT w/2 Mk46 NEARTIP	F/USA	
A(1)1 Bofors 40mm/70	C/Sweden	
Sensors:		
LW.08, ZW.06, DA.05	J	
SQS-505	M/Can	

## Remarks:

Quieted. F807 and F808 initially had 2 76mm guns, second mount replacing 40mm/70. F807 had aft 76mm gun replaced by 1(1)40mm/70 in 1982; F808 had aft 76mm replaced by (R)1 Goalkeeper 30mm in 1984. Fitted with stabilizers. Mk29 NATO SS ROF 15 ms/turn. 13th and 14th units will have 16-rd VL Sea Sparrow aft in place of 8-cell launcher. Eventual expansion to 32 ms/turn.

## Damage and Speed Breakdown:

Damage Points:	0	27	54	82	98	109
Surface Speed:	30	22	15	8	0	Sinks

## Poolster

Displacement: 16836 fl	In Class: 1	AO
Damage Points: 297	In Service: 1964	
Damage Modifier: 1.00	Speed: 21 kts	
Propulsion: Steam	Crew: 200	
Weapons:	Total Mounts: 8	
P/S(1)2 Bofors 40mm/70	C/Sweden	
1 DC rail w/8 DC	E/Intl	
Aft Pad(1)5 SH-14 Lynx	B	
Sensors:		
Decca 1229, Decca 2459	J/UK	
EDO 610 (CWE 610)	M/USA	
ESM		
Remarks:		
Decca 2459 dual F/I-band radar replaced DA.01 for trials in 1983. Can carry		

ASW ordnance for helicopters. *Zuiderkruis* has 20mm/80 vice 40mm/70. Will receive Goalkeeper.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	74	149	223	268	297
<b>Surface Speed:</b>	21	16	10	5	0	Sinks

**Tripartite**

**Displacement:** 510 std  
**Damage Points:** 20  
**Damage Modifier:** 0.75  
**Propulsion:** Diesel  
**Weapons:**

F(1)1 DCN 20mm/90  
 2 PAP104

**Sensors:**

Decca 1229

DUBM 21, DUBM 41 (to be fitted)

**Remarks:**

*Alkmaar* class. Hull constructed of GRP. DUBM 21 and DUBM 41 sonars and PAP104 mine disposal vehicles are for mine hunting only.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	5	10	15	18	20
<b>Surface Speed:</b>	15	11	8	4	0	Sinks

**Tromp**

**Displacement:** 3665 std  
**Damage Points:** 98  
**Damage Modifier:** 0.75  
**Propulsion:** COGOG

**Weapons:**

PB&SB(4)2 Mk141 w/4 Harpoon  
 A(1)1 Mk13 w/40 SM1MR/2 SPG-51  
 F(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M  
 F(2)1 Bofors 120mm/50//1 WM25  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP  
 Aft Pad(1)1 SH-14 Lynx

**Sensors:**

SPS-01  
 2 Decca 1226  
 Type 162

EDO 610 (CWE 610)

**Remarks:**

Fitted with fin stabilizers. Quieted. Aluminum superstructure. 8 reload msls carried for Mk141 Harpoon launcher (manual reload). 8 reload msls carried for NATO SS launcher (manual reload). Mk29 NATO SS ROF 15 msls per turn.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	25	49	74	88	98
<b>Surface Speed:</b>	28	21	14	7	0	Sinks

**Van Speijk**

**Displacement:** 2200 std  
**Damage Points:** 82  
**Damage Modifier:** 1.00  
**Propulsion:** Steam

**Weapons:**

PB&SB(4)2 Mk141 w/4 Harpoon  
 P&PQ/S&SQ(4)2 Sea Cat w/4 msls/2 M44  
 F(1)1 Compact 76mm/62//1 M45  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP  
 Aft Pad(1)1 SH-14 Lynx

**Sensors:**

DA.05/2, LW.03

Decca 1992C (Decca series)

EDO 700 VDS

EDO 610 (CWE 610), SQR-18 towed array

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	21	41	62	74	82
<b>Surface Speed:</b>	28	21	14	7	0	Sinks

MH

**In Class:** 13+2  
**In Service:** 1983  
**Speed:** 15 kts  
**Crew:** 34  
**Total Mounts:** 3

C/Frn

J/UK

—

DDG

**In Class:** 2  
**In Service:** 1975  
**Speed:** 28 kts  
**Crew:** 305  
**Total Mounts:** 8

D/USA

D/USA

D/USA

C/Sweden

F/USA

B

J

J/UK

M/UK

M/USA

FF

**In Class:** 2  
**In Service:** 1967  
**Speed:** 28 kts  
**Crew:** 180  
**Total Mounts:** 8

D/USA

D/UK

C/Italy

F/USA

B

J

J/UK

M/USA

M/USA

**Zeeleeuw**

**Displacement:** 2800 subm

**Damage Points:** 51

**Damage Modifier:** 1.00

**Propulsion:** Diesel-Electric

**Weapons:**

PB&SB(2)2 533mm TT w/20 see remarks

**Sensors:**

ZW.07

Octopus

Type 2026 towed array

**Remarks:**

Can carry Mk48 torp, Harpoon, and NT37E torp. Fitted with DUUX 5 Fenelon passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar. Netherlands government has not purchased any Harpoon msls. Could draw msls from other NATO countries.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	13	26	38	46	51
<b>Surface Speed:</b>	12	9	6	3	0	Sinks
<b>Submerged Speed:</b>	20	15	10	5	0	Sinks

**Zuiderkruis**

**Displacement:** 17357 std

**Damage Points:** 304

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

P/S(1)2 20mm/80

1 DC rail w/8 DC

Aft Pad(1)5 SH-14 Lynx

**Sensors:**

2 Decca 1226

**Remarks:**

Can carry ASW ammo and other stores to support up to 5 ASW helos. 2 fueling stations and one solid transfer station per side. Can carry ASW ordnance for helicopters.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	76	152	228	274	304
<b>Surface Speed:</b>	21	16	10	5	0	Sinks

**Zwaardvis**

**Displacement:** 2640 subm

**Damage Points:** 48

**Damage Modifier:** 1.00

**Propulsion:** Diesel-Electric

**Weapons:**

PB&SB(3)2 533mm TT w/20 see remarks

**Sensors:**

Type 1001

Eledone

Type 2026 towed array

**Remarks:**

Modified USA *Barbel* class. Normal TT loadout 10 NT37E, 10 Mk48 torp. Can control only one wire-guided torpedo at a time.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	12	24	36	44	48
<b>Surface Speed:</b>	13	10	6	3	0	Sinks
<b>Submerged Speed:</b>	20	15	10	5	0	Sinks

**Norway****Hauk**

**Displacement:** 120 std

**Damage Points:** 6

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

PB&SB(1)6 Penguin Mk2 w/1 msl

F(1)1 Bofors 40mm/70

SS

**In Class:** 0+4+2

**In Service:** 1988

**Speed:** 12/20 kts

**Crew:** 50

**Total Mounts:** 2

F, D/USA

J

M

M/UK

AO

**In Class:** 1

**In Service:** 1975

**Speed:** 21 kts

**Crew:** 266

**Total Mounts:** 8

C/Intl

E/Intl

B

J/UK

SS

**In Class:** 2

**In Service:** 1972

**Speed:** 13/20 kts

**Crew:** 67

**Total Mounts:** 2

F/USA

J/UK

M/Frn

M/UK

PTM

**In Class:** 14

**In Service:** 1978

**Speed:** 35 kts

**Crew:** 22

**Total Mounts:** 10

D

C/Sweden

A(1)1 Rh202 20mm/80  
PB/SB(1)2 533mm TT w/1 Type 617 torp

**Sensors:**

2 Decca 1226  
Simrad SQ3D/SF

**Remarks:**

Similar to *Snögg* class, with improved fire control.

**Damage and Speed Breakdown:**

Damage Points:	0	2	3	5	6	6
Surface Speed:	35	26	18	9	0	Sinks

C/FRG  
F/Sweden

J/UK  
M

1 DC rail w/6 DC

**Sensors:**

Decca 1226, Decca 202 (Decca series)  
Spherion hull

**Remarks:**

Used as training ships. Terne III attack sonar is for fire control only; has no search capability.

**Damage and Speed Breakdown:**

Damage Points:	0	7	14	22	26	29
Surface Speed:	22	16	11	6	0	Sinks

E/Intl

J/UK  
M/Frn

**Nordkapp**

Displacement: 2700 std

Damage Points: 99

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

Aft Pad(1)1 Lynx Mk86  
F(1)1 Bofors Mk1 57mm/70 //1 9LV200 Mk2  
P/S(1)4 Rh202 20mm/80  
PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
1 DC rail w/6 DC  
PB&SB(1)6 Penguin Mk1 w/1 msls

**Sensors:**

AWS-5, 2 Decca 1226  
Simrad SS 105

**Remarks:**

Fitted w/stabilizers. TT would be fitted in wartime. Ice-strengthened hull.

**Damage and Speed Breakdown:**

Damage Points:	0	25	50	74	89	99
Surface Speed:	23	17	12	6	0	Sinks

**Patrol Ship**

In Class: 3

In Service: 1980

Speed: 23 kts

Crew: 109

Total Mounts: 15

B  
C/Sweden  
C/FRG  
F/USA  
E/Intl  
D

J/UK  
M

**Snögg**

Displacement: 115 std

Damage Points: 6

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

PB&SB(1)4 Penguin Mk2 w/1 msl  
F(1)1 Bofors 40mm/70  
PB/SB(1)4 533mm TT w/1 Type 617 torp  
2 DC rail

**Sensors:**

Decca TM 626 (Decca series)

**Damage and Speed Breakdown:**

Damage Points:	0	1	3	4	5	6
Surface Speed:	32	24	16	8	0	Sinks

**PTM**

In Class: 6

In Service: 1970

Speed: 32 kts

Crew: 20

Total Mounts: 11

D  
C/Sweden  
F/Sweden  
E/Intl

J/UK

**Storm**

Displacement: 100 std

Damage Points: 5

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

PB&SB(1)6 Penguin Mk2 w/1 msl  
F(1)1 Bofors 76mm/50//1 WM26  
A(1)1 Bofors 40mm/70//1 WM26

**Sensors:**

Decca 1226

**Remarks:**

Additional unit *Pil* (P 976) struck in 1982. Single WM26 directs both guns at single target. Can be fitted with depth charge rails.

**Damage and Speed Breakdown:**

Damage Points:	0	1	2	4	4	5
Surface Speed:	37	27	14	9	0	Sinks

**PTM**

In Class: 19

In Service: 1963

Speed: 37 kts

Crew: 26

Total Mounts: 8

D  
C/Sweden  
C/Sweden

J/UK

**Oslo**

Displacement: 1450 std

Damage Points: 57

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

PB&SB(1)6 Penguin Mk2 w/1 msl  
A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M//1 Mk91  
F/A(2)2 Mk33 76mm/50//1 WM22  
P/S(1)2 Rh202 20mm/80  
F(6)1 Terne III w/6 salvoes//1 Attack sonar  
1 DC rail w/6 DC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

**Sensors:**

Decca 1226  
DRBV 22  
SQS-36

**Remarks:**

Total of 16 RIM-7M manual reloads carried for NATO SS. Terne III attack sonar is for fire control only; has no search capability. Mk29 NATO SS ROF 15 msls per turn. Class being modernized by replacing after Mk33 76mm mount with Bofors 40mm/70, SQS-36 sonar with integrated Spherion hull and VDS sonar, WM22 analog FC radar with digital 9LV200 Mk2. Three units complete by 1989; entire class by end of 1992.

**Damage and Speed Breakdown:**

Damage Points:	0	14	29	43	52	57
Surface Speed:	25	19	12	6	0	Sinks

**FF**

In Class: 5

In Service: 1966

Speed: 25 kts

Crew: 150

Total Mounts: 15

D  
D/USA  
C/USA  
C/FRG  
E  
E/Intl  
F/USA

J/UK  
J/Frn  
M/USA

**Tjeld**

Displacement: 70 std

Damage Points: 3

Damage Modifier: 0.75

Propulsion: Diesel

**Weapons:**

F(1)1 Bofors 40mm/70  
A(1)1 Rh202 20mm/80  
PB/SB(1)4 533mm TT w/1 Type 617 torp

**Sensors:**

None

**Remarks:**

Wooden hull. Also called *Nasty* class. Fifteen units originally built. Serve with Home Guard.

**Damage and Speed Breakdown:**

Damage Points:	0	2	3
Surface Speed:	45	22	Sinks

**PT**

In Class: 8

In Service: 1960

Speed: 45 kts

Crew: 18

Total Mounts: 6

C/Sweden  
C/FRG  
F/Sweden

**Sleipner**

Displacement: 600 std

Damage Points: 29

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

F(1)1 Mk34 76mm/50  
A(1)1 Bofors 40mm/70  
A(6)1 Terne III w/6 salvoes//1 Attack sonar  
PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

**FFL**

In Class: 2

In Service: 1965

Speed: 22 kts

Crew: 61

Total Mounts: 6

C/USA  
C/Sweden  
E  
F/USA



**Type 207**

Displacement: 482 subm  
 Damage Points: 12  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric  
 Weapons:  
 PB&SB(4)2 533mm TT w/8 see remarks

**Sensors:**

Calypso II  
 CSU-3

**Remarks:**

*Kobben* class. Can carry Type 617 (Sweden) and NT37E torp (USA). Additional units *Kinn* struck in 1982; *Stadt*, 1987. Additional units *Utvær*, *Uthag*, *Kya* sold in 1989-90 to Danish Navy. Very Small sonar contact. -10% active sonar detection chance.

**Damage and Speed Breakdown:**

Damage Points:	0	3	6	9	11	12
Surface Speed:	13	10	6	3	0	Sinks
Submerged Speed:	17	13	8	4	0	Sinks

**Type 210**

Displacement: 1150 subm  
 Damage Points: 22  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric  
 Weapons:  
 PB/SB(4)2 533mm TT w/14 Seehecht torp

**Sensors:**

DBQS-21 (CSU-83)  
 Calypso III  
 Sintra flank array

**Remarks:**

*Ula* class. Very Small sonar contact. -10% active sonar detection chance.

**Damage and Speed Breakdown:**

Damage Points:	0	5	11	16	20	22
Surface Speed:	11	8	6	3	0	Sinks
Submerged Speed:	23	17	12	6	0	Sinks

**Portugal****Baptiste de Andrade**

Displacement: 1252 std  
 Damage Points: 51  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 F(1)1 M1968 100mm/55//1 Pollux  
 A(1)2 Bofors 40mm/70  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
 1 DC rail

**Sensors:**

Diodon  
 Decca 626 (Decca series), AWS-2

**Remarks:**

Space and weight reserved for 2 MM38 Exocet msls. Helo pad aft.  
**Damage and Speed Breakdown:**

Damage Points:	0	13	25	38	46	51
Surface Speed:	21	16	10	5	0	Sinks

**France Commandant Riviere**

Displacement: 1760 std  
 Damage Points: 68  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 F/2A(1)3 M1953 100mm/55//1 DRBC 31  
 P/S(1)2 Type 107 40mm/70  
 F(4)1 Bofors 305mm mortar w/18 salvoes//1 DUBA 3  
 PB/SB(3)2 550mm TT w/2 L5 torp

SS

In Class: 10  
 In Service: 1966  
 Speed: 13/17 kts  
 Crew: 17  
 Total Mounts: 2  
 F

J/Frn  
 M/FRG

**Sensors:**

Decca 316 (Decca series)  
 DRBV 22, DRBV 50  
 SQS-17

**Remarks:**

*Commandante Joao Belo* class.

**Damage and Speed Breakdown:**

Damage Points:	0	17	34	51	61	68
Surface Speed:	25	19	12	6	0	Sinks

**France Daphne**

Displacement: 1043 subm  
 Damage Points: 22  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric  
 Weapons:  
 PB&SB(4)2 533mm TT w/8 L5 torp  
 PQ&SQ(2)2 533mm TT w/4 L5 torp

**Sensors:**

DRUA 31  
 DUUA1, DSUV 2

**Remarks:**

Fourth unit *Cachalote* sold to Pakistan 1975. Torpedo type estimated. Very Small sonar contact. -10% active sonar detection chance.

**Damage and Speed Breakdown:**

Damage Points:	0	5	11	16	20	22
Surface Speed:	13	10	6	3	0	Sinks
Submerged Speed:	16	12	8	4	0	Sinks

**Joao Coutinho**

Displacement: 1252 std  
 Damage Points: 51  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 F(2)1 Mk34 76mm/50 w/1200 rds//1 SPG-34  
 A(2)1 Bofors 40mm/70//1 Mk51  
 F(24)1 Mk10 Hedgehog w/10 salvoes  
 2 Mk6 DC proj w/21 Mk9 DC  
 2 Mk9 DC rail w/21 Mk9 DC

**Sensors:**

Decca 1226  
 MLA-1B  
 QCU-2

**Remarks:**

Helopad aft. Hedgehog fixed in train. Ship must be pointed directly at target to use Hedgehog.

**Damage and Speed Breakdown:**

Damage Points:	0	13	25	38	46	51
Surface Speed:	24	18	12	6	0	Sinks

**US Dealy**

Displacement: 1450 std  
 Damage Points: 57  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 F/A(2)2 Mk33 76mm/50//2 Mk34  
 F/A(4)2 Bofors 375mm mortar//1 DUBA 3  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

**Sensors:**

Decca 316 (Decca series), Type 978  
 MLA-1B  
 SQS-30/31/32, SQS-34 VDS

**Remarks:**

*Almirante Pereira Da Silva* class. SQS-30/31/32 differ in frequency only to avoid mutual interference. Class struck in 1989.

J/UK  
 J/Frn  
 M/USA

SS

In Class: 3  
 In Service: 1967  
 Speed: 13/16 kts  
 Crew: 50  
 Total Mounts: 4

F/Frn  
 F/Frn

J/Frn  
 M/Frn

FF

In Class: 6  
 In Service: 1970  
 Speed: 24 kts  
 Crew: 93  
 Total Mounts: 7

C/USA  
 C/Sweden  
 E/USA  
 E/USA  
 E/USA

J/UK  
 J/USA  
 M/USA

FF

In Class: [3]  
 In Service: 1966-89  
 Speed: 26 kts  
 Crew: 165  
 Total Mounts: 6

C/USA  
 E/Sweden  
 F/USA

J/UK  
 J/USA  
 M/USA

FF

In Class: 4  
 In Service: 1967  
 Speed: 25 kts  
 Crew: 214  
 Total Mounts: 8

C/Frn  
 C/Italy  
 E/Frn  
 F/Frn

**Damage and Speed Breakdown:**

Damage Points:	0	14	29	43	52	57
Surface Speed:	26	20	13	6	0	Sinks

**Vasco Da Gama**

Displacement: 2900 std

Damage Points: 76

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

PB&amp;PQ/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

A(8)1 Mk29 NATO Sea Sparrow w/8 Aspide//1 STIR

F(1)1 M1953 100mm/55//1 STIR

F(R)1 Mk15 Phalanx w/5 bursts

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Aft Pad(1)1 Lynx HAS.3

Sensors:

SQS-510

DA.08, MW.08

Type 1007

Remarks:

Ordered in Oct 1985. Fitted with stabilizers. Mk29 NATO SS ROF 15 msis per turn. Space provided for towed array and VL Sea Sparrow. Helo type estimated.

**Damage and Speed Breakdown:**

Damage Points:	0	19	38	57	68	76
Surface Speed:	31	23	11	8	0	Sinks

**People's Republic of China (PRC)****Ex-USSR Gordy**

Displacement: 1657 std

Damage Points: 52

Damage Modifier: 0.9

Propulsion: Steam

Weapons:

F/A(1)4 B-13-2C 130mm/50 //1 Four Eyes optical

F/A/P/S(2)4 37mm/63

2 DC Rail w/10 B-1 DC

PB&amp;SB(2)2 HY-2 w/2 msis

2 BMB-1 DC Proj w/10 B-1 DC

Sensors:

Ball End, Cross Bird, Square Tie, High Sieve

Fin Curve (PRC) or Neptune (USSR)

Pegas

Remarks:

Anshan or Type 07 class. Some may have triple vice dual HY-2 launchers. HY-2 ROF 2 msis per turn (both mounts) at same target. Two units (103 and 104) may be in reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	13	26	39	47	52
Surface Speed:	32	24	16	8	0	Sinks

**Ex-USSR Kronshtadt**

Displacement: 303 std

Damage Points: 13

Damage Modifier: 0.9

Propulsion: Diesel

Weapons:

F(1)1 Model 90K 85mm/52

A(1)2 Model 70K 37mm/63

(5)2 RBU 1200 w/5 salvoes

2 DC Rail w/10 B-1 DC

2 BMB-1 DC Proj w/10 B-1 DC

Sensors:

Ball End (USSR) or Fin Curve (PRC)

Tamir 11

Remarks:

Six transferred from USSR 1955; rest Chinese-built. RBU 1200 fixed in train.

In Class: 0+3

In Service: 1990

Speed: 31 kts

Crew: 184

Total Mounts: 8

D/USA

D/Italy

C/Frn

C/USA

F/USA

B/UK

M/Can

J/Nethl

J/UK

FF

DDG

Total Mounts: 14

C/USSR

C

E/USSR

D

E/USSR

J/USSR

J

M/USSR

PC

In Class: 20

In Service: 1955

Speed: 18 kts

Crew: 51

Total Mounts: 9

C/USSR

C/USSR

E/USSR

E/USSR

E/USSR

J

M/USSR

Ship must be pointed directly at target to fire RBUs. Some may be non-operational.

**Damage and Speed Breakdown:**

Damage Points:	0	3	7	10	12	13
Surface Speed:	18	13	9	5	0	Sinks

**Ex-USSR Riga**

Displacement: 1186 std

Damage Points: 38

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

2F/1A(1)3 Bu-34 100mm/56//1 Sun Visor

P/S(2)2 37mm/63

2 DC Rail w/10 B-1 DC

4 BMB-2 DC Proj w/10 B-1 DC

PB&amp;SB(2)1 HY-2 w/2 msis

Sensors:

Neptune, Slim Net, Square Tie

Type 756

Pegas

Remarks:

Chengdu or Type 01 class. HY-2 ROF 2 msis per turn (both mounts) at the same target. Not all units have aft 100mm mount.

**Damage and Speed Breakdown:**

Damage Points:	0	10	19	28	34	38
Surface Speed:	28	21	14	7	0	Sinks

**Fuqing**

Displacement: 14600 std

Damage Points: 270

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

None

Sensors:

2 Fin Curve

Remarks:

2 liquid replenishment stations per side and one solid transfer station per side. Helo pad aft but no hangar. Provision for (2)4 37mm/63 AA. One unit assigned to each fleet operating area.

**Damage and Speed Breakdown:**

Damage Points:	0	67	135	202	243	270
Surface Speed:	18	14	9	4	0	Sinks

**Haiju**

Displacement: 400

Damage Points: 20

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F/A(2)2 Type 76 57mm/70

F/A(2)2 AK-230 30mm/65

(5)4 RBU 1200 w/5 salvoes

2 DC rail w/10 B-1 DC

Sensors:

Pot Head

Tamir 11

Remarks:

Improved Hainan class. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs. Displacement and sonar type estimated.

**Damage and Speed Breakdown:**

Damage Points:	0	5	10	15	18	20
Surface Speed:	30	22	15	8	0	Sinks

**Hainan**

Displacement: 375 std

Damage Points: 19

Damage Modifier: 1.00

Propulsion: Diesel

In Class: 4

In Service: 1959

Speed: 28 kts

Crew: 170

Total Mounts: 12

C/USSR

C

E/USSR

E/USSR

D

J/USSR

J

M/USSR

AO

In Class: 3

In Service: 1980

Speed: 18 kts

Crew: 146

Total Mounts: 0

J

PC

In Class: 1+

In Service: 1989?

Speed: 30 kts

Crew: ?

Total Mounts: 10

C/USSR

C/USSR

E/USSR

E/USSR

J/USSR

M/USSR

PG

In Class: 44

In Service: 1964

Speed: 30 kts

Crew: 70

**Weapons:**

F/A(2)2 Type 76 57mm/70  
 F/A(2)2 2M-8 25mm/60  
 (5)4 RBU 1200 w/5 salvoes  
 2 BMB-2 DC proj w/10 B-1 DC  
 2 DC Rail w/10 B-1 DC

**Sensors:**

Pot Head or Skin Head  
 SS12 VDS (two units)  
 Tamir 11

**Remarks:**

PRC has purchased SS12 VDS sonars from France (1987) for tests. More may be purchased later. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

**Damage and Speed Breakdown:**

Damage Points:	0	5	9	14	17	19
Surface Speed:	30	22	15	8	0	Sinks

**Han**

**Displacement:** 4500 subm

**Damage Points:** 88

**Damage Modifier:** 1.00

**Propulsion:** Nuclear

**Weapons:**

PB&SB(3)2 533mm TT w/18 53VA torp

**Sensors:**

Tamir  
 Periscope radar

**Remarks:**

TT loadout estimated. Possibly fitted with DUUX 5 Fenelon passive ranging sonar (not a search sensor). Add 10% to Passive Fire Control solution chance if target detected by this sonar.

**Damage and Speed Breakdown:**

Damage Points:	0	22	44	66	79	88
Surface Speed:	22	17	11	6	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

**Hegu**

**Displacement:** 68 std

**Damage Points:** 4

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

F(2)1 2M-8 25mm/60  
 PB&SB(1)2 HY-2 w/1 msls

**Sensors:**

Square Tie

**Remarks:**

PRC-built Komar design. 3 Komar units delivered in 1976; now deleted. One additional unit (*Hema* class) has F/A(2)2 25mm/80. HY-2 ROF 2 msls per turn (both launchers) at same target. HY-2 launchers being replaced by (2)2 C801. C801 ROF 4 msls per turn (both launchers) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	2	4
Surface Speed:	37	18	Sinks

**Huchuan**

**Displacement:** 39 std

**Damage Points:** 2

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

A(2)2 14.5mm mg  
 PB&SB(1)2 533mm TT w/1 Type 53-56 torp

**Sensors:**

Skin Head (early units)  
 Type 756 (later units)

**Remarks:**

Hydrofoil. Treat as large radar target if travelling at 25 knots or more. The rooster tail thrown up when the ship is foiborne increases the size of the radar

**Total Mounts:** 12

C/USSR  
 C/USSR  
 E/USSR  
 E/USSR  
 E/USSR

J/USSR  
 M/Frn  
 M/USSR

**SSN**

**In Class:** 3+1

**In Service:** 1974

**Speed:** 22/25 kts

**Crew:** 100

**Total Mounts:** 2

F/USSR

M/USSR

J/Intl

**PTM**

**In Class:** 110

**In Service:** 1960

**Speed:** 37 kts

**Crew:** 17

**Total Mounts:** 3

C/USSR

D

J/USSR

**PTH**

**In Class:** 120+

**In Service:** 1966

**Speed:** 50 kts

**Crew:** 11

**Total Mounts:** 4

C/USSR

F/USSR

J/USSR

J

echo. Older units have 145mm arcs F/A.

**Damage and Speed Breakdown:**

Damage Points:	0	1	2
Surface Speed:	50	25	Sinks

**Jiangdong**

**Displacement:** 1568 std

**Damage Points:** 61

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

F/A(2)2 Bu-34 100mm/56//1 Sun Visor B  
 P/S(2)4 37mm/63//1 Rice Lamp  
 (5)2 RBU 1200 w/5 salvoes  
 (13)2 BMB-2 DC proj w/10 B-1 DC  
 2 DC Rail w/10 B-1 DC  
 F/A(1)2 RF61//2 Fog Lamp

**Sensors:**

Rice Screen (1 unit), Type 756  
 Square Tie, Fin Curve  
 Pegas

**Remarks:**

Type 053K class. PRC-designed SAM system not operational until early 1980s. May still have problems. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

**Damage and Speed Breakdown:**

Damage Points:	0	15	30	46	55	61
Surface Speed:	28	21	14	7	0	Sinks

**Jianghu I**

**Displacement:** 1568 std

**Damage Points:** 61

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

F/A(1)2 Bu-34 100mm/56//1 Wok Non  
 PB&P/P/P&PQ/SB&S/S/S&SQ(2)6 37mm/63  
 PB&SB(2)2 HY-2 w/2 msls  
 (5)2 RBU 1200 w/5 salvoes  
 4 BMB-2 DC Proj w/10 B-1 DC  
 2 DC Rail w/10 B-1 DC

**Sensors:**

Type 756, Eye Shield  
 Don 2 or Fin Curve (PRC), Square Tie  
 Pegas

**Remarks:**

Equipment problems. Fitted with stabilizers, but never used. Air conditioning turned on infrequently to reduce load on generators. 100mm guns loaded by hand. Does not have rigs for alongside RAS. No fire control radars; optical director only. HY-2 ROF 2 msls per turn (both launchers) at same target. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

**Damage and Speed Breakdown:**

Damage Points:	0	15	31	46	55	61
Surface Speed:	25	19	12	6	0	Sinks

**Jianghu II**

**Displacement:** 1586 std

**Damage Points:** 62

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

P&S(2)2 HY-2 w/2 msls//1 Square Tie  
 F/A(2)2 Bu-34 100mm/56//1 Optical dir.  
 PB&P/P/P&PQ/SB&S/S/S&SQ(2)4 37mm/63  
 (5)2 RBU 1200 w/5 salvoes  
 2 BMB-2 DC proj w/10 B-1 DC  
 2 DC rail w/10 B-1 DC

**Sensors:**

Type 756, Eye Shield  
 Square Tie

**FFG**

**In Class:** 2

**In Service:** 1974

**Speed:** 28 kts

**Crew:** 185

**Total Mounts:** 14

C/USSR

C

E/USSR

E/USSR

E/USSR

D

J

J/USSR

M/USSR

**FF**

**In Class:** 18

**In Service:** 1975

**Speed:** 25 kts

**Crew:** 195

**Total Mounts:** 18

C/USSR

C

D

E/USSR

E/USSR

E/USSR

J

J/USSR

M/USSR

**FF**

**In Class:** 5

**In Service:** 1975

**Speed:** 25 kts

**Crew:** 195

**Total Mounts:** 12

D

C/USSR

C

E/USSR

E/USSR

E/USSR

J

J/USSR

## Pegas

## Remarks:

Chinese Project EF3H or *Changsha* class. 100mm FC is simple stereoscopic rangefinder. 3 units of the series have CODOG propulsion with a speed of 28 knots. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs. Does not have rigs for alongside RAS. HY-2 ROF 2 msls per turn (both launchers) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	15	31	46	56	62	
Surface Speed:	25	19	12	6	0	Sinks	(Diesel)
Surface Speed:	28	21	14	7	0	Sinks	(CODOG)

## Jianghu IV

Displacement: 1700 std

Damage Points: 66

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

PB&SB(1)8 C801 w/1 msl//1 Square Tie  
F/A(2)2 Bu-34 100mm/56//1 Sun Visor  
PB&P/P/SB&S/S(2)4 37mm/63 //1 Rice Lamp  
F(5)2 RBU 1200 w/5 salvoes  
2 BMB-2 DC proj w/10 B-1 DC  
2 DC rail w/10 B-1 DC

## Sensors:

Eye Shield, Type 965

Square Tie

Pegas

## Remarks:

RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

## Damage and Speed Breakdown:

Damage Points:	0	16	33	49	59	66	
Surface Speed:	25	19	12	6	0	Sinks	

## Jianghu V

Displacement: 1700 std

Damage Points: 66

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

F(2)1 Compact 100mm/55//1 Wok Non  
PB&P/P/SB&S/S(2)4 37mm/63//1 Rice lamp  
PB&SB(2)1 HY-2 w/2 msls  
Aft Pad(1)1 Zhi-9  
(5)2 RBU 1200 w/5 salvoes  
2 BMB-2 DC proj w/10 B-1 DC  
2 DC rail w/10 B-1 DC

## Sensors:

Eye Shield, Type 965

Square Tie

Pegas

## Remarks:

RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

## Damage and Speed Breakdown:

Damage Points:	0	16	33	49	59	66	
Surface Speed:	25	19	12	6	0	Sinks	

## Jiangnan

Displacement: 1350 std

Damage Points: 54

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

F/2A(1)3 Bu-34 100mm/56//1 Wok Non  
PB&P/P&PQ/SB&S/S&SQ(2)4 37mm/63  
(5)2 RBU 1200 w/5 salvoes  
2 DC Rail w/10 B-1 DC  
4 BMB-2 DC Proj w/10 B-1 DC

## M/USSR

## FF

In Class: 2

In Service: 1986

Speed: 25 kts

Crew: 200

Total Mounts: 20

D

C/USSR

C

E/USSR

E/USSR

E/USSR

J

J/USSR

M/USSR

## FF

In Class: 0+1

In Service: 1987 (?)

Speed: 25 kts

Crew: 195

Total Mounts: 13

C/Frn

C

D

B

E/USSR

E/USSR

E/USSR

J

J/USSR

M/USSR

## DD

In Class: 5

In Service: 1967

Speed: 28 kts

Crew: 175

Total Mounts: 15

C/USSR

C

E/USSR

E/USSR

E/USSR

## Sensors:

Neptune or Fin Curve (PRC), Ball End

Pegas, Tamir 11

## Remarks:

PRC version of USSR *Riga* class. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

## Damage and Speed Breakdown:

Damage Points:	0	14	27	40	49	54	
Surface Speed:	28	21	14	7	0	Sinks	

## Luda

Displacement: 3250

Damage Points: 117

Damage Modifier: 1.00

Propulsion: Steam

## Weapons:

F/A(2)2 130mm/58//1 Post Lamp  
F/A/P/S(2)4 Type 76 57mm/70//2 Rice Lamp  
P/S(2)4 2M-8 25mm/60  
PB&SB(3)2 HY-2 w/3 msls  
F(12)2 FOF-2500 w/5 salvoes  
4 BMB-2 DC Proj w/10 B-1 DC  
2 DC Rail w/10 B-1 DC

## Sensors:

Fin Curve

Knife Rest A, Neptune, Square Tie

Pegas

## Remarks:

Series I has 7 in class; has Post Lamp director for 130mm. Series II has 4 in class; Rice Lamp for 130mm. Series 3 has 4 in class; more possibly being built. Some have 37mm/63 vice 57mm/70 in twin mounts. Some units have 2 vice 4 DC projectors. Some units have Bean Sticks vice Knife Rest; electronic suite varies in later units. One unit has new Rice Screen radar. Has rigs for alongside RAS. One unit lost in Aug 1978 near Zhanjiang due to explosion. HY-2 ROF 2 msls per turn (both mounts) at same target. Unit 105 Jinan modernized in 1987. After 130mm, 57mm, DC proj, DC rail removed. Helo pad and hangar added for Zhi-9 helicopter. Has F(2)1 100mm/50 vice 130mm. Other units may be converted to this configuration.

## Damage and Speed Breakdown:

Damage Points:	0	29	58	88	105	117	
Surface Speed:	32	24	16	8	0	Sinks	

## Ming

Displacement: 1900 subm

Damage Points: 36

Damage Modifier: 1.00

Propulsion: Diesel-Electric

## Weapons:

PB&SB(3)2 533mm TT w/12 53VA torp  
PQ&SQ(2)1 533mm TT w/2 53VA torp

## Sensors:

Snoop Plate

Tamir

## Remarks:

PRC-designed *Romeo*; unsatisfactory.

## Damage and Speed Breakdown:

Damage Points:	0	9	18	27	32	36	
Surface Speed:	15	11	8	4	0	Sinks	
Submerged Speed:	17	13	8	4	0	Sinks	

## Romeo

Displacement: 1712 subm

Damage Points: 27

Damage Modifier: 0.9

Propulsion: Diesel-Electric

## Weapons:

PB&SB(3)2 533mm TT w/12 53VA torp  
PQ&SQ(2)1 533mm TT w/2 53VA torp

## Sensors:

Snoop Plate or Snoop Tray

J/USSR  
M/USSR

## DDG

In Class: 15

In Service: 1971

Speed: 32 kts

Crew: 350

Total Mounts: 20

C

C

C/USSR

D

E

E/USSR

E/USSR

J

J/USSR

M/USSR

## SS

In Class: 3

In Service: 1975

Speed: 15/17 kts

Crew: 60

Total Mounts: 3

F/USSR

F/USSR

J/USSR

M/USSR

## SS

In Class: 84

In Service: 1960

Speed: 16/13 kts

Crew: 53

Total Mounts: 3

F/USSR

F/USSR

J/USSR

## Hercules or Tamir, Feniks

M/USSR

## Remarks:

As many as 50 may be in nonoperational status.

## Damage and Speed Breakdown:

Damage Points:	0	7	14	20	24	27
Surface Speed:	16	12	8	4	0	Sinks
Submerged Speed:	113	10	6	3	0	Sinks

## USSR Osa

PTM

Displacement: 112 std

In Class: 124

Damage Points: 5

In Service: 1965

Damage Modifier: 0.9

Speed: 38 kts

Propulsion: Diesel

Crew: 28

Weapons:

Total Mounts: 6

F/A(2)2 2M-8 25mm/60

C/USSR

PB&amp;SB(1)4 HY-2 w/1 msls

D

Sensors:

J/USSR

Square Tie

Remarks:

First 7 units have AK-230 30mm/65//1 Round Ball vice 25mm. 1 additional unit is *Hola* class with radome aft, 2 HY-2, no guns. Unsuccessful. HY-2 ROF 2 msls per turn (all mounts) at same target. HY-2 being replaced with 6-8 C801. C801 ROF 8 msls per turn (all mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	1	2	3	4	5
Surface Speed:	38	28	19	10	0	Sinks

## USSR P-6

PT

Displacement: 56 std

In Class: 60

Damage Points: 3

In Service: 1960

Damage Modifier: 0.9

Speed: 43 kts

Propulsion: Diesel

Crew: 15

Weapons:

Total Mounts: 5

F/A(2)2 2M-8 25mm/60

C/USSR

PB&amp;SB(1)2 533mm TT w/1 Type 53-56 torp

F/USSR

1 DC Rail w/12 B-1 DC

E/USSR

Sensors:

J/USSR

Skin Head

Remarks:

Beginning to be phased out. Over 80 units built. Wooden hull.

## Damage and Speed Breakdown:

Damage Points:	0	2	3
Surface Speed:	43	22	Sinks

## USSR Whiskey

SS

Displacement: 1350 subm

In Class: 15

Damage Points: 27

In Service: 1950

Damage Modifier: 1.00

Speed: 17/13 kts

Propulsion: Diesel-Electric

Crew: 53

Weapons:

Total Mounts: 4

PB&amp;SB(2)2 533mm TT w/12 53VA torp

F/USSR

PQ&amp;SQ(2)1 533mm TT w/2 53VA torp

F/USSR

A(2)1 2M-8 25mm/60

C/USSR

Sensors:

J/USSR

Snoop Plate

M/USSR

Tamir 5L

Remarks:

15 in reserve or used for training.

## Damage and Speed Breakdown:

Damage Points:	0	7	14	20	24	27
Surface Speed:	17	13	8	4	0	Sinks
Submerged Speed:	13	10	6	3	0	Sinks

## Wuhan

SSG

Displacement: 2100 subm

In Class: 1+?

Damage Points: 36

In Service: 1982

Damage Modifier: 1.00

Speed: 16/13 kts

Propulsion: Diesel-Electric

Crew: 53

Weapons:

Total Mounts: 9

PB&amp;SB(1)6 C801 w/1 msl

D

PB&amp;SB(3)2 533mm TT w/12 53VA torp

PQ&amp;SQ(2)1 533mm TT w/2 53VA torp

Sensors:

Snoop Plate

Tamir 5L, Hercules

Remarks:

PRC conversion of *Romeo* SS to fire SSMs while surfaced. Maximum sea state 6; takes 10 min after surfacing to prepare for launch. C801 ROF 8 msls per turn (all mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	9	18	27	32	36
Surface Speed:	16	12	8	4	0	Sinks
Submerged Speed:	13	10	6	3	0	Sinks

## Spain

## Atrevida

FFL

Displacement: 997 std

In Class: 4

Damage Points: 42

In Service: 1954

Damage Modifier: 1.00

Speed: 16 kts

Propulsion: Diesel

Crew: 132

Weapons:

Total Mounts: 4

A(1)1 Mk22 76mm/50

C/USA

F/2A(1)3 Type 107 40mm/70 //1 Optical director

C/Italy

Sensors:

J/USA

SPS-5

J/UK

Decca series

ESM

Remarks:

ASW ordnance and sonar removed in 1980. 2 Hedgehog, 2 DC proj, 2 DC rail, QBHa sonar. No director for 76mm gun; optical directors for 40mm/70. Six built.

## Damage and Speed Breakdown:

Damage Points:	0	11	21	32	38	42
Surface Speed:	16	12	8	4	0	Sinks

## Balears

FF

Displacement: 3015 std

In Class: 5

Damage Points: 110

In Service: 1973

Damage Modifier: 1.00

Speed: 27 kts

Propulsion: Steam

Crew: 256

Weapons:

Total Mounts: 11

P/S(12)2 Meroka 20mm/120//1 PVS-2

C

PB&amp;SB(4)2 Mk141 w/4 Harpoon

D/USA

A(1)1 Mk22 w/16 SM1MR//1 SPG-51

D/USA

F(1)1 Mk42 127mm/54 w/600 rds

C/USA

F(8)1 Mk16 w/8 ASROC

E/USA

PB&amp;SB(3)2 Mk32 324mm TT w/2 Mk46 torp

F/USA

PQ/SQ(1)2 Mk25 533mm TT w/1 Mk37 torp

F/USA

Sensors:

J/Italy

RAN-12L

J/USA

SPS-10, SPS-52, Pathfinder

M/USA

DE 1160LF, SQS-35 IVDS

Remarks:

SPG-53 can direct SM1MR msls or 127mm gun at target, in addition to SPG-51. Can carry a total of 41 Mk46 and Mk37 torp (manual reload). 8 manual reloads for ASROC.

## Damage and Speed Breakdown:

Damage Points:	0	27	55	82	99	110
Surface Speed:	27	20	14	7	0	Sinks

## Cadiz

ATF

Displacement: 951 std

In Class: 4

Damage Points: 31

In Service: 1964

Damage Modifier: 1.00

Speed: 15 kts

Propulsion: Diesel

Crew: 49

Weapons:

Total Mounts: 2

F/A(2)2 20mm/80

C/Intl

**Sensors:**

Decca 626 (Decca series)

**Remarks:**

Poseidon has (2)2 Bofors 40mm/70 vice 20mm.

**Damage and Speed Breakdown:**

Damage Points:	0	8	15	23	27	31
Surface Speed:	15	11	8	4	0	Sinks

**Dedalo**

Displacement: 13000 std

Damage Points: 333

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

20 Aircraft

5P/4S(2)9 Mk1 40mm/60//4 Mk34

**Sensors:**

SPS-10, SPS-40, SPS-8, SPS-6C

2 Nav radar

**Remarks:**

Armor: 127mm belt, bulkheads, 51mm deck. General armor rating is L. CHP  
 Factors: Engineering, flight deck and hangar are L. Air group has 7 AV-8A,  
 20 helicopters: SH-3D Sea King, Sea King AEW.2, AB-212ASW. Originally  
 had additional F/A(4)2 40mm/60. Hangar can hold 18 large helicopters, with  
 6 more on deck. Can land/launch 4 large helos at same time. Decommed on  
 5 Aug 1989; will become USS Cabot museum in USA.

**Damage and Speed Breakdown:**

Damage Points:	0	83	166	250	299	333
Surface Speed:	24	18	12	6	0	Sinks

**Descubierta**

Displacement: 1233 std

Damage Points: 50

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

A(8)1 Mk29 NATO Sea Sparrow w/8 Albatros

F(1)1 Compact 76mm/62 w/600 rds//1 WM25

A(1)2 Type 107 40mm/70 w/144 ready rds

F(2)1 Bofors 375mm mortar

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

PB&amp;PQ/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

**Sensors:**

ZW.06, DA.05

RAN-12L

DE 1160B, DE 1167 VDS (F 33-36)

**Remarks:**

Fitted with stabilizers. Has Prairie-Masker bubbler system to reduce radiated  
 noise (quieted). Two additional units F 37 and F 38 sold to Egypt in 1982. 16  
 manual reloads for NATO SS. Mk29 NATO SS ROF 15 msls per turn. In  
 peacetime only (2)2 Harpoon are carried. Upper of 240mm/70 being replaced  
 with A(12)1 Meroka 20mm/120//1 PVS-2. First unit *Infanta Christina* started  
 at the end of 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	13	25	38	45	50
Surface Speed:	26	20	13	6	0	Sinks

**Ex-US Fletcher**

Displacement: 2850 std

Damage Points: 104

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

F/A(1)4 Mk30 127mm/38//2 Mk25

P/S/A(2)3 Mk33 76mm/50//2 Mk63

P&amp;S(5)1 533mm TT w/5 Mk14 torp

F(24)2 Mk11 Hedgehog w/10 salvoes

4 Mk6 DC proj

1 DC rail

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

J/UK

CVH

In Class: [1]

In Service: 1943-89

Speed: 24 kts

Crew: 1100

Total Mounts: 9

B

C/USA

J/USA

J/Intl

FF

In Class: 6

In Service: 1978

Speed: 26 kts

Crew: 116

Total Mounts: 9

D/Italy

C/Italy

C/Italy

E/Sweden

F/USA

D/USA

J/Nethl

J/Italy

M/USA

DD

In Class: [5]

In Service: 1955-88

Speed: 30 kts

Crew: 290

Total Mounts: 17

C/USA

C/USA

F

E/USA

E/USA

E/Intl

F/USA

**Sensors:**

SPS-10, SPS-6C

SQS-29 or SQS-4

J/USA

M/USA

**Remarks:**

Five units transferred to Spain. D 22 has additional P&S(1)1 127mm/38, (1)6  
 Mk1 40mm/60 vice 76mm, P/S(1)6 Mk4 20mm/80. Loadout for 533mm TT  
 unknown; originally carried Mk14 antisurface vessel torpedoes. D21 *Lepanto*  
 struck in Dec 1985; D22 *Almirante Ferrandiz*, Oct 1986; D23 *Almirante Val-*  
*dez*, 1987; D24 *Alcala Galliano* and D25 *Jorge Juan*, 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	26	52	78	94	104
Surface Speed:	30	22	15	8	0	Sinks

**Ex-US Gearing**

Displacement: 2425 std

Damage Points: 67

Damage Modifier: 0.75

Propulsion: Steam

**Weapons:**

F/A(2)2 Mk38 127mm/38//1 Mk25

P&amp;S(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Aft Pad(1)1 Hughes 500M Cayuse

**Sensors:**

SPS-10, SPS-37

SQS-23

Nav radar

**Remarks:**

D 61, D 62 have SPS-40 vice SPS-37. D65 has both mounts forward, no  
 Mk16 ASROC launcher.

**Damage and Speed Breakdown:**

Damage Points:	0	17	34	51	61	67
Surface Speed:	31	23	16	8	0	Sinks

**France Agosta**

Displacement: 1750 subm

Damage Points: 34

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB/SB(2)2 550mm TT w/20 F17, E18, L5

**Sensors:**

DRUA 33

DUUA 2A, DUUA 2B, DSUV 22

**Remarks:**

May carry SM39 Exocet. Fitted with DUUX 2 (S71-72) or DUUX 5 Fenelon  
 (S73-74) passive ranging sonars (not a search sensor). Add 5% (DUUX 2) or  
 10% (DUUX 5) to Passive Fire Control solution chance if target detected by  
 this sonar. Very Small sonar contact. -10% active sonar detection chance.

**Damage and Speed Breakdown:**

Damage Points:	0	8	17	25	30	34
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

**France Daphne**

Displacement: 1042 subm

Damage Points: 22

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&amp;SB(4)2 550mm TT w/8 L5, F17, E18

PQ&amp;SQ(2)2 550mm TT w/4 L5, F17, E18

**Sensors:**

DRUA 31

DUUA 2A, DSUV 22

**Remarks:**

Fitted with DUUX 2 passive ranging sonar (not a search sensor). Add 5% to  
 Passive Fire Control solution chance if target detected by this sonar.

DD

In Class: 5

In Service: 1945

Speed: 31 kts

Crew: 274

Total Mounts: 6

C/USA

E/USA

F/USA

B

J/USA

M/USA

J/Intl

SS

In Class: 4

In Service: 1983

Speed: 12/20 kts

Crew: 50

Total Mounts: 2

F/Frn

J/Frn

M/Frn

SS

In Class: 4

In Service: 1973

Speed: 12/15 kts

Crew: 47

Total Mounts: 4

F/Frn

F/Frn

J/Frn

M/Frn



**Damage and Speed Breakdown:**

Damage Points:	0	5	11	16	20	22
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	15	11	8	4	0	Sinks

**Mahon**

Displacement: 700 std  
 Damage Points: 24  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 P&PQ/S&SQ(1)2 12.7mm mg  
 Sensors:  
 2 Decca series

**ATF**  
 In Class: 2  
 In Service: 1978  
 Speed: 14 kts  
 Crew: 45  
 Total Mounts: 2  
 C/Intl  
 J/UK

**Remarks:**

Commercial tugs purchased and commissioned in 1981.

**Damage and Speed Breakdown:**

Damage Points:	0	6	12	18	22	24
Surface Speed:	14	11	7	4	0	Sinks

**Principe de Asturias**

Displacement: 15150 fl  
 Damage Points: 368  
 Damage Modifier: 1.00  
 Propulsion: COGOG  
 Weapons:  
 P&PB/S&SB/2A(12)4 Meroka 20mm/120 //4 PVS-2  
 24 Aircraft  
 2 Elevators  
 Sensors:  
 SPS-55, SPS-52

**CVH**  
 In Class:  
 In Service: 1987  
 Speed: 26 kts  
 Crew: 793  
 Total Mounts: 6  
 C  
 B  
 —  
 J/USA

**Remarks:**

Fitted with stabilizers. Has Prairie-Masker bubbler noise suppression system (quieted). Air group can consist of AV-8B, SH-3D Sea King, Sea King AEW.2, AB-212ASW. 12-degree ski jump. Can carry 37 aircraft in emergency but can only operate 24. Typical wing 12 AV-8B Matador, 9 SH-3D Sea King, 3 Sea King AEW.2.

**Damage and Speed Breakdown:**

Damage Points:	0	92	184	276	332	368
Surface Speed:	26	20	13	6	0	Sinks

**Roger de Lauria**

Displacement: 3012 std  
 Damage Points: 109  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 2F/A(2)3 Mk38 127mm/38//2 Mk25, Mk35  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
 PB/SB(1)2 Mk25 533mm TT w/1 Mk37 torp  
 Aft Pad(1)1 Hughes 500M Cayuse  
 Sensors:  
 Decca 426 (Decca series)  
 SPS-10, SPS-40, SQS-32  
 SQA-10 VDS

**DD**  
 In Class: [2]  
 In Service: 1970-88  
 Speed: 28 kts  
 Crew: 255  
 Total Mounts: 8  
 C/USA  
 F/USA  
 F/USA  
 B  
 J/UK  
 J/USA  
 M/USA

**Remarks:**

Roger de Lauria struck in 1982; Maerques De La Ensada, 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	27	55	82	98	109
Surface Speed:	28	21	14	7	0	Sinks

**Santa Maria**

Displacement: 2851 lt  
 Damage Points: 104  
 Damage Modifier: 1.00  
 Propulsion: COGOG  
 Weapons:  
 F(1)1 Mk13 w/40 see remarks//1 STIR  
 P&S(1)1 Compact 76mm/62//1 Mk92  
 A(12)1 Meroka 20mm/120//1 PVS-2

**FFG**  
 In Class: 3+1  
 In Service: 1986  
 Speed: 29 kts  
 Crew: 201  
 Total Mounts: 7  
 D/USA  
 C/Italy  
 C

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

Aft Pad(1)2 SH-60B LAMPS III

**Sensors:**

SPS-64, SPS-49

Nav radar

RAN-12L

DE 1160B, SQR-19 towed array

**Remarks:**

Mk13 launcher loadout 8 Harpoon and 32 SM1MR. Mk13 ROF is 6 msls per min. First two units are short-hull versions; will have to be backfitted to take SH-60B and RAST. Fitted with stabilizers, RAST helo haul-down system.

**Damage and Speed Breakdown:**

Damage Points:	0	26	52	78	94	104
Surface Speed:	29	22	14	7	0	Sinks

**Teide**

Displacement: 2750 std

Damage Points: 76

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

None

Sensors:

Decca 626 (Decca series)

Remarks:

Fitted to refuel at sea, with one station on each side. Struck in 1988.

**Damage and Speed Breakdown:**

Damage Points:	0	19	38	57	68	76
Surface Speed:	13	10	6	3	0	Sinks

**Sweden****Alvsborg**

Displacement: 2660 std

Damage Points: 98

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

2F/1A(1)3 Bofors 40mm/70//1 WM22

Sensors:

Skanter 009

Raytheon (Nav radar)

ESM

Remarks:

Can carry 300 mines. Helo pad aft. M02 is used as subtender, M03 as flag-ship of coastal fleet.

**Damage and Speed Breakdown:**

Damage Points:	0	24	49	73	88	98
Surface Speed:	16	12	8	4	0	Sinks

**Göteborg**

Displacement: 380 std

Damage Points: 19

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

PB&SB(2)4 RBS 15 w/2 msls

F(1)1 Bofors Mk2 57mm/70//1 9LV200

A(1)1 Bofors Trinity 40mm/70//1 9LV200

PB/SB(4)1 400mm TT w/1 Tp 431 torp

F(9)4 Elma ASW RL

Sensors:

Sea Giraffe 150HC

Terma PN 612 (Nav radar)

Simrad SS304 Spira

Salmon VDS

ESM

Remarks:

Separate 9LV200 directors for each gun mount.

F/USA  
B/USA

J/USA  
J/Intl  
J/Italy  
M/USA

**AOR**

In Class: [1]

In Service: 1956-88

Speed: 13 kts

Crew: 98

Total Mounts: 0

J/UK

**ML**

In Class: 2

In Service: 1971

Speed: 16 kts

Crew: 97

Total Mounts: 3

J

J/Intl

**FFL**

In Class: 0+4+2

In Service: 1992

Speed: 32 kts

Crew: 43

Total Mounts: 11

D

C

C

F

E

J

J/Intl

M/Norway

M/Frn

**Damage and Speed Breakdown:**

Damage Points:	0	5	10	14	17	19
Surface Speed:	32	24	16	8	0	Sinks

**Hugin**

Displacement: 120 std  
 Damage Points: 6  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:

F(1)1 Bofors Mk1 57mm/70//1 9LV200  
 PB&SB(1)6 Penguin Mk2  
 2 DC/Mine rails  
 (9)4 ELMA ASW RL

Sensors:  
 Simrad SQ3D/SF  
 Skanter 009  
 ESM

**Damage and Speed Breakdown:**

Damage Points:	0	2	3	4	5	6
Surface Speed:	22	17	11	6	0	Sinks

**Näcken**

Displacement: 1125 subm  
 Damage Points: 23  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric

Weapons:  
 PB&SB(6)1 533mm TT w/8 Tp61 torp  
 PB&SB(2)1 406mm TT w/4 Tp42 torp

Sensors:  
 CSU 83  
 Type 206  
 Terma radar (periscope radar)

**Damage and Speed Breakdown:**

Damage Points:	0	6	12	17	21	23
Surface Speed:	12	8	6	4	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

**Spica I**

Displacement: 190 std  
 Damage Points: 10  
 Damage Modifier: 1.00  
 Propulsion: Gas Turbine

Weapons:  
 F(1)1 Bofors Mk1 57mm/70//1 WM22  
 PB&SB(1)6 533mm TT w/1 Tp61 torp

Sensors:  
 Skanter 009  
 Remarks:

Six built. *Sirius* and *Castor* struck in 1985; *Spica*, *Capella*, *Vega* and *Virgo* struck in 1989.

**Damage and Speed Breakdown:**

Damage Points:	0	2	5	7	9	10
Surface Speed:	40	30	20	10	0	Sinks

**Spica II**

Displacement: 190 std  
 Damage Points: 10  
 Damage Modifier: 1.00  
 Propulsion: Gas Turbine

Weapons:  
 PB&SB(1)2 RBS 15 w/1 msl  
 F(1)1 Bofors Mk2 57mm/70//1 9LV200  
 PB&SB(1)2 533mm TT w/1 Tp61 torp  
 (9)4 Elma ASW RL

Sensors:  
 Skanter 009, Sea Giraffe 50HC

**FPB**

In Class: 16  
 In Service: 1978  
 Speed: 22 kts  
 Crew: 36  
 Total Mounts: 13

C  
 D/Norway

E

M/Norway  
 J

—

**SS**

In Class: 3  
 In Service: 1980  
 Speed: 12/20 kts  
 Crew: 19  
 Total Mounts: 2

F  
 F

M/FRG  
 M/UK  
 J/Intl

**PTM**

In Class: [6]  
 In Service: 1966-89  
 Speed: 40 kts  
 Crew: 28  
 Total Mounts: 7

C  
 F

J

**PTM**

In Class: 12  
 In Service: 1975  
 Speed: 40 kts  
 Crew: 27  
 Total Mounts: 9

D  
 C  
 F  
 E

J

**Damage and Speed Breakdown:**

Damage Points:	0	2	5	7	9	10
Surface Speed:	40	30	20	10	0	Sinks

**Stockholm**

Displacement: 290 std  
 Damage Points: 14  
 Damage Modifier: 1.00  
 Propulsion: CODAG

Weapons:  
 PB&SB(-) RBS 15  
 F(1)1 Bofors Mk2 57mm/70//1 9LV200  
 A(1)1 Bofors 40mm/70//1 9LV200  
 PB&SB(1)2 533mm TT w/1 Tp613 torp  
 (9)4 Elma ASW RL

Sensors:  
 Terma radar (nav radar)  
 Sea Giraffe 50HC  
 Simrad SS 304 Spira  
 Salmon VDS  
 ESM

**Remarks:**

Class carries 6-8 RBS 15, either (2)4 or (2)2 and (1)1. Salmon VDS is dismountable. Can replace 2 533mm TT with (2)2 400mm TT with 4 TP431 torp total. Separate 9LV200 for each gun mount.

**Damage and Speed Breakdown:**

Damage Points:	0	4	7	11	13	14
Surface Speed:	32	24	16	8	0	Sinks

**Västergötland**

Displacement: 1140 subm  
 Damage Points: 24  
 Damage Modifier: 1.00  
 Propulsion: Diesel-Electric

Weapons:  
 PB&SB(3)2 533mm TT w/ Tp613 torp  
 PB&SB(2)2 400mm TT w/ Tp42 and 431 torp

Sensors:  
 Terma radar (nav radar)  
 CSU 83

**Damage and Speed Breakdown:**

Damage Points:	0	6	12	18	21	24
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

**United Kingdom (UK)****Abdiel**

Displacement: 1376 std  
 Damage Points: 55  
 Damage Modifier: 1.00  
 Propulsion: Diesel

Weapons:  
 F/A(1)2 Mk4 20mm/80

Sensors:  
 Type 1006

**Remarks:**

Can carry 44 mines. Carries and repairs mine sweeping equipment and cables. Used as exercise minelayer and mine craft support ship. ESM added for Persian Gulf service. Struck in 1988. Originally fitted with Type 978 radar. Replaced by Type 1006.

**Damage and Speed Breakdown:**

Damage Points:	0	14	27	41	49	55
Surface Speed:	16	12	8	4	0	Sinks

**Amazon**

Displacement: 3100 std  
 Damage Points: 84  
 Damage Modifier: 0.75

**FFL**

In Class: 2  
 In Service: 1985  
 Speed: 32 kts  
 Crew: 43  
 Total Mounts: 14 or 16

D  
 C  
 D  
 F  
 E

J/Intl  
 J  
 M/Norway  
 M/Frn

**SS**

In Class: 3+1  
 In Service: 1987  
 Speed: 12/20 kts  
 Crew: 17  
 Total Mounts: 4

F  
 F

J/Intl  
 M/FRG

**ML**

In Class: [1]  
 In Service: 1967-88  
 Speed: 16 kts  
 Crew: 98  
 Total Mounts: 2

C

J

**FF**

In Class: 6  
 In Service: 1974  
 Speed: 32 kts

**Propulsion:** COGOG**Weapons:**

PB/SB(3)2 Mk32 324mm TT w/3 Stingray

A(4)1 Sea Cat w/20 msls//1 Type 912

PB&amp;SB(1)4 MM38 Exocet w/1 msl

Aft Pad(1)1 Lynx HAS.3

F(1)1 Mk8 114mm/55//1 Type 912

P/S(1)2 Mk4 20mm/80

**Sensors:**

Type 1006

Type 184, Type 992R, Type 162M

**Remarks:**Aluminum construction. *Amazon* has 4 20mm vice 2. Two additional units*Ardent* sunk on 22 May 1982, *Antelope* sunk on 24 May 1982 in Falklands

War. MM38 ROF 8 msis per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	21	42	63	76	84
Surface Speed:	32	24	16	8	0	Sinks

**Appleaf**

Displacement: 37747 fl

Damage Points: 152

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

P/S(1)2 Mk4 20mm/80

**Sensors:**

2 Decca series

**Damage and Speed Breakdown:**

Damage Points:	0	38	76	114	137	152
Surface Speed:	15	11	8	4	0	Sinks

**Ardennes**

Displacement: 870 std

Damage Points: 38

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

None

**Sensors:**

Nav radar

**Damage and Speed Breakdown:**

Damage Points:	0	10	19	28	34	38
Surface Speed:	10	8	5	2	0	Sinks

**Argus**

Displacement: 18280 std

Damage Points: 365

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

Mid Pad(5)6 Sea King HC.4 or HAS.5

2 Elevators

P/S(1)2 LS-30B 30mm

P/S(1)2 GAM-B01 20mm/85

**Sensors:**

Type 994, Type 1006

**ESM****Remarks:**

RFA maintained. Ex-MV *Contender Bezan*. Taken over for Falklands War in 1982. Carries 9 helos including Chinook, 4 Harriers, and a large number of vehicles. Converted Mar 1984-86 to serve as aviation training ship. Can transport 12 Sea Harriers. Can operate Harriers in VTOL only. Armor: 1.9m concrete added under flight deck. CHP Factor: Flight deck and hangar is M. Watertight bulkheads added to improve compartmentation. Replaces *Egandine*.

**Damage and Speed Breakdown:**

Damage Points:	0	91	182	274	328	365
Surface Speed:	19	14	10	5	0	Sinks

Crew: 175

Total Mounts: 11

F

D

D/Frn

B

C

C

J

M

**Ark Royal**

Displacement: 43840

Damage Points: 847

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

3 Elevator

12 FG.1 Phantom

14 S.2 Buccaneer

4 Gannet AEW

7 Sea King HAS.2

1 Wessex

1 Catapult

**Sensors:**

Type 975, Type 978, Type 983, 2 Type 965

**Remarks:**

Decommed in 1978; scrapped in 1980. Can launch 10 small/med helos at once.

Armor: 114mm belt, 102mm deck, 38mm hangar sides, 64mm hangar deck. CHP

Factors: General armor rating is L; flight deck, engineering and hangar are L.

**Damage and Speed Breakdown:**

Damage Points:	0	212	424	635	762	847
Surface Speed:	31	23	16	8	0	Sinks

**Bristol**

Displacement: 6100

Damage Points: 198

Damage Modifier: 1.00

Propulsion: COSAG

**Weapons:**

F(1)1 Mk8 114mm/55//1 Type 903

P/S(2)2 GCM-A02 30mm/75

P/S(1)2 GAM-B01 20mm/85

P/S(1)2 Mk4 20mm/80

A(2)1 Sea Dart w/40 msis//2 Type 909

A(3)1 Mk10 Limbo w/17 salvoes//1 Type 170

**Sensors:**

Type 1022, Type 992R, Type 1006

Type 162, Type 184

**Remarks:**

Type 82 class. Helo pad aft for small helicopters, fitted with stabilizers. *Ikara* removed during refit in 1985-Feb 1986. Refitted at Portsmouth in 1987-88 for role as Dartmouth training ship. Will carry 100 midshipmen. Still available for duty as flagship.

**Damage and Speed Breakdown:**

Damage Points:	0	50	99	148	178	198
Surface Speed:	28	21	14	7	0	Sinks

**Bulwark**

Displacement: 23300 std

Damage Points: 504

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P&amp;PB/P&amp;PQ(2)2 Mk5 40mm/60

S&amp;SB/S&amp;SQ(2)2 Mk5 40mm/60

2 Elevators

4 LCVP

**Sensors:**

Type 978, Type 982, Type 993

**Remarks:**

Carries 4 LCVP in davits. Can launch 8 small/med helos at once. Fore and aft flight deck only. Placed in reserve in 1978; struck in 1981.

**Damage and Speed Breakdown:**

Damage Points:	0	126	252	378	454	504
Surface Speed:	28	21	14	7	0	Sinks

**Castle**

Displacement: 1250 std

Damage Points: 51

Damage Modifier: 1.00

CV

In Class: [1]

In Service: 1955-78

Speed: 31 kts

Crew: 2940

Total Mounts: 4

—

B

B

B

B

B

—

J

DDG

In Class: 1

In Service: 1973

Speed: 28 kts

Crew: 397

Total Mounts: 11

C

C

C

C

D

E

J

M

CVH

In Class: [1]

In Service: 1959-78

Speed: 28 kts

Crew: 1730

Total Mounts: 10

C

C

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—

J

OPV

In Class: 2

In Service: 1981

Speed: 20 kts

**Propulsion:** Diesel**Weapons:**

F(1)1 Mk3 40mm/60

**Sensors:**

Type 1006, Type 994

**Remarks:**

Helo pad aft can hold large helicopter (Sea King HC.4). Can also carry 7.62mm machineguns and mines.

**Damage and Speed Breakdown:**

Damage Points:	0	13	26	38	46	51
Surface Speed:	20	15	10	5	0	Sinks

**County Class**

Displacement: 5440

Damage Points: 185

Damage Modifier: 1.00

Propulsion: COSAG

**Weapons:**

F(2)1 Mk6 114mm/45//1 Type 903

P/S(1)2 Mk4 20mm/80

A(2)1 Sea Slug MkII w/30 msls//1 Type 901

PB&amp;SB(1)4 MM38 Exocet w/1 msl

P/S(4)2 Sea Cat w/4 msls//2 Type 903

Aft Pad(1)1 Lynx HAS.2

PB/SB(3)2 Mk32 324mm TT w/3 Stingray

**Sensors:**

Type 965M, Type 277, Type 992R, Type 978

Type 162, Type 184

**Remarks:**

Fitted with stabilizers. 8 built. Standard fit for County class above. Glamorgan was damaged on 12 Jun 1982 in Falklands War. Norfolk struck in 1982; Kent and Antrim, 1984; Fife, 1987. MM38 ROF 8 msls per turn (all mounts) at the same target.

**Damage and Speed Breakdown:**

Damage Points:	0	46	92	139	166	185
Surface Speed:	32	24	16	8	0	Sinks

**Diligence**

Displacement: 10595 fl

Damage Points: 216

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

P/S(1)4 Mk4 20mm/80

**Sensors:**

2 nav radars

**Remarks:**Ex-MV *Stena Inspector*. Extensive repair facilities. Helo pad aft. Can land/launch helicopters up to Chinook. Strengthened hull for ice operations.**Damage and Speed Breakdown:**

Damage Points:	0	54	108	162	194	216
Surface Speed:	16	12	8	4	0	Sinks

**Dreadnought**

Displacement: 4000 subm

Damage Points: 71

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/32 see remarks

**Sensors:**

Type 2001, Type 2007, Type 197

Type 1003

**Remarks:**

Nonoperational from 1981 with repeated engineering problems. Decommed 9 July 1983. Can carry Mk8 and Mk24 torpedoes.

**Damage and Speed Breakdown:**

Damage Points:	0	18	36	53	64	71
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	28	21	14	7	0	Sinks

Crew: 50

Total Mounts: 1

C

J

**DDG**

In Class: [8]

In Service: 1962-87

Speed: 32 kts

Crew: 472

Total Mounts: 13

C

C

D

D/Frn

D

B

F

J

M

**AR**

In Class: 1

In Service: 1984

Speed: 16 kts

Crew: 121

Total Mounts: 4

C

J/Intl

**SSN**

In Class: [1]

In Service: 1963-83

Speed: 15/28 kts

Crew: 88

Total Mounts: 2

F

M

J

**Eagle**

Displacement: 45000 std

Damage Points: 866

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P&amp;PB/P&amp;PQ/S&amp;SB/S&amp;SQ(2)8 Mk8 114mm/55//4 Type 275

4P/2S/F/A(6)8 Mk6 40mm/60 //8 Type 262

P/S(2)2 Mk5 40mm/60

P/S/1A(1)9 Mk7 40mm/60

60 aircraft

2 catapults

2 elevators

**Sensors:**

Type 960, Type 982, Type 983, Type 974

**Remarks:**

Armor: Waterline belt 114mm, flight deck 114mm-38mm, hangar side 38mm, hangar deck 63mm-25mm. Received 5.5° angled deck during 1954-55 refit; one port Mk6 40mm and 3 port Mk7 40mm guns removed. Refit from mid-1959 to 1964. Received armored 8.5° angled deck; Type 984 3D radar and Type 965 radars fitted; forward 114mm sponsons removed. All 40mm removed at this time and replaced by P&amp;PB/P&amp;PQ/S&amp;SB/S&amp;SQ/S/A(4)6 Seacat. Flight deck armor reduced to 38mm from 114mm. Aircraft complement reduced to 35 fixed-wing aircraft and 10 helos. In 1954 operated 59, including Sea Hawk, Avengers, AEW Skyraiders, Dragonfly helo. Later had Sea Vixen, Scimitars, Gannets. Paid off in Portsmouth in 1972; broken up in 1978.

**Damage and Speed Breakdown:**

Damage Points:	0	216	433	650	779	866
Surface Speed:	31	23	16	8	0	Sinks

**Endurance**

Displacement: 3600 fl

Damage Points: 129

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

Aft Pad(1)2 Lynx HAS.3

P/S(1)2 Mk4 20mm/80

**Sensors:**

2 Type 1006

**Remarks:**

Can carry detachment of marines.

**Damage and Speed Breakdown:**

Damage Points:	0	32	64	97	116	129
Surface Speed:	14	11	7	4	0	Sinks

**Engadine**

Displacement: 3640

Damage Points: 98

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

Aft Pad(1)4 Wessex

**Sensors:**

3 Decca series

**Remarks:**

Used as helicopter training ship. RFA operated. Hangar can hold 4 Wessex or 2 Sea King and 2 Wasp helos. Fitted with stabilizers.

**Damage and Speed Breakdown:**

Damage Points:	0	24	49	74	88	98
Surface Speed:	16	12	8	4	0	Sinks

**Fearless**

Displacement: 11060 std

Damage Points: 297

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

PB&amp;P/SB&amp;S(1)2 Mk9 40mm/60

4 LCA

**CV**

In Class: [1]

In Service: 1951-72

Speed: 31 kts

Crew: 2750

Total Mounts: 31

C

C

C

C

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J

**Ice Patrol Ship**

In Class: 1

In Service: 1956

Speed: 14 kts

Crew: 124

Total Mounts: 4

B

C

J

**AAH**

In Class: [1]

In Service: 1967-87

Speed: 16 kts

Crew: 77

Total Mounts: 4

B

J

**LPD**

In Class: 2

In Service: 1965

Speed: 21 kts

Crew: 550

Total Mounts: 14

C

4 LCM(9)  
2F/P/S(4)4 Sea Cat w/4 msls  
**Sensors:**  
Type 994  
**Remarks:**  
Can carry Sea King HC.4 on deck; no hangar facilities. Can launch 5 Sea King at once. *Intrepid* placed in reserve in 1976. Reactivated for Falklands War; returned to reserve. Has only P/S(4)2 Sea Cat and an additional P/S(2)2 BMARC 30mm/75 and P/S(1)2 BMARC 20mm. *Fearless* started 20-month overhaul in May 1988; will complete in 1990, receiving P/S(R)2 Mk15 Phalanx.

**Damage and Speed Breakdown:**  

Damage Points:	0	74	148	223	267	297
Surface Speed:	21	16	10	5	0	Sinks

**Fort Grange Class**

**Displacement:** 16009 grt  
**Damage Points:** 287  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
Aft Pad(2)4 Sea King HAS.5  
P/S(1)2 GAM-B03 20mm  
**Sensors:**  
Type 1006  
**Remarks:**  
Fitted with stabilizers. Can carry 4 Sea Kings. One normally carried. RFA operated. Will be fitted with another 2 20mm aft.

**Damage and Speed Breakdown:**  

Damage Points:	0	72	144	215	258	287
Surface Speed:	20	15	10	5	0	Sinks

**Fort Victoria**

**Displacement:** 31500 fl  
**Damage Points:** 481  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
Aft Pad(2)3 Sea King/EH.101  
F&A(32)1 VL Sea Wolf w/32 msls//2 Type 911  
P/S(1)4 LS-30B 30mm/75  
**Sensors:**  
Type 996, Type 1007  
Nav radar  
**Remarks:**  
Facilities for Sea Harriers to land and refuel. No Harrier maintenance or ammo. Six planned. 4 dual-purpose RAS rigs; can refuel astern. VL Sea Wolf ROF 15 msls per turn.

**Damage and Speed Breakdown:**  

Damage Points:	0	120	240	361	433	481
Surface Speed:	20	15	10	5	0	Sinks

**Hermes**

**Displacement:** 23900  
**Damage Points:** 514  
**Damage Modifier:** 1.00  
**Propulsion:** Steam  
**Weapons:**  
2 Elevator  
12 Sea King HAS.5  
5 Harrier FRS.1  
2 Wessex  
P/S(2)4 Sea Cat w/4 msls//2 Type 903  
4 LCVP  
**Sensors:**  
Type 978, Type 993, Type 1006, Type 965  
Type 184  
**Remarks:**  
18mm deck armor. 30mm magazine and machinery spaces. Armor: General rating is L. CHP Factors: Flight deck and engineering are L. Can carry 750 troops. Can launch 8 small/med helos at once. Joined active fleet in the summer of 1956.

Converted in 1964-66 to carry *Buccaneer* and *Sea Vixen*. In Mar 1971 converted to commando carrier. Converted in 1976 to ASW support ship. Refit in 1980 added ski jump. Transferred to training status early in 1984. Paid off in 1985. Sold to India. Refitted in UK before being handed over in Nov 1986.

**Damage and Speed Breakdown:**  

Damage Points:	0	128	257	386	463	514
Surface Speed:	28	21	14	7	0	Sinks

**Hunt**

**Displacement:** 625 std  
**Damage Points:** 22  
**Damage Modifier:** 0.75  
**Propulsion:** Diesel  
**Weapons:**  
F(1)1 Mk9 40mm/60  
2 PAP 104  
**Sensors:**  
Type 1006  
Type 193M, Type 2059  
**Remarks:**  
Also *Brecon* class. Hull constructed of GRP. Quieted. Units in Persian Gulf service had P/S(1)2 BMARC 20mm, ESM, and Chaff launchers added. Type 193M and Type 2059 sonars and PAP 104 mine disposal vehicles are used for mine hunting only. Mk9 40mm being replaced by F(1)1 GCM-A03 30mm/75.

**Damage and Speed Breakdown:**  

Damage Points:	0	6	11	17	20	22
Surface Speed:	17	13	8	4	0	Sinks

**Invincible**

**Displacement:** 16250 std  
**Damage Points:** 387  
**Damage Modifier:** 1.00  
**Propulsion:** COGOG  
**Weapons:**  
3 Sea King AEW.2  
8 Sea Harrier FRS.1 or 2  
9 Sea King HAS.5  
F(2)1 Sea Dart w/36 msls//2 Type 909  
2 Elevator  
P/S/S&SQ(R)3 Goalkeeper w/6 bursts  
P/S(1)2 GAM-B01 20mm/85  
**Sensors:**  
Type 992R, 2 Type 1006, Type 1022  
Type 2016  
**Remarks:**  
Original fit (*Invincible* and *Illustrious* only) 5 Harriers and 9 Sea Kings, no Phalanx or Goalkeeper, no AEW helicopters, Type 992 radar. Sea King AEW and Phalanx/Goalkeeper added after Falklands; first two units refitted with improved electronics and increased aircraft capacity. *Illustrious* and *Ark Royal* have 3 Mk15 Phalanx vice Goalkeeper. *Ark Royal* has P/S(1)2 BMARC 30mm/75. Following completion of *Invincible*'s refit in 1989, *Illustrious* paid off into "suspended operations" until it can be refitted in 1992. Will get three Goalkeeper, 4 LWT Sea Wolf launchers, two Type 911 trackers, and 21 aircraft. Will finish in 1993.

**Damage and Speed Breakdown:**  

Damage Points:	0	97	194	290	348	387
Surface Speed:	28	21	14	7	0	Sinks

**Island Class**

**Displacement:** 1000 std  
**Damage Points:** 42  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
F(1)1 Mk3 40mm/60  
**Sensors:**  
Type 1006  
ESM  
**Remarks:**  
Fitted with stabilizers. Can carry 2 7.62mm machineguns. Can embark marines.

**Damage and Speed Breakdown:**

Damage Points:	0	10	21	32	38	42
Surface Speed:	16	12	8	4	0	Sinks

**Leander/1**

Displacement: 2450  
 Damage Points: 91  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 P/S(1)2 Mk9 40mm/60  
 A(3)1 Mk10 Limbo w/17 salvoes//1 Type 170  
 P/S(4)2 Sea Cat w/4 msls//2 Type 903  
 Aft pad(1)1 Lynx HAS.2  
 F(1)1 Ikara w/13 msls//1 Ikara guidance  
 Sensors:  
 Type 994, Type 1006  
 Type 184, Type 162  
 Remarks:

*Ikara Leander.* Fitted with stabilizers. *Arethusa* has additional Type 2031 towed array sonar. Six units in class. *Ajax* struck in 1985; *Leander* and *Galatea*, late 1986; *Aurora* and *Naiad*, 1987; *Leander*, 1989.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	68	82	91
Surface Speed:	27	20	14	7	0	Sinks

**Leander/2B**

Displacement: 2650 std  
 Damage Points: 97  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 1F/2A(4)3 Sea Cat w/4 msls//2 Type 903  
 P/S(1)2 Mk9 40mm/60  
 PB&SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP  
 Aft Pad(1)1 Lynx HAS.3  
 PB&SB(1)4 MM38 Exocet w/1 msl  
 Sensors:  
 Type 1006, Type 996, Type 994  
 Type 162, Type 184  
 Remarks:

*Exocet Leander.* Fitted with stabilizers. *Juno* has (1)2 20mm/80 vice 40mm, no Type 996, Lynx helicopter, Seacat or Exocet. Used as training ship. MM38 ROF 8 msls per turn (all launchers) at same target. On deployment fitted with P/S(1)2 GAM-B01-20mm.

**Damage and Speed Breakdown:**

Damage Points:	0	24	48	73	87	97
Surface Speed:	28	21	14	7	0	Sinks

**Leander/2TA**

Displacement: 2450 std  
 Damage Points: 91  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 Aft Pad(1)1 Lynx HAS.3  
 PB&SB(1)4 MM38 Exocet w/1 msl  
 A(4)2 Sea Cat w/4 msls//2 Type 903  
 P/S(1)2 Mk4 20mm/80  
 PB/SB(3)2 Mk32 324mm TT w/3 Stingray  
 Sensors:  
 Type 994, Type 1006  
 Type 184, Type 162, Type 2031 towed array  
 Remarks:

Fitted with stabilizers. *Cleopatra* has no helicopter. MM38 ROF 8 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	68	82	91
Surface Speed:	28	21	14	7	0	Sinks

**Leander/3A**

Displacement: 2500 std  
 Damage Points: 92  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 PB&SB(1)4 MM38 Exocet w/1 msl  
 P/S(1)2 GAM-B01 20mm/85  
 PB&SB(3)2 Mk32 324mm TT w/3 Stingray  
 Aft Pad(1)1 Lynx HAS.3  
 F(6)1 Sea Wolf w/6 msls//1 Type 910  
 Sensors:  
 Type 967/968, Type 1006  
 Type 2016, Type 162M  
 Remarks:

*Sea Wolf Leander.* Heavily modified *Broad Beam Leander*. 24 manual reloads for Sea Wolf. Fitted with stabilizers. *Hermione* and *Charybdis* have A(1)1 GAM-B01 20mm. MM38 ROF 8 msls per turn (all mounts) at same target. *Scylla* is test platform for Type 2050 sonar.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	69	83	92
Surface Speed:	27	20	14	7	0	Sinks

**Leander/3B**

Displacement: 2500 std  
 Damage Points: 92  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 F(2)1 Mk6 114mm/45//1 Type 904  
 A(1)1 GAM-B01 20mm/85  
 P/S(1)2 Mk4 20mm/80  
 A(4)1 Sea Cat w/4 msls//1 Type 903  
 A(3)1 Mk10 Limbo w/17 salvoes//1 Type 170  
 Aft Pad(1)1 Lynx HAS.2  
 Sensors:  
 Type 994, Type 965, Type 1006  
 Type 184, Type 162  
 Remarks:

*Broad Beam Leander* class. Fitted with stabilizers. During Falklands War *Achilles* and *Apollo* carried A(1)1 GAM-B01 20mm, and *Diomedea* carried A(1)2 Mk4 20mm/80. Five units converted. *Buchante* struck 1982; *Achilles*, *Diomedea* and *Apollo*, 1988; *Ariadne*, 1989.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	69	83	92
Surface Speed:	27	20	14	7	0	Sinks

**Lyness**

Displacement: 9010  
 Damage Points: 192  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 Aft Pad(4)1 Sea King HC.4  
 Sensors:  
 Nav radar  
 Remarks:  
 RFA maintained. Can launch 4 small/med helos at once. *Stromness*, *Tarbatness* and *Lyness* transferred to US Navy in 1983.

**Damage and Speed Breakdown:**

Damage Points:	0	48	96	144	173	192
Surface Speed:	17	13	8	4	0	Sinks

**Oakleaf**

Displacement: 45000 fl  
 Damage Points: 650  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 P/S(1)2 Mk4 20mm/80

FF

In Class: 5  
 In Service: 1980  
 Speed: 27 kts  
 Crew: 260  
 Total Mounts: 10

D/Frn  
 C  
 F  
 B  
 D

J  
 M

FF

In Class: [5]  
 In Service: 1967-89  
 Speed: 27 kts  
 Crew: 235  
 Total Mounts: 7

C  
 C  
 C  
 D  
 E  
 B

J  
 M

AVS/AFS

In Class: [3]  
 In Service: 1967-83  
 Speed: 17 kts  
 Crew: 154  
 Total Mounts: 1

B

J/Intl

AOS

In Class: 1  
 In Service: 1986  
 Speed: 15 kts  
 Crew: 45  
 Total Mounts: 2

C



**Sensors:**

2 Nav radars

J/Intl

**Remarks:**RFA manned. Ex-MV *Oktania*; taken over in Oct 1985. Refitted in Feb-Aug 1986. Replaces *Plumleaf*.**Damage and Speed Breakdown:**

Damage Points:	0	162	325	488	585	650
Surface Speed:	15	11	8	4	0	Sinks

**Olwen**

AOF(L)

Displacement: 10890

In Class: 3

Damage Points: 220

In Service: 1965

Damage Modifier: 1.00

Speed: 19 kts

Propulsion: Steam

Crew: 66

Weapons:

Total Mounts: 6

Aft Pad(1)2 Sea King HC.4

B

P/S(1)4 Mk4 20mm/80

C

**Sensors:**

Kelvin-Hughes 14/12, Kelvin-Hughes 14/16

J/Intl

Type 1006

J

**Remarks:**

RFA maintained. Hull reinforced against ice.

**Damage and Speed Breakdown:**

Damage Points:	0	55	110	165	198	220
Surface Speed:	19	14	10	5	0	Sinks

**Pearleaf**

AOF(L)

Displacement: 5138

In Class: [1]

Damage Points: 134

In Service: 1960-86

Damage Modifier: 1.00

Propulsion: Diesel

Speed: 16 kts

Weapons:

Crew: ?

None

Total Mounts: 0

**Sensors:**

Nav radar

J/Intl

**Remarks:**

RFA maintained. Returned to owners in 1986.

**Damage and Speed Breakdown:**

Damage Points:	0	34	67	100	121	134
Surface Speed:	16	12	8	4	0	Sinks

**Plumleaf**

AOF(L)

Displacement: 6000

In Class: 1

Damage Points: 147

In Service: 1960-86

Damage Modifier: 1.00

Propulsion: Diesel

Speed: 15 kts

Weapons:

Crew: ?

None

Total Mounts: 0

**Sensors:**

Nav radar

J/Intl

**Remarks:**

RFA maintained. Returned to owners in 1986.

**Damage and Speed Breakdown:**

Damage Points:	0	37	74	110	132	147
Surface Speed:	15	11	8	4	0	Sinks

**Porpoise & Oberon**

SS

Displacement: 2450 subm

In Class: 10

Damage Points: 45

In Service: 1958

Damage Modifier: 1.00

Speed: 12/17 kts

Propulsion: Diesel-Electric

Crew: 69

Weapons:

Total Mounts: 3

PB&amp;SB(3)2 533mm TT w/20 see remarks

F, D

PQ&amp;SQ(2)1 533mm TT w/4 Mk23 torp

F

**Sensors:**

Type 1006 (Oberon), Type 1003 (Porpoise)

J

Type 187, Type 186

M

**Remarks:**

Normal TT loadout 16 Mk24 Mod 2 Tigerfish, 4 Harpoon. Forward TT can fire Mk8 torp. TT aft are short. Originally carried Mk23; no longer used. 2 Por-

poise and 13 Oberon built. Porpoise subclass has additional 6 torpedoes fwd. Can guide only one wire-guided torp at a time. Nine units being updated. *Ocelot*, *Otter*, *Onyx*, *Opossum* and *Osiris* are completed and have Type 2051 and 2007 vice 186 and 187 along with added Type 2086 towed array sonar. New fire control system allows the control of two wire-guided torps at once. Additional units *Grampus* and *Rorqual* struck 1976; *Narwhal* and *Cachelot* in 1977; *Finwhale*, 1978; *Porpoise* in 1982; *Oberon*, *Sealion*, *Walrus* and *Orpheus* 1987; *Olympus*, 1989.

**Damage and Speed Breakdown:**

Damage Points:	0	11	22	34	40	45
Surface Speed:	12	8	6	3	0	Sinks
Submerged Speed:	17	13	8	4	0	Sinks

**Reliant**

AVS

Displacement: 31500

In Class: [1]

Damage Points: 481

In Service: 1983-86

Damage Modifier: 1.00

Speed: 20 kts

Propulsion: Diesel

Crew: 195

Weapons:

Total Mounts: 9

P/S(1)4 GAM-B01 20mm/85

C

Mid pad(2)5 Sea King HAS.5

B

**Sensors:**

3 nav radars

J/Intl

**Remarks:**Ex-MV *Astronomer* container ship fitted with Arapaho kit purchased from USN. Converted in Apr 1983 to Dec 1983. Fitted with stabilizers. Normally carries 3 Sea Kings. Sold in 1986.**Damage and Speed Breakdown:**

Damage Points:	0	120	240	361	433	481
Surface Speed:	20	15	10	5	0	Sinks

**Resolution**

SSBN

Displacement: 8500 subm

In Class: 4

Damage Points: 123

In Service: 1967

Damage Modifier: 1.00

Speed: 20/25 kts

Propulsion: Nuclear

Crew: 156

Weapons:

Total Mounts: 3

PB&amp;SB(3)2 533mm TT w/ Mk24 Mod 2 Tigerfish

F, D

(16)1 Polarix AT3K w/16 msls

—

**Sensors:**

Type 1006

J

Type 2001, Type 2007

M

Type 2023 or 2024 towed array

M

**Damage and Speed Breakdown:**

Damage Points:	0	31	62	92	111	123
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

**Resource**

AEFS

Displacement: 18029 grt

In Class: 2

Damage Points: 312

In Service: 1967

Damage Modifier: 1.00

Speed: 17 kts

Propulsion: Steam

Crew: 132

Weapons:

Total Mounts: 7

Aft Pad(1)4 Sea King HC.4

B

F/P/S(1)3 Mk4 20mm/80

C

**Sensors:**

Kelvin-Hughes 21/16P, Kelvin-Hughes 14/12

J/Intl

**Remarks:**

RFA maintained. 3 RAS stations per side. Normally carries 2 Sea King.

**Damage and Speed Breakdown:**

Damage Points:	0	78	156	234	281	312
Surface Speed:	17	13	8	4	0	Sinks

**Retainer**

AEFS

Displacement: 14000

In Class: [2]

Damage Points: 262

In Service: 1952-83

Damage Modifier: 1.00

Speed: 15 kts

Propulsion: Diesel

Crew: 107



**Remarks:**RFA maintained. Additional unit *Tidepool* struck in 1982.**Damage and Speed Breakdown:**

Damage Points:	0	46	92	139	166	185
Surface Speed:	18	14	9	4	0	Sinks

**Tidereach**

Displacement: 9040 ltshp

Damage Points: 193

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

None

Sensors:

Nav radar

Remarks:

3 units built; all struck. *Tidereach* broken up in 1979.**Damage and Speed Breakdown:**

Damage Points:	0	48	96	145	174	193
Surface Speed:	17	13	8	4	0	Sinks

**Tiger**

Displacement: 9550

Damage Points: 265

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(2)1 Mk6 76mm/70//4 Type 903

P/S(4)2 Sea Cat w/4 msls//4 Type 903

Aft Pad(1)4 Sea King HAS.2

F(2)1 Mk26 152mm/52//4 Type 903

Sensors:

Type 993, Type 978, Type 278, Type 965

Remarks:

Carries 40 Sea Cat msls total (manual reload). The 4 Type 903 directors control all weapons at 4 separate targets. **Armor:** Belt 89mm thinning to 83mm. 51mm deck, 76mm-25mm turret armor. General rating is L. **CHP Rating:** 152mm turret, bridge and engineering, L. Three units started conversion. *Lion* scrapped while still being converted in 1975; *Tiger* struck in 1978; *Blake* in 1980.

**Damage and Speed Breakdown:**

Damage Points:	0	66	132	199	239	265
Surface Speed:	31	23	16	8	0	Sinks

**Trafalgar**

Displacement: 5200 subm

Damage Points: 91

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

PB&amp;SB(5)1 533mm TT w/25 see remarks

Sensors:

Type 1006

Type 2026 or 2046 towed array

Type 2020, Type 2007

Remarks:

Has anechoic coating. Normal TT loadout 17 Mk24 Mod 2 Tigerfish torp, 8 Harpoon IC. *Trafalgar* (unit #1) has 7-bladed prop. Shrouded pump jet vice propellor on second and subsequent units; lowers passive detection chance by passive sonars by -10%.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	68	82	91
Surface Speed:	28	21	14	7	0	Sinks
Submerged Speed:	32	24	16	8	0	Sinks

**Tribal Class**

Displacement: 2300

Damage Points: 86

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P/S(1)2 Mk4 20mm/80

P/S(4)2 Sea Cat w/4 msls//2 Type 262

A(3)1 Mk10 Limbo w/17 salvoes//1 Type 170

Aft Pad(1)1 Wasp HAS.1

F/A(1)2 Mk5 114mm/45//1 Type 903

**Sensors:**

Type 993, Type 978, Type 965

Type 162, Type 177

**Remarks:**

Type 81 class. Seven built. Entire class struck.

**Damage and Speed Breakdown:**

Damage Points:	0	22	43	64	77	86
Surface Speed:	25	19	12	6	0	Sinks

**Type 14**

Displacement: 1180 std

Damage Points: 48

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

P/S/A(1)3 Mk9 40mm/60

F(3)2 Mk10 Limbo w/17 salvoes//1 Type 170

PB/SB(2)2 533mm TT

Sensors:

Type 974, Type 291

Type 174, Type 162

**Remarks:**

*Blackwood* class. Original armament of 3 40mm reduced. A(1)1 Mk9 40mm removed because it could not be used in heavy weather. 2(2) 533mm TT mounted in *Blackwood*, *Exmouth*, *Malcolm*, *Palliser* removed. *Exmouth* used as gas turbine trials ship, armament unaffected.

**Damage and Speed Breakdown:**

Damage Points:	0	12	24	36	44	48
Surface Speed:	27	20	14	7	0	Sinks

**Type 15**

Displacement: 2240 std

Damage Points: 63

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

F/A(1)2 Mk19 102mm/45//1 Type 262

P/S(1)2 Mk5 40mm/60

PB/SB(1)2 533mm TT

A(3)2 Squid Mk4//1 Type 170

Sensors:

Type 278, Type 293

Type 174

**Remarks:**

*Rapid* class. F 191 *Rocket* and F 185 *Relentless* converted in 1949 to new design w/aluminum superstructure and A(2)1 Mk16 102mm, F(2)1 40mm. Other units followed suit. Later units fitted with (3)2 Mk10 Limbo vice Squid.

**Damage and Speed Breakdown:**

Damage Points:	0	16	31	47	56	63
Surface Speed:	20	15	10	5	0	Sinks

**Type 22/1**

Displacement: 3500 std

Damage Points: 126

Damage Modifier: 1.00

Propulsion: COGOG

Weapons:

F/A(6)2 Sea Wolf w/6 msls//2 Type 911

P/S(2)2 GCM-A03 30mm/75

P/S(1)2 GAM-B01 20mm/85

PB&amp;SB(1)4 MM38 Exocet w/1 msl

PB&amp;SB(3)2 Mk32 324mm TT w/3 Stingray

Aft Pad(1)2 Lynx HAS.3

Total Mounts: 8

C

D

E

B

C

J

M

FF

In Class: [12]

In Service: 1955-71

Speed: 27 kts

Crew: 140

Total Mounts: 7

C

E

F

J

M

FF

In Class: [23]

In Service: 1943-78

Speed: 20 kts

Crew: 195

Total Mounts: 8

C

C

F

E

J

M

FF

In Class: 4

In Service: 1978

Speed: 30 kts

Crew: 224

Total Mounts: 14

D

C

C

D/Frn

F

B

**Sensors:**

Type 2016

Type 1006, Type 967/968

**Remarks:**

*Broadsword* class. Normal complement is 1 Lynx. First two units, *Broadsword* and *Battleaxe*, do not have 324mm TT. 24 manual reloads carried for Sea Wolf launcher. MM38 ROF 8 msls per turn (all mounts) at same target. Type 2016 will be replaced by Type 2050 hull sonar.

**Damage and Speed Breakdown:**

Damage Points:	0	32	63	94	113	126
Surface Speed:	30	22	15	8	0	Sinks

**Type 22/2**

Displacement: 4100

Damage Points: 146

Damage Modifier: 1.00

Propulsion: COGOG

**Weapons:**

Aft Pad(1)2 Lynx HAS.3

PB&amp;SB(1)4 MM38 Exocet w/1 msl

F/A(6)2 Sea Wolf w/6 msls//2 Type 911

P/S(1)2 GCM-A03 30mm/75

P/S(1)2 GAM-B01 20mm/85

PB/SB(3)2 Mk32 324mm TT w/3 Stingray

**Sensors:**

Type 967/968, Type 1006

Type 2016, Type 2031 towed array

**Remarks:**

*Boxer* class. Fitted with stabilizers. Quieted. Third unit, *Brave*, and subsequent units can carry 1 Sea King or EH.101 (when available) vice 2 Lynx. Normal complement is 1 Lynx. *Brave* and onward max speed reduced to 28 knots. MM38 ROF 8 msls per turn (all mounts) at same target. 24 manual reloads carried for Sea Wolf launcher.

**Damage and Speed Breakdown:**

Damage Points:	0	36	73	110	131	146
Surface Speed:	30	22	15	8	0	Sinks

**Type 22/3**

Displacement: 4200 std

Damage Points: 149

Damage Modifier: 1.00

Propulsion: COGOG

**Weapons:**

Aft Pad(1)2 Lynx HAS.3

PQ&amp;PB/SQ&amp;SB(4)2 Mk141 w/4 Harpoon

F(1)1 Mk8 114mm/55//1 Type 911

P&amp;S(R)1 Goalkeeper 30mm w/6 bursts

F/A(6)2 LWT Sea Wolf w/6 msls//2 Type 911

P/S(1)2 LS-30B 30mm/75

PB/SB(3)2 Mk32 324mm TT w/3 Stingray

**Sensors:**

Type 967/968, Type 1006

Type 2050, Type 2031 towed array

**Remarks:**

Can carry 1 Sea King or EH.101 (when available) vice 2 Lynx. Normally carries 1 Lynx. Fitted with stabilizers. Quieted. Forward Type 911 director controls either Sea Wolf missile or Mk8 114mm gun. 24 manual reloads carried for Sea Wolf launcher.

**Damage and Speed Breakdown:**

Damage Points:	0	37	74	112	134	149
Surface Speed:	30	22	15	8	0	Sinks

**Type 23**

Displacement: 3500 std

Damage Points: 126

Damage Modifier: 1.00

Propulsion: CODLAG

**Weapons:**

Aft Pad(1)2 Lynx HAS.3

PQ&amp;PB/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

F&amp;A(32)1 VL Sea Wolf w/32 msls//2 Type 911

F(1)1 Mk8 114mm/55//1 Type 911

P/S(1)2 GCM-A03 30mm/75

PB/SB(2)2 324mm TT w/2 Stingray torp

**Sensors:**

Type 996, Type 1007

Type 2050, Type 2031 towed array

**Remarks:**

*Duke* or *Norfolk* class. Can carry 1 EH.101 (when available) vice Lynx. Quieted. Can cruise on electric motors up to 15 knots; treat as diesel sub on electric motors. Fitted with stabilizers. VL Sea Wolf ROF 15 msls per turn. MK141 ROF 8 msls per turn (both mounts) at same target. Surfaces sloped to reduce radar signature.

**Damage and Speed Breakdown:**

Damage Points:	0	32	63	94	113	126
Surface Speed:	28	21	14	7	0	Sinks

**Type 41**

Displacement: 2300 std

Damage Points: 86

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

F/A(2)2 Mk6 114mm/45//1 Type 275

A(2)1 Mk2 40mm/60 STAAG//1 Type 262

F(3)1 Squid Mk4//1 Type 170

**Sensors:**

Type 162

Type 960, Type 174, Type 974, Type 992Q

**Remarks:**

*Leopard* class. Fitted with stabilizers. Later fitted with Type 965 to replace Type 992Q. Twin STAAG mount proved unreliable. Replaced with A(1)1 Mk9 40mm/60. Fifth unit, *Panther*, sold to India while building.

**Damage and Speed Breakdown:**

Damage Points:	0	21	43	64	77	86
Surface Speed:	25	19	12	6	0	Sinks

**Type 42**

Displacement: 3150

Damage Points: 114

Damage Modifier: 1.00

Propulsion: COGOG

**Weapons:**

F(1)1 Mk8 114mm/55//1 Type 909

P/S(1)2 GAM-B01 20mm/85

P/S(1)2 Mk4 20mm/80

P/S(R)2 Mk15 Phalanx w/5 bursts

F(2)1 Sea Dart w/22 msls//2 Type 909

PB&amp;SB(3)2 Mk32 324mm TT w/3 Stingray

Aft Pad(1)1 Lynx HAS.3

**Sensors:**

Type 992Q, Type 1006, Type 1022

Type 184, Type 162

**Remarks:**

*Sheffield* class, batches 1 and 2. Forward Type 909 director controls Mk8 or Sea Dart msl. Fitted with stabilizers. Have bubble ejectors for propellers which reduce cavitation noise (quieted). Additional units *Sheffield* sunk on 4 May 1982 (not fitted with Mk32 TT); *Coventry* sunk on 25 May 1982 in Falklands War. *Glasgow* damaged. Type 2016 vice Type 184 sonar in batch 2 ships. Sonars in both batches being replaced by Type 2050. One unit fitted with P/S GCM-A02 30mm with on-mount optical sights instead of Phalanx. *Southampton* (batch 2) in refit following collision in Persian Gulf. Will return to service in 1992.

**Damage and Speed Breakdown:**

Damage Points:	0	28	57	86	103	114
Surface Speed:	30	22	15	8	0	Sinks

**Type 42/3**

Displacement: 3550 std

Damage Points: 127

In Class: 4

In Service: 1982

M

J

FF

In Class: 6

In Service: 1984

Speed: 30 kts

Crew: 273

Total Mounts: 14

B

D/Frn

D

C

C

F

J

M

FF

In Class: 4

In Service: 1987

Speed: 30 kts

Crew: 273

Total Mounts: 12

B

D/USA

C

C/Intl

D

C

F

J

M

FF

In Class: 1+4+(2)

In Service: 1989

Speed: 28 kts

Crew: 157

Total Mounts: 10

B

D/USA

D

C

C

F

J

M

FF

In Class: [4]

In Service: 1955-78

Speed: 25 kts

Crew: 205

Total Mounts: 4

C

C

E

M

J

DDG

In Class: 8

In Service: 1975

Speed: 30 kts

Crew: 253

Total Mounts: 11

C

C

C

C/USA

D

F

B

J

M

DDG

**Damage Modifier: 1.00****Propulsion: COGOG****Weapons:**

F(1)1 Mk8 114mm/55//1 Type 909

P/S(1)2 Mk4 20mm/80

PB/SB(3)2 Mk32 324mm TT w/3 Stingray

Aft Pad(1)1 Lynx HAS.3

F(2)1 Sea Dart w/40 msl//2 Type 909

P/S(R)2 Mk15 Phalanx w/5 bursts

P/S(1)2 GAM-B01 20mm/85

**Sensors:**

Type 1022, Type 992Q

Type 162, Type 162, Type 2016

**Remarks:**

*Manchester* class. Fitted with dual stabilizers. Forward Type 909 radar can control either Mk8 114mm gun or Sea Dart msl. Type 992 will be replaced with Type 996.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	32	64	95	114	127
<b>Surface Speed:</b>	30	22	15	8	0	Sinks

**Type 61****Displacement:** 2170**Damage Points:** 81**Damage Modifier:** 1.00**Propulsion:** Steam**Weapons:**

F(2)1 Mk6 114mm/45//1 Type 275

A(4)1 Sea Cat w/4 msls//1 GWS20 optical

**Sensors:**

Type 993, Type 278, Type 978, Type 965P

Type 174, Type 170

**Remarks:**

*Salisbury* class. Both *Salisbury* and *Lincoln* in reserve. 12 manual reloads for Sea Cat. *Lincoln* has (A) (3)1 Squid w/Type 170.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	20	40	61	73	81
<b>Surface Speed:</b>	24	18	12	6	0	Sinks

**Upholder****Displacement:** 2400 subm**Damage Points:** 44**Damage Modifier:** 1.00**Propulsion:** Diesel-Electric**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

**Sensors:**

Type 1007

Type 2040, Type 2026 t. array, Type 2007

**Remarks:**

Normal TT loadout 14 Mk24 Mod 2 Tigerfish, 4 Harpoon IC. Can carry Spearfish when available. Has anechoic coating.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	11	22	33	40	44
<b>Surface Speed:</b>	12	9	6	3	0	Sinks
<b>Submerged Speed:</b>	20	15	10	5	0	Sinks

**Valiant****Displacement:** 4900 subm**Damage Points:** 86**Damage Modifier:** 1.00**Propulsion:** Nuclear**Weapons:**

PB/SB(3)2 533mm TT w/25 Mk24 Mod 2 Tigerfish

**Sensors:**

Type 2020, Type 2007, Type 2046 twd. arr.

Type 1003

**Remarks:**

Normal TT loadout 17 Mk24 Mod 2 Tigerfish, 8 Harpoon IB. *Conqueror* has Type 2074 sonar vice 2020 for two-year trial.

**Speed:** 30 kts**Crew:** 253**Total Mounts:** 11

C

C

F

B

D

C/USA

C

J

M

**In Class:** [2]**In Service:** 1957**Speed:** 24 kts**Crew:** 237**Total Mounts:** 2

C

D

J

M

FF

SS

SSN

**In Class:** 5**In Service:** 1966**Speed:** 20/28 kts**Crew:** 116**Total Mounts:** 2

F, D

M

J

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	22	43	64	77	86
<b>Surface Speed:</b>	20	15	10	5	0	Sinks
<b>Submerged Speed:</b>	28	21	14	7	0	Sinks

**Vanguard****Displacement:** 15850 subm**Damage Points:** 190**Damage Modifier:** 1.00**Propulsion:** Nuclear**Weapons:**

PB&amp;SB(2)2 533mm TT w/20 see remarks

(16)1 Trident w/16 D5

**Sensors:**

Type 1007

Type 2054, Type 2046 towed array

**Remarks:**

TT can fire Mk24 Tigerfish, Spearfish, Harpoon. Number of weapons estimated. Has anechoic coating.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	48	95	143	171	190
<b>Surface Speed:</b>	20	15	10	5	0	Sinks
<b>Submerged Speed:</b>	25	19	12	6	0	Sinks

**Victorious****Displacement:** 30530 std**Damage Points:** 625**Damage Modifier:** 1.00**Propulsion:** Steam**Weapons:**

P&amp;PB/P/P&amp;PQ/S&amp;SB/S/S&amp;SQ(2)6 Mk33 76mm/50//6 CRBF

S(6)1 Mk6 40mm/60//1 CRBF

2 Catapults

36 Aircraft

2 Elevators

**Sensors:**

Type 984 3D, Type 974, Type 293Q

**Remarks:**

**Armor:** 114mm armor on belt and hangar side, 82mm on flight deck, 63mm on hangar deck. **Armor:** General factor L; CHP for flight deck, hangar deck, engineering is L. WWII carrier rebuilt in 1950-57. Hull enlarged; sponson added. 8.75°-angled deck fitted. During 1962-63 refit Mk6 40mm and 2 Mk33 76mm removed. Air group in Jan 1958 was 28 fixed-wings and 8 helos; later dropped to 23 and 8 helos. Carried 8 Buccaneer, 8 Sea Vixen, 2 Gannet, 5 Wessex. Suffered major fire in 1968 during refit; decision made to scrap her. Broken up in 1969.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	156	312	469	562	625
<b>Surface Speed:</b>	31	23	16	8	0	Sinks

**Whidby****Displacement:** 2150**Damage Points:** 81**Damage Modifier:** 1.00**Propulsion:** Steam**Weapons:**

F(2)1 Mk6 114mm/45//1 Type 275

A(3)1 Mk10 Limbo w/17 salvoes//1 Type 170

**Sensors:**

Type 993, Type 1006

Type 177, Type 162

**Remarks:**

Type 12 class. *Blackpool*, *Scarborough* and *Tenby* struck in 1974; *Whidby*, 1975; *Eastbourne*, 1976; *Torquay*, 1985. *Torquay* used as training ship for several years prior to decom.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	20	40	61	73	81
<b>Surface Speed:</b>	26	20	13	6	0	Sinks

SSBN

**In Class:** 0+2+2**In Service:** 1994**Speed:** 20/25 kts**Crew:** 130**Total Mounts:** 3

F, D

—

J

M

CV

**In Class:** [1]**In Service:** 1957-69**Speed:** 31 kts**Crew:** 2400**Total Mounts:** 11

C

C

—

—

—

J

FF

## USA

## Albany

Displacement: 13700

Damage Points: 258

Damage Modifier: .75

Propulsion: Steam

Weapons:

P/S(2)2 Mk11 w/40 SM1MR//4 SPG-51

P/S(1)2 Mk24 127mm/38//2 Mk35

P&amp;S(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

F/A(2)2 Mk12 w/46 Talos//4 SPG-49

Sensors:

SPS-10, SPS-43, SPS-48

SQS-23

Remarks:

Helo pad aft; utility helo carried on *Chicago*. Armor: 152mm belt, 10mm upper deck, 62mm lower deck. General rating is M. CHP rating for engineering is M. Aluminum superstructure. No ASROC reloads. Three units built. *Columbus* struck in 1975; *Albany* struck in 1980 (in Atlantic reserve); *Chicago* struck in 1985 for use as museum. Converted WWII heavy cruisers.

Damage and Speed Breakdown:

Damage Points:	0	65	129	194	232	258
Surface Speed:	32	24	16	8	0	Sinks

## Anchorage

Displacement: 8600 ltshp

Damage Points: 248

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

P&amp;PB/P&amp;PQ/S&amp;SQ(2)3 Mk33 76mm/50

P/S(R)2 Mk15 Phalanx w/5 bursts

Sensors:

SPS-10, SPS-40

LN-66

Remarks:

Well deck can carry 3 LCU or 15 LCM(6) or 9 LCM(8) or 50 LVT. Phalanx only on Atlantic fleet units to date. 76mm guns have local control only. Removable helo deck aft. No hangar. Original 76mm arcs P&PB/P&PQ/S&SB/S&SQ.

Damage and Speed Breakdown:

Damage Points:	0	62	124	186	223	248
Surface Speed:	22	16	11	6	0	Sinks

## Arleigh Burke

Displacement: 6625 lt

Damage Points: 240

Damage Modifier: 1.00

Propulsion: COGAG

Weapons:

F&amp;A(29)1 Mk41 VLS w/29 see remarks//2 SPG-62

F&amp;A(61)1 Mk41 VLS w/61 see remarks//1 SPG-62

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

F(1)1 Mk45 127mm/54//1 SPY-1

F/A(R)2 Mk15 Phalanx Block I 20mm/76 w/5 bursts

PB&amp;PQ/SB&amp;SQ(4)2 Mk141 w/4 Harpoon

Sensors:

SPS-67, SPS-64, SPY-1D

SQS-53, SQR-19 towed array

Remarks:

Helo pad aft. Can refuel and rearm LAMPS helos but no hangar. All-steel construction. Armor: 130 tons of Kevlar armor over vital spaces. CHP rating for sensors is L. SPY-1 is accurate enough to perform gunfire control. 3 SPG-62 directors can control SM2 msIs from either launcher. Mk41 VLS loadout is SM2MR Block I or II or SM2 Block IV, Tomahawk, VL ASROC. Mk41 VLS ROF 30 msIs per turn (both mounts). Mk141 ROF 8 msIs per turn (both mounts) at same targets. Quieted.

CG

In Class: [3]

In Service: 1962-85

Speed: 32 kts

Crew: 835

Total Mounts: 9

D

C

E

F

D

J

M

LSD

In Class: 5

In Service: 1969

Speed: 22 kts

Crew: 358

Total Mounts: 5

C

C

J

J/Can

DDG

In Class: 0+3+5

In Service: 1991

Speed: 31 kts

Crew: 325

Total Mounts: 9

D, E

D, E

F

C

C

D

J

M

Damage and Speed Breakdown:

Damage Points:	0	60	120	180	216	240
Surface Speed:	31	23	16	8	0	Sinks

## Asheville

Displacement: 225

Damage Points: 8

Damage Modifier: 0.75

Propulsion: Diesel

Weapons:

A(1)1 Mk3 40mm/60

F(1)1 Mk34 76mm/50//1 SPG-50

Sensors:

None

Remarks:

Aluminum hull and superstructure. PG 86, 87, 98, 100 fitted with PB&SB(1)2 Standard ARM SSMs for duty in the Mediterranean. Also carry 4 12.7mm mg. Seventeen units built; three last units stripped of armament and used as research craft.

Damage and Speed Breakdown:

Damage Points:	0	2	4	6	7	8
Surface Speed:	40	30	20	10	0	Sinks

## Ashtabula

Displacement: 34000 fl

Damage Points: 512

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(1)2 Mk26 76mm/50

Sensors:

RM 1650/6X (AO-98), SPS-10 (AO-99)

Remarks:

*Jumboized Cimarron* class. VERTREP platform forward, no helo pad. Third unit AO-51 laid up in National Defense Reserve Fleet.

Damage and Speed Breakdown:

Damage Points:	0	128	256	384	461	512
Surface Speed:	18	14	9	4	0	Sinks

## Austin

Displacement: 10000 ltshp

Damage Points: 276

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(2)2 Mk33 76mm/50

Aft Pad(2)1 CH-46 Sea Knight

F/A(R)2 Mk15 Phalanx w/5 bursts

2 LCAC

Sensors:

SPS-10 or SPS-67, SPS-40

LN-66 (except LPD-5,6)

Remarks:

No directors for guns; local control only. Can launch 2 small/med helos at once. Can carry 6 CH-46 for brief periods.

Damage and Speed Breakdown:

Damage Points:	0	69	138	207	248	276
Surface Speed:	20	15	10	5	0	Sinks

## Bainbridge

Displacement: 8000 lt

Damage Points: 230

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

PB/SQ(4)2 Mk141 w/4 Harpoon

P/S(1)2 Mk67 20mm/80

F/A(2)2 Mk10 w/40 SM2ER//4 SPG-55

PG

In Class: [17]

In Service: 1966

Speed: 40 kts

Crew: 24

Total Mounts: 2

C

C

AO

In Class: 2

In Service: 1943

Speed: 18 kts

Crew: 372

Total Mounts: 2

C

J

LPD

In Class: 11

In Service: 1965

Speed: 20 kts

Crew: 1330

Total Mounts: 7

C

B

C

—

J

J/Can

CGN

In Class: 1

In Service: 1962

Speed: 34 kts

Crew: 541

Total Mounts: 11

E

F

D

C

D



P/S(R)2 Mk15 Phalanx w/5 bursts

**Sensors:**

SPS-49, SPS-48E, SPS-67

LN-66

SQQ-23

**Remarks:**

Helo pad aft. No ASROC reloads provided. Mk141 ROF 8 msls per turn (both launchers) at same target. Has NTU upgrade.

**Damage and Speed Breakdown:**

Damage Points:	0	58	115	172	207	230
Surface Speed:	34	26	17	8	0	Sinks

**Barbel**

Displacement: 2640 subm

Damage Points: 48

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&amp;SB(3)2 533mm TT w/12 Mk48 torp

**Sensors:**

BPS-12

BQS-4, BQR-2

**Remarks:**

Additional units *Sailfish* struck in 1978; *Salmon*, 1977. *Bonafish* suffered battery explosion in Atlantic off the Florida coast on 24 Apr 1988. Subsequently decommed.

**Damage and Speed Breakdown:**

Damage Points:	0	12	24	36	43	48
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	21	16	10	5	0	Sinks

**Barry**

Displacement: 2850

Damage Points: 78

Damage Modifier: 0.75

Propulsion: Steam

**Weapons:**

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

A(8)1 Mk16 w/8 ASROC

F(1)1 Mk42 127mm/54//1 SPG-53

A(1)1 Mk42 127mm/54//1 SPG-35

**Sensors:**

SPS-10, SPS-40

SQS-23, SQS-35 IVDS

**Remarks:**

Aluminum superstructure. Has ASROC reload forward of launcher with 8 manual reloads. DD-937 has SPS-29 vice SPS-40. Converted *Forrest Sherman* class. Six converted. Class struck in 1982-83. *Barry* on display in Washington Naval Yard; rest in reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	20	39	58	70	78
Surface Speed:	32	24	16	8	0	Sinks

**Belknap**

Displacement: 6570 std

Damage Points: 156

Damage Modifier: 0.75

Propulsion: Steam

**Weapons:**

F(2)1 Mk10 w/60 see remarks//2 SPG-55

PB/SQ(4)2 Mk141 w/4 Harpoon

Aft Pad(1)1 SH-2F LAMPS I

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

P/S(R)2 Mk15 Phalanx w/5 bursts

A(1)1 Mk42 127mm/54//1 SPG-53

**Sensors:**

SPS-67, SPS-40 (CG-31 to 34)

SPS-49 (CG-26 to 30), SPS-48

LN-66

SQS-26

C

J

J/Can

M

SS

In Class: 2

In Service: 1959

Speed: 15/21 kts

Crew: 85

Total Mounts: 2

F

J

M

DD

In Class: [6]

In Service: 1956-83

Speed: 32 kts

Crew: 304

Total Mounts: 5

F

E

C

C

J

M

CG

In Class: 8

In Service: 1964

Speed: 33 kts

Crew: 452

Total Mounts: 9

D

D

B

F

C

C

J

J

J/Can

M

**Remarks:**

Mk10 magazine loadout 40 SM2ER and 20 ASROC. Mk141 ROF 8 msls per turn (both mounts) at same target. *Belknap* has SQS-53 vice SQS-26, SPQ-9D radar (additional) and SPG-60 vice SPG-53 director for 127mm guns (use Mk45 hit chances for Mk42 127mm guns). Aluminum superstructure. Armor: *Belknap*, possibly others, have Kevlar armor over critical spaces. CHP rating for sensors is L. *Belknap*'s SPG-60 director can control Mk42 or illuminate target for SM2ER missile. *Belknap* is Sixth Fleet flagship; has no helicopter or hangar, but pad has been enlarged to accommodate helos up to SH-3 size. Fox receiving NTU; will be completed late 1990. *Biddle* has NTU upgrade.

**Damage and Speed Breakdown:**

Damage Points:	0	39	78	117	140	156
Surface Speed:	33	25	16	8	0	Sinks

**Blue Ridge**

Displacement: 16790 lt

Damage Points: 438

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P/S(8)2 Mk25 Sea Sparrow w/8 RIM-7M//2 Mk115

P/S(2)2 Mk33 76mm/50

F/A(R)2 Mk15 Phalanx w/5 bursts

**Sensors:**

SPS-65, SPS-48, SPS-40, SPS-48

LN-66

**Remarks:**

Dedicated command ships with extensive communications facilities. Pad aft for helos up to Chinook size; fitted with stabilizers. Mk25 ROF 15 msls per turn (each mount).

**Damage and Speed Breakdown:**

Damage Points:	0	110	219	328	394	438
Surface Speed:	23	17	12	6	0	Sinks

**Bolster**

Displacement: 1530 std

Damage Points: 45

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

P/S(1)2 Mk67 20mm/80

**Sensors:**

SPS-10 or SPS-53

LN-66

**Remarks:**

22 units built. Four units (ARS-8, 38, 41, 42) transferred to NRF. 2 converted to oceanographic ships, 3 transferred to coast guard.

**Damage and Speed Breakdown:**

Damage Points:	0	11	22	34	40	45
Surface Speed:	15	11	8	4	0	Sinks

**Boston**

Displacement: 13589 lt

Damage Points: 342

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

A(2)2 Mk5 w/72 Terrier//2 SPQ-5

F(3)2 Mk16 203mm/55//1 Mk13

F/P&amp;PB/P&amp;PQ/S&amp;SB/S&amp;SQ(2)5 Mk38 127mm/38//1 Mk25

P/S(2)4 Mk33 76mm/50//2 Mk35

**Sensors:**

SPS-6C, SPS-8, SPS-12, CXRX

**Remarks:**

Conversions of WWII *Baltimore* class. Originally carried (2)8 76mm/50. Radar fit in 1966 was CXRX, SPS-37A, SPS-30, 2 SPQ-5. Terrier launchers removed some time before deactivation.

**Damage and Speed Breakdown:**

Damage Points:	0	86	171	257	308	342
Surface Speed:	33	25	16	8	0	Sinks

LCC

In Class: 2

In Service: 1970

Speed: 23 kts

Crew: 1060

Total Mounts: 6

D

C

C

J

J/Can

ARS

In Class: 6

In Service: 1944

Speed: 15 kts

Crew: 103

Total Mounts: 2

C

J

J/Can

CG

In Class: [2]

In Service: 1955-70

Speed: 33 kts

Crew: 1544

Total Mounts: 13

D

C

C

C

J

**Bronstein**

Displacement: 2360

Damage Points: 66

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

F(2)1 Mk33 76mm/50//1 SPG-35

Sensors:

SPS-40, SPS-10

LN-66

SQS-26, SQR-15 towed array

Remarks:

Helo pad aft. Aluminum superstructure. Magazines hold 12 additional Mk46 torp (manual reload). No ASROC reloads. FF-1037 had SQR-15 removed in 1981.

**Damage and Speed Breakdown:**

Damage Points:	0	16	33	50	59	66
Surface Speed:	26	20	13	6	0	Sinks

**Brooke**

Displacement: 2643

Damage Points: 73

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

Aft Pad(1)1 SH-2F LAMPS I

A(1)1 Mk22 w/16 SM1MR//1 SPG-51

F(1)1 Mk30 127mm/38//1 SPG-35

Sensors:

SPS-10, SPS-52

LN-66

SQS-26

Remarks:

FFG-4 to FFG-6 have automatic ASROC reload magazine, estimated 2 min per msl, 8 reload msls in magazine. Fitted with stabilizers. Aluminum superstructure. Entire class decommed in 1988-89.

**Damage and Speed Breakdown:**

Damage Points:	0	18	36	55	66	73
Surface Speed:	27	20	14	7	0	Sinks

**California**

Displacement: 8706

Damage Points: 188

Damage Modifier: 0.75

Propulsion: Nuclear

Weapons:

F/A(1)2 Mk45 127mm/54 w/600 rds//1 SPG-60

F(8)1 Mk16 w/8 ASROC

PB/SB(2)2 Mk32 324mm TT w/2 Mk46 NEARTIP

P/S(4)2 Mk141 w/4 Harpoon

P/S(R)2 Mk15 Phalanx w/5 bursts

F/A(1)2 Mk13 w/40 SM1MR//4 SPG-51

Sensors:

SPS-10, SPS-40, SPS-48, SPQ-9A

LN-66

SQS-26

Remarks:

Helo pad aft. Mk13 ROF is 6 msls/min. Armor: California has Kevlar armor midships over electronics and other components. CHP factor for sensors is L. Magazines hold another 8 Mk46 torp (manual reload). ASROC msls automatically reloaded from belowdecks magazine; estimated reload time 2 min per msl. Aluminum superstructure. SPG-60 can direct Mk45 gun or illuminate target for SM1MR msls. Class being overhauled; will get SPS-49 vice -40, SPS-67 vice -10, PB&SB(4)2 Mk44 ABL w/4 Tomahawk per mount (CHP factor L), Kevlar armor. Mk141 ROF 8 msls per turn (bots mounts) at same target. Will be fitted with SM2MR/NTU.

FF

In Class: 2

In Service: 1963

Speed: 26 kts

Crew: 216

Total Mounts: 4

E

F

C

J

J/Can

M

**Damage and Speed Breakdown:**

Damage Points:	0	47	94	141	169	188
Surface Speed:	30	22	15	8	0	Sinks

**Charles F. Adams**

Displacement: 3370

Damage Points: 91

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

F/A(1)2 Mk42 127mm/54//1 SPG-53

P&amp;S(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

A(2)1 Mk11 w/42 see remarks//2 SPG-51

Sensors:

SPS-10, SPS-65 (DDG-, 20, 22)

SPS-40, SPS-52

SQS-23

LN-66 (DDG-4, 9, 16)

Remarks:

Mk11 (2)1 on DDG 2-14 with 42 msls: 36 SM1MR, 6 Harpoon. Mk13 (1)1 on DDG 15-24 with 40 msls: 36 SM1MR; 4 Harpoon. No Harpoon in DDG-3, 8, 12, 21, 23; carry additional SM1MR msls instead. Mk11 and Mk13 ROF 3 msls per turn. Aluminum superstructure. Helo pad aft. No ASROC reloads on original units; many have been backfitted with manual reload magazine with 4 ASROC. DG 19, 20, 22 received AAW upgrade: consists of SQQ-23 vice SQS-23, additional LN-66, Mk86 GFCS with SPG-60 vice SPG-53 and additional SPQ-9 (Use the percent chance to hit of a Mk45 127mm/45). SPG-60 can direct Mk42 127mm gun or illuminate target for SM1MR msls. DDG-5 has SPS-29 vice SPS-40. *John King, Lawrence, Claude V. Ricketts, Henry B. Wilson, Sellers, Hoel and Richard E. Byrd* will be decommed in FY1990.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	68	82	91
Surface Speed:	31	23	16	8	0	Sinks

**Charleston**

Displacement: 10000 std

Damage Points: 276

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

P&amp;PB/P&amp;PQ/S&amp;SB(2)3 Mk33 76mm/50

F/A(R)2 Mk15 Phalanx w/5 bursts

4 LSM(8), 5 LCM(6), 2 LCVP, 2 LCP

Sensors:

LN-66

SPS-10

Remarks:

All but LKA 116 assigned to NRF. Helo pad aft. No hangar. LCM carried as deck cargo. Original 76mm fit was P&PB/P&PQ/S&SB/S&SQ(2)4 76mm/50//2 Mk56 GFCS. Two Mk56 GFCS and one 76mm mount removed in 1977-78. LKA 113, 117 still have 4 76mm mounts but no directors.

**Damage and Speed Breakdown:**

Damage Points:	0	69	138	207	248	276
Surface Speed:	20	15	10	5	0	Sinks

**Cherokee**

Displacement: 1235

Damage Points: 38

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

None

Sensors:

SPS-53

Remarks:

15 units built. 10 laid up in NDRF, 5 serving with US Naval Reserve Fleet. NDRF units have F(1)1 Mk22 76mm/50.

DDG

In Class: 23

In Service: 1960

Speed: 31 kts

Crew: 361

Total Mounts: 6

C

E

F

D

J

J

M

J/Can

FFG

In Class: [6]

In Service: 1966-89

Speed: 27 kts

Crew: 272

Total Mounts: 6

E

F

B

D

C

J

J/Can

M

LKA

In Class: 5

In Service: 1968

Speed: 20 kts

Crew: 617

Total Mounts: 18

C

C

—

J/Can

J

CGN

In Class: 2

In Service: 1974

Speed: 30 kts

Crew: 550

Total Mounts: 11

C

E

F

D

C

D

J

J/Can

M

ATF

In Class: 5

In Service: 1943

Speed: 16 kts

Crew: 71

Total Mounts: 0

**Damage and Speed Breakdown:**

Damage Points:	0	10	19	28	34	38
Surface Speed:	16	12	8	4	0	Sinks

**Cimarron**

Displacement: 8210 ltshp  
 Damage Points: 180  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 F/A(R)2 Mk15 Phalanx w/5 bursts  
 Sensors:  
 LN-66  
 SPS-55 (AO-177 to 179)  
 SPS-10 (AO-186, 180)  
 ESM

In Class: 5  
 In Service: 1981  
 Speed: 20 kts  
 Crew: 198  
 Total Mounts: 2

**AO**

C  
 J/Can  
 J  
 J  
 —

**Remarks:**

Helo pad aft. Four RAS stations to port and three to starboard. AO-177 *Cimarron* not yet fitted with Phalanx. All 5 units will be lengthened, with first one starting in 1990.

**Damage and Speed Breakdown:**

Damage Points:	0	45	90	135	162	180
Surface Speed:	20	15	10	5	0	Sinks

**Coontz**

Displacement: 4700 std  
 Damage Points: 124  
 Damage Modifier: 0.75  
 Propulsion: Steam  
 Weapons:  
 F(1)1 Mk42 127mm/54 w/560 rds//1 SPG-53  
 F(8)1 Mk16 w/8 ASROC  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP  
 PB/SQ(4)2 Mk141 w/4 Harpoon  
 A(2)1 Mk10 w/40 SM1ER//2 SPG-55  
 Sensors:  
 SPS-49, SPS-48, SPS-53  
 SQQ-23  
 LN-66

In Class: 10  
 In Service: 1958  
 Speed: 34 kts  
 Crew: 403  
 Total Mounts: 7

**DDG**

C  
 E  
 F  
 D  
 D  
 J  
 M  
 J/Can

**Remarks:**

*Mahan* is trials ship for New Threat Upgrade (NTU). Has SM2ER Block II. Other units will not receive full upgrade but will receive SM2ER Block II; DDG-37 *Farragut* and DDG-43 *Dahlgren* equipped by 1987. Helo pad aft. Magazines hold 6 Mk46 torpedoes (manual reload). Aluminum construction. *Farragut* has automatic ASROC reload magazine; estimated 2 min per msl. Mk141 ROF 8 msls per turn (both mounts) at same target. *Farragut*, *Coontz* and *Dewey* will be decommed in FY1990.

**Damage and Speed Breakdown:**

Damage Points:	0	31	62	93	112	124
Surface Speed:	34	26	17	8	0	Sinks

**Decatur**

Displacement: 2850  
 Damage Points: 78  
 Damage Modifier: 0.75  
 Propulsion: Steam  
 Weapons:  
 F(1)1 Mk42 127mm/54//1 SPG-53  
 P&S(8)1 Mk16 w/8 ASROC  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp  
 A(1)1 Mk13 w/40 SM1MR//1 SPG-51  
 Sensors:  
 SPS-29, SPS-48, SPS-10  
 SQS-23

In Class: [4]  
 In Service: 1967-83  
 Speed: 31 kts  
 Crew: 340  
 Total Mounts: 5

**DDG**

C  
 E  
 F  
 D  
 J  
 M

**Remarks:**

Mk13 ROF is 3 msls per turn. *Somers* has SPS-40 vice SPS-29. Converted *Forrest Sherman* class. Four ships converted. *Parsons* and *Somers* struck on 19 Nov 1982; *John Paul Jones*, 15 Dec 1982; *Decatur*, 30 Jun 1983. *Parsons* struck for disposal; rest in reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	20	39	58	70	78
Surface Speed:	31	23	16	8	0	Sinks

**Des Moines**

Displacement: 17255  
 Damage Points: 404  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 F/A2P/2S(2)6 Mk38 127mm/38 w/1010 rds//2 Mk25  
 P/S(2)8 Mk27 76mm/50 w/1200 rds//4 Mk35  
 F/A(2)2 Mk33 76mm/50 w/1200 rds//4 Mk35  
 2F/A(3)3 Mk16 203mm/55 w/450 rds//2 Mk13

In Class: [3]  
 In Service: 1948-75  
 Speed: 32 kts  
 Crew: 1800  
 Total Mounts: 19

**CA**

C  
 C  
 C  
 C  
 J

**Sensors:**

SG-6, SPS-6C, SPS-8A

**Remarks:**

*Salem* has additional F(2)1 Mk33 76mm/50. CA-139 has SPS-12 vice SPS-6C. Armor: 102-152mm belt, 25mm upper deck, 85mm lower deck, 203mm turret face, 95mm turret sides, 102mm turret roof, 160mm barbettes, 102-160mm conning tower, 96-106mm steering room. General rating is M; CHP factors for 203mm turrets, bridge and engineering are M. Utility helo carried on pad aft. No hangar. Three units built. *Salem* struck in 1959; *Des Moines*, 1961; *Newport News*, 1975. *Des Moines* and *Salem* in reserve; funds to be allocated so they can be activated in 45 days.

**Damage and Speed Breakdown:**

Damage Points:	0	101	202	303	364	404
Surface Speed:	32	24	16	8	0	Sinks

**Edenton**

Displacement: 2650  
 Damage Points: 73  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 P/S(1)2 Mk68 20mm/80  
 Sensors:  
 SPS-53

In Class: 3  
 In Service: 1971  
 Speed: 16 kts  
 Crew: 115  
 Total Mounts: 2

**ATS**

C  
 J

**Remarks:**

ATS 1 has A(2)1 Mk24 20mm/80 vice Mk68.

**Damage and Speed Breakdown:**

Damage Points:	0	18	36	55	66	73
Surface Speed:	16	12	8	4	0	Sinks

**Enterprise**

Displacement: 75700 std  
 Damage Points: 1378  
 Damage Modifier: 1.00  
 Propulsion: Nuclear  
 Weapons:  
 PQ/SQ(8)3 Mk29 NATO Sea Sparrow w/8 RIM-7M//6 Mk91  
 P&PB/P&PQ/SB&SQ(R)3 Mk15 Phalanx w/5 bursts  
 90 Aircraft  
 4 Elevators  
 4 Catapults  
 Sensors:  
 SPS-65, SPS-67, SPS-49, SPS-48  
 Mk23 TAS  
 LN-66

In Class: 1  
 In Service: 1961  
 Speed: 35 kts  
 Crew: 5785  
 Total Mounts: 13

**CVN**

D  
 C  
 B  
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 J  
 J  
 J/Can

**Remarks:**

Armor: Armored flight deck, improved protection over *Forrestal* class. General rating is L; CHP rating for flight deck, hangar, engineering is L. Aviation fuel for 12 days of flight operations. Can launch 10 small/med helos at once. Mk29 NATO SS ROF 15 msls per turn (each mount). Air group consists of 20 F-14s, 20 F/A-18 Hornets, 20 A-6 Intruders, 5 E-2Cs, 5 EA-6B Prowlers, 10 S-3 Vikings, 6 SH-3H Sea Kings.

**Damage and Speed Breakdown:**

Damage Points:	0	344	689	1034	1240	1378
Surface Speed:	35	26	18	9	0	Sinks

**Ex-UK Lyness**

Displacement: 9010 ltshp

Damage Points: 256

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

Aft Pad(1)2 CH-46 Sea Knight

Sensors:

Kelvin-Hughes 14/12, Kelvin-Hughes 14/9

Remarks:

Purchased by US in 1983; helo hangars and pad added to all three units.

Damage and Speed Breakdown:

Damage Points:	0	64	128	192	230	256
Surface Speed:	18	14	9	4	0	Sinks

**Forrest Sherman**

Displacement: 2850

Damage Points: 78

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

F/2A(1)3 Mk42 127mm/54 //2 SPG-53, SPG-35

Sensors:

SPS-37, SPS-10

SQS-23

Remarks:

*Forrest Sherman* and *Mullin* have SPS-40 vice SPS-37. DD-942, 946, 957 have SPS-29 vice SPS-37. Hull had F(1)1 Mk71 203mm/55 in place of forward Mk42. Returned to original configuration in 1979. Aluminum superstructure. SPG-53 GFC radar faces forward; SPG-35 faces aft. 18 units built. Originally fitted with Mk42 guns, P/S(2)2 Mk33 76mm/50, P/S(1)4 533mm TT, 2 Mk13 Hedgehog, DC rails. 8 converted to *Barry* class; *Edson* assigned to NRF as training ship; rest decommed in 1983.

Damage and Speed Breakdown:

Damage Points:	0	20	39	58	70	78
Surface Speed:	32	24	16	8	0	Sinks

**Forrestal**

Displacement: 60000 std

Damage Points: 1116

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

90 Aircraft

4 Catapults

4 Elevators

P&amp;PQ/S&amp;SB(8)3 Mk29 NATO Sea Sparrow

w/8 RIM-7M//6 Mk91

P&amp;PQ/S&amp;SQ/P&amp;PB(R)3 Mk15 Phalanx w/5 bursts

Sensors:

SPS-49, SPS-48, SPS-67, Mk23 TAS

LN-66

Remarks:

*Forrestal* (CV-59) has 59630-ton displacement (1109 damage pts). Deck angled 8° to port. Armor: Armored flight deck; improved protection over *Midway* class. General rating is L; CHP rating for flight deck, hangar, engineering is L. Can launch 10 small/med helos at once. NATO Sea Sparrow ROF 15 msls per turn (each mount). Typical air group 20 F-14, 20 F/A-18, 20 A-6E, 5 E-2C, 5 EA-6B, 10 S-3 Viking, 6 SH-3H Sea King.

Damage and Speed Breakdown:

Damage Points:	0	279	558	837	1004	1116	(CV-59)
Damage Points:	0	277	555	832	998	1109	
Surface Speed:	33	25	16	8	0	Sinks	

**Garcia**

Displacement: 2624

Damage Points: 72

Damage Modifier: 0.75

Propulsion: Steam

**T-AFS**

In Class: 3

In Service: 1966

Speed: 18 kts

Crew: 116

Total Mounts: 2

B

J/Intl

**Weapons:**

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

Aft Pad(1)1 SH-2F LAMPS I

F/P&amp;S(1)2 Mk42 127mm/54//1 SPG-35

Sensors:

SPS-10, SPS-40

LN-66

SQS-26

Remarks:

Last 5 units (FF-1047 to 1051) have automatic ASROC reloading system; estimated reload time 2 min per msl. 8 ASROC msls in magazine. ASROC launcher carries 2 Harpoon, with additional 2 in reload magazine. Magazines hold additional 12 Mk46 torp (manual reloading). Fitted with stabilizers. Aluminum superstructure. *Garcia*, *Edward McDonnell*, *Sample*, *Albert David* fitted with SQR-15, no SH-2F LAMPS helo. *Bradley*, *Edward McDonnell*, *Davidson*, *Sample*, *O'Callahan* decommed in 1988; *Garcia*, *Brumby*, *Voge*, *Koelsch* and *Albert David*, 1989. Four units leased to Pakistan and four to Brazil. SQR-15 removed and helicopter capability restored prior to transfer.

Damage and Speed Breakdown:

Damage Points:	0	18	36	54	65	72
Surface Speed:	27	20	14	7	0	Sinks

**Gearing FRAM I**

Displacement: 2425

Damage Points: 67

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

P&amp;S(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 torp

F/A(2)2 Mk38 127mm/38//1 Mk25

Sensors:

SPS-10, SPS-29, SPS-37, SPS-40

SQS-23

LN-66

Remarks:

Aluminum superstructure. Magazines hold 9 ASROC manual reloads. Converted *Gearing*-class destroyers. 16 units converted; all units struck by 1983.

Damage and Speed Breakdown:

Damage Points:	0	17	34	50	60	67
Surface Speed:	32	24	16	8	0	Sinks

**Glenard P. Lipscomb**

Displacement: 6480 subm

Damage Points: 103

Damage Modifier: 1.00

Propulsion: Nuclear-Electric

Weapons:

PB/SB(2)2 533mm TT w/see remarks

Sensors:

BQQ-5, TB-16 towed array

BPS-15

Remarks:

Weapons load is Mk48 torp, Harpoon. Has nuclear-electric drive. ~10% from passive sonar detection chance. Weapon load estimated.

Damage and Speed Breakdown:

Damage Points:	0	26	52	77	93	103
Surface Speed:	18	14	9	4	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

**Glover**

Displacement: 2643 std

Damage Points: 73

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

F(1)1 Mk30 127mm/38//1 SPG-35

Total Mounts: 6

E

F

B

C

J

J/Can

M

**DD**

In Class: [6]

In Service: 1956-83

Speed: 32 kts

Crew: 226

Total Mounts: 5

F

C

J

M

**DD**

In Class: [16]

In Service: 1945-83

Speed: 32 kts

Crew: 307

Total Mounts: 5

E

F

C

J

M

J/Can

**CV**

In Class: 4

In Service: 1955

Speed: 33 kts

Crew: 5630

Total Mounts: 14

B

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—

D

C

J

J/Can

**SSN**

In Class: 1

In Service: 1974

Speed: 18/25 kts

Crew: 128

Total Mounts: 2

F, D

**FF**

In Class: [10]

In Service: 1964-89

Speed: 27 kts

Crew: 270

**FF**

In Class: 1

In Service: 1965

Speed: 27 kts

Crew: 270

Total Mounts: 4

E

F

C

**Sensors:**

SPS-10, SPS-40  
LN-66  
SQS-26, SQS-35 IVDS

**Remarks:**

Aluminum superstructure. Helo pad aft for small helicopter. No ASROC reloads.

**Damage and Speed Breakdown:**

Damage Points:	0	18	36	55	66	73
Surface Speed:	27	20	14	7	0	Sinks

**Halibut**

Displacement: 5000 subm

Damage Points: 88

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&SB(2)2 533mm TT w/ Mk48 torp

PQ&SQ(2)1 533mm TT w/ Mk37 torp

**Sensors:**

BQS-4

**Remarks:**

Research submarine. Originally carried 2 Regulus II nuclear strategic cruise msls. Decommed on 30 Jun 1976. In reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	22	44	66	79	88
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

**Harpers Ferry**

Displacement: 11125 lt

Damage Points: 298

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

F/A(R)2 Mk15 Phalanx w/5 bursts

P/S(1)2 Mk67 20mm/80

2 LCAC

**Sensors:**

SPS-49, SPS-67

LN-66

**Remarks:**

Cargo version of *Whidbey Island* class. First unit ordered on 17 Jun 1988. Has 1000 m<sup>3</sup> more capacity than *Whidbey Island* class, but can only carry 2 LCAC.

**Damage and Speed Breakdown:**

Damage Points:	0	75	149	224	269	298
Surface Speed:	22	16	11	6	0	Sinks

**Improved Los Angeles**

Displacement: 6927

Damage Points: 107

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&SB(2)2 533mm TT w/26 see remarks

PB&SB(12)1 Mk45 VLS w/12 Tomahawk

**Sensors:**

BSY-1, TB-16B towed array

BPS-15

**Remarks:**

First unit is SSN-751, USS *San Juan*. Normal TT loadout 20 Mk48 torp and 6 Harpoon. Can carry Sea Lance when available. VLS Tomahawk launchers can fire antiship or land attack version of missile. Tomahawk ROF 4 msls per turn. Has anechoic coating. Has pump-jet propulsor vice propeller; reduces detection chance by passive sonars -10%. Can control 4 wire-guided torps at once. Will be fitted with BQG-5 wide aperture array.

**Damage and Speed Breakdown:**

Damage Points:	0	27	54	80	97	107
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	32	24	16	8	0	Sinks

J  
J/Can  
M

SSN

In Class: [1]

In Service:

Speed: 20 kts

Crew: 111

Total Mounts: 3

F

F

M

**Improved Spruance**

Displacement: 5830 fl

Damage Points: 144

Damage Modifier: 0.75

Propulsion: Gas turbine

**Weapons:**

(F&A) (61)x1 Mk41 VLS w/61 Tomahawk and VL ASROC

A(8)1 Mk29 NATO SS w/8 RIM-7M //1 Mk91

PB/SB(3)2 Mk32 324mm TT w/7 Mk46 NEARTIP

PB&SB(4)2 Mk141 w/4 Harpoon

Aft Pad(1)2 SH-60B LAMPS III

F/A(1)2 Mk45 127mm/54 //1 SPG-60

PB&SB/P&PQ(6)2 Mk15 Phalanx w/5 bursts

**Sensors:**

SPS-40, SPQ-9A, SPS-55, Mk23 TAS

SQS-53, SQR-19 towed array

**Remarks:**

Program to modify *Spruance*-class destroyers with VLS. Seven units converted so far: DD-963, 991, 996, 964, 967, 971, 968. Will carry VL ASROC when available. Cannot carry SM2MR. Has RAST helo recovery system. Fitted with Prairie-Masker acoustic masking system (quieted). Aluminum superstructure. Ships maneuver as 50-139 damage point vessels for turns and acceleration. Magazines hold 24 RIM-7M and 18 Mk46 torpedo manual reloads. Mk141 ROF 8 msls per turn (both launchers) at same target. Mk29 NATO Sea Sparrow ROF 15 msls per turn.

**Damage and Speed Breakdown:**

Damage Points:	0	36	72	108	130	144
Surface Speed:	33	25	16	8	0	Sinks

In Class: 7

In Service: 1987

Speed: 33 kts

Crew: 324

Total Mounts: 12

D, E

D

F

D

B

C

C

J

M

**Iowa**

Displacement: 46177

Damage Points: 886

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

2F/A(3)3 406mm/50 w/360 rounds//2 Mk13

P/S(2)6 Mk28 127mm/38//4 Mk25

P&PB/S&SB/P&PQ/S&SQ(R)4 Mk15 Phalanx w/5 bursts

PB&SB(4)8 Mk44 ABL w/4 Tomahawk

PB&PQ/SB&SQ(4)4 Mk141 w/4 Harpoon

Aft Pad(1)4 SH-60B LAMPS III

**Sensors:**

SPS-10 (BB-62), SPS-49

LN-66

**Remarks:**

*Iowa* can carry Mastiff RPV for shore bombardment surveillance. Armor: 307mm belt tapering to 41mm, turret face 432mm, turret top 184mm, turret back 305mm, barbettes 295mm max, conning tower 440 mm, 184mm conning tower top, 3 armored decks; 2nd deck is 152mm. General rating is S. CHP factor for 406mm turret, engineering is S; bridge is H; Tomahawk launcher is L. Helo pad aft can hold 4 small helos. Cannot fire aft 406mm with helos on pad. Mk141 ROF is 8 msls per turn (all mounts) at same target. Mk44 ABL ROF is 15 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	222	443	664	797	886
Surface Speed:	33	25	16	8	0	Sinks

In Class: 4

In Service: 1983

Speed: 33 kts

Crew: 2753

Total Mounts: 29

C

C

C

D

D

B

J

J/Can

LSD

In Class: 0+1+4

In Service: 1993

Speed: 22 kts

Crew: 412

Total Mounts: 6

C

C

—

J

J/Can

SSN

In Class: 5+12+2

In Service: 1988

Speed: 15/32 kts

Crew: 133

Total Mounts: 3

F, D

D

M

J

**Isaac C. Kidd**

Displacement: 6210 ltshp

Damage Points: 150

Damage Modifier: 0.75

Propulsion: COGAG

**Weapons:**

F(2)1 Mk26 w/24 SM2MR//1 SPG-55

A(2)1 Mk26 w/44 see remarks//1 SPG-55

PB&SB(4)2 Mk141 w/4 Harpoon

Aft Pad(1)2 SH-2F LAMPS I

PQ&P/SB&S(R)2 Mk15 Phalanx w/5 bursts

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

F/A(1)2 Mk45 127mm/54//1 SPG-60

In Class: 4

In Service: 1981

Speed: 33 kts

Crew: 340

Total Mounts: 12

D

D

D

B

C

F

C

DDG

**Sensors:**

SPS-53, SPQ-9A, SPS-48, SPS-55

SQS-53

**Remarks:**

Iran's gift to the US Navy. Aluminum superstructure. Fitted with aluminum and Kevlar armor. CHP rating for sensors is L. Aft msl magazine has 16 ASROC, 28 SM1MR. Ships maneuver as 50-139 damage point vessels for turns and acceleration. SPG-60 can direct Mk45 gun or illuminate target for SM1MR msIs. Mk141 ROF is 8 msIs per turn (all mounts) at same target. Mk26 ROF is 6 msIs per turn (each mount). Quieted. *Scott* has NTU.

**Damage and Speed Breakdown:**

Damage Points:	0	38	75	112	135	150
Surface Speed:	33	25	16	8	0	Sinks

**Iwo Jima**

Displacement: 11000 lt

Damage Points: 296

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

20 Helicopters

SB&amp;SQ/PB&amp;PQ(8)2 Mk25 Sea Sparrow w/8 RIM-7M//2 Mk115

F(2)2 Mk33 76mm/50

2 Elevators

P/S(R)2 Mk15 Phalanx w/5 bursts

**Sensors:**

SPS-10, SPS-58 (not in LPH-11), SPS-40

LN-66

**Remarks:**

No directors for guns; local control only. Can land/launch 7 small/med helos at once. Can carry 19 Sea Knights or 11 Sea Stallions or AV-8B Harriers. Mk25 ROF is 15 msIs per turn (each mount).

**Damage and Speed Breakdown:**

Damage Points:	0	74	148	222	266	296
Surface Speed:	22	16	11	6	0	Sinks

**Kennedy**

Displacement: 61000

Damage Points: 1133

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P&amp;PQ/S&amp;SQ/P&amp;PB(R)3 Mk15 Phalanx w/5 bursts

85 Aircraft

4 Catapults

P&amp;PQ/S&amp;SQ/S&amp;SB(8)3 Mk29 NATO

Sea Sparrow w/8 RIM-7M//6 Mk91

4 Elevators

**Sensors:**

SPS-49, SPS-48, SPS-10, SPS-65

Mk23 TAS

LN-66

**Remarks:**

Can launch 10 small/med helos at once. **Armor:** General rating is L. CHP rating for flight deck, hangar and engineering is L. NATO Sea Sparrow ROF 15 msIs per turn (each mount).

**Damage and Speed Breakdown:**

Damage Points:	0	283	566	850	1020	1133
Surface Speed:	32	24	16	8	0	Sinks

LN-66 (not in AE-27)

J/Can

**Remarks:**

AE-32 to 35 fitted with P/S(R)2 Mk15 Phalanx w/5 bursts per mount. No director for Mk33 guns; local control only. *Kilauea*, *Butte* operated by MSC; Mk33 guns removed.

**Damage and Speed Breakdown:**

Damage Points:	0	78	156	235	282	313
Surface Speed:	20	15	10	5	0	Sinks

**Kitty Hawk**

Displacement: 61100 std

Damage Points: 1134

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P&amp;PQ/S&amp;SQ/S&amp;SB(8)3 Mk29 NATO

Sea Sparrow w/8 RIM-7M//6 Mk91

P&amp;PQ/P&amp;PB/S&amp;SQ(R)3 Mk15 Phalanx w/5 bursts

85 Aircraft

4 Catapults

4 Elevators

**Sensors:**

SPS-10 or SPS-67, SPS-49, SPS-48

Mk23 TAS

LN-66 (CV-63)

**Remarks:**

*Kitty Hawk* (CV-63) has only 2 Mk29/Mk91, P&PQ/S&SQ. In SLEP starting May 1989. Will get Mk23 TAS, SPS-49, F/A-18. *Constellation* (CV-64) has F/A-18. *America* (CV-66) displacement 60300 tons (1121 damage pts). Can launch 10 small/med helos at once. **Armor:** General rating is L; CHP rating for flight deck, hangar, eng is L. NATO Sea Sparrow ROF 15 msIs per turn (each mount).

**Damage and Speed Breakdown:**

Damage Points:	0	284	567	850	1021	1134	(CV-66)
Damage Points:	0	280	561	841	1009	1121	
Surface Speed:	33	25	16	8	0	Sinks	

**Knox**

Displacement: 3011

Damage Points: 82

Damage Modifier: 0.75

Propulsion: Steam

**Weapons:**

A(R)1 Mk15 Phalanx w/5 bursts

F(8)1 Mk16 w/8 see remarks

PB/SB(2)2 Mk32 324mm TT w/2 Mk46 NEARTIP

Aft Pad(1)1 SH-2F LAMPS I

F(1)1 Mk42 127mm/54//1 SPG-53

**Sensors:**

SPS-10, SPS-40, Mk23 TAS

SQS-26, SQR-18 towed array

LN-66

**Remarks:**

Mk16 launcher loadout is 6 ASROC and 2 Harpoon; can fire 2 Harpoon per turn. Auto reloading from magazine (estimated 2 min per msl) of another 6 ASROC and 2 Harpoon. Fitted with stabilizers. Aluminum superstructure. Fitted with Prairie-Masker acoustic masking system (quieted).

**Damage and Speed Breakdown:**

Damage Points:	0	20	41	62	74	82
Surface Speed:	27	20	14	7	0	Sinks

**Lafayette**

Displacement: 8250 subm

Damage Points: 120

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(2)2 533mm TT w/10 Mk48 torp

(16)1 Poseidon or Trident 1 SLBM

**Sensors:**

BPS-11 or BPS-15

**SSBN**

In Class: 27

In Service: 1963

Speed: 15/25 kts

Crew: 147

Total Mounts: 3

F

—

J

J

M

LPH

In Class: 7

In Service: 1961

Speed: 22 kts

Crew: 2680

Total Mounts: 8

B

D

C

—

C

J

J/Can

CV

In Class: 1

In Service: 1968

Speed: 32 kts

Crew: 5653

Total Mounts: 14

C

B

—

D

—

J

J

J/Can

FF

In Class: 46

In Service: 1969

Speed: 27 kts

Crew: 287

Total Mounts: 6

C

E

F

B

C

J

M

J/Can

AE

In Class: 8

In Service: 1968

Speed: 20 kts

Crew: 380

Total Mounts: 4

B

C

J



Nav radar (see remarks)

BQR-7, BQR-15 towed array

BQR-21 DIMUS, BQS-4

Remarks:

*Daniel Webster* (SSBN-626) has bow planes for evaluation. Thirty-one built; 4 decommed. 12 units have Trident 1. Have portable commercial nav radar for surface operations.

**Damage and Speed Breakdown:**

Damage Points:	0	30	60	90	108	120
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

**Leahy**

Displacement: 5670

Damage Points: 142

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

F(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

PB&amp;SB(4)2 Mk141 w/4 Harpoon

P/S(R)2 Mk15 Phalanx w/5 bursts

F/A(2)2 Mk10 w/40 SM2ER//4 SPG-55

Sensors:

SPS-49, SPS-48, SPS-10 or SPS-67

LN-66

SQS-23

Remarks:

No ASROC reloads. Helo pad aft. Aluminum superstructure. *Gridley* and *Reeves* have SPS-43 vice SPS-49. *Dale* has SQQ-23 vice SQS-23. Mk141 ROF 8 msls per turn (both launchers) at same target. *England* has NTU.

**Damage and Speed Breakdown:**

Damage Points:	0	36	71	106	128	142
Surface Speed:	32	24	16	8	0	Sinks

**Long Beach**

Displacement: 15100 lt

Damage Points: 368

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

P/S(1)2 Mk30 127mm/38//2 Mk35

P&amp;S(8)1 Mk16 w/8 ASROC

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

PB&amp;SB(4)2 Mk141 w/4 Harpoon

A(R)2 Mk15 Phalanx w/5 bursts

F(2)2 Mk10 w/60 SM2ER//4 SPG-55

PB&amp;SB(4)2 Mk44 ABL w/4 Tomahawk

Sensors:

SPS-48, SPS-65, SPS-49, SPS-67

LN-66

SQQ-23

Remarks:

Helo pad aft. **Armor:** Radar foundations and waveguides armored. Forward superstructure has 44mm aluminum armor. CHP rating for bridge, sensors, Mk44 ABL is L. Carries 20 manual ASROC reloads. Mk141 ROF 8 msls per turn (both launchers) at same target. Mk44 ABL ROF 8 msls per turn (both launchers) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	82	184	276	331	368
Surface Speed:	30	22	15	8	0	Sinks

**Los Angeles**

Displacement: 6927 subm

Damage Points: 107

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

PB&amp;SB(2)2 533mm TT w/26 see remarks

J/Intl

M

M

Sensors:

BQQ-5, TB-16 towed array

BPS-15

Remarks:

Normal weapons loadout 20 Mk48 torp and 6 Harpoon. Class being fitted with anechoic coating. At least four units fitted to carry Tomahawk to be fired from TT. SSN-719 and later have PB&SB(12)1 Tomahawk in VLS tubes. Tomahawk ROF 4 msls per turn. Memphis (SSN-691) designated as official R&D platform for advanced submarine technology. Modifications will be made during refueling refit in 1994. Will be fitted with one 762mm TT for R&D purposes.

**Damage and Speed Breakdown:**

Damage Points:	0	27	54	80	96	107
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	32	24	16	8	0	Sinks

**Mars**

Displacement: 9400

Damage Points: 198

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

Aft Pad(1)2 CH-46 Sea Knight

F(2)2 Mk33 76mm/50

Sensors:

SPS-10

LN-66

Remarks:

No director for Mk33 76mm; local control only. Five holds. #1 and #5 for spare parts, #3 and #4 for provisions, #2 for aviation spare parts. AFS-4 has additional P/S(R)2 Mk15 Phalanx w/5 bursts.

**Damage and Speed Breakdown:**

Damage Points:	0	50	99	148	178	198
Surface Speed:	20	15	10	5	0	Sinks

**Midway**

Displacement: 51000 std

Damage Points: 966

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

P&amp;PQ/S&amp;SQ(R)2 Mk15 Phalanx w/5 bursts

72 Aircraft

2 Catapults

3 Elevators

P&amp;PB/S&amp;SB(8)2 Mk25 Sea Sparrow w/8 RIM-7M//2 Mk115

Sensors:

SPS-64, SPS-67, SPS-48, SPS-49

Remarks:

*Midway* (CV-41) as above. *Coral Sea* (CV-43) has 3 catapults, 3 Mk15 Phalanx (P&PQ/P&PB/S&SQ), no Mk29, SPS-30 vice SPS-38, SPS-43 vice -37. **Armor:** Armored flight deck, improved protection over *Essex* class. General rating is L. CHP rating for flight deck, hangar, engineering is L. Uses F-18s for fighter and attack squadrons. Can launch 8 small/med helos at once. Third unit *Franklin D. Roosevelt* struck in Oct 1977. Mk25 ROF 15 msls per turn (each mount). *Coral Sea* decommed in 1989.

**Damage and Speed Breakdown:**

Damage Points:	0	242	483	724	869	966
Surface Speed:	33	25	16	8	0	Sinks

**Mispillion**

Displacement: 9486 lt

Damage Points: 266

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

None

Sensors:

Raytheon 1650 (Raytheon series), SPS-10

CG

In Class: 9

In Service: 1962

Speed: 32 kts

Crew: 423

Total Mounts: 9

E

F

D

C

D

J

J/Can

M

CGN

In Class: 1

In Service: 1961

Speed: 30 kts

Crew: 921

Total Mounts: 13

C

E

F

D

C

D

D

J

J/Can

M

SSN

In Class: 30

In Service: 1976

Speed: 15/32 kts

Crew: 133

Total Mounts: 2

F, D

AFS

In Class: 7

In Service: 1963

Speed: 20 kts

Crew: 486

Total Mounts: 4

B

C

J

J/Can

CV

In Class: 1+[2]

In Service: 1945

Speed: 33 kts

Crew: 4450

Total Mounts: 9

C

B

—

—

D

J

T-AO

In Class: 5

In Service: 1945

Speed: 16 kts

Crew: 130

Total Mounts: 0

J

**Remarks:**

*Jumboized T3-S2-A3 oilers. Helo pad forward. Operated by MSC.*

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	66	133	200	239	266
<b>Surface Speed:</b>	16	12	8	4	0	Sinks

**Mitscher****DDG****Displacement:** 3765**In Class:** [4]**Damage Points:** 134**In Service:** 1954-74**Damage Modifier:** 1.00**Speed:** 34 kts**Propulsion:** Steam**Crew:** 373**Weapons:****Total Mounts:** 11

F/A(1)2 Weapon Alfa w/4 salvoes

E

PB/SB(3)2 Mk32 324mm TT w/3 Mk44 torp

F

PB/SB(1)4 Mk23 533mm TT w/1 Mk32 torp

F

1 DC Rail w/12 Mk9 DC

E

F/A(1)2 Mk42 127mm/54 w/700 rds//2 Mk67, Mk35

C

**Sensors:**

SPS-8, SPS-10, SPS-29

J

SQS-26

M

**Remarks:**

Originally mounted F/A(2)2 76mm/50 with 500 rds/mount. These replaced with 76mm/70s. Aft 76mm/70 removed for helo pad. Fwd 76mm/70 removed later. Originally fitted with QHB/SQG-1 sonar; replaced by SQS-26. DC rails later removed. 6 reloads carried for Mk23 TT. Four units built. DL-2 *Mitscher* and DL-3 *McCain* decommed in 1969. DL-4 *Lee*, 1972; DL-5 *Wilkinson*, 1974.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	34	67	100	121	134
<b>Surface Speed:</b>	34	26	17	8	0	Sinks

**Narwhal****SSN****Displacement:** 5380 subm**In Class:** 1**Damage Points:** 92**In Service:** 1969**Damage Modifier:** 1.00**Speed:** 25/30 kts**Propulsion:** Nuclear**Crew:** 128**Weapons:****Total Mounts:** 2

PB&amp;SB(2)2 533mm TT w/20 see remarks

F, D

**Sensors:**

BPS-14

J

BQQ-5, TB-16 towed array

M

**Remarks:**

Normal TT loadout 16 Mk48 torp, 4 Harpoon. Very quiet. Has natural-circulation nuclear plant. -10% from passive sonar detection chance.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	23	46	69	83	92
<b>Surface Speed:</b>	25	19	12	6	0	Sinks
<b>Submerged Speed:</b>	30	22	15	8	0	Sinks

**Neosho****T-AO****Displacement:** 9553 ltshp**In Class:** 6**Damage Points:** 267**In Service:** 1954**Damage Modifier:** 1.00**Speed:** 20 kts**Propulsion:** Steam**Crew:** 106**Weapons:****Total Mounts:** 0

None

**Sensors:**

SPS-10, RM1650/12X

J

**Remarks:**

Helo pad aft except T-AO-146 & 148. Facilities for service force commander and staff. Original armament was (1)4 127mm/38 and (2)6 76mm/50. All guns now removed. Operated by MSC.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	67	134	200	240	267
<b>Surface Speed:</b>	20	15	10	5	0	Sinks

**Newport****LST****Displacement:** 4164 ltshp**In Class:** 20**Damage Points:** 148**In Service:** 1969**Damage Modifier:** 1.00**Speed:** 20 kts**Propulsion:** Diesel**Crew:** 608**Weapons:**

P/S(2)2 Mk33 76mm/50

**Total Mounts:** 2**Sensors:**

C

SPS-10

J

LN-66

J/Can

**Remarks:**

No director for Mk33 76mm, local control only. Helo pad aft. Two units transferred to NRF 1980 and 1981. LST-1179, 1180, 1181, 1184, 1192 have F(R)1 Mk15 Phalanx with 5 bursts per mount.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	37	74	111	133	148
<b>Surface Speed:</b>	20	15	10	5	0	Sinks

**Nimitz****CVN****Displacement:** 81600**In Class:** 5+3+1**Damage Points:** 1476**In Service:** 1975**Damage Modifier:** 1.00**Speed:** 32 kts**Propulsion:** Nuclear**Crew:** 5698**Weapons:****Total Mounts:** 16

90 Aircraft

B

4 Catapults

—

4 Elevators

—

P&amp;PQ/S&amp;SQ/P&amp;PB/S&amp;SB(R)4 Mk15 Phalanx w/5 bursts

C

P&amp;PQ/S&amp;SQ/S&amp;SB(8)4 Mk29 NATO

Sea Sparrow w/8 RIM-7M//8 Mk91

D

**Sensors:**

SPS-49, SPS-48, SPS-67, Mk23 TAS

J

LN-66

J/Can

**Remarks:**

*Nimitz* (CVN-68) has 3 Phalanx vice 4 (no S&SB). **Armor:** Armored flight deck, 64mm belt armor, box protection for magazines and engineering spaces. General rating is L. CHP rating for flight deck, hangar and engineering is L. Can launch 10 small/med helos at once. 1954 tons aviation ordnance, aircraft fuel for 16 days of flight operations. NATO Sea Sparrow ROF 15 msls per turn (each mount).

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	369	738	1107	1328	1476
<b>Surface Speed:</b>	32	24	16	8	0	Sinks

**O.H. Perry****FFG****Displacement:** 2769 lt**In Class:** 51**Damage Points:** 76**In Service:** 1977**Damage Modifier:** 0.75**Speed:** 29 kts**Propulsion:** COGAG**Crew:** 179**Weapons:****Total Mounts:** 7

P&amp;S(1)1 Mk75 76mm/62

C

w/80 rds//1 Mk92

F

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

B

Aft Pad(1)2 SH-60B LAMPS III

C

A(R)1 Mk15 Phalanx w/5 bursts

D

F(1)1 Mk13 w/40 SM1MR/1 STIR

**Sensors:**

SPS-49, SPS-55

J

SQS-56, SQR-19 towed array

M

**Remarks:**

Aluminum superstructure. Fitted with RAST helo recovery system and stabilizers. Mk92 can direct Mk75 gun or illuminate second target for SM1MR msls. Normal Mk13 loadout is 36 SM1MR and 4 Harpoon. Mk13 ROF is 6 msls per min. Magazines hold 18 Mk46 torpedoes (manual reload) for Mk32 TT and LAMPS helicopter. **Armor:** 19mm armor over magazines, 16mm steel over engineering spaces, 19mm Kevlar over electronics. CHP rating for sensors, engineering, bridge, Mk75 gun and Mk13 launcher is L. Fitted with Prairie-Masker acoustic masking system (quieted). Early-series ships (FFG-7, 9, 19-24) are or will be assigned to NRF; will operate SH-2F LAMPS I vice SH-60B; use SQR-18 vice SQR-19, no fin stabilizers or RAST. *Stark* (FFG-31) struck by Iraqi Exocets on 17 May 1987; returned to service in Jan 1989.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	19	38	57	68	76
<b>Surface Speed:</b>	29	22	14	7	0	Sinks

<b>Ohio</b>		<b>SSBN</b>		<b>Damage and Speed Breakdown:</b>					
Displacement: 18750 subm	In Class: 10+5+5	Damage Points: 214	In Service: 1981	Damage Points: 0	54	109	163	196	218
Damage Modifier: 1.00	Speed: 15/25 kts	Propulsion: Nuclear	Crew: 157	Surface Speed: 22	16	11	6	0	Sinks
Weapons:	Total Mounts: 3			<b>Pegasus</b>		<b>PHM</b>			
PB&SB(2)2 533mm TT w/12 Mk48 torp	F			Displacement: 218	In Class: 6		In Service: 1977		
(24)1 Trident C4 or Trident II D5 SLBM	—			Damage Points: 8	Speed: 48 kts		Crew: 24		
Sensors:	J			Damage Modifier: 0.75	Propulsion: CODOG		Total Mounts: 5		
BPS-15	M			Weapons:	PB&SB(4)2 Mk141 w/4 Harpoon		D		
BQQ-6, BQQ-9 TASPE towed array				F(1)1 Compact 76mm/62 w/330 rds//1 Mk92	S(1)2 20mm/80		C		
Remarks:				P/S(1)2 Mk67 20mm/80	Sensors:		C		
Reactor plant uses natural circulation at or below 15 knots (~10% passive sonar detection chance). BQQ-6 comprises spherical BQS-13 passive, BQR-7 conforal array, PUFFS spot hydrophone array, BQQ-9 towed array.				SPS-63	LN-66		J		
Damage and Speed Breakdown:				LN-66	Remarks:		J/Can		
Damage Points: 0	54	107	161	193	214	330 76mm rds in gun magazine. 80 ready rds in drum. Can be fitted with P/		S(1)2 20mm/80 in wartime. Mk141 ROF 8 msls per turn (both mounts) at	
Surface Speed: 15	11	8	4	0	Sinks	same target. Aluminum superstructure. Treat as large radar target if travelling		at 24 knots or more. The rooster tail thrown up when the ship is foilborne	
Submerged Speed: 25	19	12	6	0	Sinks	increases the size of the radar echo.		Damage and Speed Breakdown:	
						Damage Points: 0	2	4	6
						Surface Speed: 48	36	24	12
								0	Sinks
<b>Old Cimarron</b>		<b>AO</b>		<b>Permit</b>		<b>SSN</b>			
Displacement: 8337	In Class: [2]	Damage Points: 182	In Service: 1944	Displacement: 4465 subm	In Class: 5		In Service: 1962		
Damage Modifier: 1.00	Speed: 18 kts	Propulsion: Steam	Crew: 105	Damage Points: 79	Speed: 20/30 kts		Crew: 143		
Weapons:	Total Mounts: 0			Damage Modifier: 1.00	Propulsion: Nuclear		Total Mounts: 2		
None				Weapons:	PB/SB(2)2 533mm TT w/24 see remarks		F, D		
Sensors:	J			Sensors:	BPS-15		J		
Raytheon 1650, SPS-10				TB-16 towed array, BQQ-5	Remarks:		M		
Remarks:					Normal weapons loadout 20 Mk48 torpedoes, 4 Harpoon. Originally <i>Thresher</i>		class; changed when <i>Thresher</i> lost at sea. Additional units <i>Dace</i> , <i>Pollack</i> , <i>Permit</i> , <i>Guardfish</i> , <i>Tinosa</i> , <i>Flasher</i> , <i>Greenling</i> , <i>Haddock</i> struck in 1989.		
Helo pad forward. Last 2 units of large class; laid up in National Defense Reserve Fleet.				Damage and Speed Breakdown:		Damage Points: 0	20	40	59
Damage and Speed Breakdown:				Damage Points: 20	15	10	5	0	Sinks
Damage Points: 0	46	91	136	164	182	Submerged Speed: 30	22	15	8
Surface Speed: 18	14	9	4	0	Sinks			0	Sinks
<b>Oriskany</b>		<b>CV</b>		<b>Powhatan</b>		<b>ATF</b>			
Displacement: 33000	In Class: [1]	Damage Points: 666	In Service: 1950-76	Displacement: 2000 std	In Class: 7		In Service: 1979		
Damage Modifier: 1.00	Speed: 31 kts	Propulsion: Steam	Crew: 3290	Damage Points: 57	Speed: 15 kts		Crew: 40		
Weapons:	Total Mounts: 7			Damage Modifier: 1.00	Propulsion: Diesel		Total Mounts: 0		
70 Aircraft B				Weapons:	None		Sensors:		
2 Catapults	—			SPS-53, Raytheon TM 1660	Remarks:		J		
3 Elevators	—				Can be fitted with P/S(1)2 Mk67 20mm/80 and 2 12.7mm mg.		Damage and Speed Breakdown:		
PB/SB(1)2 Mk24 127mm/38//2 Mk37	C			Damage Points: 0	14	28	43	51	57
Sensors:	J			Surface Speed: 15	11	8	4	0	Sinks
SPS-30, SPS-37, SPS-10									
Remarks:									
Can operate F-8, A-4, A-7. Armor: 76mm belt and hangar deck, 38mm flight and hangar deck. General rating is L. CHP rating for flight deck, hangar, engineering is L. Struck in 30 Sep 1976; in reserve.									
Damage and Speed Breakdown:									
Damage Points: 0	166	333	500	599	666				
Surface Speed: 31	23	16	8	0	Sinks				
<b>Paul Revere</b>		<b>APA</b>		<b>Sacramento</b>		<b>AOE</b>			
Displacement: 10709 std	In Class: [2]	Damage Points: 218	In Service: 1959-79	Displacement: 19200 ltshp	In Class: 4		In Service: 1964		
Damage Modifier: 1.00	Speed: 22 kts	Propulsion: Steam	Crew: ?	Damage Points: 327	Speed: 26 kts		Crew: 600		
Weapons:	Total Mounts: 0			Damage Modifier: 1.00	Propulsion: Steam		Total Mounts: 5		
None				Weapons:	P/S(R)2 Mk15 Phalanx w/5 bursts		C		
Sensors:	J/Intl			Aft Pad(1)2 CH-46 Sea Knight	F(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M/1 Mk91		B		
Nav radar							D		
Remarks:									
Mariner class. Hulls built in 1953-54. Ex-Diamond Mariner and Prairie Mariner. Carried 1657 troops. Helo deck aft.									

**Sensors:**

SPS-10, SPS-58, SPS-40, SPS-53

Mk23 TAS (AOE-3)

LN-66 (AOE-1 and 4)

**Remarks:**

Other units will be fitted with Mk23 TAS. NATO Sea Sparrow ROF 15 msis per turn. Fitted with ESM.

**Damage and Speed Breakdown:**

Damage Points:	0	82	164	245	294	327
Surface Speed:	26	20	13	6	0	Sinks

**Safeguard**

Displacement: 1600

Damage Points: 47

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

P/S(1)2 Mk67 20mm/80

**Sensors:**

SPS-55

**Damage and Speed Breakdown:**

Damage Points:	0	12	24	35	42	47
Surface Speed:	14	10	7	4	0	Sinks

**Samuel Gompers**

Displacement: 20500 fl

Damage Points: 365

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

P/S(1)2 Mk67 20mm/80

**Sensors:**

SPS-10

LN-66

**Remarks:**

Helo pad aft. Also carries 2 Mk19 40mm grenade launchers (see rules for repelling boarders).

**Damage and Speed Breakdown:**

Damage Points:	0	91	182	274	328	365
Surface Speed:	20	15	10	5	0	Sinks

**Seawolf**

Displacement: 9150 subm

Damage Points: 130

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(4)2 762mm TT w/50 see remarks

**Sensors:**

BPS-15

BSY-2, TB-12X towed array, TB-16D towed array

**Remarks:**

Can carry Mk48 torp, Harpoon, Tomahawk, Sea Lance (when available). Has anechoic coating. Uses second generation pump-jet propulsor vice propeller. Reduces passive sonar detection chance by 10%. Retains creep speed sonar modifiers up to 20 knots. Does not cavitate at any depth/speed combination. Quiet torpedo launch system prevents increased chance of detection due to launch. Can control 4 wire-guided torps at once. Normal TT loadout 34 Mk48 torp, 8 Tomahawk or Harpoon, 8 Sea Lance. Fitted with BQG-5 wide-aperture array passive ranging sonar (not a search sensor). Add 20% to Passive Fire Control solution chance if detected by this sonar.

**Damage and Speed Breakdown:**

Damage Points:	0	32	65	98	117	130
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	35	26	18	9	0	Sinks

**Skate**

Displacement: 2500

Damage Points: 46

Damage Modifier: 1.00

J

J

J/Can

ARS

In Class: 4

In Service: 1985

Speed: 14 kts

Crew: 87

Total Mounts: 2

C

J

AD

In Class: 6

In Service: 1967

Speed: 20 kts

Crew: 1430

Total Mounts: 2

C

J

J/Can

SSN

In Class: 0+1+2

In Service: 1995

Speed: 20/35 kts

Crew: 130

Total Mounts: 2

F, D, E

SSN

In Class: [4]

In Service: 1957-87

Speed: 15/20 kts

**Propulsion:** Nuclear**Weapons:**

PB&amp;SB(3)2 533mm TT w/20 Mk48 torp

PQ&amp;SQ(2)1 533mm TT (short) w/6 Mk37

**Sensors:**

BPS-12

BQS-4, BQR-2B

**Remarks:**

Seadragon decommed in 1983; Skate, 1985; Swordfish and Sargo, 1987. Number of weapons estimated.

**Damage and Speed Breakdown:**

Damage Points:	0	12	23	34	41	46
Surface Speed:	15	11	8	4	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

**Skipjack**

Displacement: 3075

Damage Points: 56

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB/SB(3)2 533mm TT w/24 Mk48 torp

**Sensors:**

BPS-12

BQS-4, BQR-21 DIMUS, BQR-25 towed array

**Remarks:**

Snook decommed in 1986; Scamp, 1988; Skipjack, Shark will be decommed in 1990-91. Sculpin lost at sea.

**Damage and Speed Breakdown:**

Damage Points:	0	14	28	42	50	56
Surface Speed:	16	12	8	4	0	Sinks
Submerged Speed:	30	22	15	8	0	Sinks

**Sotoyomo**

Displacement: 534

Damage Points: 20

Damage Modifier: 1.00

Propulsion: Diesel

**Weapons:**

None

**Sensors:**

None

**Remarks:**

In mothballs at Boston under Maritime Administration control. Original armament was F(1)1 76mm/50 and P/S(2)1 Mk24 20mm/67.

**Damage and Speed Breakdown:**

Damage Points:	0	5	10	15	18	20
Surface Speed:	13	10	6	3	0	Sinks

**Spruance**

Displacement: 5830 fl

Damage Points: 144

Damage Modifier: 0.75

Propulsion: COGAG

**Weapons:**

F(8)1 Mk16 w/24 ASROC

A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M/1 Mk91

PB/SB(3)2 Mk32 324mm TT w/7 Mk46 NEARTIP

PB&amp;SB(4)2 Mk141 w/4 Harpoon

Aft Pad(1)2 SH-2F LAMPS I or SH-60B LAMPS III

F/A(1)2 Mk45 127mm/54 w/600 rds//1 SPG-60

PB&amp;SB/P&amp;PQ(R)2 Mk15 Phalanx w/5 bursts

**Sensors:**

SPS-40, SPQ-9A, SPS-55, Mk23 TAS

SQS-53, SQR-19 towed array (DD-980)

**Remarks:**

DD-997 has SPS-49 vice SPS-40. Fitted with Prairie-Masker acoustic masking system (quieted). All units will be fitted with Mk23 TAS. DD-974 is already fitted with Tomahawk; rest of list will follow. 976, 979, 983, 989, 990 will get PB&SB(4)2 MK44 ABL w/4 Tomahawk per mount. Aluminum superstructure.

Crew: 121

Total Mounts: 3

F

F

J

M

SSN

In Class: 3

In Service: 1959

Speed: 16/30 kts

Crew: 114

Total Mounts: 2

F

J

M

ATA

In Class: [3]

In Service: 1944

Speed: 13 kts

Crew: 45

Total Mounts: 0

DD

In Class: 24

In Service: 1975

Speed: 33 kts

Crew: 324

Total Mounts: 12

E

D

F

D

B

C

C

J

M

**Armor:** CHP rating for sensors and Mk44 ABL is L. Ships maneuver as 50-139 damage point vessels for turns and acceleration. Magazines hold 24 RIM-7M and 18 Mk46 torpedo manual reloads. Mk141 ROF 8 msls per turn (both launchers) at same target. NATO SS ROF 15 msls per turn. USS *David R. Ray* has A(21)1 Mk43 launcher w/21 RIM-116A RAM. Mk43 ROF 2 per turn at same target. 31 units built; 7 units now equipped with VLS: DD-963, 991, 996, 964, 967, 971, 968. Listed as *Improved Spruance* class.

**Damage and Speed Breakdown:**

Damage Points:	0	36	72	108	130	144
Surface Speed:	33	25	16	8	0	Sinks

**Stalwart**

**Displacement:** 2262 fl  
**Damage Points:** 89  
**Damage Modifier:** 1.00  
**Propulsion:** CODLAG  
**Weapons:**

None

**Sensors:**

2 nav radars

UQQ-2 SURTASS

**Remarks:**

Electric drive can propel ship at 3 kts. Not subject to +15% surface ship detection modifier while on electric drive. Passive roll tank stabilization. UQQ-2 STASS is not a tactical sensor; relays data to SOSUS network.

**Damage and Speed Breakdown:**

Damage Points:	0	22	44	67	80	89
Surface Speed:	9	7	5	2	0	Sinks

**Sturgeon**

**Displacement:** 4780 subm  
**Damage Points:** 84  
**Damage Modifier:** 1.00  
**Propulsion:** Nuclear

**Weapons:**

PB&amp;SB(2)2 533mm TT w/24 see remarks

**Sensors:**

BQQ-2 or BQQ-5, TB-16B towed array

BPS-15

**Remarks:**

Originally fitted with BQQ-2 sonar suite. Replaced by BQQ-5. Normal weapons loadout 20 Mk48 torp, 4 Harpoon. *Cavalla*, *Archerfish*, *Silversides*, *Tunny*, *Mendell L. Rivers* fitted with hangar to support swimmer delivery. Can carry Tomahawk. Class is being retrofitted with anechoic coating. Additional units *Queenfish*, *Sea Devil* decommed in 1989.

**Damage and Speed Breakdown:**

Damage Points:	0	21	42	63	76	84
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

**Supply**

**Displacement:** 19700 lt  
**Damage Points:** 333  
**Damage Modifier:** 0.75  
**Propulsion:** COGAG

**Weapons:**

F(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M/2 Mk91

F/A(R)2 Mk15 Phalanx w/5 bursts

PB/SB(1)2 Mk88 25mm/87

Alt Pad(1)3 CH-46 Sea Knight

**Sensors:**

SPS-64, SPS-67, Mk23 TAS

**Remarks:**Improved *Sacramento* design. NATO SS ROF 15 msls per turn.**Damage and Speed Breakdown:**

Damage Points:	0	83	167	250	300	333
Surface Speed:	26	20	13	6	0	Sinks

**Suribachi****Displacement:** 10000 std**In Class:** 5**T-AGOS**

**In Class:** 13+5  
**In Service:** 1984  
**Speed:** 9 kts  
**Crew:** 30  
**Total Mounts:** 0

J/Intl

—

**SSN**

**In Class:** 35  
**In Service:** 1967  
**Speed:** 20/25 kts  
**Crew:** 121  
**Total Mounts:** 2  
 F, D

M

J

**AOE**

**In Class:** 0+2+(9)  
**In Service:** 1991  
**Speed:** 26 kts  
**Crew:** 625  
**Total Mounts:** 8

D

C

C

B

J

**AE**

**Damage Points:** 207  
**Damage Modifier:** 1.00  
**Propulsion:** Steam

**Weapons:**

F(2)2 Mk33 76mm/50

**Sensors:**

SPS-10

LN-66

**Remarks:**

Helo pad aft. 3 holds configured to carry msls. AE-21 and AE-22 maximum speed 18 knots.

**Damage and Speed Breakdown:**

Damage Points:	0	52	104	155	186	207
Surface Speed:	20	15	10	5	0	Sinks

**Tarawa**

**Displacement:** 25120 ltshp  
**Damage Points:** 535  
**Damage Modifier:** 1.00  
**Propulsion:** Steam

**Weapons:**

PQ/SQ(1)2 Mk45 127mm/54/1 SPG-60

PB(1)1 Mk45 127mm/54/1 SPG-60

P/S(1)6 Mk67 20mm/80

18 CH-46 Sea Knight

4 CH-53

4 AH-1S

F/A(8)2 Mk25 Sea Sparrow w/8 RIM-7M/2 Mk115

2 Elevator

**Sensors:**

SPS-10, SPS-40, SPS-52

LN-66

**Remarks:**

Can launch 12 CH-46 or 9 CH-53 from flight deck at once. Hangar can hold 30 CH-46 or 19 CH-53 or 25 Sea Harrier. Single SPG-60 controls all 127mm guns. *Saipan* has F/A(R)2 Mk15 Phalanx with 5 bursts per mount vice Mk25 Sea Sparrow. Others will be also fitted. Carries 6 LCM-6 or equivalent, 1 LCAC. Mk25 ROF 15 msls per turn (each mount).

**Damage and Speed Breakdown:**

Damage Points:	0	134	268	401	482	535
Surface Speed:	24	18	12	6	0	Sinks

**Thomaston**

**Displacement:** 6880 lt  
**Damage Points:** 214  
**Damage Modifier:** 1.00  
**Propulsion:** Steam

**Weapons:**

PB/P/S(2)3 Mk33 76mm/50

**Sensors:**

SPS-10, SPS-6C

LN-66

**Remarks:**

Can carry 21 LCM6 or 3 LCU or 18 LCM(6) or 9 LCM(8) or 50 LVT in well deck, 30 LVT on upper deck. LSD-32, 33, 34 have P/S(R)2 Mk15 Phalanx. Portable helicopter platform. Ice-strengthened bows. Originally had 8 76mm mounts, (1)12 20mm/80. 2 76mm removed in 1960s; 3 more in 1970s. 2 Mk56 and Mk63 GFCS removed in 1977. Class being decommed to reserve for wartime mobilization in 1989. One unit transferred to Brazil.

**Damage and Speed Breakdown:**

Damage Points:	0	53	107	160	192	214
Surface Speed:	22	16	11	6	0	Sinks

**Ticonderoga**

**Displacement:** 7260 lt  
**Damage Points:** 221  
**Damage Modifier:** 0.75  
**Propulsion:** COGAG

**Weapons:**

F(2)1 Mk26 w/44 see remarks//2 SPG-62

**In Service:** 1956  
**Speed:** 20 kts  
**Crew:** 346  
**Total Mounts:** 2

C

J

J/Can

**LHA**

**In Class:** 5  
**In Service:** 1976  
**Speed:** 24 kts  
**Crew:** 2835  
**Total Mounts:** 13

C

C

C

B

B

B

D

—

J

J/Can

**LSD**

**In Class:** [8]  
**In Service:** 1954-89  
**Speed:** 22 kts  
**Crew:** 343+318  
**Total Mounts:** 3

C

J

J/Can

**CG**

**In Class:** 13+14  
**In Service:** 1983  
**Speed:** 30 kts  
**Crew:** 395  
**Total Mounts:** 12

D

A(2)1 Mk26 w/44 SM2MR//2 SPG-62  
 F/A(1)2 Mk45 127mm/54 w/600 rds//1 SPY-1  
 P/S(R)2 Mk15 Phalanx w/5 bursts  
 PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP  
 Aft Pad(1)2 SH-2F LAMPS I  
 PB&SB(4)2 Mk141 w/4 Harpoon

**Sensors:**

2 SPY-1, SPS-49, SPS-55, SPQ-9A  
 SPS-64 (CG-49 & on)  
 LN-66 (CG-47, 48)  
 SQS-53

**Remarks:**

Has Prairie-Masker acoustic masking system (quieted). **Armor:** 25mm over msl magazines, Kevlar protection over vital spaces. CHP rating for Mk26/Mk41, Mk45 guns, sensors is L. Aluminum superstructure. Forward Mk26 magazine holds 24 SM2MR and 28 ASROC. CG-49 and on have SH-60B LAMPS III, RAST helo recovery system vice SH-2F. CG-52 and on have F&A(6)12 Mk41 VLS with 61 SM2MR vice Mk26 launchers. CG-54 and on will have SQR-19 added. CG-56 and on will carry VLASROC. Mk45 127mm directed by SPY-1 radar. Magazines hold 18 Mk46 torps for helo and Mk32 TT. Ships maneuver as 50-139 damage point vessels for turns and acceleration. Mk141 ROF 8 msls per turn (both launchers) at same target. Mk41 VLS ROF 30 msls per turn (both mounts). Mk26 ROF is 6 msls per turn (each mount). Aegis system is autonomous.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	55	111	166	199	221
<b>Surface Speed:</b>	30	22	15	8	0	Sinks

**Truxtun**

**Displacement:** 8600  
**Damage Points:** 248  
**Damage Modifier:** 1.00  
**Propulsion:** Nuclear  
**Weapons:**

F(1)1 Mk42 127mm/54 w/600 rounds//1 SPG-53  
 PB/SQ(4)2 Mk141 w/4 Harpoon  
 PB/SB(2)2 Mk32 324mm TT w/2 Mk46 NEARTIP  
 Aft Pad(1)1 SH-2G LAMPS I  
 A(2)1 Mk10 w/60 see remarks//2 SPG-55  
 PB&P/SB&S(R)2 Mk15 Phalanx w/5 bursts

**Sensors:**

SPS-49, SPS-48E, SPS-10, SPS-67  
 LN-66  
 SQS-26

**Remarks:**

Mk10 loadout is 40 SM2ER and 20 ASROC. Mk141 ROF 8 msls per turn (both launchers) at same target. Received NTU upgrade.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	62	124	186	223	248
<b>Surface Speed:</b>	30	22	15	8	0	Sinks

**Tulibee**

**Displacement:** 2607 subm  
**Damage Points:** 48  
**Damage Modifier:** 1.00  
**Propulsion:** Nuclear-Electric

**Weapons:**

PB&SB(2)2 533mm TT w/20 Mk48 torp

**Sensors:**

BQQ-2  
 BPS-12

**Remarks:**

Special nuclear-electric drive. -10% to all passive sonar detection chances. Mk48 loadout estimated. Decommed in 1988.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	12	24	36	43	48
<b>Surface Speed:</b>	15	11	8	4	0	Sinks
<b>Submerged Speed:</b>	20	15	10	5	0	Sinks

D  
 C  
 C  
 F  
 B  
 D

J  
 J  
 J/Can  
 M

**CGN**

**In Class:** 1

**In Service:** 1967

**Speed:** 30 kts

**Crew:** 534

**Total Mounts:** 9

C  
 D  
 F  
 B  
 D  
 C  
 J  
 J/Can  
 M

**SSN**

**In Class:** [1]

**In Service:** 1960-88

**Speed:** 15/20 kts

**Crew:** 56

**Total Mounts:** 2

F  
 M  
 J

**USCG Bear**

**Displacement:** 1200 ltshp

**Damage Points:** 49

**Damage Modifier:** 1.00

**Propulsion:** Diesel

**Weapons:**

F(1)1 Mk75 76mm/62//1 Mk92

**Sensors:**

2 SPS-64

ESM

**Remarks:**

Provision for van-mounted SQR-19 towed array to be fitted on fantail in wartime. Space and weight reserved for Mk15 Phalanx and (4)2 Mk141 Harpoon launchers. Provision for fin stabilizers. Reportedly very uncomfortable in seaway.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	12	24	37	44	49
<b>Surface Speed:</b>	19	14	10	5	0	Sinks

**Virginia**

**Displacement:** 8623 lt

**Damage Points:** 186

**Damage Modifier:** 0.75

**Propulsion:** Nuclear

**Weapons:**

F/A(1)2 Mk45 127mm/54 w/600 rds//1 SPG-60

PB/SB(3)2 Mk32 324mm TT w/3 Mk46 NEARTIP

PB&SB(4)2 Mk44 ABL w/4 Tomahawk

P/S(R)2 Mk15 Phalanx w/5 bursts

PBPO/SB&SQ(4)2 Mk141 w/4 Harpoon

F/A(2)2 Mk26 w/34 see remarks //2 SPG-51

**Sensors:**

SPS-40, SPS-48, SPQ-9A, SPS-55

LN-66 (CGN-39, 41)

SQS-53

**Remarks:**

Helo pad aft. Previous elevator and hangar blocked by addition of Mk44 ABL. Magazines hold 18 Mk46 torpedoes for helo and Mk32 TT. Aluminum superstructure. SPG-60 can direct Mk45 guns or illuminate third target for SM2MR msls. Forward Mk26 loadout is SM2MR and ASROC; aft launcher is SM2MR only. Mk141 ROF 8 msls per turn (both launchers) at same target. Mk44 ABL ROF 8 msls per turn (both launchers) at same target. Mk26 ROF is 6 msls per turn (each mount). **Armor:** All units fitted with Kevlar by 1986; CHP rating for sensors, Mk44 Tomahawk ABL is L.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	46	93	140	167	186
<b>Surface Speed:</b>	32	24	16	8	0	Sinks

**Wasp**

**Displacement:** 28233 lt

**Damage Points:** 587

**Damage Modifier:** 1.00

**Propulsion:** Steam

**Weapons:**

F/S&SQ/P&PQ(R)3 Mk15 Phalanx w/5 bursts

F/S&SQ(8)2 Mk29 NATO Sea Sparrow w/8 RIM-7M//2 Mk91

42 Helicopters

2 Elevators

**Sensors:**

SPS-49, SPS-67, 2 Mk23 TAS, SPS-64

SPS-52 (LHD-1), SPS-48E (LHD-2 and on)

**Remarks:**

Can carry 42 CH-46 Sea Knight. Typical load as amphibious ship 30 cargo helicopters and 6-8 AV-8B Harrier IIs. As sea control ship can carry 20 AV-8B, 4-8 SH-60B. Can launch 9 large helos at once. **Armor:** NBC citadel, HY100 flight deck. CHP rating for flight deck is L. NATO SS ROF 15 msls per turn (each mount).

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	147	294	440	528	587
<b>Surface Speed:</b>	23	17	12	6	0	Sinks

**MEC**

**In Class:** 8+5

**In Service:** 1983

**Speed:** 19 kts

**Crew:** 100

**Total Mounts:** 1

C

J

—

**CGN**

**In Class:** 4

**In Service:** 1976

**Speed:** 32 kts

**Crew:** 530

**Total Mounts:** 12

C

F

D

C

D

D

D

J

J/Can

M

**LHD**

**In Class:** 1+3+1

**In Service:** 1989

**Speed:** 23 kts

**Crew:** 2955

**Total Mounts:** 7

C

D

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J

J

**Whidbey Island**

Displacement: 11854 std  
 Damage Points: 313  
 Damage Modifier: 1.00  
 Propulsion: Diesel  
 Weapons:  
 P/S(R)2 Mk15 Phalanx w/5 bursts  
 P/S(1)2 Mk67 20mm/80  
 4 LCAC  
 1 LCM(6), 2 LCPL MkII, 1 LCVP  
 Sensors:  
 SPS-67, SPS-49  
 LN-66

**Remarks:**

Well can hold 4 LCAC or 21 LCM(6) or 3 LCU or 64 LVTP. Aft pad has spots for two large helicopters. No hangar. Later units will have Mk88 25mm Bushmaster vice Mk67 20mm.

**Damage and Speed Breakdown:**

Damage Points:	0	78	157	235	282	313
Surface Speed:	22	16	11	6	0	Sinks

**Wichita**

Displacement: 13000 ltshp  
 Damage Points: 250  
 Damage Modifier: 1.00  
 Propulsion: Steam  
 Weapons:  
 Aft Pad(1)2 CH-46 Sea Knight  
 P&PB/S&S(R)2 Mk15 Phalanx w/5 bursts  
 A(8)1 Mk29 NATO Sea Sparrow w/8 RIM-7M/1 Mk91  
 Sensors:  
 SPS-10, SPS-58 (AOR-3,7), Mk23 TAS  
 LN-66

**Remarks:**

AOR-6 has P/S(1)4 Mk67 20mm/80. AOR-1 does not have NATO Sea Sparrow. Mk29 NATO Sea Sparrow ROF 15 msls per turn.

**Damage and Speed Breakdown:**

Damage Points:	0	62	125	188	225	250
Surface Speed:	20	15	10	5	0	Sinks

**Union of Soviet Socialist Republics (USSR)****Akula**

Displacement: 10000 subm  
 Damage Points: 138  
 Damage Modifier: 1.00  
 Propulsion: Nuclear  
 Weapons:  
 PB&SB(2/2)2 533mm/650mm TT w/22 see remarks  
 Sensors:  
 Shark Gill, Shark Fin, LF Fin towed array  
 Snoop Pair

**Remarks:**  
 Has anechoic coating. Number of weapons estimated. Normal loadout 12 ET-80A, 2 Type 53-68 nuclear, 2 SS-N-15, 2 SS-N-16, 4 Type 65. Can also carry SS-N-21. Type 65 and SS-N-16 fired from 650mm tubes. Very quiet. Does not incur +15% passive sonar modifier for Soviet construction. May have submerged-launch SAM. Treat as SA-N-8 Gremlin launcher on a periscope mast.

**Damage and Speed Breakdown:**

Damage Points:	0	34	69	104	124	138
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	35	26	18	9	0	Sinks

**Alfa**

Displacement: 3700 subm  
 Damage Points: 79

**LSD**

In Class: 5+3  
 In Service: 1985  
 Speed: 22 kts  
 Crew: 412  
 Total Mounts: 12  
 C  
 —  
 —  
 J  
 J/Can

Damage Modifier: 1.20

Propulsion: Nuclear

Weapons:

PB&SB(3)2 533mm TT w/12 see remarks

Sensors:

Shark Teeth, Shark Fin

Snoop Head

Remarks:

Titanium hull reduces MAD range by half. Has Clusterguard anechoic coating. Normal TT loadout is 8 ET-80A torp, 2 Type 53-68 nuclear, 2 SS-N-15. Double hull construction. Can dive to VDeep depth; will not cavitate at VDeep depth.

**Damage and Speed Breakdown:**

Damage Points:	0	20	40	59	71	79
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	42	32	21	10	0	Sinks

**Alligator**

Displacement: 3400 std

Damage Points: 110

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

PB&SB(2)1 AK-257 57mm/80

Sensors:

Spin Trough, Don 2

Remarks:

Types 3 and 4 (8 units) have bombardment rocket launcher forward. Type 4 (2 units) has A(2)2 2M-8 25mm/60. Some units have (4)3 SA-N-5.

**Damage and Speed Breakdown:**

Damage Points:	0	28	55	82	99	110
Surface Speed:	18	14	9	4	0	Sinks

**Azov**

Displacement: 8200 std

Damage Points: 216

Damage Modifier: 1.00

Propulsion: COGAG

Weapons:

F&A(6)1 SA-N-6 w/48 Grumble//1 Top Dome

F(2)1 SA-N-3B w/22 Goblet//1 Head Light

P/S(2)2 SA-N-4 w/20 Gecko//2 Pop Group

P/S(2)2 76mm/60//2 Owl Screech

F(16)2 RBU 6000 w/5 salvoes

Aft Pad(1)1 Ka-25 Hormone A

PB/SB(4)2 SS-N-14 w/4 Silex//1 Head Light

P/S(R)4 AK-630 30mm w/15 bursts//2 Bass Tilt

Sensors:

2 Don Kay, Sheet Curve, Top Sail, Head Net C

Bull Nose, Mare Tail

Remarks:

Kara class unit converted to serve as test bed for SA-N-6 system. Fitted with stabilizers. The single Head Light MFC radar can control either a SA-N-3 or SS-N-14 msl. SA-N-6 ROF 12 msls per turn.

**Damage and Speed Breakdown:**

Damage Points:	0	54	108	162	194	216
Surface Speed:	32	24	16	8	0	Sinks

**Baku**

Displacement: 36000 std

Damage Points: 644

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

12/1 Yak-38 Forger A/B

14 Ka-27 Helix A

3 Ka-25 Hormone B

F(10)2 RBU ? w/5 salvoes

2 Elevator

F&A(2)12 SA-N-9 w/8 missiles //4 Cross Sword

Speed: 20/42 kts

Crew: 45

Total Mounts: 2

F

M

J

**LST**

In Class: 14

In Service: 1964

Speed: 18 kts

Crew: 100

Total Mounts: 1

C

J

**CG**

In Class: 1

In Service: 1973

Speed: 32 kts

Crew: 525

Total Mounts: 15

D

D

D

C

E

B

E

C

J

M

**CVHG**

In Class: 1

In Service: 1988

Speed: 32 kts

Crew: 1800

Total Mounts: 35

B

B

B

E

—

D

**AOR**

In Class: 7  
 In Service: 1969  
 Speed: 20 kts  
 Crew: 450  
 Total Mounts: 6  
 B  
 C  
 D

J/Can

**SSN**

In Class: 4+1  
 In Service: 1984  
 Speed: 20/35 kts  
 Crew: ???  
 Total Mounts: 2  
 F

M

J

**SSN**

In Class: 6  
 In Service: 1972



F(1)2 Auto 100mm/70 //2 Kite Screech  
PB/SB/PQ/SQ(R)8 AK-630 30mm w/15 bursts//4 Bass Tilt  
PB&SB(2)6 SS-N-12 w/2 Sandbox //1 Trap Door

## Sensors:

Top Sail, Plate Steer  
3 Palm Frond, Sky Watch  
Moose Jaw, Mare Tail

## Remarks:

Fourth unit of *Kiev* class; heavily modified island. Flight deck angled 4.5° to port. Fitted with stabilizers. Can launch 7 large helos at once. Forward elevator can lift 2 Forgers or 1 helo. Aft can lift 1 Forger. Each Cross Sword director can control 4 msls at once—2 each at two separate targets. SA-N-9 ROF is 16 msls per turn total for all mounts. SS-N-12 ROF 6 msls per turn (all mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	161	322	483	580	644
Surface Speed:	32	24	16	8	0	Sinks

## Berezina

Displacement: 36000 ft

Damage Points: 483

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

F(2)2 AK-257 57mm/80//1 Muff Cob  
P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt  
F(6)2 RBU 1000

Aft Pad(1)2 Ka-25 Hormone C

A(2)1 SA-N-4 w/20 Gecko//1 Pop Group

## Sensors:

Don 2, 2 Don Kay, Strut Curve  
Bull Horn

## Remarks:

Can refuel three ships at once or RAS two.

## Damage and Speed Breakdown:

Damage Points:	0	121	242	362	435	483
Surface Speed:	22	16	11	6	0	Sinks

## Boris Chilikin

Displacement: 8700 ltshp

Damage Points: 169

Damage Modifier: 1.00

Propulsion: Diesel

## Weapons:

None

## Sensors:

2 Don Kay

## Remarks:

All ships have had their armament removed. *Ivan Bubnov* and *Genrich Gasanov* completed in merchant colors. Can refuel astern and to both sides, with provisions and stores to starboard.

## Damage and Speed Breakdown:

Damage Points:	0	42	84	127	152	169
Surface Speed:	17	13	8	4	0	Sinks

## Charlie I

Displacement: 4500 subm

Damage Points: 80

Damage Modifier: 1.00

Propulsion: Nuclear

## Weapons:

PB&amp;SB(3)2 533mm TT w/12 see remarks

PB&amp;SB(8)1 SS-N-7 w/8 Starbright

## Sensors:

Shark Teeth, Shark Fin

Snoop Tray

## Remarks:

SS-N-7 can be launched submerged. Launch depth 20-40m (periscope/snorkeling depth); max launch speed 8-12 kts. Normal TT loadout is 4 SET-65 torp, 4 SAET-60, 2 Type 53-68, 2 SS-N-15. Normal SS-N-7 loadout is 4

conventional and 4 nuclear msls. One unit lost in June 1983 off Petropavlosk in Pacific. Salvaged, but not returned to service. Additional unit leased to India. SS-N-7 ROF 4 per turn at same target. Soviet sub. Passive sonar detection modifier +15%.

## Damage and Speed Breakdown:

Damage Points:	0	20	40	60	72	80
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	27	20	14	7	0	Sinks

## Charlie II

Displacement: 5400 subm

Damage Points: 92

Damage Modifier: 1.00

Propulsion: Nuclear

## Weapons:

PB&amp;SB(3)2 533mm TT w/12 see remarks

PB&amp;SB(8)1 SS-N-9 w/8 Siren

## Sensors:

Shark Teeth, Shark Fin

Snoop Tray

## Remarks:

SS-N-9 can be launched submerged. Launch depth 20-40m (periscope/snorkeling depth); max launch speed 8-12 kts. Normal TT loadout is 4 SET-65 torp, 4 SAET-60, 2 Type 53-68, 2 SS-N-15. Normal SS-N-9 loadout is 4 conventional and 4 nuclear msls. SS-N-9 ROF 4 msls per turn at same target. Soviet sub. Passive sonar detection modifier +15%.

## Damage and Speed Breakdown:

Damage Points:	0	23	46	69	83	92
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	24	18	12	6	0	Sinks

## Delta I

Displacement: 11750 subm

Damage Points: 156

Damage Modifier: 1.00

Propulsion: Nuclear

## Weapons:

PB&amp;SB(3)2 533mm TT w/18 see remarks

(12)1 SS-N-8 w/12 Sawfly

## Sensors:

Snoop Tray

Shark Teeth, Shark Fin

## Remarks:

Has anechoic coating. Normal TT loadout is 6 SET-65 torp, 6 SAET-60, 2 Type 53-68 nuclear, 4 SS-N-15.

## Damage and Speed Breakdown:

Damage Points:	0	39	78	117	140	156
Surface Speed:	18	14	9	4	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

## Delta II

Displacement: 12750 subm

Damage Points: 164

Damage Modifier: 1.00

Propulsion: Nuclear

## Weapons:

PB&amp;SB(3)2 533mm TT w/18 see remarks

(16)1 SS-N-8 w/16 Sawfly

## Sensors:

Snoop Tray

Shark Teeth, Shark Fin

## Remarks:

Has anechoic coating. Normal TT loadout is 6 SET-65 torp, 6 SAET-60, 2 Type 53-68 nuclear, 4 SS-N-15.

## Damage and Speed Breakdown:

Damage Points:	0	41	82	123	148	164
Surface Speed:	18	14	9	4	0	Sinks
Submerged Speed:	24	18	12	6	0	Sinks

## SSGN

In Class: 6

In Service: 1973

Speed: 20/24 kts

Crew: 90

Total Mounts: 3

F, E

D

M

J

## SSBN

In Class: 18

In Service: 1972

Speed: 18/25 kts

Crew: 120

Total Mounts: 3

F, E

—

J

M

## SSBN

In Class: 4

In Service: 1974

Speed: 18/24 kts

Crew: 120

Total Mounts: 3

F, E

—

J

M

**Delta III**

Displacement: 13250 subm  
 Damage Points: 168  
 Damage Modifier: 1.00  
 Propulsion: Nuclear

Weapons:  
 PB&SB(3)2 533mm TT w/18 See remarks  
 (16)1 SS-N-18 w/16 Stingray

**Sensors:**

Snoop Tray  
 Shark Teeth, Shark Fin

**Remarks:**

Has anechoic coating. Normal TT loadout is 6 SET-65 torp, 6 SAET-60, 2 Type 53-68 nuclear, 4 SS-N-15.

**Damage and Speed Breakdown:**

Damage Points:	0	42	84	126	152	168
Surface Speed:	18	14	9	4	0	Sinks
Submerged Speed:	24	18	12	6	0	Sinks

**SSBN**

In Class: 14  
 In Service: 1975  
 Speed: 18/24 kts  
 Crew: 120  
 Total Mounts: 3

F, E

—

J

M

**Sensors:**

Hercules, Feniks

M

Snoop Tray

J

**Remarks:**

Normal forward TT loadout is 14 Type 53-65 torp, 4 Type 53-56N nuclear.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	70	84	93
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	25	19	12	6	0	Sinks

**Echo II**

Displacement: 6000 subm

In Class: 18

Damage Points: 98

In Service: 1960

Damage Modifier: 1.00

Speed: 20/23 kts

Propulsion: Nuclear

Crew: 100

**Weapons:**

Total Mounts: 7

PB&amp;SB(3)2 533mm TT w/18 see remarks

F

PQ&amp;SQ(2)1 406mm TT w/4 E40-75A torp

F

PB&amp;SB(2)4 SS-N-3A w/2 Shaddock/1 Front Door/Front Piece

D

**Sensors:**

Hercules, Feniks

M

Snoop Slab

J

**Remarks:**

Must surface to launch SS-N-3A; takes 25 minutes to prepare for firing. Maximum speed at launch 15 kts; maximum sea state, 5. Normal TT loadout forward is 10 Type 53-65, 4 SET-65, 4 Type 53-68. Normal SS-N-3A loadout is 4 conventional and 4 nuclear. At least 10 units have been converted to Echo II mod configuration. One additional unit has been taken out of service for other uses, possibly command or swimmer delivery. One unit may be named *Dekabrit*. SS-N-3A ROF 2 msls per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

Damage Points:	0	24	49	74	88	98
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	23	17	12	6	0	Sinks

**Echo II mod**

Displacement: 6000 subm

In Class: 10

Damage Points: 98

In Service: 1970?

Damage Modifier: 1.00

Speed: 20/23 kts

Propulsion: Nuclear

Crew: 100

**Weapons:**

Total Mounts: 7

PB&amp;SB(3)2 533mm TT w/18 see remarks

F

PQ&amp;SQ(2)1 406mm TT w/4 E40-75A torp

F

PQ&amp;SQ(2)4 SS-N-12 w/2 Sandbox

D

**Sensors:**

Shark Teeth, Shark Fin

M

Snoop Tray

J

**Remarks:**

Converted *Echo II*. Must surface to launch SS-N-12; takes 10 minutes to prepare for firing. Maximum speed at launch 15 kts; maximum sea state, 5. Normal TT loadout forward is 10 Type 53-65 torp, 4 SET-65, 4 Type 53-56N nuclear. Normal SS-N-12 loadout is 4 conventional and 4 nuclear. SS-N-12 ROF 4 msls per turn (all mounts) at same target. May have anechoic coating.

**Damage and Speed Breakdown:**

Damage Points:	0	24	49	74	88	98
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	23	17	12	6	0	Sinks

**Foxtrot**

Displacement: 2400 subm

In Class: 45

Damage Points: 44

In Service: 1958

Damage Modifier: 1.00

Speed: 16/15 kts

Propulsion: Diesel-Electric

Crew: 78

**Weapons:**

Total Mounts: 4

PB&amp;SB(3)2 533mm TT

F

PQ&amp;SQ(2)2 533mm TT

F

**Sensors:**

Feniks, Hercules

M

Snoop Tray

J

**Delta IV**

Displacement: 13550 subm

Damage Points: 171

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

(16)1 SS-N-23 w/16 Skiff

PB&amp;SB(3)2 533mm TT w/18 see remarks

**Sensors:**

Shark Gill, Shark Fin, LF Fin towed array

Snoop Tray

**Remarks:**

Fifth unit launched early in 1987. Normal TT loadout is 12 ET-80A torp, 2 Type 53-68 nuclear, 4 SS-N-15. Sail modified to allow under-ice operations. Very quiet. Not subject to +15% passive sonar modifier for Soviet construction.

**Damage and Speed Breakdown:**

Damage Points:	0	43	85	128	154	171
Surface Speed:	18	14	9	4	0	Sinks
Submerged Speed:	24	18	12	6	0	Sinks

**SSBN**

In Class: 4+1  
 In Service: 1985  
 Speed: 18/24 kts  
 Crew: 120  
 Total Mounts: 3

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F, E

M

J

**Dzerzhinsky**

Displacement: 12900

Damage Points: 298

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

2F/1A(3)3 B-38 152mm/57/1 Top Bow

P/S(2)6 100mm/70/2 Sun Visor

P/S(2)8 37mm/63

A(2)1 SA-N-2 w/20 Guideline/1 Fan Song E

**Sensors:**

Low Seive, Big Net, Slim Net, Neptune

**Remarks:**

100mm/50 mount has Egg Cup rangefinding radar for use in local control. Modifier for local control is -5%. Armor: 100-125mm belt tapering to 40-50mm for and aft, 125mm turrets, 150mm conning tower, 25-50mm and 50-75mm deck. General rating is M. CHP rating for 152mm turrets, engineering, and bridge is M. SA-N-2 system a failure. In reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	74	149	224	268	298
Surface Speed:	35	26	18	9	0	Sinks

**CG**

In Class: [1]  
 In Service: 1961  
 Speed: 35 kts  
 Crew: 1000  
 Total Mounts: 18

C

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C

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J

**Echo I**

Displacement: 5500 subm

Damage Points: 93

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

PQ&amp;SQ(2)2 406mm TT w/4 E40-75A torp

**SSN**

In Class: 5  
 In Service: 1960  
 Speed: 20/25 kts  
 Crew: 92  
 Total Mounts: 4

F

F

## Remarks:

Refined *Zulu* class. Total torp load 22 weapons. May have 406mm tubes aft, but not clear if smaller-diameter weapons were in service when boat was designed. 62 built; approx. 4 lost. Two units lost in accidents (or scrapped following them), one in collision w/Italian liner *Angelino Lauro* on 10 Jan 1970. Lost approx. 8m off bow. Additional 10 units in reserve. Normal forward 533mm TT loadout is 10 Type 53-65 torp, 4 SET-65, 4 Type 53-56N.

## Damage and Speed Breakdown:

Damage Points:	0	11	22	33	40	44
Surface Speed:	16	12	8	4	0	Sinks
Submerged Speed:	15	11	8	4	0	Sinks

## Grisha I

Displacement: 950

Damage Points: 37

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

A(2)1 AK-257 57mm/80//1 Muff Cob

P/S(2)2 533mm TT w/2 SET-65 torp

F(12)2 RBU 6000 w/5 salvoes

2 DC Rail w/6 B-1 DC

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group

Sensors:

Strut Curve, Don 2

Bull Nose, Elk Tail

## Damage and Speed Breakdown:

Damage Points:	0	9	18	28	33	37
Surface Speed:	33	25	16	8	0	Sinks

## Grisha II

Displacement: 950

Damage Points: 37

Damage Modifier: 1.00

Propulsion: CODAG

Weapons:

F/A(2)2 AK-257 57mm/80//1 Muff Cob

F(12)2 RBU 6000 w/5 salvoes

P/S(2)2 533mm TT w/2 SET-65 torp

2 DC Rail w/6 B-1 DC

Sensors:

Strut Curve, Don 2

Bull Nose, Elk Tail

Remarks:

KGB manned.

## Damage and Speed Breakdown:

Damage Points:	0	9	18	28	33	37
Surface Speed:	33	25	16	8	0	Sinks

## Grisha III/V

Displacement: 950

Damage Points: 37

Damage Modifier: 1.00

Propulsion: CODAG

Weapons:

A(2)1 AK-257 57mm/80//1 Bass Tilt

A(R)1 AK-630 30mm w/15 bursts//1 Bass Tilt

F(12)2 RBU 6000 w/5 salvoes

P/S(2)2 533mm TT w/2 SET-65 torp

2 DC Rail w/6 B-1 DC

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group

Sensors:

Strut Curve, Don 2

Bull Nose, Elk Tail

Remarks:

Single Bass Tilt directs 57mm and AK-630 30mm at same target. *Grisha V* has A(1)1 Auto 76mm/60 vice 57mm, Strut Pair vice Strut Curve, starboard RBU 6000 removed.

## Damage and Speed Breakdown:

Damage Points:	0	9	18	28	33	37
Surface Speed:	33	25	16	8	0	Sinks

## Ivan Rogov

Displacement: 11000 std

Damage Points: 266

Damage Modifier: 1.00

Propulsion: COGOG

Weapons:

F(2)1 76mm/60//1 Owl Screech

P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt

F(40)1 Rocket Launcher w/40 BM-21 rockets

Mid, Aft Pads(2)4 Ka-29 Helix B

3 Lebed landing craft

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group

Sensors:

Head Net C, 2 Don Kay

Remarks:

Can carry a naval infantry battalion including 30 APCs, 10 tanks, and trucks. Helo pads fore and aft of central hangar. BM-21 rockets for use against ground targets only. *Alexander Nikolayev* has A(4)1 SA-N-5 Grail, Palm Frond vice 2 Don Kay.

## Damage and Speed Breakdown:

Damage Points:	0	66	133	200	239	266
Surface Speed:	23	17	12	6	0	Sinks

## Juliatt

Displacement: 3750 subm

Damage Points: 67

Damage Modifier: 1.00

Propulsion: Diesel-Electric

Weapons:

PB&amp;SB(3)2 533mm TT w/14 see remarks

PQ&amp;SQ(2)1 406mm TT w/4 E40-75A torp

PB&amp;SB(1)4 SS-N-3A w/1 Shaddock //1 Front Door/Front Piece

Sensors:

Hercules, Feniks

Snoop Slab

Remarks:

Some units have 4 406mm TT aft vice 2. Must surface to launch SS-N-3A; takes 25 min to prepare for launch. Maximum speed at launch 15 kts, maximum sea state, 5. Normal 533mm TT loadout forward is 6 Type 53-65 torp, 4 SET-65, 4 Type 53-56N. Normal SS-N-3A loadout 3 conventional, 1 nuclear. 2 units may have been refitted with SS-N-12 as *Echo II mod* class. SS-N-3A ROF 2 msls per turn (all mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	17	34	50	60	67
Surface Speed:	16	12	8	4	0	Sinks
Submerged Speed:	12	9	6	3	0	Sinks

## Kalinin

Displacement: 22000 std

Damage Points: 434

Damage Modifier: 1.00

Propulsion: CONAS

Weapons:

F&amp;A(12)1 SA-N-6 w/96 Grumble //2 op Dome

PB&amp;SB(20)1 SS-N- w/20 Shipwreck

PB&amp;P/P/PQ/SB&amp;S/S/S&amp;SQ 6 New CIWS (see remarks)

F(10)1 RBU ?

P/S(6)2 RBU 1000 w/5 salvoes

P/S(2)2 SA-N-4 w/20 Gecko//2 Pop Group

A(2)1 Auto 130mm/70//1 Kite Screech

P/S(4)2 533mm TT w/4 SET-65

Aft Pad(1)3 Ka-27 Helix A, 2 Ka-25 Hormone B

F&amp;A(1)16 SA-N-9 VLS/8 msls //2 Cross Swords

1 Elevator

Sensors:

Top Plate, 3 Palm Frond, Top Pair

## LPD

In Class: 2+1

In Service: 1978

Speed: 23 kts

Crew: 400

Total Mounts: 14

C

C

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B

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D

J

## SSG

In Class: 16

In Service: 1961

Speed: 16/12 kts

Crew: 79

Total Mounts: 7

F

F

D

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J

## BCGN

In Class: 1+1

In Service: 1988

Speed: 32 kts

Crew: 840

Total Mounts: 38

D

D

C, D

E

E

D

C

F

B

D

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J

## Horse Jaw, Horse Tail, Bull Horn

M

## Remarks:

New CIWS is single mount with 230mm rotary cannon and eight short-range SAM tubes; has its own radar. Top Dome MFCS can direct at least 2 and possibly 6 msls at once at different targets. Four is median value. Each Cross Sword director is estimated to control 4 msls at once—2 each at two separate targets. SA-N-9 ROF is 8 msls per turn total for all mounts. SA-N-6 ROF 12 msls per turn. SS-N- ROF 4 msls per turn (all mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	109	217	326	391	434
Surface Speed:	32	24	16	8	0	Sinks

## Kanin

DDG

Displacement: 3700

Damage Points: 119

Damage Modifier: 1.00

Propulsion: Steam

## Weapons:

F(4)2 57mm/70//1 Hawk Screech  
F/P/S(12)3 RBU 6000 w/5 salvoes  
P/S(5)2 533mm TT w/5 SET-65 torp  
P/S(2)4 AK-230 30mm/65//2 Drum Tilt  
A(2)1 SA-N-1 w/22 Goa//1 Peel Group

## Sensors:

Head Net C, 2 Don Kay

Hercules

## Remarks:

Helo pad aft. Eight ships converted from *Krupny* class in 1969-72. Four units struck in 1987-88; two others in reserve.

## Damage and Speed Breakdown:

Damage Points:	0	30	60	89	107	119
Surface Speed:	34	26	17	8	0	Sinks

## Kara

CG

Displacement: 8200

Damage Points: 216

Damage Modifier: 1.00

Propulsion: COGOG

## Weapons:

F/A(2)2 SA-N-3B w/22 Goblet //2 Head Light  
P/S(2)2 SA-N-4 w/20 Gecko//2 Pop Group  
P/S(2)2 76mm/60//2 Owl Screech  
P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt  
P/S(5)2 533mm TT w/5 SET-65 torp  
P/S(6)2 RBU 1000 w/5 salvoes  
F(16)2 RBU 6000 w/5 salvoes  
Aft Pad(1)1 Ka-25 Hormone A  
PB&SB(4)2 SS-N-14 w/4 Silex //1 Head Light

## Sensors:

Sheet Curve, Top Sail, Don 2

Head Net C, 2 Don Kay

Bull Nose, Mare Tail

## Remarks:

Trials ship Azov described separately. Fitted with stabilizers. Forward Head Light MFCS can control either SS-N-14 or SA-N-3 msl. *Petropavlosk* does not have RBU 1000. *Nikolayev* has 2 Palm Frond vice 2 Don Kay. *Kerch* fitted with new air search radar in place of Top Sail. Type or performance unknown.

## Damage and Speed Breakdown:

Damage Points:	0	54	108	162	194	216
Surface Speed:	32	24	16	8	0	Sinks

## Kashin

DDG

Displacement: 3750

Damage Points: 121

Damage Modifier: 1.00

Propulsion: COGOG

## Weapons:

F/A(2)2 76mm/60//2 Owl Screech  
F(12)2 RBU 6000 w/5 salvoes  
P/S(6)2 RBU 1000 w/5 salvoes

In Class: 11

In Service: 1963

Speed: 35 kts

Crew: 280

Total Mounts: 9

C

E

E

P&amp;S(5)1 533mm TT w/5 SET-65 torp

F/A(2)2 SA-N-1 w/22 Goa//2 Peel Group

## Sensors:

Big Net, 2 Don Kay or Don 2, Head Net C

Hercules

## Remarks:

Helo pad aft. 2 units have 2 Head Net C vice Head Net and Big Net. Additional unit *Provomyy* described separately. Additional unit *Otvazhnyy* was lost in Black Sea on 31 Aug 1974 after explosion and fire. Additional unit *Ognevoy* in reserve in 1989.

## Damage and Speed Breakdown:

Damage Points:	0	30	60	91	109	121
Surface Speed:	35	26	18	9	0	Sinks

## Kiev

CVHG

Displacement: 36000 std

Damage Points: 644

Damage Modifier: 1.00

Propulsion: Steam

## Weapons:

12/1 Yak-38 Forger A/B  
14 Ka-27 Helix A  
3 Ka-25 Hormone B  
F/A(2)2 76mm/60//2 Owl Screech  
PB/SB/PQ/SQ(R)8 AK-630 30mm w/15 bursts //4 Bass Tilt  
PB&SB(2)4 SS-N-12 w/6 Sandbox //1 Trap Door  
F/A(2)2 SA-N-3B w/36 Goblet //2 Head Light  
F/A(2)2 SA-N-4 w/20 Gecko//2 Pop Group  
F(2)1 SUW-N-1 w/24 FRAS-1  
F(12)2 RBU 6000 w/5 salvoes  
P/S(5)2 533mm TT w/5 SET-65

2 elevators

## Sensors:

Top Sail, Top Steer, Don Kay, 2 Don 2

Moose Jaw, Mare Tail

## Remarks:

Flight deck angled 4.5° to port. Fitted with stabilizers. Can launch 7 large helos at once. Forward elevator can lift 2 Forgers or 1 helo. Aft can lift 1 Forger. *Novorossiysk* has F&A(1)12 SA-N-9 with 8 msls per mount and 2 Cross Sword MFCS vice SA-N-4. Each Cross Sword director can control 4 msls at once, 2 each at two separate targets. SA-N-9 ROF is 8 msls per turn total for all mounts. Also has 3 Palm Frond vice Don series radars. SS-N-12 ROF 4 msls per turn (all mounts) at same target. Fourth Unit *Baku* is listed separately.

## Damage and Speed Breakdown:

Damage Points:	0	161	322	483	580	644
Surface Speed:	32	24	16	8	0	Sinks

## Kilo

SS

Displacement: 2900 subm

Damage Points: 53

Damage Modifier: 1.00

Propulsion: Diesel-Electric

## Weapons:

PB&amp;SB(3)2 533mm TT w/12 torpedoes

## Sensors:

Snoop Tray

Shark Gill (Passive only), Shark Fin

## Remarks:

Has anechoic coating. May be fitted with fin-mounted SAM. Treat as SA-N-8 Gremlin on a periscope mast. Normal TT loadout 10 ET-80A, 2 Type 53-68 nuclear.

## Damage and Speed Breakdown:

Damage Points:	0	13	26	40	48	53
Surface Speed:	12	9	6	3	0	Sinks
Submerged Speed:	20	15	10	5	0	Sinks

## Kirov

BCGN

Displacement: 22000 std

Damage Points: 434

Damage Modifier: 1.00

In Class: 2

In Service: 1980

Speed: 34 kts

**Propulsion: CONAS****Weapons:**

F&A(12)1 SA-N-6 w/96 Grumble //2 Top Dome  
 P/S(2)2 SA-N-4 w/20 Gecko//2 Pop Group  
 PB&SB(20)1 SS-N-19 w/20 Shipwreck  
 F(12)1 RBU 6000 w/5 salvoes  
 P/S(6)2 RBU 1000 w/5 salvoes  
 F(2)1 SS-N-14 w/14 Silex//2 Eye Bowl  
 P&PB/S&SB/P&PQ/S&SQ(R)8 AK-630 30mm  
 w/15 bursts//4 Bass Tilt  
 A(1)2 Auto 100mm/70 w/600 rds //1 Kite Screech  
 P/S(4)2 533mm TT w/4 SET-65 torp  
 Aft Pad(1)5 Ka-25 Hormone A&B  
 1 Elevator

**Sensors:**

Horse Jaw, Horse Jaw, Bull Horn  
 Top Steer, 3 Palm Frond, Top Pair

**Remarks:**

Top Dome MFCS can direct at least 2 and possibly 6 msls at once at different targets. Four is median value. *Frunze* has A(2)1 Auto 130mm/70 vice 100mm guns, additional Slim Net radar, F&A(1)16 SA-N-9 VLS with 8 msls per mount and 2 Cross Swords MFCS vice SS-N-14, no RBU 1000. Each Cross Sword director is estimated to control 4 msls at once, 2 each at two separate targets. SA-N-9 ROF is 8 msls per turn total for all mounts. SA-N-6 ROF 12 msls per turn. SS-N-19 ROF 6 msls per turn (all mounts) at same target. Third unit *Kalinin* listed as separate class.

**Damage and Speed Breakdown:**

Damage Points:	0	108	217	326	391	434
Surface Speed:	34	26	17	8	0	Sinks

**Koni**

Displacement: 1440 std  
 Damage Points: 51  
 Damage Modifier: 1.00  
 Propulsion: CODAG  
 Weapons:

F/A(2)2 76mm/60//1 Hawk Screech  
 A(2)1 SA-N-4 w/20 Gecko//1 Pop Group  
 P/S(2)2 AK-230 30mm/65//1 Drum Tilt  
 F(12)2 RBU 6000  
 2 DC Rail w/10 B-1 DC

**Sensors:**

Don 2, Strut Curve  
 Bull Nose

**Remarks:**

Export use only. One unit in Soviet service for training named *Timofey Ulyantsev*. Fitted with fin stabilizers.

**Damage and Speed Breakdown:**

Damage Points:	0	13	26	38	46	51
Surface Speed:	30	22	15	8	0	Sinks

**Kotlin**

Displacement: 2600  
 Damage Points: 86  
 Damage Modifier: 1.00  
 Propulsion: Steam

**Weapons:**

F/A(2)2 56-5M 130mm/58//1 Sun Visor  
 F/A(4)4 45mm/85//2 Hawk Screech  
 P/S(2)4 2M-8 25mm/60  
 6 BMB-2 DC Proj w/10 B-1 DC  
 2 DC Rail w/10 B-1 DC  
 P/S(16)2 RBU 2500  
 P&S(5)2 533mm TT w/5 SET-65 torp

**Sensors:**

Slim Net, Neptune or Don 2  
 Hercules

**Remarks:**

*Svetly* has helo pad aft. All units in reserve; probably slated for disposal. Some units do not have 25mm.

Crew: 800

Total Mounts: 26

D  
D  
D  
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E  
E  
C  
C  
F  
B  
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M  
J

**Damage and Speed Breakdown:**

Damage Points:	0	22	43	64	77	86
Surface Speed:	36	27	18	9	0	Sinks

**Kresta I**

Displacement: 6000

Damage Points: 176

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

F/A(2)2 SA-N-1 w/22 Goa//2 Peel Group  
 P/S(2)2 AK-257 57mm/80//2 Muff Cob  
 F(12)2 RBU 6000 w/5 salvoes  
 P/S(6)2 RBU 1000 w/5 salvoes  
 P/S(5)2 533mm TT w/5 SET-65 torp  
 Aft Pad(1)1 Ka-25 Hormone B  
 PB&SB(2)2 SS-N-3B w/2 Shaddock //1 Scoop Pair

**Sensors:**

Big Net, Head Net C, 2 Don Kay, 2 Plinth Net  
 Hercules

**Remarks:**

*Vitse-Admiral Drozd* has additional P/S(R)4 AK-630 30mm with 15 bursts per mount and 2 Bass Tilt GFCS; *Admiral Zozulya* has 2 Palm Frond vice Don series. SS-N-3 ROF 2 msls per turn (both mounts) at the same target.

**Damage and Speed Breakdown:**

Damage Points:	0	44	88	132	158	176
Surface Speed:	35	26	18	9	0	Sinks

**Kresta II**

Displacement: 6000

Damage Points: 176

Damage Modifier: 1.00

Propulsion: Steam

**Weapons:**

F/A(2)2 SA-N-3A w/22 Goblet //2 Head Light  
 P/S(2)2 AK-257 57mm/80//2 Muff Cob  
 P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt  
 P/S(5)2 533mm TT w/5 SET-65 torp  
 P/S(6)2 RBU 1000 w/5 salvoes  
 F(12)2 RBU 6000 w/5 salvoes  
 Aft Pad(1)1 Ka-25 Hormone A  
 PB&SB(4)2 SS-N-14 w/4 Silex //1 Head Light

**Sensors:**

Top Sail, Head Net C, 2 Don Kay  
 Bull Nose

**Remarks:**

Fitted with stabilizers. The forward Head Light of 2 carried can direct either SS-N-14 or SA-N-3 msl. First 4 units do not have Bass Tilt, treat AK-630 30mm as being in local control.

**Damage and Speed Breakdown:**

Damage Points:	0	44	88	132	158	176
Surface Speed:	34	26	17	8	0	Sinks

**Krivak I**

Displacement: 3300

Damage Points: 107

Damage Modifier: 1.00

Propulsion: COGAG

**Weapons:**

A(2)2 76mm/60//1 Owl Screech  
 F/A(2)2 SA-N-4 w/20 Gecko//2 Pop Group  
 F(16)2 RBU 2500  
 P/S(4)2 533mm TT w/4 SET-65 torp  
 F(4)1 SS-N-14 w/4 Silex//2 Eye Bowl

**Sensors:**

Head Net C, Don Kay or Palm Frond  
 Don 2 or Spin Trough  
 Bull Nose, Mare Tail

In Class: 4

In Service: 1967

Speed: 35 kts

Crew: 375

Total Mounts: 13

D  
C  
E  
E  
F  
B  
D

CG

In Class: 10

In Service: 1970

Speed: 34 kts

Crew: 400

Total Mounts: 17

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C  
C  
F  
E  
E  
B  
E

CG

In Class: 21

In Service: 1970

Speed: 32 kts

Crew: 200

Total Mounts: 9

C  
D  
E  
F  
E  
J  
J  
M

FFG

**Damage and Speed Breakdown:**

Damage Points:	0	27	54	80	96	107
Surface Speed:	32	24	16	8	0	Sinks

**Krivak II**

Displacement: 3300  
 Damage Points: 107  
 Damage Modifier: 1.00  
 Propulsion: COGAG  
 Weapons:

F/A(2)2 SA-N-4 w/20 Gecko//2 Pop Group  
 F(12)2 RBU 6000 w/5 salvoes  
 P/S(4)2 533mm TT w/4 SET-65 torp  
 A(1)2 Auto 100mm/70//1 Kite Screech  
 F(4)1 SS-N-14 w/4 Silex//2 Eye Bowl

**Sensors:**

Head Net C, Don Kay or Palm Frond, Don 2  
 Bull Nose, Mare Tail

**Damage and Speed Breakdown:**

Damage Points:	0	27	54	80	96	107
Surface Speed:	32	24	16	8	0	Sinks

**Krivak III**

Displacement: 3100 std  
 Damage Points: 101  
 Damage Modifier: 1.00  
 Propulsion: COGAG

**Weapons:**

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group  
 F(1)1 Auto 100mm/70//1 Kite Screech  
 P/S(R)2 AK-630 30mm w/15 bursts //1 Bass Tilt  
 F(12)2 RBU 6000 w/5 salvoes  
 P/S(4)2 533mm TT w/4 SET-65 torp  
 Aft Pad(1)1 Ka-27 Helix A

**Sensors:**

Head Net C, Don Kay or Palm Frond  
 Bull Nose, Mare Tail

**Remarks:**

Used by KGB. Would probably be assigned naval duties in wartime.

**Damage and Speed Breakdown:**

Damage Points:	0	25	50	76	91	101
Surface Speed:	32	24	16	8	0	Sinks

**Kynda**

Displacement: 4400  
 Damage Points: 140  
 Damage Modifier: 1.00  
 Propulsion: Steam

**Weapons:**

F(2)1 SA-N-1 w/22 Goa//1 Peel Group  
 F(12)2 RBU 6000 w/5 salvoes  
 P/S(3)2 533mm TT w/3 SET-65 torp  
 A(2)2 76mm/60//1 Owl Screech  
 F/A(4)2 SS-N-3B w/4 Shaddock //2 Scoop Pair

**Sensors:**

2 Head Net A, 2 Plinth Net (Grozny only)  
 2 Don 2  
 Hercules

**Remarks:**

Helo pad aft. Eight SS-N-3 manual reload msls (4 forward, 4 aft) carried. Reloads require 20 min per msl (estimated) with no weapons firing on that end of the ship. Normal SS-N-3 loadout is 12 conventional, 4 nuclear. *Admiral Fokin* has Head Net A and Head Net C vice 2 Head Net A. *Varyag* has 3 Don 2. *Grozny* and *Varyag* refitted in 1981 with 2 Head Net C vice Head Net A; they have P/S(R)4 AK-630 30mm with 15 bursts per mount and 2 Bass Tilt GFC radars. SS-N-3 ROF 2 msls per turn (both mounts) at same targets.

**Damage and Speed Breakdown:**

Damage Points:	0	35	70	105	126	140
Surface Speed:	35	26	18	9	0	Sinks

**Marshal Nedelin**

Displacement: 24000 fl  
 Damage Points: 464  
 Damage Modifier: 1.00  
 Propulsion: Gas Turbine

**Weapons:**

Aft Pad(1)2 Ka-32 Helix C

**Sensors:**

Strut Pair, 3 Palm Frond  
 End Tray, Quad Leaf, 3 Quad Wedge, Quad Rods

**Remarks:**

Special-purpose naval auxiliary. Normally serves as space tracking ship. Has electronics necessary to permit correlation of data from space, air, sea, and land-based sources for integrated battle management. End Tray, Quad Leaf, Quad Wedge, Quad Rods are space tracking antennas; no detection capability. Provision for F/P&PQ/S&SQ(R)6 AK-630 30mm w/15 bursts//3 Bass Tilt.

**Damage and Speed Breakdown:**

Damage Points:	0	116	232	348	418	464
Surface Speed:	20	15	10	5	0	Sinks

**Matka**

Displacement: 200 std  
 Damage Points: 9  
 Damage Modifier: 1.00  
 Propulsion: Diesel

**Weapons:**

F(1)1 Auto 76mm/60//1 Bass Tilt  
 A(R)1 AK-630 30mm w/15 bursts//1 Bass Tilt  
 PB&SB(1)2 SS-N-2C w/1 Styx

**Sensors:**

Plank Shave, Cheese Cake

**Remarks:**

Hydrofoil. Single Bass Tilt directs both weapons at a single target. SS-N-2C ROF 4 msls per turn (both mounts) at same target. Treat as large radar target if travelling at 20 kts or more. The rooster tail thrown up when the ship is foiborne increases the size of the radar echo.

**Damage and Speed Breakdown:**

Damage Points:	0	2	4	7	8	9
Surface Speed:	40	30	20	10	0	Sinks

**Mike**

Displacement: 7000 subm  
 Damage Points: 130  
 Damage Modifier: 1.20  
 Propulsion: Nuclear

**Weapons:**

PB&SB(1/2)2 533mm/650mm TT w/18 see remarks

**Sensors:**

Snoop Head  
 Shark Gill, Shark Fin

**Remarks:**

Named *Komsomolets*. Titanium hull halves MAD range. Has anechoic coating. Typical loadout 8 ET-80A, 2 Type 53-68 nuclear, 2 SS-N-15, 2 SS-N-16, 4 Type 65. Can also carry SS-N-21. Type 65 and SS-N-16 fired from 650mm tubes. Very quiet. Does not incur +15% passive sonar modifier for Soviet construction. Can operate at VDeep depth; will not cavitate at maximum speed at Vdeep. Surface speed estimated. Lost on 7 Apr 1989 southwest of Bear Island after an electrical fire in the engineering compartment spread to adjacent sections. 42 of the crewmembers were lost.

**Damage and Speed Breakdown:**

Damage Points:	0	32	65	98	117	130
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	35	26	18	9	0	Sinks

**Mirka I**

Displacement: 950  
 Damage Points: 37  
 Damage Modifier: 1.00  
 Propulsion: CODAG

**AGM**

In Class: 2  
 In Service: 1984  
 Speed: 20 kts  
 Crew: 200  
 Total Mounts: 2  
 B

J

—

**PHM**

In Class: 16  
 In Service: 1979  
 Speed: 40 kts  
 Crew: 30  
 Total Mounts: 4  
 C

C

D

J

**SSN**

In Service: 1984-89  
 Speed: 20/35 kts  
 Crew: 69  
 Total Mounts: 2  
 F, E

J

M

**FFL**

In Class: 9  
 In Service: 1964  
 Speed: 34 kts  
 Crew: 96

**Weapons:**

F/A(16)4 RBU 6000 w/5 salvoes  
 P&S(5)1 406mm TT w/5 E40-75A torp  
 1 DC Rail w/10 B-1 DC  
 F/P&S(2)1 76mm/60//1 Hawk Screech

**Sensors:**

Don 2, Slim Net  
 Hercules or Pegas

**Remarks:**

Some units have Foal Tail/Lamb Tail dipping sonar. At least three units are in reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	9	18	28	33	37
Surface Speed:	34	26	17	8	0	Sinks

**Mirka II**

**Displacement:** 950

**Damage Points:** 37

**Damage Modifier:** 1.00

**Propulsion:** CODAG

**Weapons:**

F/P&S(2)2 76mm/60//1 Hawk Screech  
 F(12)2 RBU 6000 w/5 salvoes  
 P&S(5)2 406mm TT w/5 E40-75A torp

**Sensors:**

Don 2, Slim Net or Strut Curve  
 Hercules or Pegas, Foal Tail/Lamb Tail

**Damage and Speed Breakdown:**

Damage Points:	0	9	18	28	33	37
Surface Speed:	34	26	17	8	0	Sinks

**Mod Kashin**

**Displacement:** 3950

**Damage Points:** 127

**Damage Modifier:** 1.00

**Propulsion:** COGAG

**Weapons:**

F/A(2)2 SA-N-1 w/22 Goa//2 Peel Group  
 F/A(2)2 76mm/60//2 Owl Screech  
 P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt  
 P&S(5)1 533mm TT w/5 SET-65 torp  
 F(12)2 RBU 6000 w/5 salvoes  
 PQ&SQ(1)4 SS-N-2C w/1 Styx

**Sensors:**

Head Net C, Big Net, 2 Don Kay  
 Bull Horn, Steer Hide

**Remarks:**

Helopad aft. SS-N-2C ROF 4 msls per turn (both mounts) at the same target.

**Damage and Speed Breakdown:**

Damage Points:	0	32	64	95	114	127
Surface Speed:	35	26	18	9	0	Sinks

**Mod Kildin**

**Displacement:** 2800

**Damage Points:** 92

**Damage Modifier:** 1.00

**Propulsion:** Steam

**Weapons:**

A(2)2 76mm/60//1 Owl Screech  
 2F/P/S(4)4 57mm/70//2 Hawk Screech  
 F(16)2 RBU 2500 w/5 salvoes  
 P/S(2)2 533mm TT w/2 SET-65 torp  
 PQ&SQ(1)4 SS-N-2C w/1 Styx

**Sensors:**

Don 2, Head Net C  
 Hercules or Pegas

**Remarks:**

Bedovyy has Strut Pair vice Head Net C, 45mm/85 vice 57mm. SS-N-2C ROF 2 msls per turn (both mounts) at same target.

**Total Mounts:** 7

E  
 F  
 E  
 C

J  
 M

**FFL**

**In Class:** 9

**In Service:** 1964

**Speed:** 34 kts

**Crew:** 96

**Total Mounts:** 6

C  
 E  
 F

J  
 M

**DDG**

**In Class:** 5

**In Service:** 1973

**Speed:** 35 kts

**Crew:** 320

**Total Mounts:** 15

D  
 C  
 C  
 F  
 E  
 D

J  
 M

**DD**

**In Class:** 3

**In Service:** 1958

**Speed:** 34 kts

**Crew:** 300

**Total Mounts:** 14

C  
 C  
 E  
 F  
 D

J  
 M

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	69	83	92
Surface Speed:	34	26	17	8	0	Sinks

**Mod Kotlin**

**Displacement:** 2850

**Damage Points:** 94

**Damage Modifier:** 1.00

**Propulsion:** Steam

**Weapons:**

F/A(2)2 56-5M 130mm/58 //1 Post Lamp or Top Bow  
 F/A(4)3 45mm/85//2 Hawk Screech  
 P/S(2)4 2M-8 25mm/60  
 P&S(5)1 533mm TT w/5 SET-65 torp  
 F(16)2 RBU 2500 w/5 salvoes  
 P/S(12)2 RBU 600 w/5 salvoes

**Sensors:**

Slim Net, Neptune or Don 2  
 Tamir or Pegas

**Remarks:**

Some units have (2)2 2M-8 25mm/60. *Muskovskiy Komsomolets* has F(16)2 RBU 6000 vice RBU 600 and RBU 2500; add Steer Hide VDS. *Svetly* has helopad aft. Entire class probably in reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	24	47	70	85	94
Surface Speed:	34	26	17	8	0	Sinks

**Mod Petya I**

**Displacement:** 950

**Damage Points:** 37

**Damage Modifier:** 1.00

**Propulsion:** CODAG

**Weapons:**

P&S(5)1 406mm TT w/5 E40-75A torp  
 F(16)2 RBU 2500 w/5 salvoes  
 1 DC Rail w/10 B-1 DC  
 F/A(2)2 76mm/60//1 Hawk Screech

**Sensors:**

Don 2, Slim Net  
 Hercules, Mare Tail

**Remarks:**

Internal DC rails. One unit carries ASW research gear vice VDS and TT. One unit is prototype for the class with exposed Mare Tail VDS, originally called *Petya III*.

**Damage and Speed Breakdown:**

Damage Points:	0	9	18	28	33	37
Surface Speed:	30	22	15	8	0	Sinks

**Mod Skory**

**Displacement:** 2600

**Damage Points:** 86

**Damage Modifier:** 1.00

**Propulsion:** Steam

**Weapons:**

F/A(2)2 B-13-2C 130mm/50//1 Top Bow  
 F/2P/2S(1)5 57mm/70//2 Hawk Screech  
 F(16)2 RBU 2500 w/5 salvoes  
 P&S(5)1 533mm TT w/5 SET-65 torp  
 2 DC Rail w/10 B-1 DC

**Sensors:**

Don 2, Slim Net  
 Tamir or Pegas

**Remarks:**

Some units have additional Knife Rest radar. Six units originally converted; all probably in reserve.

**Damage and Speed Breakdown:**

Damage Points:	0	22	43	64	77	86
Surface Speed:	33	25	16	8	0	Sinks

**DD**

**In Class:** [11]

**In Service:** 1960

**Speed:** 34 kts

**Crew:** 285

**Total Mounts:** 14

C  
 C  
 C  
 F  
 E  
 E

J  
 M

**FFL**

**In Class:** 11

**In Service:** 1973

**Speed:** 30 kts

**Crew:** 100

**Total Mounts:** 6

F  
 E  
 E  
 C

J  
 M

**DD**

**In Class:** [4]

**In Service:** 1960

**Speed:** 33 kts

**Crew:** 280

**Total Mounts:** 12

C  
 C  
 E  
 F  
 E

J  
 M



**Moskva**

Displacement: 14500 std

Damage Points: 322

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(2)1 SUW-N-1 w/15 FRAS-1

P/S(2)2 AK-257 57mm/80//2 Muff Cob

F(12)2 RBU 6000 w/5 salvoes

Aft Pad(4)14 Ka-25 Hormone A

2 Elevator

F(2)2 SA-N-3A w/22 Goblet//2 Head Light

Aft Pad(4)4 Ka-25 Hormone B

Sensors:

Top Sail, Head Net C, 3 Don 2

Moose Jaw, Mare Tail

Remarks:

Fitted with stabilizers. Can launch 4 small/med helos at once.

Damage and Speed Breakdown:

Damage Points:	0	80	161	242	290	322
Surface Speed:	30	22	15	8	0	Sinks

**Muravey**

Displacement: 180 std

Damage Points: 8

Damage Modifier: 1.00

Propulsion: Gas Turbine

Weapons:

F(1)1 Auto 76mm/60//1 Bass Tilt

A(1)1 AK-630 30mm//1 Bass Tilt

PB/SB(1)2 406mm TT w/1 E45-75A torp

1 DC rail w/10 B-1 DC

Sensors:

Hercules, Rat Tail

Peel Cone

Remarks:

Used by KGB Border Guard. Single Bass Tilt controls both 76mm and 30mm guns.

Damage and Speed Breakdown:

Damage Points:	0	2	4	6	7	8
Surface Speed:	40	30	20	10	0	Sinks

**Nanuchka I**

Displacement: 780

Damage Points: 32

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group

A(2)1 AK-257 57mm/80//1 Muff Cob

PB&amp;SB(3)2 SS-N-9 w/3 Siren //1 Band Stand &amp; 2 Fish Bowl

Sensors:

Spar Stump, Don, Peel Pair

Remarks:

SS-N-9 ROF 4 msls per turn (both mounts at same target). Fish Bowl radars transmit midcourse guidance corrections to inflight Siren missiles.

Damage and Speed Breakdown:

Damage Points:	0	8	16	24	29	32
Surface Speed:	32	24	16	8	0	Sinks

**Nanuchka III**

Displacement: 780

Damage Points: 32

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group

A(1)1 Auto 76mm/60//1 Bass Tilt

A(R)1 AK-630 30mm w/15 bursts//1 Bass Tilt

PB&amp;SB(3)2 SS-N-9 w/3 Siren //1 Band Stand &amp; 2 Fish Bowl

**CHG**

In Class: 2

In Service: 1967

Speed: 30 kts

Crew: 850

Total Mounts: 9

E

C

E

B

—

D

B

J

M

**PGH**

In Class: 14+1

In Service: 1983

Speed: 40 kts

Crew: ?

Total Mounts: 5

C

C

F

E

M

J

**FFL**

In Class: 17

In Service: 1969

Speed: 32 kts

Crew: 60

Total Mounts: 4

D

C

D

**AGI**

In Class: 15

In Service: 1962

Speed: 11 kts

Crew: 60

Total Mounts: 2

D

J

—

**FFL**

In Class: 14+1

In Service: 1978

Speed: 32 kts

Crew: 60

Total Mounts: 5

D

C

C

D

**Sensors:**

Spar Stump, Don, Peel Pair

J

**Remarks:**

Single Bass Tilt directs 76mm and AK-630 30mm at same target. SS-N-9 ROF 4 msls per turn (both mounts) at same target. Fish Bowl radars transmit midcourse guidance corrections to inflight Siren msils.

**Damage and Speed Breakdown:**

Damage Points:	0	8	16	24	29	32
Surface Speed:	32	24	16	8	0	Sinks

**Natya I**

Displacement: 650 std

Damage Points: 21

Damage Modifier: 0.75

Propulsion: Diesel

Weapons:

F/A(2)2 AK-230 30mm/65//1 Drum Tilt

P/S(2)2 2M-8 25mm/60

P/S(4)2 SA-N-5/8 w/4 Grail/Gremlin

(5)2 RBU 1200 w/5 salvoes

Sensors:

Don 2

J

Tamir 5N, HF minehunting sonar

M

**Remarks:**

Aluminum alloy hull. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs.

**Damage and Speed Breakdown:**

Damage Points:	0	5	10	16	19	21
Surface Speed:	17	13	8	4	0	Sinks

**November**

Displacement: 5300 subm

Damage Points: 91

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

PB&amp;SB(3)2 533mm TT w/22 see remarks

PQ&amp;SQ(2)2 406mm TT w/4 E40-75A torp

Sensors:

Hercules, Feniks

M

Snoop Tray

J

**Remarks:**

Normal TT loadout forward is 14 Type 53-65 torp, 4 SET-65, 4 Type 53-68 nuclear. One unit sank off Cape Finsterre in the Atlantic in Apr 1970; another was probably scrapped in late 1970s.

**Damage and Speed Breakdown:**

Damage Points:	0	23	46	68	82	91
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	30	22	15	8	0	Sinks

**Okean**

Displacement: 700 fl

Damage Points: 22

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

P&amp;PQ/S&amp;SQ(4)2 SA-N-5/8 w/4 Grail/Gremlin

Sensors:

1-2 Don 2

J

ELINT (ESM)

**Remarks:**

Converted trawlers. Some may hve been removed from service. Some do not have SA-N-5 or 8 missile launchers. Barograf has P/S(1)2 14.5mm mg. Carry 8 manual reloads for SA-N-5 or -8 launcher. Reloads take 1 min per missile.

**Damage and Speed Breakdown:**

Damage Points:	0	5	11	16	20	22
Surface Speed:	11	8	6	3	0	Sinks

**Osa I**

**Displacement:** 175  
**Damage Points:** 8  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
 F/A(2)2 AK-230 30mm/65//1 Drum Tilt  
 PB&SB(1)4 SS-N-2B w/1 Styx //1 Square Tie  
**Sensors:**  
 Square Tie  
**Remarks:**

Some units have A(4)1 SA-N-5 Grail. SS-N-2B ROF 2 msis per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	2	4	6	7	8
<b>Surface Speed:</b>	36	27	18	9	0	Sinks

**Osa II**

**Displacement:** 215  
**Damage Points:** 10  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel  
**Weapons:**  
 PB&SB(1)4 SS-N-2B w/1 Styx //1 Square Tie  
 F/A(2)2 AK-230 30mm/65//1 Drum Tilt  
**Sensors:**  
 Square Tie  
**Remarks:**

Some units may have SS-N-2C vice SS-N-2B; may have A(4)1 SA-N-5 Grail. SS-N-2B ROF 2 msis per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	2	5	8	9	10
<b>Surface Speed:</b>	36	27	18	9	0	Sinks

**Oscar I**

**Displacement:** 14500 subm  
**Damage Points:** 215  
**Damage Modifier:** 1.20  
**Propulsion:** Nuclear  
**Weapons:**  
 PB&SB(2/2)2 533mm/650mm TT w/24 see remarks  
 PB&SB(2)12 SS-N-19 w/2 Shipwreck  
**Sensors:**  
 Shark Teeth, Shark Fin  
 Snoop Tray  
**Remarks:**

Has Clusterguard anechoic coating. Standoff hull with a gap of approximately 3 meters may reduce ASW torp effectiveness. If hit by DE warhead, the chance of a pressure hull penetration is reduced from 50% to 10%. Normal TT loadout 12 ET-80A torp, 2 Type 53-68 nuclear, 6 Type 65, 2 SS-N-15, 2 SS-N-16. Normal SS-N- loadout 18 conventional and 6 nuclear warheads. Unit #2 has an LF Fin sonar. SS-N-19 ROF 4 msis per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	54	108	161	194	215
<b>Surface Speed:</b>	20	15	10	5	0	Sinks
<b>Submerged Speed:</b>	30	23	15	8	0	Sinks

**Oscar II**

**Displacement:** 16000 subm  
**Damage Points:** 229  
**Damage Modifier:** 1.20  
**Propulsion:** Nuclear  
**Weapons:**  
 PB&SB(2/2)2 533mm/650mm TT w/24 see remarks  
 PB&SB(2)12 SS-N-19 w/2 Shipwreck  
**Sensors:**  
 Snoop Tray  
 Shark Teeth, Shark Fin, LF Fin towed array  
**Remarks:**

Has Clusterguard anechoic coating. Standoff hull with a gap of approximately

**PTM**

**In Class:** 50  
**In Service:** 1959  
**Speed:** 36 kts  
**Crew:** 30  
**Total Mounts:** 6

C

D

J

**PTM**

**In Class:** 30  
**In Service:** 1966  
**Speed:** 36 kts  
**Crew:** 30  
**Total Mounts:** 6

D

C

J

**SSGN**

**In Class:** 2  
**In Service:** 1980  
**Speed:** 20/30 kts  
**Crew:** 130  
**Total Mounts:** 14

F, E

D

M

J

**SSGN**

**In Class:** 3+1  
**In Service:** 198?  
**Speed:** 20/28 kts  
**Crew:** 130  
**Total Mounts:** 13

F, E

D

J

M

3 meters may reduce ASW torp effectiveness. If hit by DE warhead the chance of a pressure hull penetration is reduced from 50% to 10%. Normal TT loadout 12 ET-80A torp, 2 Type 53-68 nuclear, 6 Type 65, 2 SS-N-15, 2 SS-N-16. Normal SS-N- loadout 18 conventional and 6 nuclear warheads. SS-N-19 ROF 4 msis per turn (all mounts) at same target.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	57	115	171	206	229
<b>Surface Speed:</b>	20	15	10	5	0	Sinks
<b>Submerged Speed:</b>	28	21	14	7	0	Sinks

**Papa**

**Displacement:** 8000 subm  
**Damage Points:** 142  
**Damage Modifier:** 1.00  
**Propulsion:** Nuclear

**Weapons:**  
 PB&SB(10)1 SS-N-9 w/10 Siren  
 PB&SB(6)1 533mm TT w/12 see remarks

**Sensors:**  
 Snoop Tray  
 Shark Fin, Shark Teeth  
**Remarks:**

Has Clusterguard anechoic coating. Normal TT loadout is 8 SET-65 torp, 2 Type 53-56N, 2 SS-N-15. Normal SS-N-9 loadout is 6 conventional and 4 nuclear. SS-N-9 ROF 4 msis per turn at same target. Titanium hull halves MAD range.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	36	71	107	128	142
<b>Surface Speed:</b>	26	20	13	6	0	Sinks
<b>Submerged Speed:</b>	38	28	19	10	0	Sinks

**Pauk**

**Displacement:** 480 std  
**Damage Points:** 22  
**Damage Modifier:** 1.00  
**Propulsion:** Diesel

**Weapons:**  
 F(1)1 Auto 76mm/60//1 Bass Tilt  
 A(R)1 AK-630 30mm w/15 bursts//1 Bass Tilt  
 PB/SB(1)4 406mm TT w/1 E40-75A torp  
 A(4)1 SA-N-5/8 w/4 Grail/Gremlin  
 2 DC Rail w/6 B-1 DC  
 (5)2 RBU 1200 w/5 salvoes

**Sensors:**  
 Plank Shave or Peel Cone, Spin Trough  
 Bull Horn, Rat Tail

**Remarks:**

Same hull as *Tarantul* class. Replacement for *Poti*. 12 manual reloads carried for SA-N-5/8. RBU 1200 fixed in train. Ship must be pointed directly at target to fire RBUs. Single Bass Tilt directs both 76mm and AK-630 30mm at same target.

**Damage and Speed Breakdown:**

<b>Damage Points:</b>	0	6	11	16	20	22
<b>Surface Speed:</b>	34	26	17	8	0	Sinks

**Petya I**

**Displacement:** 950 std  
**Damage Points:** 37  
**Damage Modifier:** 1.00  
**Propulsion:** CODAG

**Weapons:**  
 F/A(16)4 RBU 2500 w/5 salvoes  
 P&S(5)1 406mm TT w/5 E40-75A torp  
 2 DC Rail w/10 B-1 DC  
 F/A(2)2 76mm/60//1 Hawk Screech

**Sensors:**  
 Slim Net, Neptune or Don 2  
 Hercules, Rat Tail

**Remarks:**

Internal DC rails. Some units have Mare Tail VDS. 1 or 2 units have after 76mm removed.

**SSGN**

**In Class:** 1  
**In Service:** 1977  
**Speed:** 26/38 kts  
**Crew:** 90

**Total Mounts:** 2

D

F, E

J

M

**PC**

**In Class:** 30+3  
**In Service:** 1980  
**Speed:** 34 kts  
**Crew:** 40

**Total Mounts:** 11

C

C

F

D

E

E

J

M

**FFL**

**In Class:** 7  
**In Service:** 1962  
**Speed:** 30 kts  
**Crew:** 100

**Total Mounts:** 9

E

F

E

C

J

M

**Damage and Speed Breakdown:**

Damage Points:	0	9	18	28	33	37
Surface Speed:	30	22	15	8	0	Sinks

**Petya II**

Displacement: 950 std

Damage Points: 37

Damage Modifier: 1.00

Propulsion: CODAG

Weapons:

P&amp;S(5)2 406mm TT w/5 E40-75A torp

F(16)2 RBU 6000 w/5 salvoes

2 DC Rail w/10 B-1 DC

F/A(2)2 76mm/60//1 Hawk Screech

Sensors:

Strut Curve, Don 2

Hercules, Rat Tail

Remarks:

Internal DC rails. Additional unit *Mod Petya II* has after 76mm removed for Mare Tail VDS.**Damage and Speed Breakdown:**

Damage Points:	0	9	18	28	33	37
Surface Speed:	30	22	15	8	0	Sinks

**Polnochny**

Displacement: 750 std

Damage Points: 31

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F/A(4)2 SA-N-5/8 w/4 Grail/Gremlin

F/A(2)2 30mm/65//1 Drum Tilt

F(18)2 Rocket Launchers

Sensors:

Spin Trough

Remarks:

Rockets launchers are for shore bombardment only.

**Damage and Speed Breakdown:**

Damage Points:	0	8	15	23	28	31
Surface Speed:	18	14	9	4	0	Sinks

**Poti**

Displacement: 400 fl

Damage Points: 18

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

F(12)2 RBU 6000 w/5 salvoes

P&amp;S(4)1 406mm TT w/4 E40-75A torp

F(2)1 AK-257 57mm/80//1 Muff Cob

Sensors:

Strut Curve, Spin Trough, Don 2

Hercules, Rat Tail

Remarks:

Class being struck as *Pauk* enters service.**Damage and Speed Breakdown:**

Damage Points:	0	5	9	14	16	18
Surface Speed:	36	27	18	9	0	Sinks

**Provornyy**

Displacement: 3750 std

Damage Points: 121

Damage Modifier: 1.00

Propulsion: COGAG

Weapons:

A(1)1 SA-N-7 w/20 Gadfly//8 Front Dome

F/A(2)2 76mm/60//2 Owl Screech

P/S(5)1 533mm TT w/5 SET-65 torp

F(12)2 RBU 6000 w/5 salvoes

**Sensors:**

Don 2, Top Steer, 2 Don Kay, Head Net C

Bull Horn

No ESM

Remarks:

Modified *Kashin*; served as trials ship for SA-N-7 system. Has empty position forward for another SA-N-7 launcher. SA-N-7 launcher can fire 3 msls per turn. Front Dome arcs are P&PQ/S&SQ/P&PB/S&SB.**Damage and Speed Breakdown:**

Damage Points:	0	30	60	91	109	121
Surface Speed:	38	28	19	10	0	Sinks

**Riga**

Displacement: 1000

Damage Points: 38

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

2F/A(1)3 Bu-34 100mm/56//1 Sun Visor

P/S(2)2 V-74M 37mm/63//1 Wasp Head

P/S(2)2 2M-8 25mm/60

F(16)2 RBU 2500 w/5 salvoes

P&amp;S(3)1 533mm TT w/3 SET-65 torp

2 DC Rail w/10 B-1 DC

4 BMB-2 DC Proj w/10 B-1 DC

Sensors:

Slim Net, Neptune

Hercules, Rat Tail

Remarks:

Some units do not have 25mm and Rat Tail dipping sonar. Some units do not have DC Proj. TT is bank of 2 or 3. About 15 more in reserve; seven more struck.

**Damage and Speed Breakdown:**

Damage Points:	0	10	19	28	34	38
Surface Speed:	28	21	14	7	0	Sinks

**Romeo**

Displacement: 1330 subm

Damage Points: 27

Damage Modifier: 1.00

Propulsion: Diesel-Electric

Weapons:

PB&amp;SB(3)2 533mm TT w/10 see remarks

PQ&amp;SQ(2)1 533mm TT w/4 SET-65 torp

Sensors:

Hercules, Feniks

Snoop Plate

Remarks:

Normal 533mm loadout forward is 8 SET-65 torp, 2 Type 53-56N. 20 units built.

**Damage and Speed Breakdown:**

Damage Points:	0	7	14	20	24	27
Surface Speed:	17	13	8	4	0	Sinks
Submerged Speed:	14	10	7	4	0	Sinks

**Ropucha**

Displacement: 2600 std

Damage Points: 86

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F/A(2)2 AK-257 57mm/80//1 Muff Cob

Sensors:

Strut Curve, Don 2

Remarks:

Positions forward for 2 bombardment rocket launchers. At least 2 units have A(4)4 SA-N-5 Grail.

**Damage and Speed Breakdown:**

Damage Points:	0	22	43	64	77	86
Surface Speed:	17	13	8	4	0	Sinks

FFL

In Class: 21

In Service: 1964

Speed: 30 kts

Crew: 100

Total Mounts: 8

F

E

E

C

J

M

FFL

In Class: 25

In Service: 1952

Speed: 28 kts

Crew: 230

Total Mounts: 16

C

C

C

E

F

E

E

LST

In Class: 43

In Service: 1972

Speed: 18 kts

Crew: 42

Total Mounts: 6

D

C

—

J

SS

In Class: [20]

In Service: 1960

Speed: 17/14 kts

Crew: 55

Total Mounts: 3

F

F

M

J

PC

In Class: 55

In Service: 1961

Speed: 36 kts

Crew: 80

Total Mounts: 4

E

F

C

J

M

DDG

In Class: 1

In Service: 1981

Speed: 38 kts

Crew: 280

Total Mounts: 6

D

C

F

E

LST

In Class: 24

In Service: 1975

Speed: 17 kts

Crew: 315

Total Mounts: 2

C

J

**SAM Kotlin**

Displacement: 2700 std

Damage Points: 89

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

F(2)1 130mm/58//1 Sun Visor

F(12)2 RBU 6000 w/5 salvoes

F(4)1 45mm/85//1 Hawk Screech

P&amp;S(5)1 533mm TT w/5 SET-65 torp

A(2)1 SA-N-1 w/22 Goal//1 Peel Group

Sensors:

Head Net C, Don Kay or Don 2

Hercules

Remarks:

Forward 130mm mount has Egg Cup rangefinding radar for local control. Modifier for local control is 5%. *Bravyy* has F/P/S(4)3 45mm/85. *Skrytnyy*, *Soznatel'nyy*, *Vozbuzhdenyy*, *Nesokrushimyy* have P/S(2)4 AK-230 30mm/65//2 Drum Tilt. *Skromnyy* has RBU 2500 vice 6000.

Damage and Speed Breakdown:

Damage Points:	0	22	44	67	80	89
Surface Speed:	36	27	18	9	0	Sinks

**Sarancha**

Displacement: 280 std

Damage Points: 13

Damage Modifier: 1.00

Propulsion: CODOG

Weapons:

F(2)1 SA-N-4 w/20 Gecko//1 Pop Group

A(R)1 AK-630 30mm w/15 bursts//1 Bass Tilt

PB&amp;SB(2)2 SS-N-9 w/3 Siren //1 Band Stand &amp; 1 Fish Bowl

Sensors:

Band Stand

Remarks:

Hydrofoil. SS-N-9 ROF 4 msIs per turn (both mounts) at same target. Treat as large radar target if travelling at 25 kts or more. The rooster tail thrown up when the ship is foilborne increases the size of the radar echo.

Damage and Speed Breakdown:

Damage Points:	0	3	6	10	12	13
Surface Speed:	50	38	25	12	0	Sinks

**Shershen**

Displacement: 150

Damage Points: 7

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F/A(2)2 AK-230 30mm/65//1 Drum Tilt

2 DC Rail w/6 B-1 DC

PB/SB(1)4 533mm TT w/1 SET-65 torp

Sensors:

Pot Drum

Remarks:

Hydrofoil. All units scrapped or transferred to allied navies. Treat as large radar target if travelling at 22 kts or more. The rooster tail thrown up when the ship is foilborne increases the size of the radar echo.

Damage and Speed Breakdown:

Damage Points:	0	2	4	5	6	7
Surface Speed:	45	34	22	11	0	Sinks

**Sierra**

Displacement: 7550 subm

Damage Points: 136

Damage Modifier: 1.20

Propulsion: Nuclear

Weapons:

PB&amp;SB(2)2 533mm/650mm TT w/22 see remarks

Sensors:

Snoop Pair

**DDG**

In Class: 8

In Service: 1963

Speed: 36 kts

Crew: 300

Total Mounts: 6

C

E

C

F

D

J

M

Shark Gill, Shark Fin, LF Fin towed array

Remarks:

Titanium hull halves MAD range. Has anechoic coating. Type 65 and SS-N-16 fired from 650mm tubes. Normal loadout 10 ET-80A, 2 Type 53-68 nuclear, 2 SS-N-15, 4 SS-N-16, 4 Type 65. Can also carry SS-N-21. Very quiet. Does not incur +15% passive sonar modifier for Soviet construction.

Damage and Speed Breakdown:

Damage Points:	0	34	68	102	122	136
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	32	24	16	8	0	Sinks

**Skory**

Displacement: 2600

Damage Points: 86

Damage Modifier: 1.00

Propulsion: Steam

Weapons:

A(2)1 HAM 39-3 85mm/52//1 Post Lamp

P&amp;S(5)2 533mm TT w/5 SET-65 torp

2 DC Rail w/10 B-1 DC

2 BMB-2 DC Proj w/10 B-1 DC

F/A(2)2 B-13-2C 130mm/50//1 Top Bow

F(2)1 57mm/70

Sensors:

Don 2, Cross Bird or High Sieve

Tamir or Pegas

Remarks:

*Serdity* has (additional) Knife Rest radar. GFC radar is Top Bow or Post Lamp or Half Bow. Some units have P/S(1)7 37mm/63 or (2)4 37mm/63. Units with (2)4 37mm also have (2)2 or (2)3 2M-8 25mm/60. 75 built; 13 in reserve; rest scrapped.

Damage and Speed Breakdown:

Damage Points:	0	22	43	64	77	86
Surface Speed:	33	25	16	8	0	Sinks

**Slava**

Displacement: 12500 std

Damage Points: 292

Damage Modifier: 1.00

Propulsion: COGAG

Weapons:

F&amp;A(8)1 SA-N-6 w/64 Grumble //1 Top Dome

P/S(2)2 SA-N-4 w/20 Gecko//2 Pop Group

F(2)1 Auto 130mm/70//1 Kite Screech

F/P/S(R)6 AK-630 30mm w/15 bursts //3 Bass Tilt

Aft Pad(1)1 Ka-27 Helix B

P/S(2)2 533mm TT w/2 SET-65 torp

F(16)2 RBU 6000 w/5 salvoes

PB&amp;SB(2)8 SS-N-12 w/2 Sandbox //1 Front Door

Sensors:

Top Pair, 3 Palm Frond, Top Steer

Bull Nose, Mare Tail

Remarks:

SS-N-12 ROF 4 msIs per turn (all mounts) at same target. SA-N-6 ROF 12 msIs per turn.

Damage and Speed Breakdown:

Damage Points:	0	73	146	219	263	292
Surface Speed:	34	26	17	8	0	Sinks

**Sovremennyy**

Displacement: 6300 std

Damage Points: 136

Damage Modifier: 0.75

Propulsion: Steam

Weapons:

P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt

P/S(6)2 RBU 1000 w/5 salvoes

Aft Pad(1)1 Ka-27 Helix A

F/A(2)2 Auto 130mm/70//1 Kite Screech

P/S(2)2 533mm TT w/2 SET-65 torp

**SSN**

In Class: 2+1

In Service: 1984

Speed: 20/32 kts

Crew: 100

Total Mounts: 2

F

J

In Class: 10+6

In Service: 1981

Speed: 34 kts

Crew: 350

Total Mounts: 15

C

E

B

C

F

**DD**

In Class: [75]

In Service: 1949

Speed: 33 kts

Crew: 287

Total Mounts: 10

C

F

E

E

C

C

J

M

**CG**

In Class: 3+1

In Service: 1982

Speed: 34 kts

Crew: 600

Total Mounts: 23

D

D

C

C

B

F

E

D

J

M

**DDG**

PB&amp;SB(4)2 SS-N-22 w/4 Sunburn //1 Band Stand

D

F/A(1)2 SA-N-7 w/22 Gadfly //6 Front Dome

D

## Sensors:

Top Steer, 3 Palm Frond

J

Bull Horn, Steer Hide VDS

M

## Remarks:

*Osmotritelnyy* has combined Top Steer/Top Plate. SS-N-22 ROF 4 msls per turn (both mounts) at same target. SA-N-7 ROF 3 msls per turn (each mount).

Aluminum superstructure.

## Damage and Speed Breakdown:

Damage Points:	0	34	68	102	122	136
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Surface Speed:	34	26	17	8	0	Sinks
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## Sverdlov

CL

Displacement: 12900 std

In Class: 8

Damage Points: 298

In Service: 1950

Damage Modifier: 1.00

Speed: 32 kts

Propulsion: Steam

Crew: 1000

## Weapons:

Total Mounts: 26

F/A(3)4 B-38 152mm/57 //1 Top Bow or Half Bow

C

P/S(2)6 100mm/70//2 Sun Visor

C

P/S(2)16 V-74M 37mm/63

C

## Sensors:

Low or High Sieve, Big Net or Knife Rest

J

Neptune or Don 2

J

## Remarks:

Armor: 100-125mm belt tapering to 40-50mm forward and aft. 125mm on 152mm turrets, 150mm conning tower. General rating is M. CHP rating for 152mm turret, bridge, engineering is M. A and X 152mm turrets have Egg Cup rangefinding radars for use in local control. Modifier for local control is -5%. Egg Cup removed from 3 ships: *Admiral Ushakov*, *Alexander Suvurov*, *Oktyabrskaya Revolutsiya*; add P/S(2) 8 AK-230 30mm/65//4 Drum Tilt; only (2) 14 37mm. P/S(5) 2 533mm TT removed from all ships in late 1960s. 14 units built. 2 converted to command cruisers (*Sverdlov CC*); *Dzerzhinsky* converted to SAM ship. Five units in reserve; one refitting; rest fully operational.

## Damage and Speed Breakdown:

Damage Points:	0	74	149	224	268	298
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Surface Speed:	32	24	16	8	0	Sinks
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## Sverdlov CC

CC

Displacement: 12900 std

In Class: 2

Damage Points: 298

In Service: 1972

Damage Modifier: 1.00

Speed: 32 kts

Propulsion: Steam

Crew: 1000

## Weapons:

Total Mounts: 33

F(3)2 B-38 152mm/57//1 Top Bow

C

P/S(2)6 100mm/70//2 Sun Visor

C

P/S(2)16 V-74M 37mm/63

C

P&amp;S(2)1 SA-N-4 w/20 Gecko//1 Pop Group

D

P/S(2)8 AK-230 30mm/65//2 Drum Tilt

C

## Sensors:

Low Sieve, Top Trough, Neptune

J

## Remarks:

Converted *Sverdlov* units. *Admiral Senyavin* has 1 Ka-25 Hormone C, helo pad and hangar aft. *Zhdanov* has additional (A) (1) 3 152mm/57, but only 2 4 30mm. Armor: 100-125mm belt tapering to 40-50mm forward and aft. 125mm on 152mm turrets, 150mm conning tower. General rating is M. CHP rating for 152mm turret, bridge, engineering is M. A and X 152mm turrets have Egg Cup rangefinding radars for use in local control. Modifier for local control is -5%.

## Damage and Speed Breakdown:

Damage Points:	0	74	149	224	268	298
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Surface Speed:	32	24	16	8	0	Sinks
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## Tango

SS

Displacement: 3900 subm

In Class: 22

Damage Points: 70

In Service: 1972

Damage Modifier: 1.00

Speed: 20/16 kts

Propulsion: Diesel-Electric

Crew: 62

## Weapons:

Total Mounts: 4

PB&amp;SB(3)2 533mm TT w/20 see remarks

F

PQ&amp;SQ(2)2 533mm TT/4 see remarks

F

## Sensors:

Snoop Tray

J

Shark Teeth (Passive only), Shark Fin

M

## Remarks:

Has anechoic coating. Normal TT loadout forward 16 ET-80A torp, 2 Type 53-68 nuclear, 2 SS-N-15. Loadout aft is 4 ET-80A. Very quiet—not subject to Soviet submarine passive sonar detection modifier.

## Damage and Speed Breakdown:

Damage Points:	0	18	35	52	63	70
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Surface Speed:	20	15	10	5	0	Sinks
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Submerged Speed:	16	12	8	4	0	Sinks
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## Tarantul I/II

FFL

Displacement: 480

In Class: 2/20

Damage Points: 22

In Service: 1979

Damage Modifier: 1.00

Speed: 35 kts

Propulsion: CODOG

Crew: 50

## Weapons:

Total Mounts: 6

A(R)2 AK-630 30mm w/15 bursts//1 Bass Tilt

C

PB&amp;SB(2)2 SS-N-2C w/2 Styx//1 Square Tie

D

A(4)1 SA-N-5/8 w/4 Grail/Gremlin

D

F(1)1 Auto 76mm/60//1 Bass Tilt

C

## Sensors:

Spin Trough, Plank Shave, Square Tie

J

## Remarks:

Single Bass Tilt directs 76mm and AK-630 30mm at same target. *Tarantul II* has Band Stand vice Plank Shave. SS-N-2C ROF 4 msls per turn (both mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	6	11	16	20	22
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Surface Speed:	35	26	18	9	0	Sinks
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## Tarantul III

FFL

Displacement: 480 std

In Class: 10+3

Damage Points: 22

In Service: 1987

Damage Modifier: 1.00

Speed: 36 kts

Propulsion: Diesel

Crew: 50

## Weapons:

Total Mounts: 6

PB&amp;SB(2)2 SS-N-22 w/2 Sunburn

D

F(1)1 Auto 76mm/55//1 Bass Tilt

C

A(R)2 AK-630 30mm w/15 bursts//1 Bass Tilt

C

A(4)1 SA-N-5/8 w/4 Grail/Gremlin

D

## Sensors:

Band Stand, Spin Trough

J

## Remarks:

Single Bass Tilt directs 76mm and AK-630 30mm at same target. SS-N-22 ROF 4 msls per turn (both mounts) at same target.

## Damage and Speed Breakdown:

Damage Points:	0	5	11	16	19	22
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Surface Speed:	36	27	18	9	0	Sinks
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## Tbilisi

CVHG

Displacement: 65000

In Class: 1+1

Damage Points: 1079

In Service: 1992+

Damage Modifier: 1.00

Speed: 32 kts

Propulsion: Steam

Crew: ?

## Weapons:

Total Mounts: 16

50 Aircraft

B

PB/SB/PQ/SQ 8 New CIWS

C, D

2 Elevators

—

F&amp;A(6)4 SA-N-9 w/8 msls //4 Cross Sword

D

PB&amp;SB SS-N-19 (number unknown)

D

F(10)2 RBU ?

E

## Sensors:

Sky Watch, Plate Steer, 3 Palm Frond

J

Strut Curve

J

## Horse Jaw

## Remarks:

Has angled deck and ski jump. First unit *Tbilisi* is fitting out; sea trials in 1990. Second unit *Riga* launched 1989. Aircraft could include Yak-41 (Forger follow-on), Su-27 Flanker, MiG-29 Fulcrum, Ka-27 Helix, or new aircraft. Would not achieve full capability with its air group until the early 1990s. Some parts of weapons and sensor fit estimated. Each Cross Sword director can control 4 msls at once, 2 each at two separate targets. SA-N-9 ROF is 16 msls per turn total for all mounts.

## Damage and Speed Breakdown:

Damage Points:	0	270	540	809	971	1079
Surface Speed:	32	24	16	8	0	Sinks

## Turya

Displacement: 205 std

Damage Points: 9

Damage Modifier: 1.00

Propulsion: Diesel

Weapons:

F(2)1 2M-8 25mm/60

PB&amp;SB(1)4 533mm TT w/1 SET-65 torp

A(2)1 AK-257 57mm/80//1 Muff Cob

1 DC Rail w/10 B-1 DC

Sensors:

Rat Tail

Pot Drum

Remarks:

Hydrofoil. Treat as large radar target if traveling at 21 kts or more. The rooster tail thrown up when the ship is foilborne increases the size of the radar echo.

## Damage and Speed Breakdown:

Damage Points:	0	2	4	7	8	9
Surface Speed:	42	32	21	10	0	Sinks

## Typhoon

Displacement: 29000 subm

Damage Points: 360

Damage Modifier: 1.20

Propulsion: Nuclear

Weapons:

PB&amp;SB(1/2)2 533mm/650mm TT w/24 see remarks

(20)1 SS-N-20 w/20 Sturgeon

Sensors:

Shark Gill, Shark Fin

Snoop Pair

Remarks:

Normal TT loadout is 14 ET-80A, 4 Type 53-68 nuclear, 4 SS-N-16, 2 SS-N-15. TT can also fire SS-N-21, Type 65. Has anechoic coating. The percent chance of a DE warhead penetrating the pressure hull is reduced from 50% to 10%.

## Damage and Speed Breakdown:

Damage Points:	0	90	180	270	324	360
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	24	16	12	6	0	Sinks

## Udaloy

Displacement: 6500 std

Damage Points: 185

Damage Modifier: 1.00

Propulsion: COGOG

Weapons:

F(1)2 Auto 100mm/70//1 Kite Screech

A(12)2 RBU 6000 w/5 salvoes

P/S(4)2 533mm TT w/4 SET-65 torp

Aft Pad(1)2 Ka-27 Helix A

F&amp;A(2)4 SA-N-9 w/16 msls //2 Cross Sword

P/S(R)4 AK-630 30mm w/15 bursts //2 Bass Tilt

PB&amp;SB(4)2 SS-N-14 w/4 Silex//2 Eye Bowl

Sensors:

3 Palm Frond, 2 Strut Pair (Units #1 and 2)

Top Mesh and Top Plate (Unit #3 and on)

M

## Horse Jaw, Horse Tail

## Remarks:

Fitted with stabilizers. Each Cross Sword director can control 4 msls at once, 2 each at two separate targets. SA-N-9 ROF is 8 msls per turn total for all mounts.

## Damage and Speed Breakdown:

Damage Points:	0	46	92	139	166	185
Surface Speed:	33	25	16	8	0	Sinks

## Victor I

Displacement: 5100 subm

Damage Points: 89

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

PB&amp;SB(3)2 533mm TT w/18 see remarks

Sensors:

Shark Teeth, Shark Fin

Snoop Tray

Remarks:

Has anechoic coating. Normal TT loadout 8 Type 53-65, 6 SET-65 torp, 2 Type 53-68, 2 SS-N-15. One unit named *50 Let SSR*.

## Damage and Speed Breakdown:

Damage Points:	0	22	44	67	80	89
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	32	24	16	8	0	Sinks

## Victor II

Displacement: 5700 subm

Damage Points: 95

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

PB&amp;SB(1/2)2 533mm/650mm TT w/18 see remarks

Sensors:

Shark Teeth, Shark Fin

Snoop Tray

Remarks:

Has anechoic coating. Normal TT loadout 6 SET-65 torp, 4 Type 53-65, 2 Type 53-68, 4 Type 65, 2 SS-N-15, 2 SS-N-16.

## Damage and Speed Breakdown:

Damage Points:	0	24	48	71	86	95
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	31	23	16	8	0	Sinks

## Victor III

Displacement: 6500 subm

Damage Points: 103

Damage Modifier: 1.00

Propulsion: Nuclear

Weapons:

PB&amp;SB(1/2)2 533mm/650mm TT w/18 see remarks

Sensors:

Shark Teeth, Shark Fin, LF Fin towed array

Snoop Tray

Remarks:

Has Clusterguard anechoic coating. Normal TT loadout 8 ET-80A torp, 2 Type 53-68, 4 Type 65, 2 SS-N-15, 2 SS-N-16. Quiet. Does not incur +15% passive sonar modifier for Soviet construction.

## Damage and Speed Breakdown:

Damage Points:	0	26	52	77	93	103
Surface Speed:	20	15	10	5	0	Sinks
Submerged Speed:	30	23	15	8	0	Sinks

## Whiskey

Displacement: 1350 subm

Damage Points: 27

Damage Modifier: 1.00

Propulsion: Diesel-Electric

In Class: 45

In Service: 1950

Speed: 17/13 kts

Crew: 54

SSN

In Class: 16

In Service: 1968

Speed: 20/32 kts

Crew: 90

Total Mounts: 2

F, E

M

J

SSN

In Class: 7

In Service: 1972

Speed: 20/31 kts

Crew: 80

Total Mounts: 2

F, E

M

J

SSN

In Class: 23+1+

In Service: 1979

Speed: 20/30 kts

Crew: 100

Total Mounts: 2

F, E

M

J

SS

**Weapons:**

PB&amp;SB(3)2 533mm TT w/10 see remarks

PQ&amp;SQ(2)1 533mm TT w/2 SET-40 torp

**Sensors:**

Tamir 5L

Snoop Plate

**Remarks:**

240 built; approximately 60 units in reserve. Normal 533mm TT loadout is 10

Type 53-65 torp, 2 Type 53-56N nuclear.

**Damage and Speed Breakdown:**

Damage Points:	0	7	14	20	24	27
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Surface Speed:	17	13	8	4	0	Sinks
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Submerged Speed:	13	10	6	3	0	Sinks
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**Yankee I**

Displacement: 9600 subm

Damage Points: 134

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

(16)1 SS-N-6 w/16 msls

**Sensors:**

Snoop Tray

Shark Teeth, Shark Fin

**Remarks:**

34 units built: one converted to *Yankee II*; rest being converted to SSN or SSGN configurations. Additional unit lost 6 Oct 1986 off Bermuda after explosion and fire in the missile compartment. Has anechoic coating. Estimated TT loadout 14 ET-80A torp, 2 Type 53-68, 2 SS-N-15. Soviet sub; subject to +15% passive sonar detection modifier.

**Damage and Speed Breakdown:**

Damage Points:	0	34	67	100	121	134
----------------	---	----	----	-----	-----	-----

Surface Speed:	20	15	10	5	0	Sinks
----------------	----	----	----	---	---	-------

Submerged Speed:	27	20	14	7	0	Sinks
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**Yankee II**

Displacement: 10000 subm

Damage Points: 138

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

(12)1 SS-N-17 w/12 Snipe

**Sensors:**

Snoop Tray

Shark Teeth, Shark Fin

**Remarks:**

Has anechoic coating. Estimated TT loadout 14 ET-80A torp, 2 Type 53-68, 2 SS-N-15. Soviet sub, subject to +15% passive sonar detection modifier.

**Damage and Speed Breakdown:**

Damage Points:	0	34	69	104	124	138
----------------	---	----	----	-----	-----	-----

Surface Speed:	20	15	10	5	0	Sinks
----------------	----	----	----	---	---	-------

Submerged Speed:	27	20	14	7	0	Sinks
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**Yankee Notch**

Displacement: 10300 subm

Damage Points: 141

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

(??) SS-N-21 w/? Sampson

**Sensors:**

Snoop Tray

Shark Gill, Shark Fin

**Remarks:**

Modified *Yankee* hull, can carry 20-40 SS-N-21s in missile compartment. SS-N-21 can be fired from 533mm TT. May be fired from midships discharge tubes.

Total Mounts: 3

F

F

M

J

**SSBN**

In Class: 15

In Service: 1967

Speed: 20/27 kts

Crew: 120

Total Mounts: 3

F, E

—

J

M

**SSBN**

In Class: 1

In Service: 1978

Speed: 20/27 kts

Crew: 120

Total Mounts: 3

F, E

—

J

M

**SSGN**

In Class: 3+(13?)

In Service: 1985

Speed: 20/26 kts

Crew: 120

Total Mounts: 3

F, E

—

J

M

Has anechoic coating. Estimated TT loadout 14 ET-80A torp, 2 Type 53-68, 2 SS-N-15. Soviet sub; subject to +15% passive sonar detection modifier.

**Damage and Speed Breakdown:**

Damage Points:	0	35	70	106	127	141
----------------	---	----	----	-----	-----	-----

Surface Speed:	20	15	10	5	0	Sinks
----------------	----	----	----	---	---	-------

Submerged Speed:	26	20	13	6	0	Sinks
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**Yankee SSGN**

Displacement: 13650 subm

Damage Points: 172

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

—(24)1 SS-N-24 w/24 msls

**Sensors:**

Snoop Tray

Shark Teeth, Shark Fin

**Remarks:**

Converted SSGN serving as testbed for SS-N-24 nuclear land attack cruise missile. Has anechoic coating. Estimated TT loadout 14 ET-80A torp, 2 Type 53-68, 2 SS-N-15. Soviet sub; subject to +15% passive sonar detection modifier.

**Damage and Speed Breakdown:**

Damage Points:	0	43	86	129	155	172
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Surface Speed:	18	14	9	4	0	Sinks
----------------	----	----	---	---	---	-------

Submerged Speed:	22	16	11	6	0	Sinks
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**Yankee SSN**

Displacement: 10000 subm

Damage Points: 138

Damage Modifier: 1.00

Propulsion: Nuclear

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 see remarks

**Sensors:**

Snoop Tray

Shark Gill, Shark Fin, LF Fin towed array

**Remarks:**

Converted *Yankee* SSBNs. Has anechoic coating. Estimated TT loadout 14 ET-80A torp, 2 Type 53-68, 2 SS-N-15. Soviet sub; subject to +15% passive sonar detection modifier.

**Damage and Speed Breakdown:**

Damage Points:	0	34	69	104	124	138
----------------	---	----	----	-----	-----	-----

Surface Speed:	20	15	10	5	0	Sinks
----------------	----	----	----	---	---	-------

Submerged Speed:	27	20	14	7	0	Sinks
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**Zulu IV**

Displacement: 2350 subm

Damage Points: 44

Damage Modifier: 1.00

Propulsion: Diesel-Electric

**Weapons:**

PB&amp;SB(3)2 533mm TT w/18 SET-65 torp

PQ&amp;SQ(2)2 533mm TT w/4 SET-65 torp

**Sensors:**

Tamir

Snoop Plate

**Remarks:**

4 units in reserve; 20 others scrapped.

**Damage and Speed Breakdown:**

Damage Points:	0	11	22	33	40	44
----------------	---	----	----	----	----	----

Surface Speed:	18	14	9	4	0	Sinks
----------------	----	----	---	---	---	-------

Submerged Speed:	16	12	8	4	0	Sinks
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**SSGN**

In Class: 1

In Service: 1983

Speed: 18/22 kts

Crew: 120

Total Mounts: 3

F, E

—

J

M

**SSN**

In Class: 2+(14?)

In Service: 1984

Speed: 20/27 kts

Crew: 80

Total Mounts: 2

F, E

J

M

**SS**

In Class: [4]

In Service: 1952

Speed: 18/16 kts

Crew: 75

Total Mounts: 4

F

F

M

J



# Annex B—Aircraft

## Argentina

### A-4Q Skyhawk.

Cannon ATA: 2

Sensors:

None. Ballistic bombsight.

Performance:

Def ATA: 2.5 (1.0)

Attack

#### Speed in Knots (Nm/Phase)

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	—
Med:	410 (1.7)	558 (2.3)	—
High:	410 (1.7)	516 (2.2)	—

Ceiling: 11250 meters

Endurance:

Cruise Range: 970 nm

Drop Tank Desc. Fuel Wt. Range Add.

300 USG drop tank 926 kg 182 nm

Ordnance Loadouts:

Cannon: 2 Mk12 20mm.

● 3 300 USG drop tank, 2 Mk84 2000 lb bombs or Martin Pescador (1364 nm).

● 1 300 USG drop tank, 4 Mk82 500 lb bombs or LAU-69 (1200 nm).

● 3 Mk84 2000 lb bombs (873 nm).

Remarks:

Based on A-4B.

Inflight Refuel?: Y

Internal Fuel: 2469 kg

Payload: 2723 kg

### Agusta A.109

Cannon ATA: 2

Sensors:

None.

Performance:

Def ATA: 2.0 (1.5)

Attack

#### Speed in Knots (Nm/Phase)

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	125 (0.5)	167 (0.7)	—
Med:	125 (0.5)	167 (0.7)	—

Ceiling: 4450 meters

Endurance:

Cruise Range: 446 nm

Drop Tank Desc. Fuel Wt. Range Add.

Internal aux ferry tank 135 kg 201 nm

Ordnance Loadouts:

Cannon: 2 7.62mm miniguns.

● 2 AL-6-70 rocket pods (446 nm).

Remarks:

Helicopter.

Inflight Refuel?: N

Internal Fuel: 300 kg

Payload: 344 kg

### Bell 212

Cannon ATA: 0

Sensors:

None.

Performance:

Def ATA: 1.5 (1.5)

Transport

#### Speed in Knots (Nm/Phase)

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	100 (0.4)	110 (0.5)	—
Med:	100 (0.4)	110 (0.5)	—

Ceiling: 3960 meters

Endurance:

Cruise Range: 227 nm

Ordnance Loadouts:

Inflight Refuel?: N

Internal Fuel: 663 kg

Payload: ?

None.

Remarks:

Helicopter.

USA designation UH-1N. Aux fuel tank with 555 kg.

### Boeing 707

Cannon ATA: 0

Sensors:

Weather radar with SS capability.

Performance:

Def ATA: .5 (.5)

Recce

#### Speed in Knots (Nm/Phase)

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	545 (2.3)	545 (2.3)	—
Med:	478 (2.0)	545 (2.3)	—
High:	478 (2.0)	545 (2.3)	—

Ceiling: 11855 meters

Endurance:

Cruise Range: 6493 nm

Ordnance Loadouts:

None.

Inflight Refuel?: N

Internal Fuel: 73619 kg

Payload: 40324 kg

### C-130H Hercules

Cannon ATA: 0

Sensors:

Weather radar.

Performance:

Def ATA: .5 (.5)

Transport

#### Speed in Knots (Nm/Phase)

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	300 (1.2)	330 (1.4)	—
Med:	300 (1.2)	330 (1.4)	—
High:	330 (1.4)	330 (1.4)	—

Ceiling: 10060 meters

Endurance:

Cruise Range: 2046 nm

Drop Tank Desc. Fuel Wt. Range Add.

Fixed external tank 4197 kg 209 nm

Ordnance Loadouts:

None. 2 fixed external tanks carried.

Inflight Refuel?: Y

Internal Fuel: 20520 kg

Payload: 19356 kg

### Canberra B.62

Cannon ATA: 0

Sensors:

None. Ballistic bombsight.

Performance:

Def ATA: 1 (.5)

Attack

#### Speed in Knots (Nm/Phase)

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	450 (1.9)	450 (1.9)	—
Med:	350 (1.5)	460 (1.9)	—
High:	350 (1.5)	470 (2.0)	—

Ceiling: 14630 meters

Endurance:

Cruise Range: 3153 nm

Drop Tank Desc. Fuel Wt. Range Add.

Drop Tank 886 kg 169 nm

Ordnance Loadouts:

● 8 454 kg bombs (2837 nm).

● 2 drop tanks, 6 454 kg bombs or 8 227 kg bombs (3141 nm).

Inflight Refuel?: N

Internal Fuel: 8267 kg

Payload: 2724 (int) kg

### Electra

Cannon ATA: 0

Sensors:

At least one aircraft configured for Sigint role (ESM).

Def ATA: .5 (.5)

Transport

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	324 (1.4)	386 (1.6)	—
Med:	324 (1.4)	389 (1.6)	—
High:	389 (1.6)	389 (1.6)	—

Ceiling: 8655 meters

Endurance:

Cruise Range: 1912 nm

Ordnance Loadouts:

None.

Inflight Refuel?: N

Internal Fuel: ?

Payload: 0 kg

## IA.58A Pucara

Cannon ATA: 2

Sensors:

None. Ballistic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	232 (1.0)	290 (1.2)	—
Med:	232 (1.0)	270 (1.1)	—
High:	250 (1.0)	250 (1.0)	—

Ceiling: 10000 meters

Endurance:

Cruise Range: 1325 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

330 l drop tank

264 kg

171 nm

1200 l drop tank

958 kg

622 nm

Ordnance Loadouts:

Payload: 1620 kg

Cannon: 2 20mm and 4 12.7mm mg.

● 12 125 kg bombs or 3 LAU-69 rocket pods or 4 400 kg bombs (1192 nm).

● 2 330 l drop tanks and 6 125 kg bombs (1500 nm).

● 1 1200 l drop tank and 2 400 kg bombs or 6 125 kg bombs (1752 nm).

## KC-130H Hercules

Cannon ATA: 0

Sensors:

None.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	300 (1.2)	330 (1.4)	—
Med:	300 (1.2)	330 (1.4)	—
High:	330 (1.4)	330 (1.4)	—

Ceiling: 10060 meters

Endurance:

Cruise Range: 5883 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop Tank

4197 kg

308 nm

Ordnance Loadouts:

Payload: ?

None.

Remarks:

Tanker version of C-130H; uses internal fuel, 2 drop tanks, fuel tank in cargo compartment with 11110 kg fuel. All fuel can be used by aircraft.

## Learjet 35A

Cannon ATA: 0

Sensors:

Sperry Primus 300SL weather radar.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	470 (2.0)	470 (2.0)	—
Med:	418 (1.7)	470 (2.0)	—
High:	418 (1.7)	470 (2.0)	—

Ceiling: 13715 meters

Endurance:

Cruise Range: 2289 nm

Ordnance Loadouts:

None.

Inflight Refuel?: N

Internal Fuel: 2873 kg

Payload: 1361 kg

## MB.326GB

Cannon ATA: 0

Sensors:

None. Ballistic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	468 (2.0)	468 (2.0)	—
Med:	430 (1.8)	455 (1.9)	—
High:	430 (1.8)	440 (1.8)	—

Ceiling: 11900 meters

Endurance:

Cruise Range: 1000 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop Tank

265 kg

119 nm

Ordnance Loadouts:

Payload: 1814 kg

Cannon: None.

● 2 Mk82 500 lb bombs and 8 Zuni 5" rockets (900 nm).

● 2 SA 10 cannon pods and 4 Mk 82 500 lb bombs (900 nm).

● 6 Mk82 500 lb bombs (900 nm).

● 2 drop tanks and 4 Mk82 500 lb bombs (1114 nm).

## MB.339A

Cannon ATA: 0

Sensors:

None. No RWR. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	485 (2.0)	485 (2.0)	—
Med:	430 (1.8)	441 (1.8)	—
High:	430 (1.8)	441 (1.8)	—

Ceiling: 14630 meters

Endurance:

Cruise Range: 950 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop tank

260 kg

112 nm

Ordnance Loadouts:

Payload: 1815 kg

None.

## Nesher

Cannon ATA: 3

Sensors:

RWR. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	516 (2.2)	675 (2.8)	962 (4.0)
High:	516 (2.2)	750 (3.1)	1260 (5.2)

Ceiling: 17000 meters

Endurance:

Cruise Range: 1040 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

625 L drop tank

499 kg

95 nm

1300 L drop tank

1038 kg

198 nm

1700 L drop tank

1358 kg

260 nm

Ordnance Loadouts:

Payload: 4500 kg

Cannon: 2 30mm DEFA 552A.

● 2 AIM-9 and 2 454 kg bombs (936 nm).

● 6 400 kg bombs (936 nm).

● 2 AIM-9 and 2 1300 l drop tanks (1292 nm).

Attack

Def ATA: 2 (1)

Attack

Def ATA: .5 (5)

Attack

Def ATA: 2 (1)

Tanker

Def ATA: .5 (5)

Attack

Def ATA: 3 (1.5)

**P-2H Neptune**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

APS-20 radar, MAD, ESM, 66 sonobuoys. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	180 (0.8)	300 (1.2)	—
Med:	180 (0.8)	300 (1.2)	—
High:	300 (1.2)	300 (1.2)	—

Ceiling: 6700 meters

Endurance:

Cruise Range: 1914 nm

Inflight Refuel?: N

Internal Fuel: 6789 kg

Drop Tank Desc.

Fuel Wt.

Range Add.

Internal bay ferry tank 2160 kg 609 nm

Ordnance Loadouts:

Payload: 3630 kg

● 8 454 kg bombs and 16 Zuni 5" HVAR (914 nm).

● 2 Mk46 torp and 16 Zuni 5" HVAR (1914 nm).

● 12 147 kg DC and 16 Zuni 5" HVAR (1914 nm).

**S-2E Tracker**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

APS-38 radar in retractable radome, retractable MAD, ESM, 32 sonobuoys.

Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	130 (0.5)	197 (0.8)	—
Med:	130 (0.5)	197 (0.8)	—
High:	197 (0.8)	197 (0.8)	—

Ceiling: 6400 meters

Endurance:

Cruise Range: 800 nm

Inflight Refuel?: N

Internal Fuel: 1981 kg

Ordnance Loadouts:

Payload: 2182 kg

● 2 Mk46 torp or 4 175 kg DC internally.

● And 6 Mk81 bombs or 6 Zuni 5" HVAR or 4 Mk46 torp (720 nm).

**SA.330L Puma**

Cannon ATA: 0

Def ATA: 1.0 (1.0)

Sensors:

None.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	139 (0.6)	142 (0.6)	—
Med:	139 (0.6)	142 (0.6)	—

Ceiling: 4800 meters

Endurance:

Cruise Range: 300 nm

Inflight Refuel?: N

Internal Fuel: 1232 kg

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop tank 279 kg 68 nm

Ferry tank 1517 kg 369 nm

Ordnance Loadouts:

Payload: 2500 kg

None.

Remarks:

Helicopter.

**Skyvan**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

None.

ASW

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	150 (0.6)	175 (0.7)	—
Med:	150 (0.6)	175 (0.7)	—

Ceiling: 6705 meters

Endurance:

Cruise Range: 580 nm

Inflight Refuel?: N

Internal Fuel: 1063 kg

Ordnance Loadouts:

Payload: ?

None.

**T-34C Mentor**

Cannon ATA: 0

Def ATA: 1.0 (1.0)

Sensors:

None. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	180 (0.8)	210 (0.9)	—
Med:	180 (0.8)	210 (0.9)	—
High:	210 (0.9)	210 (0.9)	—

Ceiling: 9145+ meters

Endurance:

Cruise Range: 708 nm

Inflight Refuel?: N

Internal Fuel: 401 kg

Ordnance Loadouts:

Payload: 544 kg

● 2 SUU-11B/A 7.62mm gun pods or 2 Mk82 500 lb bombs (637 nm).

● 2 LAU-69 rocket pods (637 nm).

Remarks:

Argentina uses T-34C-1. Fifteen purchased.

**UH-1H**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

Sensors:

None.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	110 (0.5)	110 (0.5)	—
Med:	110 (0.5)	110 (0.5)	—
High:	110 (0.5)	110 (0.5)	—

Ceiling: 3840 meters

Endurance:

Cruise Range: 280 nm

Inflight Refuel?: N

Internal Fuel: 651 kg

Ordnance Loadouts:

Payload: ?

Remarks:

Helicopter.

Cruise and max speeds are the same.

**Canada****Argus Mk2**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

ASV-21 radar, ESM, MAD, 32 sonobuoys. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	251 (1.0)	274 (1.1)	—
Med:	251 (1.0)	262 (1.1)	—
High:	251 (1.0)	251 (1.0)	—

Ceiling: 7620 meters

Endurance:

Cruise Range: 5130 nm

Inflight Refuel?: N

Internal Fuel: 3630 kg

Ordnance Loadouts:

Payload: ?

● 4 Mk46 torp or 2 Mk57 Nuclear DB (5130 nm).

Transport

ASW

Transport

**CF-18 Hornet**

Cannon ATA: 4

Sensors:

APG-65, FLIR, Laser Spot Tracker, RWR. Advanced bombsight.

Performance:

Def ATA: 4.5 (2)

Intercept

## Speed in Knots (Nm/Phase)

## Throttle Setting

Altitude	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	795 (3.3)
Med:	490 (2.0)	685 (2.9)	914 (3.8)
High:	490 (2.0)	720 (3.0)	1032 (4.3)

Ceiling: 15510 meters

Endurance:

Cruise Range: 1197 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

330 USG drop tank

1018 kg

124 nm

Ordnance Loadouts:

Payload: 7710 kg

Cannon: 20mm Vulcan.

● 4 Maverick, 1 drop tank, 2 AIM-9L (1189 nm).

● 8 BL755, 1 drop tank, 2 AIM-9L (1189 nm).

● 4 BL755 or Mk82 bomb, 3 drop tank, 2 AIM-9L (1412 nm).

● 4 AIM-7M, 2 AIM-9L, 1 drop tank (1189 nm).

● 2 AIM-7M, 4 AIM-9L, 3 drop tanks (1412 nm).

**CH-124 Sea King**

Cannon ATA: 0

Sensors:

AQS-10 dipping sonar, ESM.

Performance:

Def ATA: 1.5 (1.5)

ASW

## Speed in Knots (Nm/Phase)

## Throttle Setting

Altitude	Cruise	Full Mil.	Reheat
VLow:	120 (0.5)	130 (0.5)	—
Med:	110 (0.5)	130 (0.5)	—

Ceiling: 9900 meters

Endurance:

Cruise Range: 483 nm

Ordnance Loadouts:

● 4 Mk46 torp or 4 Mk11 DC (483 nm).

Remarks:

Helicopter.

Autohover. Canadian designation for SH-3A.

Performance:

Specs taken from SH-3A.

Inflight Refuel?: N

Internal Fuel: 2008 kg

Payload: 1764 kg

**CP-121 Tracker**

Cannon ATA: 0

Sensors:

Retractable APS-38 radar, retractable MAD boom, ESM, doppler radar, 16 sonobuoys. Basic bombsight.

Performance:

Def ATA: .5 (.5)

ASW

## Speed in Knots (Nm/Phase)

## Throttle Setting

Altitude	Cruise	Full Mil.	Reheat
VLow:	130 (0.5)	246 (1.0)	—
Med:	130 (0.5)	210 (0.9)	—
High:	210 (0.9)	210 (0.9)	—

Ceiling: 6950 meters

Endurance:

Cruise Range: 780 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Internal bay aux tank

3024 kg

1666 nm

Ordnance Loadouts:

Payload: 908 kg

● 4 175 kg DC or 2 Mk46 torp internally.

● And 6 Zuni 5" HVAR or 4 Mk46 torp or 4 Mk81 250 lb bombs (702 nm).

Remarks:

Original designation CS2F-1 (S-2A), -2, -3. Evaluation used specs for USA S-2A.

Inflight Refuel?: N

Internal Fuel: 1416 kg

**CP-140 Aurora**

Cannon ATA: 0

Sensors:

APS-116 radar, FLIR, MAD, ESM, 156 sonobuoys. Basic bombsight.

Performance:

Def ATA: .5 (.5)

ASW

## Speed in Knots (Nm/Phase)

## Throttle Setting

Altitude	Cruise	Full Mil.	Reheat
VLow:	328 (1.4)	366 (1.5)	—
Med:	328 (1.4)	385 (1.6)	—
High:	375 (1.6)	403 (1.7)	—

Ceiling: 8600 meters

Endurance:

Cruise Range: 4405 nm

Ordnance Loadouts:

● 8 Mk46 torp (4405 nm).

● 2 B57 nuclear DB and 4 Mk46 torp (4405 nm).

Remarks:

USA P-3C aircraft with the sensor suite of the USA S-3 Viking.

Performance:

Statistics supplemented by P-3C data.

Inflight Refuel?: N

Internal Fuel: 28404 kg

Payload: 9070 kg

**France****Alizé**

Cannon ATA: 0

Sensors:

Iguane radar (retractable), 12 sonobuoys. Basic bombsight.

Performance:

Def ATA: .5 (.5)

ASW

## Speed in Knots (Nm/Phase)

## Throttle Setting

Altitude	Cruise	Full Mil.	Reheat
VLow:	178 (0.7)	250 (1.0)	—
Med:	178 (0.7)	257 (1.1)	—

Ceiling: 6300 meters

Endurance:

Cruise Range: 1350 nm

Ordnance Loadouts:

● 1 L4 torp, 2 175 kg DC, 2 AS.12 (350 nm).

● 1 L4 torp, 2 EU2 250 kg bombs, 6 Zuni 5" HVAR (1350 nm).

● 5 175 kg DC, 6 Zuni 5" HVAR (1350 nm).

Remarks:

Treat aircraft with extended radar as fully loaded. Takes one A/C movement phase to extend or retract radar.

Inflight Refuel?: N

Internal Fuel: 1677 kg

Payload: 975 kg

**AS.332F Super Puma**

Cannon ATA: 0

Sensors:

ORB 32 radar.

Performance:

Def ATA: 1.5 (1.5)

Transport

## Speed in Knots (Nm/Phase)

## Throttle Setting

Altitude	Cruise	Full Mil.	Reheat
VLow:	130 (0.5)	150 (0.6)	—
Med:	130 (0.5)	150 (0.6)	—

Ceiling: 3500 meters

Endurance:

Cruise Range: 470 nm

Ordnance Loadouts:

● 2 Mk46 or Murene torp and HS-12 dipping sonar (470 nm).

● 2 AM.39 Exocet or 6 AS.15TT (470 nm).

Remarks:

Two auxiliary external tanks are standard on AS.332F; included in internal fuel figure.

Inflight Refuel?:

Internal Fuel: 2274 kg

Payload: ?

**Atlantic**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

DRAA-2B radar in retractable radome, MAD, ESM, 100+ sonobuoys. Basic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	290 (1.2)	320 (1.3)	—
Med:	290 (1.2)	335 (1.4)	—
High:	350 (1.5)	350 (1.5)	—

Ceiling: 10000 meters

**Endurance:**

Cruise Range: 3200 nm

**Ordnance Loadouts:**

● 12 175 kg DC or 4 L4 torp or 8 Mk46 torp internally.

● And 4 AS.12 or AS.37 or 6 Zuni 5" HVAR externally (2880 nm).

Inflight Refuel?: N

Internal Fuel: 18470 kg

Payload: 3000 kg

**Atlantique 2**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

Iguane radar in retractable radome, FLIR turret, MAD, ESM, 100+ sonobuoys. Basic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	290 (1.2)	320 (1.3)	—
Med:	290 (1.2)	335 (1.4)	—
High:	350 (1.5)	350 (1.5)	—

Ceiling: 9100 meters

**Endurance:**

Cruise Range: 3200 nm

**Ordnance Loadouts:**

● 2 AM.39 or 4 L4 torp or 8 Mk46 torp or 7 Murene torp internally.

● 12 175 kg DC or 2 Nuclear DB internally.

● 2 AM.39 or 4 ARMAT or AS.12 or r.550 Magic externally (2880 nm).

Inflight Refuel?: N

Internal Fuel: 18470 kg

Payload: 3000 kg int, 3500 kg ext

**Etendard IV P/IV M**

Cannon ATA: 2

Def ATA: 3 (1.5)

**Sensors:**

Aida 7 radar. IV P has 5 cameras. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	—
Med:	443 (1.8)	595 (2.5)	—
High:	443 (1.8)	590 (2.5)	—

Ceiling: 15500 meters

**Endurance:**

Cruise Range: 660 nm

**Drop Tank Desc.**

Drop Tank

Fuel Wt.

479 kg

Range Add.

74 nm

**Ordnance Loadouts:**

Cannon: (IV) 1 30mm DEFA 552.

● 2 AS.30 or EU3 450 kg bombs, 2 AIM-9L (660 nm).

● 4 Matra 150 rocket pods (660 nm).

● 2 479 kg drop tanks 2 Matra 150 or 2 AIM-9 (808 nm).

● 2 EU3 450 kg bomb, 2 EU2 225 kg bomb (660 nm).

**Remarks:**

One 30mm cannon normally removed to make room for TACAN gear. IV M is attack, IV P is both recce and tanker. IV P is unarmed.

**F-8E (FN) Crusader**

Cannon ATA: 3

Def ATA: 3.5 (3.5)

**Sensors:**

APQ-104 radar. Basic bombsight.

**ASW****Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	486 (2.0)	675 (2.8)	912 (3.8)
High:	486 (2.0)	700 (2.9)	1033 (4.3)

Ceiling: 18000 meters

**Endurance:**

Cruise Range: 1300 nm

**Ordnance Loadouts:**

Cannon: 4 Mk12 20mm.

● 2 R.530 or R.550 Magic (1300 nm).

**Remarks:**

All weather. Aircraft will be reworked starting in 1993. Will add RWR, Cyrano IV radar vice APQ-104, Super 530F vice R.530.

Inflight Refuel?: Y

Internal Fuel: 4234 kg

Payload: 2269 kg

**Jaguar A**

Cannon ATA: 3

Def ATA: 3.5 (2)

**Sensors:**

RWR. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	373 (1.6)	650 (2.7)	822 (3.4)
High:	373 (1.6)	700 (2.9)	918 (3.8)

Ceiling: 14000 meters

**Endurance:**

Cruise Range: 1000 nm

**Drop Tank Desc.**

1200 L drop tank

Fuel Wt.

959 kg

Range Add.

143 nm

**Ordnance Loadouts:**

Cannon: 2 DEFA 553 30mm.

● 1 AS.37 Martel, 2 959 kg dt, 1 Phimat, 1 Barracuda (1157 nm).

● Atlas II pod, 2 AS.30L, 1 Phimat, 1 Barracuda (900 nm).

● 1 AN52, 2 959 kg dt, 1 Phimat, 1 Barracuda (900 nm).

● 3 EU3 450kg bomb, 2 959 kg dt, 1 Phimat, 1 Barracuda (1157 nm).

● 5 EU3 450kg bomb, 1 Phimat, 1 Barracuda (900 nm).

Inflight Refuel?: Y

Internal Fuel: 3355 kg

Payload: 4500 kg

**ASW****Attack****Lynx Mk4**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

DUAV-4 sonar (optional), ORB31WA radar.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	125 (0.5)	180 (0.8)	—
Med:	125 (0.5)	180 (0.8)	—

Ceiling: 3658 meters

**Endurance:**

Cruise Range: 320 nm

**Ordnance Loadouts:**

● 2 Mk46 torp or 2 Mk11 DC or 4 AS.12 (288 nm).

**Remarks:**

Helicopter.

Inflight Refuel?: N

Internal Fuel: 733 kg

Payload: 1360 kg

**Mirage 2000**

Cannon ATA: 3

Def ATA: 4.5 (2)

**Sensors:**

RDI radar (interceptor), RWR. Advanced bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	660 (2.8)	660 (2.8)	800 (3.3)
Med:	516 (2.2)	705 (2.9)	1031 (4.3)
High:	516 (2.2)	750 (3.1)	1262 (5.3)

**Intercept****Intercept**

Ceiling: 18000 meters

Endurance:

Cruise Range: 840 nm

Drop Tank Desc.	Fuel Wt.	Inflight Refuel?: Y Internal Fuel: 3036 kg Range Add.
1700 L drop tank	1358 kg	188 nm
1300 L drop tank	1038 kg	144 nm

Ordnance Loadouts:

Payload: 6000 kg

Cannon: 2 DEFA 554 30mm.

● 2 AM.39 Exocet, 1 1300 L drop tank (885 nm).

● 1300 L drop tank, 2 ARMAT, 2 R.550 Magic (885 nm).

● 1 1300 L drop tank, 2 R.530D, 2 R.550 Magic (885 nm).

● 4 Belouga, 2 1700 L drop tank, 2 R.550 Magic (1094 nm).

● 18 EU2 250 kg bombs (756 nm).

**Mirage 5**

Cannon ATA: 3

Def ATA: 3 (1.5)

Attack

Sensors:

Aida II and Laser RF or Agave radar (depends on customer). Ballistic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	516 (2.2)	670 (2.8)	962 (4.0)
High:	516 (2.2)	740 (3.1)	1200 (5.0)

Ceiling: 17000 meters

Endurance:

Cruise Range: 1040 nm

Inflight Refuel?: N

Internal Fuel: 2720 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
1200 L drop tank	959 kg	183 nm

Ordnance Loadouts: Payload: 4500 kg

Cannon: 2 30mm DEFA 553.

● 1 AS.30 or AS.37 and 2 EU3 450 kg bombs (936 nm).

● 1 AS.30 or AS.37 and 2 1200 L drop tanks (1265 nm).

● 2 Matra 155 rocket pods, 2 EU3 450 kg bombs, 2 R.550 Magic (936 nm).

● 2 1200 L drop tanks, 2 R.550 Magic (1265 nm).

● 8 EU3 450 kg bombs (936 nm).

**Mirage 50**

Cannon ATA: 3.5

Def ATA: 3 (1.5)

Attack

Sensors:

Agave or Cyrano IVM radar (depends on customer), RWR. Ballistic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	625 (2.6)	625 (2.6)	750 (3.1)
Med:	516 (2.2)	688 (2.9)	1006 (4.2)
High:	516 (2.2)	750 (3.1)	1262 (5.3)

Ceiling: 18000 meters

Endurance:

Cruise Range: 1150 nm

Inflight Refuel?: N

Internal Fuel: 2720 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
1700 L Drop tank	1358 kg	287 nm

Ordnance Loadouts: Payload: 4000 kg

Cannon: 2 30mm DEFA 552A.

● 1 AS.30 or AS.37 and 2 EU3 450 kg bombs (936 nm).

● 1 AS.30 or AS.37 and 2 1200 L drop tanks (1265 nm).

● 2 Matra 155 rocket pods, 2 EU3 450 kg bombs, 2 R.550 Magic (936 nm).

● 2 1200 L drop tanks, 2 R.550 Magic (1265 nm).

● 8 EU3 450 kg bombs (936 nm).

**Mirage F.1C**

Cannon ATA: 3

Def ATA: 4 (2)

Intercept

Sensors:

Cyrano IVM radar (-200 has IVMR), RWR. Ballistic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	791 (3.3)
Med:	479 (2.0)	700 (2.9)	1026 (4.3)
High:	479 (2.0)	750 (3.1)	1262 (5.3)

Ceiling: 20000 meters

Endurance:

Cruise Range: 1160 nm

Inflight Refuel?: Y

Internal Fuel: 3435 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
1160 L drop tank	927 kg	157 nm
2300 L drop tank	1837 kg	310 nm

Ordnance Loadouts: Payload: 6300 kg

Cannon: 2 30mm DEFA 553.

● 2 2300 L drop tank, 1 AM.39 Exocet, 2 R.550 Magic (1602 nm).

● 1 ATLIS II pod, 2 AS.30L, 2 R.550 Magic (1044 nm).

● 1 1160 L drop tank, 2 Armat or R.530F, 2 R.550 Magic (1185 nm).

● 6 Belouga, 2 R.550 Magic (1044 nm).

● 1 1160 L drop tank, 6 EU2 250 kg bomb, 2 R.550 Magic (1185 nm).

**Mirage IIIE**

Cannon ATA: 3

Def ATA: 3 (1.5)

Intercept

Sensors:

Cyrano II radar, RWR. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	625 (2.6)	625 (2.6)	750 (3.1)
Med:	516 (2.2)	688 (2.9)	1005 (4.2)
High:	516 (2.2)	750 (3.1)	1260 (5.2)

Ceiling: 17000 meters

Endurance:

Cruise Range: 900 nm

Inflight Refuel?: N

Internal Fuel: 2350 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
625 L drop tank	499 kg	96 nm
1300 L drop tank	1038 kg	199 nm
1700 L drop tank	1358 kg	260 nm

Ordnance Loadouts: Payload: 4000 kg

Cannon: 2 30mm DEFA 552.

● 1 R.530 and 2 R.550 Magic (810 nm).

● 1 AS.37 Martel, 2 1700 L drop tanks and 2 R.550 Magic (1278 nm).

● 4 EU3 450 kg bombs (810 nm).

● 1 AN52 nuclear bomb and 2 1700 L drop tanks (1278 nm).

**P-2H Neptune**

Cannon ATA: 0

Def ATA: 0.5 (0.5)

ASW

Sensors:

APS-20 radar, MAD, ESM, 66 sonobuoys. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	180 (0.8)	260 (1.1)	—
Med:	180 (0.8)	260 (1.1)	—
High:	300 (1.2)	300 (1.2)	—

Ceiling: 6700 meters

Endurance:

Cruise Range: 1914 nm

Inflight Refuel?: N

Internal Fuel: 6789 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
Internal bay tank	2160 kg	609 nm

Ordnance Loadouts: Payload: ?

● 2 L4 or Mk46 torp and 16 Zuni 5" HVAR (1914 nm).

● 1 Mk101 nuclear DB and 16 Zuni 5" HVAR (1914 nm).

**Rafale M**

Cannon ATA: 3

Def ATA: 5 (2.5)

Intercept

Sensors:

RDX LD/SD radar, FLIR, LRMTS, RWR. Advanced bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	480 (2.0)	690 (2.9)	969 (4.0)
High:	480 (2.0)	730 (3.0)	1147 (4.8)
Ceiling: ?			
Endurance:		Inflight Refuel?: Y	
Cruise Range: 1000 nm		Internal Fuel: 4250 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
2000 L Drop Tank	1598 kg	188 nm	
Ordnance Loadouts:		Payload: 3500 kg	
Cannon: 1 30mm DEFA 554.			
● 6 Mica and 2 R.550 Magic 2 (900 nm).			
● 4 Mica and 2 R.550 Magic 2 and 2 BGL 400 and 2 2000 L drop tanks (1238 nm).			
Remarks:			
Multiple launch vs. 8 targets at once. IOC mid-1990s. Internal ECCM suite equivalent to -10% radar jamming pod.			

## SA.319B Alouette III

ASW

Cannon ATA: 0 Def ATA: 1.5 (1.5)

## Sensors:

None. MAD can be carried as store.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	106 (0.4)	119 (0.5)	—
Med:	106 (0.4)	119 (0.5)	—
Ceiling: 3048 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 325 nm		Internal Fuel: 457 kg	
Ordnance Loadouts:		Payload: ?	
● 2 Mk46 torp or 1 Mk46 and MAD or 2 AS.12 (292 nm).			
Remarks:			
Helicopter.			

## SA.321G Super Frelon

ASW

Cannon ATA: 0 Def ATA: 1.5 (1.5)

## Sensors:

ORB-31D radar, HS-12 dipping sonar, MAD. Libyan Models fitted with ORB-32 Heracles 2 radar. PRC models have ORB-32, HS-12 dipping sonar, sonobuoys.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	135 (0.6)	145 (0.6)	—
Med:	135 (0.6)	145 (0.6)	—
Ceiling: 3150 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 440 nm		Internal Fuel: 3175 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
500 L ferry tank	399 kg	55 nm	
Ordnance Loadouts:		Payload: ?	
● 4 Mk46 or L4 or Murene torp (396 nm).			
● 2 AM.39 Exocet and ORB 31 radar (396 nm).			
Remarks:			
Operates in tactical formations of three-four A/C, one carrying the detection equipment, the others the equipment for attack. Endurance is 4 hours in ASW role.			

## SA.365F Dauphin 2

Attack

Cannon ATA: 0 Def ATA: 1.5 (1.5)

## Sensors:

Agrion 15 radar, RWR.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	140 (0.6)	165 (0.7)	—
Med:	140 (0.6)	165 (0.7)	—
Ceiling: 4575 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 485 nm		Internal Fuel: 910 kg	
Ordnance Loadouts:		Payload: ?	
● 4 AS.15TT or 2 AM.39 Exocet (436 nm).			
Remarks:			
Helicopter.			

## Super Etendard

Attack

Cannon ATA: 3

Def ATA: 3.5 (1.5)

## Sensors:

Agave radar, RWR. Ballistic bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	—
Med:	460 (1.9)	612 (2.5)	—
High:	460 (1.9)	574 (2.4)	—
Ceiling: 13700 meters			
Endurance:		Inflight Refuel?: Y	
Cruise Range: 1080 nm		Internal Fuel: 2612 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
600 L drop tank	479 kg	99 nm	
625 L drop tank	499 kg	103 nm	
1100 L drop tank	879 kg	182 nm	
Ordnance Loadouts:		Payload: 2100 w/full int fuel kg	
● 1 AM.39 Exocet, 1 600 L drop tank, 1 1100 L drop tank (1231 nm).			
● 1 600 L drop tank, 2 AS.30, 2 R.550 (1061 nm).			
● 4 Matra 155, 1 600 L drop tank (1061 nm).			
● 1 AN52, 2 1100 L drop tank (1299 nm).			
● 2 1100 L drop tank, buddy refuel store (1299 nm).			
Remarks:			
Midlife update started in 1989. Will receive Anemone radar to replace Agave, new computer, ability to launch laser-guided weapons.			

## Federal Republic of Germany (FRG)

## F-104G Starfighter

Intercept

Cannon ATA: 4

Def ATA: 3 (1.5)

## Sensors:

NASARR F15A-41B range-only radar, RWR. Basic bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	795 (3.3)
Med:	530 (2.2)	690 (2.9)	970 (4.0)
High:	530 (2.2)	730 (3.0)	1147 (4.8)
Ceiling: 16764 meters			
Endurance:		Inflight Refuel?: Y	
Cruise Range: 940 nm		Internal Fuel: 2709 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
170 USG drop tank	363 kg	63 nm	
195 USG drop tank	588 kg	102 nm	
225 USG drop tank	679 kg	118 nm	
Ordnance Loadouts:		Payload: 1815 kg	
Cannon: 1 20mm Vulcan.			
● 1 Mk84 2000 lb bomb and 2 588 kg drop tanks, 2 AIM-9L (997 nm).			
● 1 B43 Nuclear bomb, 2 588 kg drop tanks, 2 363 kg drop tanks (1143 nm).			
● 4 AIM-9L Sidewinder (846 nm).			
● 2 AIM-9L and 2 AGM-12A Bullpup A or 2 LAU-69 rocket pods (846 nm).			
● 1 Mk84 2000 lb bomb and 2 Mk83 1000 lb bombs, 2 AIM-9L (846 nm).			



**F-4F Phantom II**

Cannon ATA: 4

Def ATA: 3 (1)

Intercept

Performance:

**Sensors:**

APQ-100, ALR-46 RWR. Basic bombsight. Radar will be replaced by APF-65 in 1990s.

**Performance:****Speed in Knots (Nm/Phase)**

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	790 (3.3)
Med:	500 (2.1)	695 (2.9)	1026 (4.3)
High:	500 (2.1)	740 (3.1)	1205 (5.0)
VHigh:	500 (2.1)	740 (3.1)	1205 (5.0)

Ceiling: 16768 meters

**Endurance:**

Cruise Range: 1330 nm

Inflight Refuel?: N

Internal Fuel: 5295 kg

Drop Tank Desc. Fuel Wt. Range Add.

600 USG drop tank 1852 kg 233 nm

370 USG drop tank 1118 kg 140 nm

**Ordnance Loadouts:**

Payload: 7258 kg

Cannon: 1 20mm Vulcan.

● 15 LAU-69 rocket pods (1197 nm).

● 3 Mk84 1000 lb bombs or 7 Mk83 1000 lb bombs (1197 nm).

● 4 AIM-9L Sidewinder and 1 600 USG drop tank (1406 nm).

● 18 Mk82 500 lb bombs and 2 370 USG drop tanks (1449 nm).

**Lynx Mk88**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

**Sensors:**

AQS-18 dipping sonar.

**Performance:****Speed in Knots (Nm/Phase)**

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	125 (0.5)	180 (0.8)	—
Med:	125 (0.5)	180 (0.8)	—

Ceiling: 3663 meters

**Endurance:**

Cruise Range: 320 nm

Inflight Refuel?: N

Internal Fuel: 733 kg

**Ordnance Loadouts:**

Payload: 1360 kg

● 2 Mk46 torp or 2 Mk11 DC (288 nm).

**Remarks:**

Performance statistics supplemented by data for UK Lynx HAS.3.

**SH-3D Sea King**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

**Sensors:**

Dipping sonar. 20 units to be fitted w/Sea Spray Mk3 radar.

**Performance:****Speed in Knots (Nm/Phase)**

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	118 (0.5)	144 (0.6)	—
Med:	118 (0.5)	144 (0.6)	—

Ceiling: 3600 meters

**Endurance:**

Cruise Range: 600 nm

Inflight Refuel?: N

Internal Fuel: 2592 kg

**Ordnance Loadouts:**

Payload: 928 kg

● 2 Mk46 torp or 2 Mk11 DC (540 nm).

**Remarks:**

Helicopter.

Autohover.

**Tornado**

Cannon ATA: 3

Def ATA: 2.5 (1.5)

Attack

**Sensors:**

Terrain-following radar, RWR. Advanced bombsight.

**Speed in Knots (Nm/Phase)**

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	400 (1.7)	700 (2.9)	1027 (4.3)
High:	400 (1.7)	750 (3.1)	1262 (5.3)

Ceiling: 15240 meters

**Endurance:**

Cruise Range: 1900 nm

Inflight Refuel?: Y

Internal Fuel: 8000 kg

Drop Tank Desc. Fuel Wt. Range Add.

1500 L drop tank 1198 kg 142 nm

**Ordnance Loadouts:**

Payload: 9000 kg

Cannon: 2 27mm Mauser.

● 4 Kormoran, 2 AIM-9L Sidewinder, BOZ 100, Phimat chaff pod (1710 nm).

● 2 Kormoran, 2 1500 L drop tank, 2 AIM-9L Sidewinder, BOZ 100, Phimat chaff pod (1965 nm).

● Buddy refuel store, 2 1500 L drop tank, BOZ 100, Phimat chaff pod (1965 nm).

**Tornado ECR**

Cannon ATA: 0

Def ATA: 2.5 (1.5)

Attack

**Sensors:**

ESM, FLIR, Tornado nose radar. Advanced bombsight.

**Performance:****Speed in Knots (Nm/Phase)**

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	400 (1.7)	700 (2.9)	1027 (4.3)
High:	400 (1.7)	750 (3.1)	1262 (5.3)

Ceiling: 15240 meters

**Endurance:**

Cruise Range: 1900 nm

Inflight Refuel?: Y

Internal Fuel: 8000 kg

Drop Tank Desc. Fuel Wt. Range Add.

1500 L drop tank 1198 kg 142 nm

**Ordnance Loadouts:**

Payload: 9000 kg

● 8 HARM, 1 BOZ 100, 1 Phimat (1710 nm).

● 2 HARM, 2 1500 L drop tank, 2 AIM-9L Sidewinders, 1 BOZ 100, 1 Phimat (1965 nm).

● 4 HARM, 2 1500 L drop tank, 1 BOZ 100, 1 Phimat (1965 nm).

**Remarks:**

IOC 1989, 35 in service by 1991.

**International****Alpha Jet**

Cannon ATA: 0

Def ATA: 2 (1)

Attack

**Sensors:**

RWR

**Performance:****Speed in Knots (Nm/Phase)**

Altitude	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	540 (2.2)	540 (2.2)	—
Med:	402 (1.7)	488 (2.0)	—
High:	402 (1.7)	488 (2.0)	—

Ceiling: 13700 meters

**Endurance:**

Cruise Range: 1330 nm

Inflight Refuel?: N

Internal Fuel: 1520 kg

Drop Tank Desc. Fuel Wt. Range Add.

310 L drop tank 248 kg 108 nm

450 L drop tank 359 kg 157 nm

**Ordnance Loadouts:**

Payload: 2200 kg

● 4 BL755 or Matra F1 pod or Belouga (1197 nm).

● 2 AGM-65 Maverick and 2 AIM-9L (1197 nm).

● 2 450 L drop tank and 2 AIM-9L (1479 nm).

**Remarks:**

Trainer version used by France is Alpha Jet E; attack version used by FRG

is Alpha Jet A. Differences are minor. Endurance on internal fuel at high altitude 3.5+ hours.

### EH.101 Merlin

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

Sensors:

Blue Kestrel radar, HISOS 2 dipping sonar, 32 sonobuoys, MAD, ESM.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	150 (0.6)	160 (0.7)	—
Med:	150 (0.6)	160 (0.7)	—
Ceiling: ?			
Endurance:	Inflight Refuel?: N		
Cruise Range: 1050 nm	Internal Fuel: 3855 kg		
Ordnance Loadouts:	Payload: ?		
● 4 HP for A.244s or Stingray torp or Mk11 DC or 2 AM.39 Exocet (945 nm).			
Remarks:			
Helicopter.			

## Italy

### AB-212ASW

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

Sensors:

APS-705 radar, AQS-18 dipping sonar.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	100 (0.4)	105 (0.4)	—
Med:	100 (0.4)	105 (0.4)	—
Ceiling: 4330 meters			
Endurance:	Inflight Refuel?: N		
Cruise Range: 274 nm	Internal Fuel: 1021 kg		
Ordnance Loadouts:	Payload: ?		
● 2 Mk46 or A.244/s torp or Mk11 DC or Marte Mk2 or 4 AS.12 (246 nm).			
Remarks:			
Helicopter.			

### AMX

Cannon ATA: 3

Def ATA: 3 (1.5)

Attack

Sensors:

FIAR Pointer range-only radar, RWR. Ballistic bombsight.

Performance:

Speed in Knots (Nm/Phase)			
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	626 (2.6)	626 (2.6)	—
Med:	500 (2.1)	600 (2.5)	—
High:	500 (2.1)	560 (2.3)	—
Ceiling: ?			
Endurance:	Inflight Refuel?: Y		
Cruise Range: 1150 nm	Internal Fuel: 3076 kg		
Drop Tank Desc.	Fuel Wt.	Range Add.	
500 L drop tank	399 kg	75 nm	
1000 L drop tank	799 kg	149 nm	
Ordnance Loadouts:	Payload: 3800 kg		
Cannon: 1 20mm Vulcan.			
● 2 AIM-9L Sidewinder, 2 1000 L drop tanks, 2 500 L drop tanks (1438 nm).			
● 2 AGM-65 Maverick or Kormoran, 2 AIM-9L, ELT-555 jamming pod (1035 nm).			
● 6 Belouga, 2 AIM-9L (1035 nm).			
● 2 Mk84 2000 lb bombs, 2 500 L drop tanks (1170 nm).			
● 2 M117 750 kg bombs and 2 1000 L drop tanks (1303 nm).			

### ASH-3D Sea King

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

Sensors:

APS-702 radar.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	118 (0.5)	144 (0.6)	—
Med:	118 (0.5)	144 (0.6)	—
Ceiling: 4480 meters			
Endurance:	Inflight Refuel?: N		
Cruise Range: 600 nm	Internal Fuel: 2592 kg		
Ordnance Loadouts:	Payload: 3629 kg		
● 4 Mk46 torp or 4 AS.12, or 2 Marte Mk2 (540 nm).			
Remarks:			
Helicopter.			

### ASH-3H Sea King

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

Sensors:

APS-707 radar; MAD can be installed; AQS-13F or AQS-18 dipping sonar.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	118 (0.5)	144 (0.6)	—
Med:	118 (0.5)	144 (0.6)	—
Ceiling: 3720 meters			
Endurance:	Inflight Refuel?: N		
Cruise Range: 630 nm	Internal Fuel: 2540 kg		
Ordnance Loadouts:	Payload: 928 kg		
● 4 Mk46 or A.244s or 4 Mk11 DC or 4 AS.12 or 2 Marte Mk2 (567 nm).			
Remarks:			
Helicopter.			

### F-104S Starfighter

Cannon ATA: 4

Def ATA: 3 (1.5)

Intercept

Sensors:

NASARR F15A-41B range-only radar, RWR. Basic bombsight. F-104ASA has FIAR R21G/M1 Setter (LD/SD radar).

Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	795 (3.3)
Med:	530 (2.2)	700 (2.9)	1026 (4.3)
High:	530 (2.2)	750 (3.1)	1258 (5.2)
Ceiling:	17700 meters		
Endurance:		Inflight Refuel?: Y	
Cruise Range:	940 nm	Internal Fuel: 2709 kg	
Drop Tank Desc.		Fuel Wt.	Range Add.
Wingtip tank		516 kg	90 nm
Ordnance Loadouts:		Payload: 3400 kg	
Cannon:	1 20mm Vulcan.		
● 4 AIM-9E Sidewinder, 2 AIM-7F Sparrow (846 nm).			
● 2 AIM-9E, 2 Mk84 2000 lb bombs , 2 Mk83 1000 lb bombs (846 nm).			
● 2 AIM-9E, 6 Belouga or 4 LAU-69 rocket pods (846 nm).			
● 2 AIM-9E, 4 AIM-7F, 2 wingtip tanks (1008 nm).			
Remarks:			
F-104ASA deliveries began in the summer of 1986. F-104ASA uses Aspide vice AIM-7F and AIM-9L vice AIM-9E.			

### Tornado

Cannon ATA: 3

Def ATA: 2.5 (1.5)

Attack

Sensors:

Terrain-following radar, RWR. Advanced bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	400 (1.7)	700 (2.9)	1027 (4.3)
High:	400 (1.7)	750 (3.1)	1262 (5.3)
Ceiling: 15240 meters			
Endurance:		Inflight Refuel?: Y	
Cruise Range: 1900 nm		Internal Fuel: 8000 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
1500 L drop tank	1198 kg	142 nm	
Ordnance Loadouts:		Payload: 9000 kg	
Cannon: 2 27mm Mauser @ 125 rds.			
● 4 Kormoran, 2 AIM-9L Sidewinder, BOZ 100, Phimat chaff pod (1710 nm).			
● 2 Kormoran, 2 1500 L drop tank, 2 AIM-9L Sidewinder, BOZ 100, Phimat chaff pod (1965 nm).			
● Buddy refuel store, 2 1500 L drop tank, BOZ 100, Phimat chaff pod (1965 nm).			

## Japan

## F-1

## Attack

Cannon ATA: 3

Def ATA: 3.5 (2)

## Sensors:

J/AWG-12 radar, RWR. Basic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	373 (1.6)	650 (2.7)	820 (3.4)
High:	373 (1.6)	700 (2.9)	918 (3.8)
Ceiling: 15240 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 1170 nm		Internal Fuel: 3054 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
833 L drop tank	659 kg	126 nm	
Ordnance Loadouts:		Payload: 2722 kg	
Cannon: 1 20mm Vulcan.			
● 2 Type 80 ASM and 6 Mk82 500 lb bombs (1053 nm).			
● 4 LAU-69 rocket pods or 4 AAM-1 or 4 AIM-9L and 1 drop tank (1166 nm)			
● 2 AAM-1 or AIM-9L and 2 drop tanks (1422 nm).			
● 2 Type 80 and 2 AAM-1 or AIM-9L (1053 nm).			
● 7 M117 750 lb bombs (1053 nm).			

## ASW

## HSS-2 Sea King

Cannon ATA: 0

Def ATA: 1.5 (1.5)

## Sensors:

AQS-10 dipping sonar.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	120 (0.5)	130 (0.5)	—
Med:	120 (0.5)	130 (0.5)	—
Ceiling: 9900 meters			
Endurance:	Inflight Refuel?: N		
Cruise Range: 483 nm	Internal Fuel: 2008 kg		
Ordnance Loadouts:	Payload: 1764 kg		
● 4 Mk46 torp or 4 Mk11 DC (434 nm).			
Remarks:			
US SH-3A Sea King. Later marks HSS-2A, HSS-2B exist; no data available.			
All aircraft manufactured in Japan by Mitsubishi.			

## P-2J Neptune

## ASW

Cannon ATA: 0

Def ATA: .5 (.5)

## Sensors:

APS-80 radar, ESM, MAD, 24 sonobuoys. Basic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	200 (0.8)	321 (1.3)	—
Med:	200 (0.8)	321 (1.3)	—
Ceiling: 9150 meters			
Endurance:	Inflight Refuel?:		
Cruise Range: 2400 nm	Internal Fuel: 10340 kg		
Ordnance Loadouts:	Payload: 3630 kg		
● 8 Mk83 1000 lb bombs and 16 Zuni 5" HVAR (2160 nm).			
● 2 Mk46 torp and 16 Zuni 5" HVAR (2160 nm).			
● 12 Mk11 DC and 16 Zuni 5" HVAR (2160 nm).			
Remarks:			
1209 kg fuel carried in port wingtip tank; 9131 kg carried internally.			

## PS-1

## ASW

Cannon ATA: 0

Def ATA: .5 (.5)

## Sensors:

Large dipping sonar, APS-80 search radar, HLR-1 countermeasures, ASQ-10A MAD, APN-153 Doppler radar, 20 sonobuoys. Basic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	170 (0.7)	295 (1.2)	—
Med:	170 (0.7)	295 (1.2)	—
High:	295 (1.2)	295 (1.2)	—
Ceiling: 9000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 1170 nm		Internal Fuel: 6989 kg	
Ordnance Loadouts:		Payload: ?	
● 4 Mk11 DC, 4 Mk46 torp, 6 Zuni 5" HVAR (1053 nm).			

## Netherlands

## SH-14 Lynx

## ASW

Cannon ATA: 0

Def ATA: 1.5 (1.5)

## Sensors:

SH-14B has French DUAV 4 Alcatel dipping sonar; SH-14C has MAD instead. All helicopters to be standardized with DUAV 4 sonar. Fitted to first set of helicopters already.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	125 (0.5)	180 (0.8)	—
Med:	125 (0.5)	180 (0.8)	—
Ceiling: 3663 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 320 nm		Internal Fuel: 733 kg	
Ordnance Loadouts:		Payload: 1360 kg	
● 2 Mk46 torp or 2 Mk11 DC (288 nm).			
Remarks:			
UK designation Lynx Mk27 for SH-14B version (10 built) and Mk81 for -14C (8 built).			

## People's Republic of China (PRC)

## Be-6 Madge

## ASW

Cannon ATA: 1

Def ATA: .5 (.5)

## Sensors:

Retractable radar, MAD. Basic bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	140 (0.6)	250 (1.0)	—
Med:	140 (0.6)	224 (0.9)	—
High:	200 (0.8)	200 (0.8)	—
Ceiling: 6100 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 2600 nm		Internal Fuel: ?	
Ordnance Loadouts:		Payload: ?	
Canon: 2 NS-23 23mm defensive.			
● 16 FAB-100 or 8 FAB-500 or 2 FAB-1500 (2340 nm).			
● 4 B-1 DC or 4 SET-40 torp (2340 nm).			
Remarks:			
Amphibian.			

## F-7M Airguard

Cannon ATA: 2 Def ATA: 3 (1.5) Intercept  
Sensors:  
Type 226 ranging radar (UK Skyranger), RWR. Basic bombsight.  
Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	450 (1.9)	450 (1.9)	540 (2.2)
Med:	516 (2.2)	593 (2.5)	858 (3.6)
High:	516 (2.2)	735 (3.1)	1176 (4.9)
Ceiling: 18200 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 577 nm		Internal Fuel: 1905 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
800 L drop Tank	639 kg	97 nm	
500 L drop Tank	400 kg	61 nm	
Ordnance Loadouts:		Payload: 2000 kg	
Cannon: 2 Type 30-1 30mm @ 60 rds.			
● 4 PL-2 or PL-7 AAM and 1 800 L drop tank (606 nm).			
● 4 18x57mm rocket pods or 7x90mm rocket pods and 1 800 L drop tank (606 nm).			
● 2 500 L drop tank and 2 500 kg bombs or 2 PL-2 or 2 PL-7 (629 nm).			
● 6 Type 1 250 kg bombs and 1 500 L drop tank (574 nm).			
● 2 PL-2 or PL-7 AAM, 1 800 L drop tank, 2 500 L drop tanks (716 nm).			

## Hong-5 Beagle

Cannon ATA: 1 Def ATA: 1 (.5) Attack  
Sensors:  
None. Ballistic bombsight.  
Performance:

Speed in Knots (Nm/Phase)			
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	424 (1.8)	424 (1.8)	—
Med:	415 (1.7)	487 (2.0)	—
High:	415 (1.7)	500 (2.1)	—
Ceiling: 12300 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 1175 nm		Internal Fuel: 6400 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Wingtip tank	266 kg	24 nm	
Ordnance Loadouts:		Payload: 1000 kg	
Canon: 2 NR-23 23mm fixed forward, 2 NR-23 23mm in tail turret.			
● 4 500 kg bombs or 2 53VA torp or 12 Type 1 250 kg bombs (1116 nm).			
● 1 FAB-3000 (overload) (767 nm).			

## Hong-6 Badger

Cannon ATA: 2 Def ATA: 1 (.5) Attack  
Sensors:  
RWR. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	590 (2.5)	590 (2.5)	—
Med:	460 (1.9)	550 (2.3)	—
High:	460 (1.9)	510 (2.1)	—
Ceiling: 12300 meters			
Endurance:	Inflight Refuel?: N		
Cruise Range: 3100 nm	Internal Fuel: 36300 kg		
Ordnance Loadouts:	Payload: 8000 kg		
Canon: 1 NR-23mm fixed forward, 3x2 NR-23mm in defensive turrets.			
● 2 C601 ASMs externally (no internal load) (2790 nm).			
● 12 500 kg bombs or 6 1000 kg bombs internally (2945 nm).			

## Jian-5 Fresco

Cannon ATA: 3 Def ATA: 2 (1) Intercept  
Sensors:  
None. Basic bombsight.  
Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	620 (2.6)	620 (2.6)	—
Med:	420 (1.8)	610 (2.5)	—
High:	420 (1.8)	552 (2.3)	—
Ceiling: 15850 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 810 nm		Internal Fuel: 1143 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
400 L drop tank	325 kg	115 nm	
Ordnance Loadouts:		Payload: 650 kg	
Cannon: 3 NR-23 23mm.			
● 4 8x57mm rocket pods or 2 Type 1 250 kg bombs (729 nm).			
● 2 400 L drop tanks (936 nm).			
Remarks:			
MiG-17PF Fresco D equivalent. Wopen TJ license-built Klimov VK-1F TJ.			

## Jian-6 Farmer

Cannon ATA: 3 Def ATA: 3 (1.5) Intercept  
Sensors:  
Izmrud radar, RWR. Basic bombsight.  
Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	723 (3.0)
Med:	512 (2.1)	575 (2.4)	776 (3.2)
High:	512 (2.1)	550 (2.3)	830 (3.5)
Ceiling: 17900 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 750 nm		Internal Fuel: 1732 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
800 L drop Tank	639 kg	138 nm	
1140 L drop Tank	911 kg	197 nm	
Ordnance Loadouts:		Payload: ?	
Cannon: 2 or 3 NR-30mm.			
● 2 Type 1 250 kg bombs or 8x57mm rocket pod and 2 800 L drop tanks (923 nm).			
● 2 PL-2 AAM and 2 1140 L drop tanks (1029 nm).			
● 2 ARS 212 rockets and 2 800 L drop tanks (923 nm).			

## Jian-7 Fishbed

Cannon ATA: 3 Def ATA: 3 (1.5) Intercept  
Sensors:  
Type 222 ranging radar, RWR. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	700 (2.9)
Med:	520 (2.2)	670 (2.8)	1010 (4.2)
High:	520 (2.2)	760 (3.2)	1320 (5.5)
Ceiling: 18000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 650 nm		Internal Fuel: 1869 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
800 L drop tank	639 kg	111 nm	
Ordnance Loadouts:		Payload: ?	
Cannon: 1 Type 30-1 30mm.			
● 2 PL-2 or PL-7 AAM and 1 800 L drop tank (685 nm).			
● 2 18x57mm rocket pods or 7x90mm rocket pods and 1 800 L drop tank (685 nm).			
● 2 Type 1 250 kg bombs and 1 800 L drop tank (685 nm).			
Remarks:			
Copy of MiG-21F Fishbed C. WP-7 is copy of Tumansky R-11.			

## Sensors:

Search radar, MAD.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	243 (1.0)	299 (1.2)	—
Med:	243 (1.0)	299 (1.2)	—
High:	299 (1.2)	299 (1.2)	—
Ceiling: 7000 meters			
Endurance:			
Cruise Range: 2563 nm			
Ordnance Loadouts:			
● 2 C101 ASM and 6 SET-40 torp (2306 nm).			
Remarks:			
Amphibian. Also Harbin SH-5. Four in service in Sep 1986 with PLA Navy.			

## Yun-8 Cub

Recce

Cannon ATA: 0

Def ATA: .5 (.5)

## Sensors:

Radar type unknown; use USSR Mushroom radar until further information is available.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	297 (1.2)	400 (1.7)	—
Med:	297 (1.2)	376 (1.6)	—
High:	351 (1.5)	351 (1.5)	—
Ceiling: 10400 meters			
Endurance:			
Cruise Range: 3020 nm			
Ordnance Loadouts:			
None.			
Remarks:			
PRC-built An-12 Cub modified for maritime reconnaissance.			

## Zhi-8

ASW

Cannon ATA: 0

Def ATA: 1.5 (1.5)

## Sensors:

ORB-32 radar, HS-12 dipping sonar, sonobuoys.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	135 (0.6)	145 (0.6)	—
Med:	135 (0.6)	145 (0.6)	—
Ceiling: 3150 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 440 nm		Internal Fuel: 3175 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
500 L drop tank	399 kg	55 nm	
Ordnance Loadouts:		Payload: 11800 kg	
● 4 SET-40 or 4 B-1 DC or 2 C801 ASM (396 nm).			
Remarks:			
PRC license-built SA 321JA Super Frelon.			

## Zhi-9

ASW

Cannon ATA: 0

Def ATA: 1.5 (1.5)

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	140 (0.6)	164 (0.7)	—
Med:	140 (0.6)	164 (0.7)	—
Ceiling: 4575 meters			
Endurance:			
Cruise Range: 475 nm			
Inflight Refuel?: N			
Internal Fuel: 907 kg			

## Jian-8 Finback

Intercept

Cannon ATA: 3

Def ATA: 3 (1.5)

## Sensors:

Izmrud ranging radar, RWR. Ballistic bombsight. Will be upgraded with modified APG-66 radar.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	700 (2.9)
Med:	520 (2.2)	670 (2.8)	1010 (4.2)
High:	520 (2.2)	760 (3.2)	1320 (5.5)
Ceiling: 18000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 700 nm		Internal Fuel: 3994 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
480 L drop tank	383 kg	34 nm	
800 L drop tank	639 kg	56 nm	
Ordnance Loadouts:		Payload: ?	
Cannon: 2 Type 30-1 30mm.			
● 4 PL-2 or PL-7 and 800 L drop tank (680 nm).			
● 2 PL-2 or PL-7 and 2 480 L drop tank and 1 800 L drop tank (741 nm).			

## Q-5 Fantan A

Attack

Cannon ATA: 3

Def ATA: 3 (1.5)

## Sensors:

High Fix radar, RWR. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	540 (2.2)	540 (2.2)	653 (2.7)
Med:	513 (2.1)	545 (2.3)	648 (2.7)
High:	513 (2.1)	550 (2.3)	648 (2.7)
Ceiling: 16000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 910 nm		Internal Fuel: 2883 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Drop Tank	310 kg	49 nm	
Drop Tank	535 kg	84 nm	
Ordnance Loadouts:		Payload: 2000 kg	
Cannon: 2 Type 23-2 23mm.			
● 6 Type 1 250 kg bombs (819 nm).			
● 4 Type 1 250 kg bombs and 2 8x57mm rocket pods (819 nm).			
● 4 Type 1 250 kg bombs and 2 2 PL-2 or PL-7 AAM (819 nm).			

## SH-5

ASW

Cannon ATA: 0

Def ATA: .5 (.5)

**Ordnance Loadouts:**  
 ● 2 SET-40 torp or 2 B-1 DC (427 nm).  
**Remarks:**  
 PRC designation for SA.365N. Military version is Z-9A.

## Spain

### HS.13

**Cannon ATA:** 0  
**Sensors:**  
 MAD.  
**Performance:**

**ASW**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	129 (0.5)	152 (0.6)	—
Med:	119 (0.5)	152 (0.6)	—
Ceiling: 4875 meters			
Endurance:		Inflight Refuel?: ?	
Cruise Range: 255 nm		Internal Fuel: ?	
Ordnance Loadouts:		Payload: ?	
● 1 Mk46 torpedo (229 nm).			

## United Kingdom (UK)

### Buccaneer S.2B

**Cannon ATA:** 0  
**Sensors:**  
 Blue Parrot radar, RWR, FLIR. Ballistic bombsight.  
**Performance:**

**Attack**

Speed in Knots (Nm/Phase)			
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	610 (2.5)	610 (2.5)	—
Med:	500 (2.1)	574 (2.4)	—
High:	500 (2.1)	539 (2.2)	—
Ceiling: 12200 meters			
Endurance:		Inflight Refuel?: Y	
Cruise Range: 1700 nm		Internal Fuel: 5446 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Slipper Tank	908 kg	142 nm	
Int Bay Tank	1598 kg	499 nm	
Ordnance Loadouts:		Payload: 7257 kg ext/1811kg int	
● 4 Sea Eagle, 1 Int bay tank (1979 nm).			
● 2 AS.37 Martel, 1 ALQ-101, 1 AIM-9L, 1 Int bay tank (1979 nm).			
● 6 BL755, 1 Int bay tank, 2 sliper tank (2235 nm).			
● 1 Green Parrot nuclear bomb, 1 AIM-9L, 1 ALQ-101, 2 sliper tank (1786 nm).			
● 2 GBU-10, Pave Spike Pod, 1 ALQ-101, 1 Int bay tank (1979 nm).			

### Chinook HC.1

**Cannon ATA:** 0  
**Sensors:**  
 None.  
**Performance:**

**Transport**

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	137 (0.6)	164 (0.7)	—
Med:	137 (0.6)	164 (0.7)	—
Ceiling: 4570 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 218 nm		Internal Fuel: 3215 kg	
Ordnance Loadouts:		Payload: 10536 kg	
None.			

**Remarks:**  
 Helicopter.  
 Similar to CH-47C, Canadian CH-147.

### Gazelle AH.1

**Cannon ATA:** 0  
**Sensors:**  
 None.  
**Performance:**

**Def ATA:** 2.0 (2.0)

**Attack**

	Speed in Knots (Nm/Phase)			
	Throttle Setting			
Altitude	Cruise	Full Mil.	Reheat	
VLow:	126 (0.5)	167 (0.7)	—	
Med:	126 (0.5)	167 (0.7)	—	
Ceiling: 5000 meters				
Endurance:		Inflight Refuel?: N		
Cruise Range: 219 nm		Internal Fuel: 355 kg		
Ordnance Loadouts:		Payload: ?		
● 4 AS.12 (197 nm).				
Remarks:				
Helicopter.				
France-manufactured SA.341B Gazelle.				

### Hawk T.1A

**Cannon ATA:** 0  
**Sensors:**  
 None. Basic bombsight.  
**Performance:**

**Def ATA:** 3.5 (2)

**Attack**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	537 (2.2)	537 (2.2)	—
Med:	352 (1.5)	521 (2.2)	—
High:	352 (1.5)	504 (2.1)	—
Ceiling: 14630 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 1130 nm		Internal Fuel: 1362 kg	
Ordnance Loadouts:		Payload: 1360 kg	
● 1 Mk4 30mm Aden cannon pod, 2 BL755 or 2 AIM-9L <sub>r</sub> or 2 454 kg bombs (1017 nm).			

### Jaguar GR.1

**Cannon ATA:** 3  
**Sensors:**  
 LRMTS, RWR. Advanced bombsight.  
**Performance:**

**Def ATA:** 3.5 (2)

**Attack**

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	373 (1.6)	650 (2.7)	822 (3.4)
High:	373 (1.6)	700 (2.9)	918 (3.8)
Ceiling: 13000 meters			
Endurance:	Inflight Refuel?: Y		
Cruise Range: 1000 nm	Internal Fuel: 3355 kg		
Drop Tank Desc.	Fuel Wt.	Range Add.	
1200 L drop tank	959 kg	143 nm	
Ordnance Loadouts:	Payload: 4763 kg		
● 2 AS.37 Martel, 1 AIM-9L, 1 ALQ-101, 1 1200 L drop tank (1029 nm).			
● 2 GBU-10, 1 Pave Spike Pod, 1 ALQ-101, 1 AIM-9L (900 nm).			
● 2 Matra 155, 2 1200 L drop tank, 4 BL755 (1157 nm).			
● 4 454 kg bombs, 2 1200 L drop tank (1157 nm).			
● 8 454 kg bombs (900 nm).			

### Lightning F.6

**Cannon ATA:** 3  
**Sensors:**  
 Airpass radar, RWR. Basic bombsight.

**Def ATA:** 3 (1)

**Intercept**

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	702 (2.9)
Med:	517 (2.2)	670 (2.8)	1001 (4.2)
High:	517 (2.2)	760 (3.2)	1300 (5.4)

Ceiling: 18300 meters

Endurance:

Cruise Range: 695 nm

Ordnance Loadouts:

Cannon: Can carry pack with 2 Mk4 30mm Aden.

● 2 Red Top, Belly 30mm pack (579 nm).

● 2 Red Top, 1 Belly fuel tank (661 nm).

Inflight Refuel?: Y

Internal Fuel: 5000 kg

Payload: 2722 kg

## Lynx HAS.3

Cannon ATA: 0

Def ATA: 1.5 (1.5)

Sensors:

Sea Spray radar, ESM, or 8 SSG-947B sonobuoys and MAD.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	125 (0.5)	180 (0.8)	—
Med:	125 (0.5)	180 (0.8)	—

Ceiling: 3663 meters

Endurance:

Cruise Range: 320 nm

Ordnance Loadouts:

● 4 Sea Skua or AS.12 or 2 Mk46 or Sting Ray torp or 2 Mk11 DC (288 nm).

Remarks:

Helicopter.

Inflight Refuel?: N

Internal Fuel: 733 kg

Payload: 1360 kg

## Nimrod MR.2A

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

Searchwater radar, MAD, ESM, 126 Sonobuoys. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	540 (2.2)	540 (2.2)	—
Med:	431 (1.8)	520 (2.2)	—
High:	431 (1.8)	500 (2.1)	—

Ceiling: 12800 meters

Endurance:

Cruise Range: 4200 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Int bay tank

1141 kg

123 nm

Ordnance Loadouts:

Payload: 6120 kg

● 2 Harpoon, 9 Sting Ray (3780 nm).

● 4 AS.12, 9 Sting Ray (3780 nm).

● 1 Mk57 Nuclear DB, 6 Sting Ray, 4 AIM-9L (3990 nm).

● 9 Sting Ray, 4 AIM-9L (3780 nm).

● 6 Sting Ray, Int bay tank (5000 nm).

Inflight Refuel?: Y

Internal Fuel: 38960 kg

## Phantom FGR.2

Cannon ATA: 0

Def ATA: 3 (1)

Sensors:

AWG-12, RWR. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	791 (3.3)
Med:	500 (2.1)	695 (2.9)	998 (4.2)
High:	500 (2.1)	740 (3.1)	1205 (5.0)

Ceiling: 17373 meters

Endurance:

Cruise Range: 1500 nm

Inflight Refuel?: Y

Internal Fuel: 6172 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
600 USG drop Tank	1852 kg	225 nm
Drop Tank	1141 kg	139 nm
Ordnance Loadouts:		Payload: 7250 kg
● 4 Sky Flash, 2 AS.37 Martel, 1 Data Link Pod, 2 1141 kg drop tank (1602 nm).		
● 4 Sky Flash, 2 AGM-12B Bullpup B, 1 600 USG drop tank, 2 1141 kg drop tank (1805 nm).		
● 4 Sky Flash, 4 AIM-9L, 1 SUU-23 gun pod, 2 1141 kg drop tank (1602 nm).		
● 4 Sky Flash, 4 AIM-9L, 1 600 USG drop tank, 2 1141 kg drop tank (1805 nm).		
● 4 Matra 155, 4 Sky Flash, 1 600 USG drop tank, 2 1141 kg drop tank (1805 nm).		

## Scout AH.1

Cannon ATA: 0

Def ATA: 2.0 (1.5)

Sensors:

None.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	105 (0.4)	114 (0.5)	—
Med:	105 (0.4)	114 (0.5)	—

Ceiling: 4085 meters

Endurance:

Cruise Range: 273 nm

Ordnance Loadouts:

● 4 AS.11 or 1 flexible GPMG or 2 fixed forward-firing GPMG (245 nm).

Remarks:

Helicopter.

Inflight Refuel?: N

Internal Fuel: 562 kg

Payload: ?

## Sea Harrier FRS.1

Cannon ATA: 3

Def ATA: 3.5 (1.5)

Sensors:

Blue Fox radar, RWR. Ballistic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	—
Med:	450 (1.9)	583 (2.4)	—
High:	450 (1.9)	516 (2.2)	—

Ceiling: 15600 meters

Endurance:

Cruise Range: 690 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

100 Imp G drop Tank

363 kg

55 nm

190 Imp G drop Tank

690 kg

104 nm

Ordnance Loadouts:

Payload: 3628 kg

Cannon: 2 Aden Mk5 30mm.

● 2 Sea Eagle or AS.37 Martel and 2 AIM-9L or ALARM (621 nm).

● 5 BL755 or 454 kg bombs or Matra 155 rocket pods (621 nm).

● 2 190 Imp G drop tank, 3 BL755 or 454 kg bombs (808 nm).

● 2 190 Imp G drop tank, 4 AIM-9L (808 nm).

● 4 ALARM (621 nm).

Remarks:

VSTOL.

Inflight Refuel?: Y

Internal Fuel: 2287 kg

## Sea Harrier FRS.2

Cannon ATA: 3

Def ATA: 3.5 (1.5)

Sensors:

Blue Vixen radar, RWR. Advanced bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	—
Med:	450 (1.9)	583 (2.4)	—
High:	450 (1.9)	516 (2.2)	—

Ceiling: 15600 meters

Attack

ASW

ASW

Intercept

Attack



**Endurance:**

Cruise Range: 600 nm

**Drop Tank Desc.**

100 Imp G drop tank

190 Imp G drop tank

Fuel Wt.

363 kg

690 kg

Inflight Refuel?: Y

Internal Fuel: 2287 kg

Range Add.

48 nm

91 nm

**Ordnance Loadouts:**

Cannon: 2 Aden 25mm.

● 2 Sea Eagle or AS.37 Martel, 2 AIM-9L or ALARM (540 nm).

● 5 BL755 or 454 kg bombs or Matra 155 rocket pods (540 nm).

● 2 190 Imp G drop tank, 3 BL755 or 454 kg bombs (704 nm).

● 2 190 Imp G drop tank, 2 AMRAAM, 2 AIM-9L (704 nm).

● 4 ALARM or AMRAAM and 2 AIM-9L (540 nm).

**Remarks:**

V/STOL.

Capable of engaging two targets at once with AMRAAM. Can substitute additional 2 AMRAAM for 25mm cannon in all configurations.

**Sea King AEW.2**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

Searchwater radar, ESM.

**Performance:****Speed in Knots (Nm/Phase)****Throttle Setting**

Altitude	Cruise	Full Mil.	Reheat
VLow:	90 (0.4)	110 (0.5)	—
Med:	90 (0.4)	110 (0.5)	—

Ceiling: 3050 meters

**Endurance:**

Cruise Range: 700 nm

**Ordnance Loadouts:**

None.

**Remarks:**

Helicopter.

ASW

**Sea King HAS.2/5**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

Type 195 dipping sonar, AW.391 radar, ESM.

**Performance:****Speed in Knots (Nm/Phase)****Throttle Setting**

Altitude	Cruise	Full Mil.	Reheat
VLow:	112 (0.5)	184 (0.8)	—
Med:	112 (0.5)	184 (0.8)	—

Ceiling: 3087 meters

**Endurance:**

Cruise Range: 662 nm

**Ordnance Loadouts:**

● 4 Mk46 or Sting Ray torp or Mk11 DC (595 nm).

**Remarks:**

Helicopter.

ASW

**Sea King HAS.6**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

MEL Super Searcher radar, mini-sonobuoys, MAD, ESM, Type 2096 dipping sonar.

**Performance:****Speed in Knots (Nm/Phase)****Throttle Setting**

Altitude	Cruise	Full Mil.	Reheat
VLow:	112 (0.5)	131 (0.5)	—
Med:	112 (0.5)	131 (0.5)	—

Ceiling: 3087 meters

**Endurance:**

Cruise Range: 662 nm

**Ordnance Loadouts:**

● 4 Mk46 or Sting Ray torp or Mk11 DC or 2 Sea Eagle (595 nm).

ASW

**Remarks:**

Advanced Sea King. Used by India as Sea King Mk42B; can fire Sea Eagle. Up-rated transmission, all-composite rotor blades, improved sonobuoy processor. IOC summer 1989.

**Sea King HC.4**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

None.

**Performance:****Speed in Knots (Nm/Phase)****Throttle Setting**

Altitude	Cruise	Full Mil.	Reheat
VLow:	112 (0.5)	124 (0.5)	—
Med:	112 (0.5)	124 (0.5)	—

Ceiling: 3050 meters

**Endurance:**

Cruise Range: 664 nm

**Ordnance Loadouts:**

Cannon: Cabin-mounted 7.62mm GPMG.

**Remarks:**

Helicopter.

Transport

**Sentry AEW.1**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

APY-1 radar, Yellow gate ESM pods under wingtips.

**Performance:****Speed in Knots (Nm/Phase)****Throttle Setting**

Altitude	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	—
Med:	422 (1.8)	460 (1.9)	—
High:	422 (1.8)	460 (1.9)	—

Ceiling: 12200 meters

**Endurance:**

Cruise Range: 4374 nm

**Ordnance Loadouts:**

None.

**Remarks:**

USA designation E-3D. Carries both probe and receptacle for inflight refueling. 7 planned; first arrived in late 1989. Will be based at RAF Waddington.

AEW

**Shackleton AEW.2**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

APS-20F radar, ESM.

**Performance:****Speed in Knots (Nm/Phase)****Throttle Setting**

Altitude	Cruise	Full Mil.	Reheat
VLow:	220 (0.9)	240 (1.0)	—
Med:	220 (0.9)	240 (1.0)	—

Ceiling: 6100 meters

**Endurance:**

Cruise Range: 2650 nm

**Ordnance Loadouts:**

None.

Inflight Refuel?: N

Internal Fuel: ?

AEW

**Tornado F.2**

Cannon ATA: 2

Def ATA: 3 (1.5)

**Sensors:**

Foxhunter radar, ESM. Advanced bombsight.

Intercept

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	400 (1.7)	675 (2.8)	1016 (4.2)
High:	400 (1.7)	745 (3.1)	1239 (5.2)
VHigh:	400 (1.7)	745 (3.1)	1239 (5.2)

VHigh: 21355 meters

## Endurance:

Cruise Range: 1943 nm

Drop Tank Desc.	Fuel Wt.	Range Add.
-----------------	----------	------------

1500 L drop tank 1198 kg 145 nm

2250 L drop tank 1797 kg 218 nm

Ordnance Loadouts: Payload: 8500 kg

Cannon: 1 27mm Mauser cannon.

● 4 Sky Flash, 4 AIM-9, 2 2250 L drop tank (2127 nm).

● 4 2250 L drop tank, 1 refuel store (2505 nm).

## Remarks:

Can engage 4 targets simultaneously w/Sky Flash.

## Tornado F.3

Cannon ATA: 2

Def ATA: 3.5 (2)

## Intercept

## Sensors:

Foxhunter radar, ESM. Advanced bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	400 (1.7)	700 (2.9)	1027 (4.3)
High:	400 (1.7)	750 (3.1)	1262 (5.3)
VHigh:	400 (1.7)	750 (3.1)	1262 (5.3)

VHigh: 21335 meters

## Endurance:

Cruise Range: 1943 nm

Drop Tank Desc.	Fuel Wt.	Range Add.
-----------------	----------	------------

1500 L drop tank 1198 kg 145 nm

2250 L drop tank 1797 kg 218 nm

Ordnance Loadouts: Payload: 8500 kg

● 4 Sky Flash, 4 AIM-9, 2 2250 L drop tank (2127 nm).

● 4 2250 L drop tank, 1 refuel store (2505 nm).

● 8 AMRAAM, 2 2250 L drop tank (2127 nm).

## Remarks:

Has autosweep avionics. Can engage 4 targets simultaneously w/Sky Flash. Will carry AMRAAM when available.

## Tornado GR.1

Cannon ATA: 3

Def ATA: 3 (1.5)

## Attack

## Sensors:

Terrain-following radar, RWR, LRMTS. Advanced bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	791 (3.3)
Med:	400 (1.7)	700 (2.9)	1026 (4.3)
High:	400 (1.7)	750 (3.1)	1262 (5.3)

Ceiling: 15240 meters

## Endurance:

Cruise Range: 1943 nm

Drop Tank Desc.	Fuel Wt.	Range Add.
-----------------	----------	------------

1500 L drop tank 1198 kg 145 nm

Ordnance Loadouts: Payload: 9000 kg

Cannon: 2 27mm Mauser cannon.

● 4 GBU-15, 2 ALARM, 2 AIM-9L (1748 nm).

● 8 Mk83 1000 lb bombs or BL755, Sky Shadow ECM pod, BOZ 100 chaff pod (1748 nm).

● 1 Green Parrot nuclear bomb, 2 AIM-9L, 2 1500 L drop tanks, Sky Shadow ECM pod, BOZ 100 chaff pod. (2009 nm).

● 7 ALARM, 2 1500 L drop tanks, Sky Shadow ECM pod, BOZ 100 chaff pod (2009 nm).

● 8 Mk83 1000 lb bombs or BL755, 2 AIM-9L, 2 1500 L drop tanks, Sky Shadow ECM pod, BOZ 100 chaff (2009 nm).

## Tristar K.1

Cannon ATA: 0

Def ATA: 5 (.5)

## Tanker

## Sensors:

None.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	545 (2.3)	545 (2.3)	—
Med:	480 (2.0)	545 (2.3)	—
High:	480 (2.0)	545 (2.3)	—

Ceiling: 12800 meters

## Endurance:

Cruise Range: 8682 nm

Ordnance Loadouts:

None.

## Remarks:

Converted L-1011 airliners. Nine purchased. Two hoses under fuselage; two Mk32 refueling pods under wings. Can also carry passengers or cargo.

## Victor K.2

Cannon ATA: 0

Def ATA: 5 (.5)

## Tanker

## Sensors:

H2S radar, RWR.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	530 (2.2)	530 (2.2)	—
Med:	500 (2.1)	530 (2.2)	—
High:	500 (2.1)	530 (2.2)	—

Ceiling: 16000 meters

## Endurance:

Cruise Range: 3997 nm

Ordnance Loadouts:

None.

## Remarks:

Conversions of Victor B.2 bombers. No two exactly alike. C/L station, one refuel pod on each wing. Can refuel one heavy aircraft or two fighters. External fuel in two permanently fitted underwing slipper tanks (@ 6170 kg) and refueling pods (@ 526 kg).

## Vulcan B.2A

Cannon ATA: 0

Def ATA: 1 (.5)

## Attack

## Sensors:

H2S radar, RWR, terrain-following radar, Green Satin nav radar. Ballistic bombsight.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	—
Med:	543 (2.3)	570 (2.4)	—
High:	543 (2.3)	560 (2.3)	—

Ceiling: 19810 meters

## Endurance:

Cruise Range: 4000 nm

Ordnance Loadouts:

● 21 Mk83 1000 lb bombs (3800 nm).

Inflight Refuel?: Y

Internal Fuel: 54432 kg

Payload: 9600 kg

## Wasp HAS.1

Cannon ATA: 0

Def ATA: 2.0 (2.0)

## ASW

## Sensors:

None.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	96 (0.4)	104 (0.4)	—
Med:	96 (0.4)	104 (0.4)	—

Ceiling: 3658 meters  
Endurance:  
Cruise Range: 235 nm  
Ordnance Loadouts:  
● 2 Mk46 torp or 2 AS.12 (211 nm).  
Remarks:  
Helicopter.

## Wessex HAS.3

Cannon ATA: 0  
Sensors:  
Type 195 dipping sonar, APN-97 doppler radar, AW.391 search radar. HAS.1 has Type 194.  
Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	105 (0.4)	114 (0.5)	—
Med:	105 (0.4)	114 (0.5)	—

Ceiling: 4274 meters  
Endurance:  
Cruise Range: 262 nm  
Ordnance Loadouts:  
● 2 Mk46 or 4 AS.12 or 2 Mk11 DC (236 nm).  
Remarks:  
Helicopter.  
HAS.1 had APN-97A doppler radar and autostabilizer, dipping sonar. Last HAS.3 withdrawn in 1984.

## Wessex HU.5

Cannon ATA: 0  
Sensors:  
None.  
Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	105 (0.4)	114 (0.5)	—
Med:	105 (0.4)	114 (0.5)	—

Ceiling: 3660 meters  
Endurance:  
Cruise Range: 286 nm  
Ordnance Loadouts:  
None.  
Remarks:  
Helicopter.

## Harrier (GR.3/AV-8A)

Cannon ATA: 3  
Sensors:  
LRMTS (GR.3), RWR. Advanced bombsight.  
Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	—
Med:	490 (2.0)	589 (2.5)	—
High:	490 (2.0)	528 (2.2)	—

Ceiling: 15240 meters  
Endurance:  
Cruise Range: 600 nm  
Drop Tank Desc. Fuel Wt. Range Add.  
100 Imp G drop Tank 363 kg 48 nm  
190 Imp G drop Tank 690 kg 91 nm

## Ordnance Loadouts:

Cannon: 2 30mm Mk4 Aden.  
● 2 GBU-10 and 2 190 Imp G drop tanks (704 nm).  
● 4 Matra 155 and 2 190 Imp G drop tanks (704 nm).  
● 5 Mk83 1000 lb bombs or BL755 (no 30mm cannon) (540 nm).  
● 3 Mk83 1000 lb bombs or BL 755 and 2 190 Imp G drop tanks (704 nm).  
● 2 AS.37 Martel and 2 190 Imp G drop tanks (704 nm).  
Remarks:  
V/STOL.

## Harrier II (AV-8B/GR.5)

Cannon ATA: 4  
Sensors:  
LRMTS, RWR. Advanced bombsight.  
Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	—
Med:	460 (1.9)	550 (2.3)	—
High:	460 (1.9)	520 (2.2)	—

Ceiling: 15240 meters  
Endurance:  
Cruise Range: 965 nm  
Drop Tank Desc. Fuel Wt. Range Add.  
300 USG Drop Tank 907 kg 129 nm  
Ordnance Loadouts:  
Cannon: 2 25mm Aden @ 100 rds (UK)/1 25mm GAU-12/U w/300 rds (USA).  
● 1 ALQ-165, 2 drop tanks, 4 GBU-10, 2 AIM-9L (1101 nm).  
● 1 ALQ-165, 10 BL755, 2 AIM-9L (869 nm).  
● 1 ALQ-165, 2 drop tanks, 6 Mk82 bomb, 2 AIM-9L (1101 nm).  
● 4 AIM-9L, 2 drop tanks (1101 nm).  
● 4 AGM-65 Maverick (869 nm).  
Remarks:  
V/STOL.  
GR.7 version under development in UK. Night-capable version of Harrier GR.5 with FLIR.

## United States of America (USA)

## A-10A Thunderbolt II

Cannon ATA: 5.0  
Sensors:  
Laser designator, FLIR, RWR.  
Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	300 (1.2)	381 (1.6)	—
Med:	300 (1.2)	381 (1.6)	—
High:	336 (1.4)	381 (1.6)	—

Ceiling: ?  
Endurance:  
Cruise Range: 1350 nm  
Drop Tank Desc. Fuel Wt. Range Add.  
600 USG drop tank 1862 kg 259 nm  
Ordnance Loadouts:  
Cannon: GAU-8 30mm w/1174 rds.  
● 1 600 USG drop tank, 6 Maverick, 1 AIM-9L, 1 ALQ-119 pod (1448 nm).  
● 1 600 USG drop tank, 2 GBU-16, 2 GBU-10, 1 AIM-9L, 1 ALQ-119 pod (1448 nm).  
● 1 600 USG drop tank, 4 Mk83 bombs, 1 AIM-9L, 1 ALQ-119 (1448 nm).  
● 3 600 USG drop tank, 6 Mk20 Rockeye, 1 AIM-9L, 1 ALQ-119 pod (1914 nm).

## A-4M Skyhawk

Cannon ATA: 2  
Def ATA: 3.5 (1.5)

## ASW

## Transport

## Attack

## Attack

## Attack

## Attack

**Sensors:**

LST, RWR, APG-53 radar. Advanced bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	—
Med:	396 (1.6)	570 (2.4)	—
High:	396 (1.6)	560 (2.3)	—

Ceiling: 12800 meters

Endurance:

Cruise Range: 1786 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

300 USG drop tank

925 kg

411 nm

Ordnance Loadouts:

Payload: 4175 kg

Cannon: 2 Mk12 20mm.

● 4 HARM or AGM-12B Bullpup B, 1 drop tank (1058 nm).

● 4 LAU-69 and 2 drop tanks (1256 nm).

● 8 Mk82 bombs and 2 drop tanks (1256 nm).

● 1 B57 nuclear bomb, 2 drop tanks, 2 AIM-9L (1256 nm).

● 2 AIM-9L, 3 300 USG drop tank (1454 nm).

**A-6E Intruder/KA-6D****Attack**

Cannon ATA: 0

Def ATA: 2 (1)

**Sensors:**

APQ-156 radar, RWR. TRAM has FLIR, LRMTS. Advanced bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	570 (2.4)	570 (2.4)	—
Med:	415 (1.7)	535 (2.2)	—
High:	415 (1.7)	500 (2.1)	—

Ceiling: 13800 meters

Endurance:

Cruise Range: 1600 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

300 USG drop tank

907 kg

99 nm

Ordnance Loadouts:

Payload: 8165 kg

● 4 Harpoon or HARM or Walleye II, 1 drop tank (1530 nm).

● 3 B57 nuclear bombs, 2 drop tank (1620 nm).

● 22 Mk20 Rockeye, 1 drop tank (1530 nm).

● 8 Mk82 500 lb bomb, 1 drop tank (1530 nm).

● 5 Mk84 bomb (1440 nm).

**A-7E Corsair II****Attack**

Cannon ATA: 4

Def ATA: 2.5 (1)

**Sensors:**

APQ-126 radar, RWR, FLIR being added. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	602 (2.5)	602 (2.5)	—
Med:	492 (2.0)	546 (2.3)	—
High:	492 (2.0)	490 (2.0)	—

Ceiling: 13000 meters

Endurance:

Cruise Range: 2065 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop tank

926 kg

210 nm

Drop tank

756 kg

171 nm

Ordnance Loadouts:

Payload: 6800 kg

Cannon: 1 20mm Vulcan w/1032 rds.

● 2 AIM-9L, 4 HARM or Walleye (1859 nm).

● 2 AIM-9L and 18 Mk20 Rockeye, 2 drop tanks (2237 nm).

● 2 AIM-9L and 12 Mk81 250 lb bombs 2 drop tanks (2237 nm).

● 1 B57 nuclear bomb, 3 drop tanks (2426 nm).

● 2 AIM-9L, 36 Mk81 250 lb bombs (1859 nm).

**B-52G Stratofortress****Attack**

Cannon ATA: 1.5

Def ATA: .5 (.5)

**Sensors:**

ASQ-151 EO viewing system w/LLTV and FLIR, LAQ-46 RWR, ALQ-153 tail-warning radar. Advanced bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	365 (1.5)	365 (1.5)	—
Med:	400 (1.7)	440 (1.8)	—
High:	442 (1.8)	516 (2.2)	—

Ceiling: 16765 meters

Endurance:

Cruise Range: 8800 nm

Ordnance Loadouts:

Cannon: 4 12.7mm mg in tail stinger.

● 8 Harpoon or GBU-15V or AGM-136 Tacit Rainbow (7920 nm).

● 51 M117 750 lb bombs (7920 nm).

**Remarks:**

Carries powerful defensive ECM suite equivalent to -15% radar jamming pod.

**CH-46D Sea Knight****Transport**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

None.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	135 (0.6)	146 (0.6)	—
Med:	135 (0.6)	146 (0.6)	—

Ceiling: 4266 meters

Endurance:

Cruise Range: 230 nm

Ordnance Loadouts:

None.

**Remarks:**

Helicopter.

**E-2C Hawkeye****AEW**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

APS-125 radar, ESM. Later versions have APS-138 radar, APS-145 radar.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	262 (1.1)	320 (1.3)	—
Med:	262 (1.1)	320 (1.3)	—
High:	320 (1.3)	320 (1.3)	—

Ceiling: 9390 meters

Endurance:

Cruise Range: 1580 nm

Ordnance Loadouts:

None.

**Remarks:**

Group I update has APS-139 radar, Allison T56-A-427 TP. First aircraft scheduled for delivery to fleet in mid-1989. Older aircraft will be converted to group I standard with APS-139 radar. Group II has APS-145 with better overland capability; IOC 1990.

**E-3 Sentry****AEW**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

APY-1 radar.

## Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	—
Med:	422 (1.8)	460 (1.9)	—
High:	422 (1.8)	460 (1.9)	—
Ceiling: 12200 meters			
Endurance:			
Cruise Range: 4374 nm			
Ordnance Loadouts:			
None.			

## EA-3B Skywarrior

Cannon ATA: 0

Def ATA: .5 (.5)

Recce

Sensors:

ESM, ASB-7 radar.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	556 (2.3)	556 (2.3)	—
Med:	400 (1.7)	530 (2.2)	—
High:	400 (1.7)	510 (2.1)	—
Ceiling: 12500 meters			
Endurance:			
Cruise Range: 2370 nm			
Ordnance Loadouts:			
None.			

## EA-6B Prowler

Cannon ATA: 0

Def ATA: 3 (3)

EW Jammer

Sensors:

APS-130 nav radar, ESM.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	570 (2.4)	570 (2.4)	—
Med:	420 (1.8)	535 (2.2)	—
High:	420 (1.8)	500 (2.1)	—
Ceiling: 11580 meters			
Endurance:			
Cruise Range: 1018 nm			
Drop Tank Desc.			
Drop Tank	907 kg		66 nm
Ordnance Loadouts:			
Payload: 0 kg			

● 5 ALQ-99 jamming pods (916 nm).

● 3 ALQ-99 pods and 2 HARM (916 nm).

Remarks:

Opposing radar ranges decreased by 1/2; hit chances by radar-guided weapons reduced by -10% (5% with 3 pods) within 25 nm. Carries equivalent of -15% radar jamming pod internally.

## EF-111A Raven

Cannon ATA: 0

Def ATA: 3 (1)

EW Jammer

Sensors:

APQ-160 nav radar, APQ-110 terrain-following radar, ALR-62 RWR, ESM.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	430 (1.8)	700 (2.9)	1027 (4.3)
High:	430 (1.8)	750 (3.1)	1262 (5.3)
Ceiling: 13715 meters			
Endurance:			
Cruise Range: 1614 nm			
Drop Tank Desc.			
600 USG drop tank	1852 kg		101 nm

## Ordnance Loadouts:

None.

Remarks:

Equipped with the equivalent of a -15% defensive jamming pod.

## ES-3A

Cannon ATA: 0

Def ATA: 1 (1)

Recce

Sensors:

ESM, APS-137 radar, FLIR.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	450 (1.9)	450 (1.9)	—
Med:	355 (1.5)	420 (1.8)	—
High:	355 (1.5)	390 (1.6)	—
Ceiling: 12285 meters			
Endurance:			
Cruise Range: 2765 nm			
Drop Tank Desc.			
300 USG drop tank	907 kg		210 nm
Ordnance Loadouts:			
None.			

Remarks:

Converted S-3 Viking. ELINT role. 16 aircraft. IOC mid-1990s. Will form 2 new squadrons, VQ-5 at Agana and -6 at Rota, with 8 aircraft each.

## F-111F

Cannon ATA: 4

Def ATA: 3 (1)

Attack

Sensors:

AVQ-26 Pave Tack FLIR and laser designator, APQ-144 radar, APQ-110 terrain-following radar. Will be fitted w/APG-67. Advanced bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	790 (3.3)
Med:	502 (2.1)	715 (3.0)	1112 (4.6)
High:	502 (2.1)	780 (3.2)	1434 (6.0)
Ceiling: 18300 meters			
Endurance:			
Cruise Range: 2574 nm			
Drop Tank Desc.			
600 USG drop Tank	1816 kg		154 nm
Ordnance Loadouts:			
Payload: 13608 kg			
Cannon: 1 20mm Vulcan.			
● 4 GBU-15, 2 AIM-9L, 1 ALQ-131 (2317 nm).			
● 24 Mk82 500 lb bombs, 1 ALQ-131 (2317 nm).			
● 12 Mk82 500 lb bombs, 2 600 USG drop tanks, 1 ALQ-131 (2594 nm).			
● 1 B61 nuclear bomb, 2 AIM-9L, 4 600 USG drop tank, 1 ALQ-131 (2871 nm).			
Remarks:			
Pave Tack retracts into weapons bay when not in use. Treat aircraft as fully loaded while Pave Tack is extended.			

## F-14A Tomcat

Cannon ATA: 4

Def ATA: 4 (2)

Intercept

Sensors:

AWG-9 radar, TCS, IRST. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	405 (1.7)	708 (3.0)	1067 (4.4)
High:	405 (1.7)	765 (3.2)	1342 (5.6)
Ceiling: 18150 meters			
Endurance:			
Cruise Range: 1556 nm			
Drop Tank Desc.			
600 USG drop tank	1852 kg		101 nm

**Drop Tank Desc.** **Fuel Wt.** **Range Add.**  
 280 USG drop tank 862 kg 91 nm  
**Ordnance Loadouts:** **Payload:** 6577 kg  
**Cannon:** 1 20mm Vulcan.  
 ● 6 AIM-54C Phoenix, 2 AIM-9L, 2 280 USG drop tanks (1350 nm).  
 ● 4 AIM-54C Phoenix, 2 AIM-7M Sparrow, 2 AIM-9L, 2 280 USG drop tanks (1564 nm).  
 ● 1 280 USG drop tank, 1 refuel store (1482 nm).  
**Remarks:**  
 Cannot land w/6 Phoenix, normally carries 4 on CAP.

**F-14D Tomcat****Intercept**

**Cannon ATA:** 4 **Def ATA:** 4.5 (2.5)  
**Sensors:**  
 APG-71 radar, TCS, IRST (later), RWR. Basic bombsight.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	405 (1.7)	708 (3.0)	1060 (4.4)
High:	405 (1.7)	765 (3.2)	1342 (5.6)

**Ceiling:** 20000 meters**Endurance:****Cruise Range:** 1790 nm**Inflight Refuel?:** Y**Internal Fuel:** 7350 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
280 USG drop tank	862 kg	105 nm

**Ordnance Loadouts:****Payload:** 6577 kg**Cannon:** 1 20mm Vulcan.

- 6 AIM-54C Phoenix, 2 AIM-9L, 2 280 USG drop tanks (1350 nm).
- 4 AIM-54C Phoenix, 2 AIM-7M Sparrow, 2 AIM-9L, 2 280 USG drop tanks (1564 nm).
- 1 280 USG drop tank, 1 refuel store (1482 nm).

**Remarks:**

Cannot land w/6 Phoenix; normally carries 4 on CAP.

**F-15C Eagle****Intercept****Cannon ATA:** 4 **Def ATA:** 4 (2)

**Sensors:**  
 APG-63, RWR. Radar being uprated to APG-70 in MSIP. Advanced bomb-sight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	660 (2.8)	660 (2.8)	810 (3.4)
Med:	493 (2.1)	713 (3.0)	1074 (4.5)
High:	493 (2.1)	765 (3.2)	1338 (5.6)

**Ceiling:** 19800 meters**Endurance:****Cruise Range:** 1881 nm**Inflight Refuel?:** Y**Internal Fuel:** 10515 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
600 USG drop tank	1815 kg	162 nm

**Ordnance Loadouts:****Payload:** 7258 kg**Cannon:** 1 20mm Vulcan.

- 4 AIM-7M, 4 AIM-9L, 1 600 USG drop tank (1839 nm).
- 4 AIM-7M, 3 600 USG drop tanks (2130 nm).
- 8 AIM-120 AMRAAM, 1 600 USG drop tank (1839 nm).

**Remarks:**

Range values include FAST pack, which adds @ 2206 kg fuel=4412 kg. Removal of FAST packs increases Def ATA to 4.5 (2.5). Can carry AMRAAM when available. Can engage 2 different targets simultaneously with AAM.

**F-16C Falcon****Attack****Cannon ATA:** 4 **Def ATA:** 5 (2.5)

**Sensors:**  
 APG-68, RWR. Advanced bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	791 (3.3)
Med:	533 (2.2)	693 (2.9)	974 (4.1)
High:	533 (2.2)	735 (3.1)	1158 (4.8)

**Ceiling:** 15240 meters**Endurance:****Cruise Range:** 1100 nm**Inflight Refuel?:** Y**Internal Fuel:** 3162 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
Drop tank	1118 kg	194 nm
300 USG drop tank	907 kg	158 nm

**Ordnance Loadouts:****Payload:** 5443 kg

- 4 GBU-15, 4 AIM-9L, 1 ALQ-131 (990 nm).
- 4 Mk20 Rockeye, 2 1118 kg drop tank, 4 AIM-9L, 1 ALQ-131 (1339 nm).
- 8 Mk82 500 lb bombs, 2 1118 kg drop tanks, 2 AIM-9L, 1 ALQ-131 (1339 nm).
- 6 AIM-9L, 1 300 USG drop tank (1132 nm).
- 4 AIM-9L, 1 300 USG drop tank, 2 1118 kg drop tanks (1481 nm).

**F-4E Phantom II****Attack****Cannon ATA:** 4 **Def ATA:** 3 (1)**Sensors:**

APQ-120 radar, TISEO. Some have AVQ-23 Pave Spike with FLIR and LRMTS. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	790 (3.3)
Med:	500 (2.1)	698 (2.9)	1026 (4.3)
High:	500 (2.1)	745 (3.1)	1244 (5.2)

**Ceiling:** 18000 meters**Endurance:****Cruise Range:** 1400 nm**Inflight Refuel?:** Y**Internal Fuel:** 5575 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
600 USG drop tank	1852 kg	233 nm
Drop Tank	1118 kg	140 nm

**Ordnance Loadouts:****Payload:** 7260 kg**Cannon:** 1 20mm Vulcan.

- 3 AIM-7F, 1 ALQ-131, 2 1118 kg drop tanks, 2 GBU-10 (1260 nm).
- 4 AIM-7F, 4 AIM-9L, 2 1118 kg drop tanks, 1 600 USG drop tank (1722 nm).
- 3 AIM-7F, 1 ALQ-131, 24 Mk82 500 lb bombs (1260 nm).
- 3 AIM-7F, 1 ALQ-131, 2 1118 kg drop tanks, 9 LAU-69 rocket pods (1260 nm).
- 3 AIM-7F, 1 ALQ-131, 2 1118 kg drop tanks, 1 B57 nuclear bomb (1260 nm).

**F-4N/S Phantom II****Intercept****Cannon ATA:** 0 **Def ATA:** 3 (1)**Sensors:**

AWG-10A radar, RWR. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	790 (3.3)
Med:	516 (2.2)	700 (2.9)	1026 (4.3)
High:	516 (2.2)	750 (3.1)	1262 (5.3)
VHigh:	516 (2.2)	750 (3.1)	1262 (5.3)

**Ceiling:** 21000 meters**Endurance:****Cruise Range:** 1500 nm**Inflight Refuel?:** Y**Internal Fuel:** 5575 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
600 USG drop tank	1852 kg	249 nm
Drop tank	1118 kg	150 nm

**Ordnance Loadouts:****Payload:** 7260 kg

- 6 AIM-7M (1425 nm).
- 4 AIM-7M and 2 AIM-9L (1425 nm).
- 11 Mk83 1000 lb bombs (1350 nm).

**F/A-18A Hornet**

Cannon ATA: 4

Def ATA: 4.5 (2)

**Sensors:**

APG-65, FLIR, Laser Spot Tracker, RWR. Advanced bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	795 (3.3)
Med:	490 (2.0)	685 (2.9)	914 (3.8)
High:	490 (2.0)	720 (3.0)	1032 (4.3)

Ceiling: 15510 meters

Endurance:

Cruise Range: 1197 nm

Drop Tank Desc.

Fuel Wt.

Inflight Refuel?: Y

Internal Fuel: 4929 kg

Range Add.

330 USG drop tank

1018 kg

124 nm

Ordnance Loadouts:

Payload: 7710 kg

Cannon: 1 20mm Vulcan.

- 4 Harpoon or HARM or AGM-65 Maverick, 1 330 USG drop tank, 2 AIM-9L (1189 nm).

- 2 Harpoon or HARM or AGM-65 Maverick, 3 330 USG drop tank, 2 AIM-9L (1412 nm).

- 4 AIM-7M, 2 AIM-9L, 1 330 USG drop tank (1189 nm).

- 2 AIM-7M, 4 AIM-9L, 3 330 USG drop tank (1412 nm).

- 8 Mk20 Rockeye, 1 330 USG drop tank, 2 AIM-9L (1189 nm).

**KC-10 Extender**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

Modified commercial weather radar.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	530 (2.2)	530 (2.2)	—
Med:	440 (1.8)	530 (2.2)	—
High:	440 (1.8)	530 (2.2)	—

Ceiling: 12800 meters

Endurance:

Cruise Range: 10000 nm

Ordnance Loadouts:

None.

Inflight Refuel?: Y/3

Internal Fuel: 158292 kg

Payload: 0 kg

**KC-135R**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

Weather radar (no detection capability).

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	530 (2.2)	—
Med:	460 (1.9)	530 (2.2)	—
High:	460 (1.9)	530 (2.2)	—

Ceiling: 13716 meters

Endurance:

Cruise Range: 9827 nm

Ordnance Loadouts:

None.

Remarks:

Rebuilt KC-135A.

Inflight Refuel?: Y/1

Internal Fuel: 92210 kg

Payload: 0 kg

**P-3C Orion**

Cannon ATA: 0

Def ATA: .5 (.5)

**Sensors:**

APS-115 radar, MAD, 87 sonobuoys, retractable FLIR. Basic bombsight. Update IV uses APS-137 ISAR radar.

**Attack****Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	328 (1.4)	366 (1.5)	—
Med:	328 (1.4)	385 (1.6)	—
High:	403 (1.7)	403 (1.7)	—

Ceiling: 8600 meters

Endurance:

Cruise Range: 4405 nm

Ordnance Loadouts:

- 4 Harpoon, 8 Mk46 torp (3965 nm).

- 1 Mk101 nuclear DB, 4 Mk46 torp (4405 nm).

Inflight Refuel?: N

Internal Fuel: 28404 kg

Payload: 9070 kg

**S-3 Viking**

Cannon ATA: 0

Def ATA: 1 (.5)

**Sensors:**

APS-116 radar, MAD, FLIR, ESM, 60 sonobuoys. S-3B has APS-137 ISAR radar. Basic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	450 (1.9)	450 (1.9)	—
Med:	355 (1.5)	420 (1.8)	—
High:	355 (1.5)	390 (1.6)	—

Ceiling: 12285 meters

Endurance:

Cruise Range: 2765 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop Tank

907 kg

210 nm

Ordnance Loadouts:

Payload: 4536 kg

- 2 Harpoon, 4 Mk46 torp (2489 nm).

- 6 Mk20 Rockeye, 4 Mk46 torp (2489 nm).

- 1 Mk57 nuclear DB, 2 Mk46 torp, 2 drop tank (3185 nm).

- 4 Mk46 torp, 2 drop tank (2867 nm).

- 1 drop tank, 1 refuel store (2678 nm).

Inflight Refuel?: Y

Internal Fuel: 5964 kg

**SH-2F Seasprite**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

LN-66, MAD, ESM, 15 sonobuoys (DIFAR & DICASS). Blip enhancer.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	120 (0.5)	130 (0.5)	—
Med:	120 (0.5)	138 (0.6)	—

Ceiling: 2994 meters

Endurance:

Cruise Range: 195 nm

Drop Tank Desc.

Fuel Wt.

Range Add.

Drop Tank

185 kg

42 nm

Ordnance Loadouts:

Payload: 464 kg

- 2 Mk46 torp (176 nm).

- 1 Mk46 torp and 1 drop tank (213 nm).

- 2 drop tank (251 nm).

Remarks:

Helicopter.

SH-2F Seasprite is also called the LAMPS I. LAMPS stands for Light Airborne Multipurpose System. Must stay in radar line of sight of parent ship to use sonobuoys.

**SH-2G Seasprite**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

FLIR, LN-66, MAD, ESM, 15 sonobuoys (DIFAR & DICASS). Blip enhancer.

**Tanker****Tanker****ASW****ASW****ASW****ASW**



## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	130 (0.5)	150 (0.6)	—
Med:	130 (0.5)	150 (0.6)	—
Ceiling: 6401 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 300 nm		Internal Fuel: 852 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Drop tank	309 kg	109 nm	
Ordnance Loadouts:		Payload: 650 kg	
● 2 Mk46 torp (270 nm).			
● 1 Mk46 torp and 1 drop tank (368 nm).			
● 2 drop tank (466 nm).			
Remarks:			
Helicopter.			
Has onboard sonobuoy processors. Up-rated SH-2F LAMPS I.			

## SH-3H Sea King

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

## Sensors:

LN-66HP radar, MAD, ESM, AQS-13B dipping sonar. ESM and radar later removed to make room for tactical navigation equipment and improved sonar (-13B?). Blip enhancer.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	118 (0.5)	140 (0.6)	—
Med:	118 (0.5)	140 (0.6)	—
Ceiling: 4537 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 610 nm		Internal Fuel: 2540 kg	
Ordnance Loadouts:		Payload: 928 kg	
● 4 Mk46 torp (549 nm).			
● 1 Mk57 nuclear DB (549 nm).			
Remarks:			
Helicopter.			

## SH-60B Seahawk

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

## Sensors:

ESM, MAD, APS-124 radar, 25 sonobuoys, FLIR. Blip Enhancer (estimated).

## Performance:

Speed in Knots (Nm/Phase)			
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	100 (0.4)	150 (0.6)	—
Med:	100 (0.4)	125 (0.5)	—
Ceiling: 5790 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 400 nm		Internal Fuel: 1092 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Drop Tank	363 kg	66 nm	
Ordnance Loadouts:		Payload: 800 kg	
● 2 Mk46 torp or Mk50 torp or Mk11 DC (360 nm).			
● 2 Penguin Mk2 Mod 7 (360 nm).			
● 1 Mk57 nuclear DB, 1 drop tank (419 nm).			
● 2 drop tank (479 nm).			
● 1 Mk46 torp or Mk50 torp or Mk11 DC and 1 drop tank (419 nm).			
Remarks:			
Helicopter.			

## SH-60F Oceanhawk

Cannon ATA: 0

Def ATA: 1.5 (1.5)

ASW

## Sensors:

AQS-13F dipping sonar. Blip enhancer (estimated).

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	100 (0.4)	150 (0.6)	—
Med:	100 (0.4)	125 (0.5)	—
Ceiling: 5790 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 400 nm		Internal Fuel: 1092 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Drop Tank	363 kg	66 nm	
Ordnance Loadouts:		Payload: 464 kg	
● 2 Mk46 torp or Mk50 torp (360 nm).			
● 1 drop tank, 1 Mk46 or Mk50 torp (419 nm).			
● 2 drop tank (479 nm).			
● 1 Mk57 nuclear DB, 1 drop tank (419 nm).			
Remarks:			
Helicopter.			

## Union of Soviet Socialist Republics (USSR)

## An-12 Cub

Cannon ATA: 2

Transport/EW

Def ATA: .5 (.5)

## Sensors:

B has ESM (ELINT), C & D have ESM & jammers.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	297 (1.2)	380 (1.6)	—
Med:	297 (1.2)	400 (1.7)	—
High:	420 (1.8)	420 (1.8)	—
Ceiling: 10200 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 2347 nm		Internal Fuel: 11103 kg	
Ordnance Loadouts:		Payload: 20000 kg	
Cannon: 2 NR-23 23mm in tail in A and B.			
Remarks:			
A carries cargo; B is ELINT; C and D are jammer variants.			

## An-74 Madcap

Cannon ATA: 0

Def ATA: .5 (.5)

AEW

## Sensors:

Radar, RWR. May have ESM. Radar type unknown. Use Flat Jack until further information is available.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	329 (1.4)	329 (1.4)	—
Med:	297 (1.2)	329 (1.4)	—
High:	297 (1.2)	329 (1.4)	—
Ceiling: 10500 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 2500 nm		Internal Fuel: ?	
Ordnance Loadouts:		Payload: 0 kg	
None.			
Remarks:			
AEW version of An-74 Coaler STOL transport.			

## Be-12 Mail

Cannon ATA: 0

Def ATA: .5 (.5)

ASW

## Sensors:

MAD, 32 sonobuoys. Radar type unknown; use USSR Mushroom radar until further information is available. Basic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	172 (0.7)	300 (1.2)	—
Med:	172 (0.7)	329 (1.4)	—
High:	350 (1.5)	350 (1.5)	—

Ceiling: 11300 meters

Endurance:

Cruise Range: 4054 nm

Ordnance Loadouts:

● 4 E45-75A torp, 2 B-1 DC (3649 nm).

● 8 B-1 DC (3649 nm).

● 2 nuclear DB (3649 nm).

Remarks:

Amphibian.

Inflight Refuel?: N

Internal Fuel: 10547 kg

Payload: 5000 kg

**II-38 May**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

Wet Eye radar, MAD, ESM, 50 sonobuoys. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	216 (0.9)	315 (1.3)	—
Med:	216 (0.9)	348 (1.5)	—
High:	380 (1.6)	380 (1.6)	—

Ceiling: 9500 meters

Endurance:

Cruise Range: 3900 nm

Ordnance Loadouts:

● 6 E45-75A torp (3900 nm).

● 1 Nuclear DB, 3 E45-75A torp (3900 nm).

● 12 B-1 nuclear DB (3900 nm).

Remarks:

Weapon quantities estimated.

Inflight Refuel?: N

Internal Fuel: 24000 kg

Payload: 3600 kg

**II-76TD Mainstay**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

Radar, RWR.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	—
Med:	405 (1.7)	460 (1.9)	—
High:	405 (1.7)	460 (1.9)	—

Ceiling: 15000 meters

Endurance:

Cruise Range: 3020 nm

Ordnance Loadouts:

None.

Remarks:

Radar type unknown; use Flat Jack with +10% to Pd.

Inflight Refuel?: N

Internal Fuel: 55340 kg

**II-78 Midas**

Cannon ATA: 0

Def ATA: .5 (.5)

Sensors:

RWR (estimated).

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	—
Med:	405 (1.7)	460 (1.9)	—
High:	405 (1.7)	460 (1.9)	—

Ceiling: 15000 meters

Endurance:

Inflight Refuel?: N

Cruise Range: 6274 nm

Ordnance Loadouts:

None.

Remarks:

Aerial refueling variant of II-76 Candid, using probe and drogue.

Internal Fuel: 65340 kg

Payload: 48000 kg

**Ka-25 Hormone****ASW, Recce**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

Sensors:

A: Dipping sonar, 3 sonobuoys, MAD, Mushroom radar, EO sensor estimated to be FLIR. B: Big Bulge radar, ESM, data link.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	105 (0.4)	115 (0.5)	—
Med:	105 (0.4)	115 (0.5)	—

Ceiling: 3500 meters

Endurance:

Cruise Range: 216 nm

Ordnance Loadouts:

● 2 E45-75A torp or B-1 DC (194 nm).

● 1 Nuclear DB (194 nm).

Remarks:

Helicopter.

Hormone cannot hover or dip at night. A is ASW; B is OTH targeting; C is utility/SAR. B and C are unarmed.

Inflight Refuel?: N

Internal Fuel: ?

Payload: 600 kg

**Ka-27 Helix****ASW**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

Sensors:

A: Radar, MAD, dipping sonar, 12 sonobuoys, RWR.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	124 (0.5)	135 (0.6)	—
Med:	124 (0.5)	135 (0.6)	—

Ceiling: 5000 meters

Endurance:

Cruise Range: 432 nm

Ordnance Loadouts:

● 2 E45-7A torp or B-1 DC (389 nm)

● 1 nuclear DB (389 nm)

Remarks:

Helicopter.

A is ASW; C is utility/SAR. Radar type on Helix A is unknown. Use Mushroom radar until further data is available. C is unarmed.

Inflight Refuel?: N

Internal Fuel: ?

Payload: 800 kg

**Ka-29TB Helix B****Transport**

Cannon ATA: 0

Def ATA: 0

Sensors:

RWR, directional ESM, dorsal EW pod.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	124 (0.5)	135 (0.6)	—
Med:	124 (0.5)	135 (0.6)	—

Ceiling: 5000 meters

Endurance:

Cruise Range: 432 nm

Ordnance Loadouts:

● 4 UB-20 rocket pods (389 nm).

● 4 AT-6 Spiral (389 nm).

Remarks:

Formerly Ka-27 Helix B. Amphibious assault helicopter. Primary function is delivery of precision-guided weapons, weapons designation, and troop transport.

Inflight Refuel?: N

Internal Fuel: 432 kg

Payload: 800 kg

**ASW****AEW****Tanker**

**Mi-14 Haze**

Cannon ATA: 0

Def ATA: 1.5 (1.5)

**Sensors:**

MAD, dipping sonar, 20 sonobuoys. Radar type unknown; use USSR Mushroom radar until further information is available.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	113 (0.5)	124 (0.5)	—
Med:	113 (0.5)	124 (0.5)	—

Ceiling: 5000 meters

Endurance:

Cruise Range: 432 nm

Ordnance Loadouts:

● 4 E45-75A torp or 4 B-1 DC (389 nm).

● 2 Nuclear DB (389 nm).

**Remarks:**

Helicopter.

A is ASW; B is MCM variant (unarmed).

**ASW****Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	620 (2.6)	620 (2.6)	—
Med:	420 (1.8)	610 (2.5)	—
High:	420 (1.8)	552 (2.3)	—

Ceiling: 16600 meters

Endurance:

Cruise Range: 523 nm

Ordnance Loadouts:

Cannon: 3 NR-23 23mm.

● 4 UV-8-57 rocket pods or AA-2 Atoll (471 nm).

● 2 FAB-250 bombs (471 nm).

Inflight Refuel?: N

Internal Fuel: 1115 kg

Payload: ?

**MiG-19S Farmer C**

Cannon ATA: 4

Def ATA: 3 (1.5)

**Sensors:**

Izmud ranging radar, RWR. Basic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	495 (2.1)	495 (2.1)	596 (2.5)
Med:	513 (2.1)	523 (2.2)	690 (2.9)
High:	513 (2.1)	550 (2.3)	784 (3.3)

Ceiling: 17500 meters

Endurance:

Cruise Range: 750 nm

Ordnance Loadouts:

Cannon: 3 NR-30 30mm with 75 rds for fuselage gun and 55 for wing root guns.

● 4 AA-2 Atoll or UV-8-57 rocket pods (675 nm).

● 2 FAB-500 bombs (675 nm).

Inflight Refuel?: N

Internal Fuel: 1733 kg

Payload: ?

**Mi-24 Hind E**

Cannon ATA: 2

Def ATA: 2 (1.5)

**Sensors:**

FLIR, RWR, laser designator. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	160 (0.7)	170 (0.7)	—
Med:	160 (0.7)	170 (0.7)	—

Ceiling: 4500 meters

Endurance:

Cruise Range: 405 nm

Ordnance Loadouts:

Cannon: GSH-23L 23mm.

● 12 AT-6 Spiral (365 nm).

● 4 UV-16-57, 4 AT-6 Spiral (365 nm).

● 2 FAB-250 bombs (365 nm).

**Remarks:**

Helicopter.

Can carry 8 troops, 4 stretcher cases, or reloads for its own weapons.

**Attack****Mi-28 Havoc**

Cannon ATA: 2

Def ATA: 2.5 (1.0)

**Sensors:**

EO turret with laser rangefinder, FLIR, LLLTV, RWR.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	143 (0.6)	164 (0.7)	—
Med:	143 (0.6)	164 (0.7)	—

Ceiling: 6000 meters

Endurance:

Cruise Range: 253 nm

Ordnance Loadouts:

Cannon: 2A42 30mm.

● 16 AT-6 Spiral (227 nm).

● 2 UB-20 rocket pod or AA-8 Aphid, 8 AT-6 Spiral (227 nm).

**Remarks:**

Helicopter.

**Attack****MiG-21bis Fishbed N**

Cannon ATA: 3

Def ATA: 4 (2)

**Sensors:**

Jay Bird radar, RWR. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	702 (2.9)
Med:	560 (2.3)	660 (2.8)	953 (4.0)
High:	560 (2.3)	740 (3.1)	1204 (5.0)

Ceiling: 18500 meters

Endurance:

Cruise Range: 600 nm

Drop Tank Desc.

Drop Tank

Drop Tank

Ordnance Loadouts:

Cannon: 1 GSH-23 23mm.

● 4 UV-16-57 rocket pods or AA-8 Aphid, 1 631 kg drop tank (612 nm).

● 2 FAB-250, 1 631 kg drop tank, 2 391 kg drop tanks (702 nm).

● 2 FAB-500 and 2 FAB-250 bombs, 1 631 kg drop tank (612 nm).

Inflight Refuel?: N

Internal Fuel: 2364 kg

Fuel Wt.

631 kg

391 kg

Range Add.

80 nm

50 nm

Payload: 2000 kg

**MiG-21PFS Fishbed D**

Cannon ATA: 0

Def ATA: 3 (1.5)

**Sensors:**

Spin Scan (R1L) radar, RWR. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	450 (1.9)	450 (1.9)	540 (2.2)
Med:	520 (2.2)	590 (2.5)	844 (3.5)
High:	520 (2.2)	730 (3.0)	1147 (4.8)

Ceiling: 14000 meters

**Intercept****Intercept****Intercept****MiG-17F Fresco C**

Cannon ATA: 2

Def ATA: 2 (1)

**Sensors:**

Izmud ranging radar. Basic bombsight.

**Intercept**

**Endurance:**  
**Cruise Range:** 594 nm  
**Drop Tank Desc.** *Fuel Wt.* *Range Add.*  
 Drop tank 391 kg 51 nm  
**Ordnance Loadouts:**  
 ● 4 AA-2 Atoll (564 nm).  
 ● 2 FAB-500 and FAB-250 bombs (534 nm).  
 ● 4 UV-16-57 rocket pods (534 nm).

**Inflight Refuel?:** N  
**Internal Fuel:** 2277 kg  
**Range Add.**  
 51 nm  
**Payload:** 1500 kg

### MiG-23MF Flogger B/G/K

**Intercept**

**Cannon ATA:** 3 **Def ATA:** 3 (1)  
**Sensors:**  
 High Lark radar, RWR, IRST. Basic bombsight.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	791 (3.3)
Med:	436 (1.8)	708 (3.0)	1070 (4.5)
High:	436 (1.8)	765 (3.2)	1348 (5.6)

**Ceiling:** 18600 meters

**Endurance:**  
**Cruise Range:** 970 nm  
**Drop Tank Desc.** *Fuel Wt.* *Range Add.*  
 800 L drop tank 639 kg 67 nm  
**Ordnance Loadouts:**  
**Cannon:** 1 GSh-23L 23mm.  
 ● 2 AS-7 Kerry or UV-16-57 or FAB-500, 2 AA-7, 1 800 L drop tank (933 nm).  
 ● 2 AA-7, 4 AA-8, 1 800 L drop tank (Flogger B/G) (933 nm).  
 ● 4 AA-10, 4 AA-11, 1 800 L drop tank (Flogger K) (933 nm).

**Inflight Refuel?:** N  
**Internal Fuel:** 4600 kg  
**Range Add.**  
 67 nm  
**Payload:** 2000 kg

### Mig-25 Foxbat A

**Intercept**

**Cannon ATA:** 0 **Def ATA:** 2.5 (2.5)  
**Sensors:**  
 Foxfire radar, RWR.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	561 (2.3)
Med:	561 (2.3)	625 (2.6)	1084 (4.5)
High:	561 (2.3)	790 (3.3)	1606 (6.7)
VHigh:	561 (2.3)	790 (3.3)	1606 (6.7)

**VHigh:** 24400 meters

**Endurance:**  
**Cruise Range:** 1560 nm  
**Ordnance Loadouts:**  
 ● 4 AA-6 Acrid (1482 nm).  
 ● 2 AA-7 Apex and 2 AA-8 Aphid (1482 nm).  
**Remarks:**  
 Being converted to Foxbat Es.

**Inflight Refuel?:** N  
**Internal Fuel:** 14200 kg  
**Payload:** ?

### MiG-25M Foxbat E

**Intercept**

**Cannon ATA:** 0 **Def ATA:** 2.5 (2.5)  
**Sensors:**  
 High Lark radar (or variant), RWR, undernose sensor pod, possibly IRST.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	561 (2.3)
Med:	560 (2.3)	625 (2.6)	1204 (5.0)
High:	560 (2.3)	790 (3.3)	1606 (6.7)
VHigh:	560 (2.3)	790 (3.3)	1606 (6.7)

**VHigh:** 24000 meters

**Endurance:**  
**Cruise Range:** 1560 nm  
**Ordnance Loadouts:**  
 ● 4 AA-6 Acrid or AA-7 Apex pr AA-8 Aphid or AA-11 Archer (1404 nm).

**Inflight Refuel?:** N  
**Internal Fuel:** 14200 kg  
**Payload:** ?

### MiG-25 Foxbat F

**Attack**

**Cannon ATA:** 0 **Def ATA:** 2.5 (2.5)  
**Sensors:**  
 ESM (estimated). Ballistic bombsight.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	460 (1.9)	460 (1.9)	561 (2.3)
Med:	560 (2.3)	625 (2.6)	1084 (4.5)
High:	560 (2.3)	790 (3.3)	1606 (6.7)
VHigh:	560 (2.3)	790 (3.3)	1606 (6.7)

**VHigh:** 24000 meters

**Endurance:**  
**Cruise Range:** 1560 nm  
**Ordnance Loadouts:**  
 ● 4 AS-11 Kilter (1404 nm).  
**Remarks:**  
 Offensive EW variant. Assumed to be modified A or E models.

**Inflight Refuel?:** N  
**Internal Fuel:** 14200 kg  
**Payload:** ?

### MiG-25R Foxbat B/D

**Recce**

**Cannon ATA:** 0 **Def ATA:** 2.5 (2.5)  
**Sensors:**  
 B has Jay Bird radar, 5 cameras and SLAR. D has Jay Bird, larger SLAR, no cameras, and ELINT sensors.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	475 (2.0)	475 (2.0)	572 (2.4)
Med:	560 (2.3)	638 (2.7)	1204 (5.0)
High:	560 (2.3)	800 (3.3)	1836 (7.7)
VHigh:	560 (2.3)	800 (3.3)	1836 (7.7)

**VHigh:** 27000 meters

**Endurance:**  
**Cruise Range:** 1560 nm  
**Ordnance Loadouts:**  
 None.

**Inflight Refuel?:** N  
**Internal Fuel:** 14200 kg

### MiG-27 Flogger D/J

**Attack**

**Cannon ATA:** 4 **Def ATA:** 3 (1)  
**Sensors:**  
 LRMTS, RWR. Advanced bombsight.  
**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	530 (2.2)	655 (2.7)	850 (3.5)
High:	530 (2.2)	710 (3.0)	925 (3.9)

**Ceiling:** 15240 meters

**Endurance:**  
**Cruise Range:** 950 nm  
**Drop Tank Desc.** *Fuel Wt.* *Range Add.*  
 800 L drop tank 639 kg 66 nm  
**Ordnance Loadouts:**  
**Cannon:** GSh-6-N-30 30mm rotary.  
 ● 2 AS-12 or AS-14, 2 AA-8 Aphid, 1 800 L drop tank, 1 ECM pod (914 nm).  
 ● 2 UV-32-57 rocket pod, 2 AA-8 Aphid, 1 800 L drop tank, 1 ECM pod (914 nm).  
 ● 4 FAB-500, 1 800 L drop tank, 1 ECM pod (914 nm).

**Inflight Refuel?:** N  
**Internal Fuel:** 4600 kg  
**Payload:** 3500 kg

### MiG-29 Fulcrum

**Intercept**

**Cannon ATA:** 4 **Def ATA:** 5 (2.5)  
**Sensors:**  
 Slot Back radar, IRST, RWR. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	700 (2.9)
Med:	460 (1.9)	665 (2.8)	980 (4.1)
High:	460 (1.9)	750 (3.1)	1260 (5.2)
Ceiling: 18400 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 905 nm		Internal Fuel: 4000 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
Drop Tank	800 kg	90 nm	
Ferry Tank	1500 kg	255 nm	
Ordnance Loadouts:		Payload: 4000 kg	
Cannon: 1 30mm single barrel (use specs for GSh-23L 23mm).			
● 2 AS-12 or AS-14, 2 AA-11, 1 ECM pod (806 nm).			
● 2 AS-12 or AS-14 or TN-1000, 2 800 kg drop tanks, 1 AA-11, 1 ECM pod (968 nm).			
● 4 AA-10, 2 AA-11 (806 nm).			
● 4 FAB-1000, 1 ECM pod, 1 AA-11 (806 nm).			
● 2 AA-10, 2 AA-11, 2 800 kg drop tanks (968 nm).			

## Su-22 Fitter F

Canon ATA: 3

Def ATA: 2.5 (1.5)

## Sensors:

Terrain-following radar, RWR. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	570 (2.4)	570 (2.4)	699 (2.9)
Med:	460 (1.9)	658 (2.7)	972 (4.1)
High:	460 (1.9)	745 (3.1)	1245 (5.2)
Ceiling: 18000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 945 nm		Internal Fuel: 3950 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
800 L drop tank	639 kg	76 nm	
Ordnance Loadouts:		Payload: 3500 kg	
Canon: 2 NR-30 30mm.			
● 2 AS-7 or AS-9 or AS-10, 2 AA-8 (987 nm).			
● 6 FAB-500 bombs and 2 800 L drop tanks (987 nm).			

## Attack

## Su-22 Fitter J

Canon ATA: 3

Def ATA: 2.5 (1.5)

## Sensors:

RWR. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	580 (2.4)	580 (2.4)	702 (2.9)
Med:	500 (2.1)	660 (2.8)	951 (4.0)
High:	500 (2.1)	740 (3.1)	1200 (5.0)
Ceiling: 18000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 1035 nm		Internal Fuel: 5111 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
800 L drop tank	639 kg	65 nm	
Ordnance Loadouts:		Payload: 4000 kg	
Canon: 2 NR-30mm.			
● 2 FAB-500, 2 AA-2, 2 800 L drop tank (1048 nm).			
● 4 FAB-500, 2 800 L drop tank (1048 nm).			

## Attack

## MiG-31 Foxhound

Canon ATA: 0

Def ATA: 3 (2)

## Sensors:

LD/SD TWS radar, possibleIRST, RWR.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	792 (3.3)
Med:	560 (2.3)	710 (3.0)	1084 (4.5)
High:	560 (2.3)	770 (3.2)	1377 (5.7)
VHigh:	560 (2.3)	770 (3.2)	1377 (5.7)
Ceiling: 24400 meters			
Endurance:			
Cruise Range: 1620 nm		Inflight Refuel?: N	
Drop Tank Desc.		Internal Fuel: 14200 kg	
2000 L drop tank	Fuel Wt.	Range Add.	
	1600 kg	91 nm	
Ordnance Loadouts:			
Payload: ?			
● 6 AA-9 Amos, 4 AA-11 Archer (1458 nm).			
● 4 AA-9 Amos, 2 2000 L drop tanks, 4 AA-11 Archer (1622 nm).			
● 8 AA-9 Amos (1458 nm).			
Remarks:			
Can engage 4 different targets simultaneously with M-9.			

## Intercept

## Su-17 Fitter C

Canon ATA: 3

Def ATA: 2.5 (1.5)

## Sensors:

High Fix (SRD-5M) radar, RWR in both models. Fitter D also has LRMTS, possible terrain-following radar. Ballistic bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	570 (2.4)	570 (2.4)	690 (2.9)
Med:	460 (1.9)	655 (2.7)	945 (3.9)
High:	460 (1.9)	740 (3.1)	1200 (5.0)
Ceiling: 18000 meters			
Endurance:		Inflight Refuel?: N	
Cruise Range: 590 nm		Internal Fuel: 3700 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
800 L drop tank	639 kg	51 nm	
1200 L ferry tank	958 kg	76 nm	
Ordnance Loadouts:		Payload: 3500 kg	
Cannon: 2 NR-30 30mm.			
● 2 AS-10, 2 AA-8, 2 800 L drop tanks (623 nm).			
● 4 UV-32-57 or FAB-500 bombs, 2 800 L drop tanks (623 nm).			
● 2 UV-32-57 or FAB-500 bombs, 4 800 L drop tanks (715 nm).			
● 1 TN-1000 nuclear bomb, 4 800 L drop tanks, 1 AA-8 (715 nm).			

## Attack

## Su-24 Fencer

Canon ATA: 4

Def ATA: 2.5 (1.5)

## Sensors:

Fencer radar, terrain-following radar, LRMTS, RWR. Advanced bombsight.

## Performance:

	Speed in Knots (Nm/Phase)		
	Throttle Setting		
Altitude	Cruise	Full Mil.	Reheat
VLow:	650 (2.7)	650 (2.7)	791 (3.3)
Med:	561 (2.3)	698 (2.9)	1021 (4.3)
High:	516 (2.2)	745 (3.1)	1251 (5.2)
Ceiling: 16500 meters			
Endurance:		Inflight Refuel?: Y	
Cruise Range: 1930 nm		Internal Fuel: 10385 kg	
Drop Tank Desc.	Fuel Wt.	Range Add.	
3000 L drop tank	2396 kg	223 nm	
Ordnance Loadouts:		Payload: 8000 kg	
Cannon: GSh-6-N-30 30mm rotary.			
● 4 AS-7/9/10/11/12/14, 2 3000 L drop tank, 2 AA-8 (1616 nm).			
● 2 AS-7/9/10/11/12/14, 4 3000 L drop tank, 2 AA-8 (1919 nm).			
● 10 FAB-500, 2 3000 L drop tank (1616 nm).			
● 22 FAB-500 (1314 nm).			
● 1 TN-1000, 4 3000 L drop tank, 1 AA-11 (1919 nm).			

## Attack

**Remarks:**

Later production marks may have different engines, poss R-29Bs @ 11500 kg. Fencer A is initial production variant w/squared-off aft fuselage. Su-24B has rounded fuselage. Su-24C has changes in EW equipment. Su-24D can be inflight refueled and has longer nose. Su-24E is recon variant for navy; can also carry antiship weapons. Possible Fencer F version; perhaps EW variant? All weather.

**Su-25K Frogfoot****Cannon ATA: 3****Def ATA: 3 (1.5)****Attack****Sensors:**

RWR, laser designator, LRMTS.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	350 (1.5)	460 (1.9)	—
Med:	350 (1.5)	460 (1.9)	—
High:	350 (1.5)	460 (1.9)	—

Ceiling: 7000 meters

**Endurance:**

Cruise Range: 750 nm

Inflight Refuel?: N

Internal Fuel: 3500 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
600 L drop tank	479 kg	51 nm

**Ordnance Loadouts:**

Payload: 4400 kg

Cannon: 1 GSh-6-N-30 30mm rotary.

● 4 AS-7/9/11/12 and 2 AA-8 Aphid (675 nm).

● 10 FAB-250 or UV-32-57 or 8 FAB-500 (675 nm).

● 2 600 L drop tanks, 6 500 kg LGB, 2 AA-8 Aphid (767 nm).

● 2 600 L drop tanks, 6 FAB-250 or UV-32-57, 2 AA-8 Aphid (767 nm).

● 2 600 L drop tanks, 1 AS-7/9/11/12, 4 FAB-250 and 2 AA-8 Aphid (767 nm).

**Remarks:**

USSR name Grach (Rook).

**Su-27 Flanker B****Cannon ATA: 4****Def ATA: 4.5 (2)****Intercept****Sensors:**

Flash Dance radar,IRST and TV sensors, RWR. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	530 (2.2)	680 (2.8)	1022 (4.3)
High:	530 (2.2)	760 (3.2)	1320 (5.5)

Ceiling: 15240 meters

**Endurance:**

Cruise Range: 1000 nm

Inflight Refuel?: N

Internal Fuel: 6350 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
Drop Tank	1600 kg	126 nm

**Ordnance Loadouts:**

Payload: 6000 kg

Cannon: 23mm rotary.

● 6 AA-10, 4 AA-11 (1440 nm).

● 2 drop tanks, 4 AA-10, 4 AA-11 (1667 nm).

● 2 drop tanks, 8 FAB-500 (1667 nm).

**Remarks:**All weather. Used on *Tbilisi* carrier.**Su-7BMK Fitter A****Cannon ATA: 3****Def ATA: 2.5 (1)****Attack****Sensors:**

High Fix (SRD-5M) radar. Basic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	600 (2.5)	600 (2.5)	725 (3.0)
Med:	459 (1.9)	650 (2.7)	822 (3.4)
High:	459 (1.9)	700 (2.9)	918 (3.8)

Ceiling: 15000 meters

**Endurance:**

Cruise Range: 645 nm

Inflight Refuel?: N

Internal Fuel: 2350 kg

Drop Tank Desc.	Fuel Wt.	Range Add.
-----------------	----------	------------

600 L drop tank 479 kg 66 nm

Ferry tank 719 kg 99 nm

**Ordnance Loadouts:**

Payload: 1000 kg

Cannon: 2 NR-30 30mm.

● 2 FAB-500, 2 600 L drop tanks (699 nm).

● 4 UV-16-57 rocket pods, 2 600 L drop tanks (699 nm).

● 2 FAB-250 and 2 AA-2, 2 600 L drop tanks (699 nm).

● 2 FAB-750 and 2 FAB-500 (580 nm).

**Tu-126 Moss****Cannon ATA: 0****Def ATA: .5 (.5)****AEW****Sensors:**

Flat Jack radar, ESM.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	351 (1.5)	460 (1.9)	—
Med:	351 (1.5)	460 (1.9)	—
High:	460 (1.9)	460 (1.9)	—

Ceiling: 10000 meters

**Endurance:**

Cruise Range: 6775 nm

Inflight Refuel?: Y

Internal Fuel: 65000 kg

**Ordnance Loadouts:**

None.

**Tu-142 Bear F****Cannon ATA: 2****Def ATA: .5 (.5)****ASW****Sensors:**

Wet Eye radar, MAD, 100 sonobuoys, ESM.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	321 (1.3)	450 (1.9)	—
Med:	321 (1.3)	475 (2.0)	—
High:	500 (2.1)	500 (2.1)	—

Ceiling: 12500 meters

**Endurance:**

Cruise Range: 8900 nm

Inflight Refuel?: Y

Internal Fuel: 59501 kg

**Ordnance Loadouts:**

Payload: ?

Cannon: 2 NR-23 23mm in tail.

● 8 E45-75A torp or B-1 DC (8900 nm).

● 2 Nuclear DB, 4 E45-75A torp (8900 nm).

**Tu-16 Badger****Cannon ATA: 2****Def ATA: 1 (.5)****Attack****Sensors:**

C: Puff Ball radar. G: Short Horn radar. E/F: ESM, cameras. K: ESM. Ballistic bombsight.

**Performance:**

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	590 (2.5)	590 (2.5)	—
Med:	460 (1.9)	550 (2.3)	—
High:	460 (1.9)	510 (2.1)	—

Ceiling: 12300 meters

**Endurance:**

Cruise Range: 3100 nm

Inflight Refuel?: Y/1 (A only)

Internal Fuel: 36300 kg

**Ordnance Loadouts:**

Payload: 8000 kg

**Remarks:**

A: Basic bomber, also used as a tanker. B: 2 AS-1, rebuilt to Gs, used by DA.

C: 1 AS-2, nose 23mm removed, no bomb capability. D: Maritime recon and

ELINT. E: Rebuilt A for optical recon; bomb bay used for extra fuel and camera

pallets. F: Similar to E but has ESM pods under wings (ELINT). G: 2 AS-5 or

AS-6; can carry bombs. Gmod: 2 AS-6, large radome under fuselage. H:

Radar/comjam A/C; can carry 9072 kg of Chaff=161km barrier, escort or stand-off jammer. J: Specialized jammer A/C. K: ELINT A/C. Possible underwing tanks (2 sources) but no photos of A/C w/tanks or mention of tank size.

**Tu-22 Blinder**

Cannon ATA: 2

Def ATA: 1 (.5)

**Attack**

Sensors:

A: Short Horn radar. B: Down Beat radar. C: ESM, cameras. Ballistic bomb-sight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	400 (1.7)	400 (1.7)	480 (2.0)
Med:	482 (2.0)	475 (2.0)	670 (2.8)
High:	482 (2.0)	550 (2.3)	860 (3.6)

Ceiling: 18300 meters

Endurance:

Cruise Range: 3350 nm

Ordnance Loadouts:

Cannon: 1 NR-23mm defensive cannon in tail.

● 1 AS-4 (3183 nm).

Inflight Refuel?: Y

Internal Fuel: 36300 kg

Payload: 8000 kg

**Tu-22M Backfire**

Cannon ATA: 2

Def ATA: 2 (1)

**Attack**

Sensors:

Down Beat radar, RWR. Advanced bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	495 (2.1)	495 (2.1)	594 (2.5)
Med:	459 (1.9)	610 (2.5)	847 (3.5)
High:	459 (1.9)	725 (3.0)	1100 (4.6)

Ceiling: 17000 meters

Endurance:

Cruise Range: 5940 nm

Ordnance Loadouts:

Cannon: 2 NR-23mm (B) or GSh-23 (C) in tail.

● 2 AS-4 or 3 AS-6 (5346 nm).

● 12 FAB-1000 or 16 FAB-750 or 18 FAB-250 bombs (5346 nm).

● 6 FAB-1000 bombs, 2 AS-9 (5346 nm).

● 1 AS-4 or AS-6 (lightly loaded) (5643 nm).

Remarks:

Extensive ECM suite; carries equivalent of -15% radar jammer pod internally. Carries internal or external load, but not both. Lightly loaded with one AS-4/6.

**Tu-95 Bear D**

Cannon ATA: 2

Def ATA: .5 (.5)

**Recce**

Sensors:

Big Buge A radar, Mushroom radar, A346Z Data Link, ESM.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	410 (1.7)	440 (1.8)	—
Med:	410 (1.7)	460 (1.9)	—
High:	480 (2.0)	480 (2.0)	—

Ceiling: 12500 meters

Endurance:

Cruise Range: 8000 nm

Ordnance Loadouts:

Cannon: 3x2 NR-23mm defensive cannon in tail, dorsal, ventral turrets.

Inflight Refuel?: Y

Internal Fuel: 60052 kg

**Tu-95 Bear G**

Cannon ATA: 2

Def ATA: .5 (.5)

**Attack**

Sensors:

Down Beat radar, RWR.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	410 (1.7)	440 (1.8)	—
Med:	410 (1.7)	470 (2.0)	—
High:	500 (2.1)	500 (2.1)	—

Ceiling: 12500 meters

Endurance:

Cruise Range: 8000 nm

Ordnance Loadouts:

Cannon: 3x2 NR-23mm cannon in tail, dorsal, ventral turrets.

● 2 AS-4 (7200 nm).

Inflight Refuel?: Y

Internal Fuel: 60000 kg

Payload: ?

**Yak-28 Brewer E**

Cannon ATA: 0

Def ATA: 2 (2)

**EW Jammer**

Sensors:

Mushroom radar, ESM. Basic bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	496 (2.1)	550 (2.3)	637 (2.7)
Med:	496 (2.1)	550 (2.3)	637 (2.7)
High:	496 (2.1)	550 (2.3)	637 (2.7)

Ceiling: 16750 meters

Endurance:

Cruise Range: 755 nm

Drop Tank Desc.

1000 L Slipper tank

Fuel Wt.

799 kg

Inflight Refuel?: N

Internal Fuel: 8500 kg

Range Add.

53 nm

Ordnance Loadouts:

Payload: ?

● 2 chaff rocket pods or AS-9, 2 1000 L slipper tanks (775 nm).

Remarks:

Escort jammer aircraft. Reduces enemy radar range by 25% and percent to hit chance of radar-guided weapons by 5% within 5 nm. Chaff warheads provide 2 nm of chaff in 1 turn, 1 nm in front of launching aircraft.

**Yak-38 Forger**

Cannon ATA: 0

Def ATA: 3 (1.5)

**Attack**

Sensors:

Ranging radar, laser rangefinder, nose IR sensor (possiblyIRST). Advanced bombsight.

Performance:

Altitude	Speed in Knots (Nm/Phase)		
	Throttle Setting		
	Cruise	Full Mil.	Reheat
VLow:	562 (2.3)	562 (2.3)	—
Med:	520 (2.2)	554 (2.3)	—
High:	520 (2.2)	545 (2.3)	—

Ceiling: 12200 meters

Endurance:

Cruise Range: 400 nm

Drop Tank Desc.

600 L drop tank

Fuel Wt.

479 kg

Inflight Refuel?: N

Internal Fuel: 2268 kg

Range Add.

42 nm

Ordnance Loadouts:

Payload: 1362 kg

● 4 AS-10 or UV-32-57 or FAB-500 or AA-8 (360 nm).

● 2 AS-10 or UV-32-57 or FAB-500 or AA-8, 2 600 L drop tanks (436 nm).

Remarks:

V/STOL.



# Annex C—Surface Gun Systems

1	2	3	4	5	6	7	8	9	10	11	12
Country	Mount Name Bore/Caliber	Barrels /Mount	Surf Range	Surf Ph/Mt 50%— 51%+		Air Range	Air Pk	Dmg Pts/ Mount	Max Alt	Local Cntrl?	Remarks
Argent.	105mm	1	6.8	.40	.25	4.3	.20	4	High	Y	
France	DCN 20mm/80	1	1.1	.30	.10	1.1	.15	2	Low	Y	
France	CAS 62 30mm/70	1	1.5	.40	.25	1.5	.25	4	Low	Y	
France	M1951 57mm/60	1	2.7	.40	.25	2.7	.30	2	Med	Y	
France	M1953 100mm/55	1	6.5	.50	.35	4.3	.40	14	High	Y	
France	M1968 100mm/55	1	6.5	.50	.35	4.3	.30	14	High	Y	
France	Compact 100mm/55	1	6.5	.60	.45	4.3	.20	24	High	Y	
France	M1948 127mm/54	1	9.7	.40	.30	4.9	.30	8	High	Y	
FRG	Rh202 20mm/80	1	1.1	.40	.20	1.1	.20	4	Low	Y	
Intl	12.7mm mg	1	0.5	.30	.10	0.5	.10	1	Low	Y	
Intl	20mm/80	1	0.8	.30	.10	0.8	.15	2	Low	Y	
Intl	Goalkeeper 30mm	R	0.8	.70	.55	0.8	.90	39	Low	N	A, B.
Intl	40mm/60	1	1.6	.30	.10	1.6	.20	1	Low	Y	
Intl	40mm/70	1	2.2	.40	.20	2.2	.20	2	Low	Y	
Italy	Breda Single 30mm/82	1	1.8	.50	.40	1.8	.40	5	Low	N	
Italy	Breda Twin 30mm/82	2	1.8	.55	.45	1.8	.50	12	Low	N	
Italy	OE/OTO 35mm/90	2	3.2	.30	.20	2.7	.30	6	Low	Y	
Italy	Dardo 40mm/70	2	2.2	.60	.45	2.2	.75	12	Low	N	B.
Italy	Type 106 40mm/70	2	2.2	.40	.20	2.2	.50	8	Low	Y	
Italy	Type 107 40mm/70	1	2.2	.40	.20	2.2	.35	4	Low	Y	
Italy	Type 564 40mm/70	1	2.2	.40	.20	2.2	.35	4	Low	Y	
Italy	Type 64 40mm/70	2	2.2	.40	.20	2.2	.50	8	Low	Y	
Italy	OTO MK1 76mm/62	1	4.3	.40	.30	2.7	.40	10	High	Y	
Italy	Compact 76mm/62	1	4.3	.50	.40	2.7	.50	9	High	N	
Italy	Super Rapid 76mm/62	1	4.3	.55	.45	2.7	.60	14	High	N	
Italy	Compact 127mm/54	1	8.1	.60	.45	3.1	.30	29	High	Y	
Norway	105mm/56 Coastal Gun	1	4.8	.40	.30	—	—	3	—	Y	
Norway	127mm/45 Coastal Gun	1	4.7	.35	.25	—	—	4	—	Y	
PRC	Type 82 14.5mm/93	2	0.5	.30	.10	0.5	.10	1	Low	Y	C.
PRC	Type 61 25mm/60	2	1.2	.30	.15	1.2	.15	1	Low	Y	C.
PRC	Type 69 30mm/65	2	1.6	.30	.15	1.6	.30	5	Low	N	
PRC	37mm/63	2	2.2	.25	.05	2.2	.05	2	Med	Y	C.
PRC	Type 76 57mm/70	2	2.7	.40	.25	2.7	.20	8	High	-Y	
PRC	Autoloader 100mm/56	2	5.4	.50	.35	4.3	.30	8	High	-Y	
PRC	130mm/58	2	8.6	.30	.20	7	.10	10	High	Y	
Spain	Meroka 20mm/120	12	1	.50	.40	1	.70	18	Low	Y	B.
Sweden	Bofors 40mm/70	1	2.2	.40	.20	1.3	.15	4	Low	Y	
Sweden	Bofors Trinity 40mm/70	1	2.2	.65	.55	1.3	.40	8	Low	Y	B.
Sweden	Bofors Mk1 57mm/70	1	4.5	.50	.40	4.5	.30	20	Med	Y	
Sweden	Bofors Mk2 57mm/70	1	4.5	.55	.45	4.5	.40	25	Med	Y	
Sweden	Bofors 76mm/50	1	4.3	.50	.40	—	—	3	—	N	
Sweden	Bofors 120mm/50	2	7	.45	.35	3	.40	32	High	Y	
Sweden	Bofors Ersta 120mm/62	1	9	.60	.40	7	.45	23	High	Y	
Sweden	Bofors 152mm/50	2	10	.45	.35	8	.10	16	High	Y	
UK	GAM-B01/02/03 20mm/85	1	1.1	.30	.10	1.1	.15	1	Low	Y	
UK	GCM-A01/02/03 30mm/75	2	3	.50	.40	3	.30	11	Low	Y	
UK	LS-30B 30mm	1	1.6	.50	.40	1.6	.20	5	Low	Y	
UK	Mk2 40mm/60 STAAG	2	1.6	.20	.10	1.6	.10	1	High	Y	
UK	Mk3/Mk7/Mk9 40mm/60	1	1.6	.25	.10	1.6	.10	1	High	Y	
UK	Mk4 20mm/80	1	0.8	.30	.10	0.8	.15	2	Low	Y	
UK	Mk5 40mm/60	2	1.6	.30	.15	1.6	.20	2	High	Y	
UK	Mk6 40mm/60	6	1.6	.35	.20	1.6	.25	8	High	Y	
UK	Mk6 76mm/70	2	4.3	.35	.30	2.7	.30	15	Med	Y	
UK	Mk19 102mm/45	2	4.9	.40	.25	2	.20	7	High	Y	
UK	Mk5 114mm/45	1	5.9	.40	.25	2.7	.20	5	High	Y	
UK	Mk6 114mm/45	2	5.9	.50	.35	2.7	.30	10	High	Y	
UK	Mk8 114mm/55	1	7	.50	.35	3.2	.40	10	High	N	
UK	Mk26 152mm/52	2	10	.40	.30	4.3	.10	31	High	Y	
USA	Mk15 Phalanx 20mm/76	R	0.3	.20	.10	0.8	.80	6	Low	N	A, B.
USA	Mk15 Phalanx										
	Block I 20mm/76	R	0.3	.20	.10	0.8	.80	7	Low	N	A, B, D.

## Annex C—Surface Gun Systems

1	2	3	4	5	6	7	8	9	10	11	12
Country	Mount Name Bore/Caliber	Barrels /Mount	Surf Range	Surf Ph/Mt 50%-- 51%+	Air Range	Air Pk	Dmg Pts/ Mount	Max Alt	Local Cntrl?	Remarks	
USA	Mk10/Mk24 20mm/80	1	1	.20	.05	1	.10	1	Low	Y	
USA	Mk67/Mk68 20mm/80	1	1	.20	.05	1	.10	1	Low	Y	
USA	Mk88 25mm/87	1	1.5	.30	.15	0.05	.50	1	Low	Y	
USA	Emerlec Mk74 30mm	2	1.7	.30	.15	1.7	.10	9	Low	Y	
USA	Mk1 40mm/60	2	1.6	.40	.20	1.6	.15	3	High	Y	E, C.
USA	Mk2 40mm/60	4	1.6	.40	.20	1.6	.15	7	High	Y	E, C.
USA	Mk3 40mm/60	1	1.6	.40	.20	1.6	.15	2	High	Y	E, C.
USA	Mk22 76mm/50	1	4	.25	.20	2.7	.10	1	High	Y	
USA	Mk75 76mm/62	1	4.3	.50	.40	2.7	.50	9	High	N	
USA	Mk26 76mm/50	1	4	.15	.10	2.7	.05	1	High	Y	
USA	Mk34 76mm/50	1	4	.25	.10	2.7	.10	2	High	Y	
USA	Mk27/Mk33 76mm/50	2	4	.40	.20	2.7	.15	7	High	Y	
USA	Mk24/Mk30 127mm/38	1	7	.40	.30	4.3	.10	6	High	Y	
USA	Mk28/Mk32/ Mk38 127mm/38	2	7	.40	.30	4.3	.20	12	High	Y	
USA	Mk27 127mm/25	1	5.5	.40	.20	1.2	.15	5	High	Y	
USA	Mk39 127mm/54	1	9.7	.45	.35	4.9	.30	7	High	Y	
USA	Mk42 127mm/54	1	9.7	.45	.35	4.9	.30	10	High	Y	
USA	Mk45 127mm/54	1	9.7	.60	.45	4.9	.40	13	High	Y	
USA	Mk16 152mm/47	3	10.3	.40	.30	—	—	11	—	Y	
USA	Mk16 203mm/55	3	15.5	.30	.10	—	—	34	—	Y	
USA	Mk71 203mm/55	1	15.5	.50	.20	—	—	24	—	N	
USA	406mm/50	3	20	.30	.30	—	—	245	—	Y	
USSR	2M-7 14.5mm/93 mg	2	0.5	.30	.10	0.5	.10	1	Low	Y	
USSR	23mm/87	2	0.9	.30	.10	0.8	.15	6	Med	Y	
USSR	ZU-23 23mm/81	2	1.5	.20	.10	1.5	.10	1	Low	Y	
USSR	2M-8 25mm/60	2	1.2	.30	.15	1.2	.15	1	Low	Y	C.
USSR	AK-230 30mm/65	2	1.6	.30	.15	1.6	.30	5	Low	N	
USSR	AK-257 57mm/80	2	3.2	.50	.40	3.2	.30	11	High	N	
USSR	AK-630 30mm/65	R	1.6	.60	.45	1.6	.60	10	Low	Y	B.
USSR	New 30mm CIWS	2xR	1.6	.75	.60	1.6	.75	25	Low	Y	B.
USSR	Model 70K 37mm/63	1	2.2	.30	.10	2.2	.20	1	Med	Y	
USSR	V-74M 37mm/63	2	2.2	.40	.15	2.2	.20	3	Med	Y	
USSR	45mm/85	4	2.2	.40	.25	2.2	.30	9	High	Y	
USSR	Single 57mm/70	1	2.7	.20	.10	2.7	.10	3	High	Y	
USSR	Twin 57mm/70	2	2.7	.25	.15	2.7	.15	7	High	Y	
USSR	Quad 57mm/70	4	2.7	.30	.20	2.7	.20	17	High	Y	
USSR	76mm/60	2	3.8	.40	.30	2.7	.30	7	High	Y	
USSR	Auto 76mm/60	1	3.8	.50	.40	2.7	.40	12	High	Y	
USSR	Model 90K 85mm/52	1	4.3	.35	.20	3.2	.20	2	High	Y	
USSR	HAM39-3 85mm/52	2	4.3	.40	.25	3.2	.30	3	High	Y	
USSR	Bu-34 100mm/56	1	5.4	.40	.25	4.3	.20	3	High	Y	
USSR	100mm/70	2	6.5	.35	.20	4.3	.20	6	High	Y	
USSR	Auto 100mm/70	1	6.5	.50	.40	4.3	.40	21	High	Y	
USSR	56-5M 130mm/58	2	8.6	.40	.30	7	.20	13	High	Y	
USSR	Auto 130mm/70	2	9.5	.50	.40	5	.40	59	High	Y	
USSR	B-13-2C 130mm/50	2	7.6	.30	.20	6	.20	5	High	Y	
USSR	B-38 152mm/57	3	9.7	.35	.25	7.5	.05	10	High	Y	

1. **Nation:** Nation manufacturing the weapon. 2. **Name:** Standard designation for the weapon; includes bore (barrel inside diameter in millimeters) and caliber (barrel length expressed in barrel diameters). 3. **Effective Surface Range:** Distance in nautical miles within which a surface target can be engaged and hit. 4. **Surface Percent Hit Probability at Half Range or Less:** Percent hit chance used if range to surface target is half or less of column three. 5. **Surface Percent Hit Probability at Greater than Half Range:** Percent hit chance used if range to surface target is more than half of column three. 6. **Effective Air Range:** Horizontal distance in nautical miles within which an air target can be engaged and hit. 7. **Air Percent Kill Probability:** Probability of a mount killing an air target. 8. **Damage Points:** Number of damage points each hit by a mount inflicts on a surface target. 9. **Maximum Target Altitude:** Altitude (or less) at which an air target can be engaged and hit. 10. **Local Control:** Whether the mount can be fired in local control if the director is destroyed. 11. **Remarks:** Additional information about this weapon.

**Notes:** A. Autonomous (rule 4.4.5). B. Capable vs. seaskimmers. C. No director. D. No 1/4 modifier for diving targets. E. Manually loaded.

## Annex D—Surface Missile Systems

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Country	Name	Guidance	Surf Range	Surf Ph	Air Range	Air Pk	Min Range	Max Alt (m)	Min Alt (m)	Dmg Pts	Dis/ turn	0.1 m <sup>2</sup>	SAM HF Req?	Remarks
France	ASTER 15	I/M/TARH	—	—	8	.80	0.3	Med	VLow	—	15.0	Y	N	R, X.
France	Crotale	Cmd	—	—	5	.70	0.27	High	Low	3	6.6	Y	N	A.
France	Crotale EDIR	Cmd	—	—	7	.60	0.38	High	VLow	3	12.1	Y	N	A.
France	Masurca	SARH	—	—	21.6	.50	3	VHigh	Low	24	14.3	Y	Y	Mod 3.
France	Mistral	IRH	—	—	3.25	.60	0.16	Med	VLow	1	14.3	Y	N	
France	MM38 Exocet	I/TARH	23	.75	—	—	2.7	VLow	VLow	33	5.1	Y	N	
France	SM39 Exocet	I/TARH	27	.80	—	—	3	VLow	VLow	33	5.1	Y	N	
France	MM40 Exocet	I/TARH	38	.80	—	—	3	VLow	VLow	33	5.1	Y	N	
France	SS.11	Wire	1.6	.50	—	—	0.25	Low	Low	6	2.9	Y	N	
France	SS.12	Wire	3.2	.50	—	—	0.33	Low	Low	6	2.9	Y	N	
France	SS.12M	Wire	3	.50	—	—	0.1	Low	Low	6	2.9	Y	N	
Int'l	ANS	I/M/TARH	100	.85	—	—	3	VLow	VLow	33	11.0	Y	N	Low flight.
Int'l	ANS	I/M/TARH	100	.85	—	—	3	High	High	33	12.0	Y	N	High flight.
Italy	RIM-116A RAM	PRH/TIRH	—	—	5	.80	0.3	Med	VLow	4	11.0	Y	N	A.
Italy	Aspide	SARH	10.5	.40	10.5	.60	0.3	High	VLow	7	11.0	Y	N	P.
Italy	Otomat	I/M/TARH	32	.75	—	—	3.2	VLow	VLow	42	5.0	Y	N	No popup.
Italy	Otomat Mk2	I/M/TARH	54	.80	—	—	3.2	VLow	VLow	42	5.0	Y	N	
Italy	Sea Killer I	Cmd	6	.45	—	—	1.5	VLow	VLow	7	5.0	Y	N	
Italy	Sea Killer II	Cmd	13.5	.50	—	—	3	VLow	VLow	14	5.0	Y	N	
Japan	SSM-1	I/TARH	82	—	—	—	—	VLow	VLow	45	5.0	Y	N	
Norway	Penguin Mk1	I/TIRH	11	.70	—	—	1.4	VLow	VLow	24	3.9	Y	N	T.
Norway	Penguin Mk2	I/TIRH	16	.80	—	—	1.4	VLow	VLow	24	4.4	Y	N	T.
PRC	HY-2	I/TARH	51	.50	—	—	6	Low	Low	103	5.0	N	N	
PRC	HY-2A	I/TIRH	51	.50	—	—	6	Low	Low	103	5.0	N	N	B.
PRC	HY-2G	I/TARH	51	.60	—	—	3	Low	Low	103	5.0	N	N	
PRC	C801	I/TARH	21.6	.65	—	—	4.3	Low	VLow	33	5.0	Y	N	
PRC	HQ-61 (RF61)	SARH	—	—	5.4	.40	1.6	High	Low	4	16.5	Y	?	
Sweden	RBS 15	I/TARH	54	.80	—	—	3	VLow	VLow	50	5.0	Y	N	
Sweden	RBS 17	SALH	3	.80	—	—	0.3	Low	Low	5	6.4	Y	N	
Sweden	RBS 70	SALH	—	—	2.7	.80	0.3	Low	VLow	1	5.5	Y	N	
Sweden	RBS 70 Mk2/RBS 90	SALH	—	—	3.2	.80	0.3	Low	VLow	1	5.5	Y	N	
UK	Sea Cat	TV Cmd	3.2	.30	3.2	.40	0.75	Med	VLow	1	3.3	Y	N	A.
UK	Sea Dart	SARH	40	.50	40	.60	2.3	High	Low	9	14.3	Y	Y	
UK	Sea Slug II	Beam-R	25	.50	25	.40	3	High	Low	27	8.6	Y	Y	
UK	Sea Wolf/	—	—	—	3	.70	0.27	Med	VLow	—	11.0	Y	N	X.
UK	LWT Sea Wolf	Cmd	—	—	4.3	.80	.3	Med	VLow	—	11.0	Y	N	Autonomous.
USA	Harpoon	I/TARH	60	.75	—	—	3	VLow	VLow	45	4.7	Y	N	P, Q.
USA	Harpoon IB	I/TARH	60	.75	—	—	3	VLow	VLow	45	4.7	Y	N	No popup. Q.
USA	Harpoon IC	I/TARH	80	.80	—	—	3	VLow	VLow	45	4.7	Y	N	U, C, Q.
USA	Harpoon II	I/TARH	100	.85	—	—	3	VLow	VLow	45	4.7	Y	N	U, C, Q.
USA	RIM-7H	SARH	8	.40	8	.40	0.5	Med	Low	6	22.0	Y	N	A.
USA	RIM-7M	SARH	8	.50	8	.60	0.5	Med	VLow	6	22.0	Y	N	A.
USA	Talos	Cmd	—	—	65	.50	3	VHigh	Low	20	12.0	Y	Y	
USA	Talos	ARM	65	.40	—	—	3	VHigh	Low	20	12.0	Y	Y	
USA	Tartar	SARH	17	.40	17	.50	1	VHigh	Low	5	9.6	Y	Y	Tartar-D.
USA	Terrier	Cmd	24	.40	40	.50	3.5	VHigh	Low	5	14.3	Y	Y	

## Annex D—Surface Missile Systems

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Country	Name	Guidance	Surf Range	Surf Ph	Air Range	Air Pk	Min Range	Max Alt (m)	Min Alt (m)	Dmg Pts	Dis/ turn	0.1 m <sup>2</sup> ?	SAM HF Req?	Remarks
USA	Terrier BTN	Cmd	24	1.00	24	1.00	3.5	VHigh	Low	1kt	14.3	Y	Y	
USA	Tomahawk	I/TARH	250	.75	—	—	4	VLow	VLow	91	4.0	Y	N	
USA	SM1ER	SARH	35	.60	35	.60	3	Vhigh	Low	5	12.0	Y	Y	N.
USA	SM1MR	SARH	20	.60	20	.60	1.5	VHigh	Low	5	12.0	Y	Y	
USA	SM2 Block IV	I/MTSARH	60	.80	60	.80	3	VHigh	VLow	5	12.0	Y	Y	
USA	SM2ER	I/MTSARH	70	.75	70	.75	3	VHigh	VLow	5	12.0	Y	Y	
USA	SM2ER Block II	I/MTSARH	100	.80	100	.80	3	VHigh	VLow	5	12.0	Y	Y	
USA	SM2MR Block I	I/MTSARH	35	.75	35	.75	3	VHigh	VLow	5	12.0	Y	Y	
USA	SM2MR Block II	I/MTSARH	50	.80	50	.80	3	VHigh	VLow	5	12.0	Y	Y	
USA	Standard ARM	ARM	35	.85	—	—	3.5	Med	Med	20	13.7	Y	N	
USA	Stinger	IRH	—	—	2.25	.50	0.1	Med	VLow	—	12.1	Y	N	
USSR	SA-N-1 Goa	Cmd	13.5	.30	13.5	.25	3.5	High	Low	12	9.6	Y	Y	A.
USSR	SA-N-2 Guideline	Cmd	22	.20	22	.20	5	VHigh	Low	26	16.7	Y	Y	O.
USSR	SA-N-3A Gobllet	Cmd	16	.50	16	.40	3	VHigh	Low	12	14.3	Y	Y	A.
USSR	SA-N-3B Gobllet	Cmd	30	.55	30	.50	3	VHigh	Low	12	14.3	Y	Y	A.
USSR	SA-N-4 Gecko	Cmd	8	.55	8	.50	0.3	Med	VLow	4	19.2	Y	N	
USSR	SA-N-5 Grail	IRH	—	—	2.6	.30	0.4	Med	Low	—	8.2	Y	N	
USSR	SA-N-6 Grumble	TVM	50	.60	50	.70	6	VHigh	VLow	18	28.7	Y	Y	K.
USSR	SA-N-7 Gadfly	SARH	15	.60	15	.70	1.6	High	Low	11	14.3	Y	Y	
USSR	SA-N-8 Gremlin	IRH	—	—	5	.40	0.3	High	VLow	4	9.0	Y	Y	
USSR	SA-N-9	Cmd	—	—	8	.70	0.3	High	VLow	2	14.3	Y	N	
USSR	SA-N-?	Cmd	—	—	5	.70	0.3	Med	VLow	—	14.3	Y	N	Y.
USSR	SS-N-2A Styx	Cmd/TARH	25	.40	—	—	5	Low	Low	—	4.3	N	N	W. S.
USSR	SS-N-2B Styx	Cmd/TARH	25	.40	—	—	5	Low	Low	90	4.3	N	N	W. S.
USSR	SS-N-2C Styx	I/TARH	43	.65	—	—	6	Low	VLow	90	4.3	N	N	B.
USSR	SS-N-3A/-3B													
	Shaddock	I/MTARH	250	.70	—	—	VLow	High	High	200	5.0	N	N	
USSR	SS-N-7 Starbright	I/TARH	30	.70	—	—	3	VLow	VLow	100	5.0	N	N	
USSR	SS-N-9 Siren	I/TARH	60	.75	—	—	3	Low	Low	100	3.0	N	N	
USSR	SS-N-12 Sandbox	I/MTARH	300	.75	—	—	12	High	High	200	12.0	N	N	
USSR	SS-N-14 Silex	Cmd	30	.60	—	—	4	Low	Low	18	5.2	N	N	V.
USSR	SS-N-19 Shipwreck	I/MTARH	250	.80	—	—	12	High	High	200	12.0	N	N	
USSR	SS-N-22 Sunburn	I/TARH	65	.80	—	—	3	VLow	VLow	100	13.7	N	N	

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Guidance: Type of guidance system or systems used by the weapon. 4. Surface Range: If the weapon can attack a surface target, this is the maximum range within which a surface target can be engaged and hit. 5. Surface Percent Hit Probability: Chance of the weapon hitting a surface target. 6. Air Range: If the weapon can attack an air target, this is the maximum range within which an air target can be engaged and hit. 7. Air Percent Hit Probability: Chance of the weapon hitting and killing an air target. 8. Minimum Range: Distance in nautical miles within which a target cannot be engaged. 9. Maximum Altitude: Maximum altitude for the missile. 10. Minimum Altitude: Minimum altitude for the missile. 11. Damage Points: Number of damage points each hit by a missile inflicts on a surface target. 12. Distance Per Turn: Distance in nautical miles the weapon travels in each 30-second tactical turn. 13. VSmall Target: Whether the weapon represents a Very Small (.1 m<sup>2</sup>) target to enemy defensive systems. 14. SAM HF Radar Required: Whether or not the missile needs a HF radar operating on the launching ship in order to engage an air target. 15. Remarks: Additional information about this weapon.

Notes to Remarks: A: Two missiles may be controlled by the director at the same time at the same target. B: Terminal seaskimmer. C: Can make up to three course changes. K: Four missiles at once at different targets. N: Nuclear option. O: Obsolete. P: Pop-up. Q: Climbs to Low altitude on turn of launch. R: Ten missiles at once at different targets. S: Ship must turn directly toward target for launch. T: Laser altimeter, TIRH seeker, no ESM warning of attack. U: Selectable pop-up. V: Warhead is E45-75A Mod torpedo. W: Alternate TIRH. X: Autonomous. Y: Used by new hybrid CIWS.

## Annex E-ASW Systems

1	2	3	4	5	6	7	8	9
Country	Name	Range (nm)	Min Rng	Ph	Damage Pts	Dist/ Turn	Type	Remarks
Australia	Ikara	9.7	1.0	—	Mk46 torp	4.1	Standoff	Manually reloaded.
France	305mm mortar	1.6	0.2	.40	23	—	DC launcher	Autoloading. 4 barrels×305mm.
France	Malafon	7.0	1.1	—	L4 torp	3.8	Standoff	Manually reloaded; takes 3 turns.
France	Mk54 375mm mortar	0.9	0.1	.40	25	—	DC launcher	6 barrels×375mm.
France	175 kg DC	—	—	.20	24	—	Depth charge	Air-dropped DC.
France	Mortier	1.5	0.2	.30	57	—	DC launcher	4 barrels×305mm.
Intl	Depth Charge	—	—	.03	38	—	Depth charge	Rollled off stern or air-dropped.
Italy	Menon K113	0.5	0.1	.20	23	—	DC launcher	3 barrels×305mm, autoloading.
Japan	Type 71 375mm mortar	0.9	0.1	.40	27	—	DC launcher	6 barrels; manually loaded.
Norway	Terne III	1.6	0.2	.40	25	—	ASW mortar	6 barrels×200mm; trainable.
PRC	FQF-2500	3.2	0.1	.20	16	—	ASW mortar	12×250mm tubes.
Sweden	Bofors 2-tube mortar	2.0	0.2	.20	27	—	DC launcher	2 barrels×375mm, autoloading.
Sweden	Bofors 375mm mortar	2.0	0.5	.30	27	—	DC launcher	4×375mm tubes; 3 min reload.
Sweden	Elma ASW RL	0.1	0.1	.30	3	—	ASW mortar	9 tubes.
UK	Mk10 Limbo	0.5	0.1	.25	16	—	DC launcher	3 barrels×305mm. Autoloading.
UK	Mk11 Depth Charge	—	—	.20	20	—	Depth charge	Air dropped.
UK	Squid Mk4	0.2	0.1	.15	23	—	DC launcher	Fixed in train; must fire straight ahead.
USA	ASROC	5.0	0.5	—	Mk46 torp or nuke DB	6.9	Standoff	Fixed in train; 3 min manual reload. 24 rockets.
USA	Hedgehog Mk10/11	0.2	0.1	.15	13	—	ASW mortar	5 min manual reload. 24 rockets.
USA	Hedgehog Mk15	0.2	0.1	.10	13	—	ASW mortar	Aircraft depth bomb; weight 157 kg.
USA	Mk54 DC	—	—	.03	28	—	Depth charge	From surface ships.
USA	Mk9 Depth Charge	—	—	.03	23	—	Depth charge	8 rockets; manually loaded.
USA	Mousetrap Mk20	0.1	0.1	.10	25	—	ASW mortar	16 rockets; manually loaded.
USA	Mousetrap Mk24	0.1	0.1	.15	25	—	ASW mortar	Fired from sub 533mm TT.
USA	Sea Lance (Torp)	30.0	10.0	—	Mk50 torp	5.5	Standoff	Vertical launch.
USA	Sea Lance (Nuke)	60.0	10.0	—	Nuke DB	6.0	Standoff	Air-dropped or from surface ship.
USA	SUBROC	30.0	5.0	—	W55 nuke DB	5.4	Standoff	6 barrels×300mm. Ex-MBU 4500
USA	VL ASROC	20.0	2.5	—	Mk50 torp	—	Standoff	6 barrels×300 mm. Auto loader.
USA	Weapon Alfa	0.4	0.1	.15	57	—	DC launcher	5 barrels×250mm. Fixed in train.
USSR	B-1 Depth Charge	—	—	.03	34	—	Depth charge	16 barrels×250mm. Manual reload.
USSR	FRAS-1	37.0	1.0	—	Nuke DB	—	Standoff	Autoloading. 12 barrels×250mm.
USSR	Nuke Depth Bomb	—	—	—	Nuke DB	—	Depth charge	10 tubes. Follow-on to RBU 6000.
USSR	RBU 600	0.3	0.1	.30	28	—	ASW mortar	Limited SSM capability (see Annex D).
USSR	RBU 1000	0.5	0.1	.30	28	—	ASW mortar	Ballistic trajectory. Uses 533mm TT.
USSR	RBU 1200	0.7	0.1	.20	17	—	ASW mortar	Uses 650mm TT. Ballistic trajectory.
USSR	RBU 2500	1.3	0.1	.25	11	—	ASW mortar	
USSR	RBU 6000	3.2	0.1	.25	16	—	ASW mortar	
USSR	RBU ?	4.0	0.1	.20	18	—	ASW mortar	
USSR	SS-N-14 Silex	30.0	4.0	—	E45-75A Mod torp	5.2	Standoff	
USSR	SS-N-15 Starfish	20.0	5.0	—	Nuke DB	8.3	Standoff	
USSR	SS-N-16 Stallion	50.0	10.0	—	E45-75A Mod torp	8.3	Standoff	

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Effective Range: The maximum distance within which a submarine can be engaged and hit. 4. Minimum Range: The minimum distance outside which a submarine can be engaged and hit. 5. Percent Hit Probability: The percent chance the weapon will hit the target. 6. Damage Points: The number of damage points the weapon will inflict on a submerged target. 7. Distance Per Turn: The distance in nautical miles that the torpedo will travel in one 30-second tactical turn. 8. Type: Specific type of ASW weapon. 12. Remarks: Additional information about the weapon.

## Annex F—Torpedoes

1	2	3	4	5	6	7	8	9	10	11	12
Country	Name	Eff. Range	Speed (kts)	Dist/ turn	% hit	Warh. Wt (kg)	Damage vs. sub vs. ship	Launch Platforms	Diam (mm)	Remarks	
France	E12	6.5	25	.21	.50	330	83 165	Sub	550	Passive.	
France	E14	3	25	.21	.50	200	50 100	Sub	550	Passive.	
France	E15	6.5	25	.21	.50	300	75 150	Sub	550	Passive.	
France	E18	9.9	35	.29	.55	250	63 125	Surf, sub	533	Passive.	
France	F17 Mod1	11	35	.29	.60	250	63 125	Sub	550	Wire-guided.	
France	F17 Mod2	11	40	.33	.70	250	63 125	Sub, surf	533	Wire-guided.	
France	F17P Mod2	16	35	.29	.70	250	63 125	Sub	550	Wire-guided.	
France	L3	2.8	25	.21	.50	200	50	Sub, surf	550	Active.	
France	L4	3.9	30	.25	.60	150	38	Surf, air, Malafor	533	New version is shallow-water capable.	
France	L5	3.7	35	.29	.60	150	38 75	Sub, surf	533	Act/Pass.	
France	Murene	6	38/53	.31/.42	.85	50	25	Surf, air, Malafor	324	Shallow-water capable.	
France	Z13	5.5	30	.25	.30	300	—	Sub	550	Pattern.	
France	Z16	5.5	30	.25	.30	300	—	Sub	550	Pattern.	
FRG	Seal	11	33	.28	.70	260	—	Sub, surf	533	Dual-wire.	
FRG	Seeschlange	22	23	.19	—	—	—	—	—	—	
FRG	SST-3	3.3	33	.28	.70	100	25	Sub	533	Dual-wire.	
FRG	SST-4	6.6	23	.19	—	—	—	—	—	—	
FRG	SST-4	12	35	.29	.70	260	—	Sub, surf	533	Dual-wire.	
FRG	SST-4	28	23	.19	—	—	—	—	—	—	
FRG	SST-4	6	35	.29	.70	260	—	Sub, surf	533	Dual-wire.	
FRG	SST-4	11	28	.23	—	—	—	—	—	—	
FRG	SST-4	20	23	.19	—	—	—	—	—	—	
FRG	SUT	6.5	34	.33	.70	260	65 130	Sub, surf	533	Dual-wire, shallow-water capable.	
FRG	SUT	15.3	23	.20	—	—	—	—	—	—	
FRG	Seehecht	11	35	.38	.75	260	65 130	Sub	533	Dual-wire.	
FRG	Seal 3	12	50	.42	.80	260	65 130	Sub, surf	533	Dual-wire.	
FRG	DM2A4	22	25	.21	—	—	—	—	—	—	
FRG	DM2A4	11	35	.21	.75	260	65 130	Sub	533	Dual-wire	
Italy	A.184	5.5	36	.30	.70	250	63 125	Sub, surf	533	Wire-guided, dual-speed.	
Italy	A.184	13.7	24	.20	—	—	—	—	—	—	
Italy	A.244	3.3	30	.25	.50	34	17	Surf, air	324	Act/Pass.	
Italy	A.244s	3.3	30	.25	.55	34	17	Surf, air	324	Act/Pass.	
Italy	A.290	5	45	.38	.65	45	23	Surf, air, Milas	324	Shallow-water capable.	
Japan	Type 72	11	50	.42	.65	250	—	Sub, surf	533	Pass.	
Japan	Type 73	3	30	.55	.60	45	23	Ship, air	324	Wire-guided.	
Japan	Type 80	8	34	.28	.70	150	75	Sub	482	Wire-guided.	
Japan	GRX-2	18	22	.18	—	—	—	—	—	—	
Japan	GRX-2	16.4	70	.58	.80	300	75 150	Sub	533	Wire-guided.	
Japan	GRX-2	25	40	.33	—	—	—	—	—	—	

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Effective Range: Maximum distance the torpedo will travel in a straight line. If two effective ranges are shown, the firing vessel may select between them, but the corresponding speed must be used. 4. Speed: The torpedo's speed in knots. 5. Distance Per Turn: The distance in nautical miles that the torpedo will travel in one 30-second tactical turn. 6. Percent Hit Probability: The percent chance the torpedo will hit the target. 7. Warhead: The torpedo's warhead weight in kilograms. 8. Damage Points Against A Submarine: If the torpedo can attack a submarine, this value is the number of damage points it will inflict on a submerged target. 9. Damage Points Against A Surface Target: If the torpedo can attack a surface vessel, this value is the number of damage points it will inflict on a surface target. 10. Launch Platforms: Type of units the torpedo can be launched from. 11. Diameter: The diameter of the torpedo in millimeters. 12. Remarks: Additional information about the weapon.

## Annex F—Torpedoes

1	2	3	4	5	6	7	8	9	10	11	12
Country	Name	Eff. Range	Speed (kts)	Dist/ turn	% hit	Warh. Wt (kg)	Damage vs. sub vs. ship	Launch Platforms	Diam (mm)	Remarks	
Sweden	Type 42	5.4/10.8	40/25	.33/.20	.60	50	25	25	Surf, sub, air	400	Wire-guided.
Sweden	Type 422	5.4/10.8	40/25	.33/.20	.65	50	25	25	Surf, sub, air	400	Wire-guided.
Sweden	Type 431	8/16	40/25	.33/.20	.80	50	25	25	Surf, sub	400	Dual-wire, shallow-water capable.
Sweden	Type 61	10	45	.38	.70	250	—	125	Surf, sub	533	Wire-guided.
Sweden	Type 613	16.4/10.0	25/45	.37/.20	.80	250	—	125	Surf, sub	533	Dual wire-guided, dual-speed.
Sweden	Type 617	16.5	60	.50	.80	240	—	120	Surf, sub	533	Dual wire-guided.
UK	Mk20	6	20	.17	.50	90	23	—	Sub	533	Passive.
UK	Mk23	6	20	.17	.60	90	23	—	Sub	533	Wire-guided.
UK	Mk24 Tigerfish Mod0	16	24	.20	.30	340	—	170	Sub	533	Wire-guided, dual-speed.
UK	Mk24 Tigerfish Mod1	7	35	.29	—	—	—	—	—	—	Wire-guided, dual-speed.
UK	Mk24 Tigerfish Mod2	18	24	.20	.75	340	85	170	Sub	533	Wire-guided, dual-speed.
UK	Mk8	11	35	.29	—	—	—	—	—	—	Wire-guided, dual-speed.
UK	Mk8	2.5	45	.38	.30	340	—	102	Sub	533	Nonhoming.
UK	Mk8	3.5	40	.33	—	—	—	—	—	—	Nonhoming.
UK	Spearfish	20/10	28/65	.20/.54	.80	300	75	150	Sub	533	Dual-wire, dual-speed, DE warhead.
UK	Stingray	6	45	.38	.70	45	23	—	Air, surf, standoff	324	Shallow-water capable, DE warhead.
USA	Mk14	2.5	46	.38	.30	292	—	146	Sub	533	Nonhoming.
USA	Mk14	4.3	32	.27	—	—	—	—	—	—	Nonhoming.
USA	Mk16	5.5	46	—	.30	338	—	101	Sub	533	Nonhoming.
USA	Mk27	2.5	12	.10	.50	43	22	22	Sub	482	Nonhoming.
USA	Mk32	4.3	12	.10	.50	49	25	—	Air,surf	483	Wire-guided.
USA	Mk37	4	24	.20	.60	150	75	—	Sub	482	Wake-F.
USA	Mk43	9	16	.13	—	—	—	—	—	—	Dual-speed.
USA	Mk43	2.1	21	.18	.40	34	17	—	Air, surf, standoff	324	Dual-wire, dual-speed.
USA	Mk44	3	30	.25	.45	34	17	—	Air, surf, standoff	324	Shallow-water capable, DE warhead.
USA	Mk45 ASTOR	5.4	25	.21	—	10kt	—	—	Sub	482	Wire-guided.
USA	Mk45F Freedom	7.5	40	.33	.65	295	—	148	Sub	483	Wake-F.
USA	Mk46	6	45	.38	.55	45	23	—	Air, surf, standoff	324	Dual-speed.
USA	Mk46 NEARTIP	6	45/25	.37/.20	.60	45	23	—	Air, surf, standoff	324	Dual-wire, dual-speed.
USA	Mk48	20	40	.33	.70	300	75	150	Sub	533	Dual-wire, dual-speed.
USA	Mk48	13	55	.46	—	—	—	—	—	—	Dual-wire, dual-speed.
USA	Mk48 ADCAP	25	40	.33	.80	300	75	150	Sub	533	Dual-wire, dual-speed.
USA	Mk50 Barracuda	15	60	.50	—	—	—	—	—	—	Shallow-water capable, DE warhead.
USA	NT-37C	6	55	.46	.70	45	23	—	Air, surf, standoff	324	Wire-guided.
USA	NT-37C	8	34	.28	.60	150	75	75	Surf, sub	482	Wire-guided.
USA	NT-37D	18	22	.18	—	—	—	—	—	—	Wire-guided.
USA	NT-37D	8	34	.28	.65	150	75	75	Surf, sub	483	Wire-guided.
USA	NT-37E	18	22	.18	—	—	—	—	—	—	Wire-guided.
USA	NT-37E	10	33	.28	.70	150	75	75	Sub	482	Wire-guided, dual-speed.
USSR	53VA	22	22	.18	—	—	—	—	—	—	Wire-guided, dual-speed.
USSR	53VA	5	30	.25	.60	225	56	113	Surf, sub	533	Wire-guided, dual-speed.
USSR	E40-75A	7.5	24	.20	.60	225	56	113	—	—	Wire-guided, dual-speed.
USSR	E45-70A	7	30	.25	.50	100	50	—	Sub	400	Wire-guided, dual-speed.
USSR	E45-70A	5.4	30	.25	.45	90	45	—	Standoff	450	Wire-guided, dual-speed.



## Annex F--Torpedoes

1	2	3	4	5	6	7	8	9	10	11	12
Country	Name	Eff. Range	Speed (kts)	Dist/turn	% hit	Warh. Wt (kg)	Damage vs. sub vs. ship	Launch Platforms	Diam (mm)	Remarks	
USSR	E45-75A	4.5	33	.28	.50	90	45	Air, standoff	450		
USSR	E45-75A Mod	4	38	.32	.55	90	45	Standoff	450		
USSR	ET-80(66)	5.5	35	.29	—	20kt	—	Sub	533	Nonhoming.	
		21.8	20	.17	—	—	—	—	—		
USSR	ET-80A	6.4	45	.38	.65	272	68	Sub	533	Wire-guided.	
		8	35	.29	—	—	—	—	—		
USSR	SAET-60	8.1	35	.29	.55	400	—	Sub	533		
USSR	SET-40	5.4	28	.23	.50	100	50	Sub, standoff, air	400		
		—	—	—	—	—	—	Surf	—		
USSR	SET-65	5.4	35	.29	.55	272	68	Sub	533		
		11	24	.20	—	—	—	—	—		
USSR	Type 53-51	2.2	52	.43	.40	400	—	Sub	533	Nonhoming.	
		4.3	39	.33	—	—	—	—	—		
USSR	Type 53-56	5	51	.43	.40	400	—	Sub	533	Nonhoming.	
		10	39	.33	—	—	—	—	—		
USSR	Type 53-56 Nuclear	11.3	32	.27	—	15kt	—	Sub	533	Nonhoming.	
		5.9	50	.42	—	—	—	—	—		
USSR	Type 53-65	7.6	55	.46	.60	400	—	Sub	533	Nonhoming.	
		13	40	.33	—	—	—	—	—		
USSR	Type 53-68	7.6	45	.38	—	20kt	—	Sub	533	Nonhoming.	
USSR	Type 65	27	50	.40	.65	900	—	Sub	650	I/Wake-F/TASH.	
		54	30	.25	—	—	—	—	—		

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Effective Range: Maximum distance the torpedo will travel in a straight line. If two effective ranges are shown, the firing vessel may select between them, but the corresponding speed must be used. 4. Speed: The torpedo's speed in knots. 5. Distance Per Turn: The distance in nautical miles that the torpedo will travel in one 30-second tactical turn. 6. Percent Hit Probability: The percent chance the torpedo will hit the target. 7. Warhead: The torpedo's warhead weight in kilograms. 8. Damage Points Against A Submarine: If the torpedo can attack a submarine, this value is the number of damage points it will inflict on a submerged target. 9. Damage Points Against A Surface Target: If the torpedo can attack a surface vessel, this value is the number of damage points it will inflict on a surface target. 10. Launch Platforms: Type of units the torpedo can be launched from. 11. Diameter: The diameter of the torpedo in millimeters. 12. Remarks: Additional information about the weapon.

## Annex G<sup>1</sup>—Unguided Air Ordnance

1	2	3	4	5	6	7
Country	Name	Range (nm)	Ph	Hang Wt (kg)	Dam Pts	Remarks
France	AN52	—	—	600	15kt	Nuclear free-fall bomb.
France	BAT 120	—	.15	34	5	Retarded anti-armor bomb.
France	Belouga	—	.30	290	36	Cluster weapon.
France	Giboulee	—	.30	490	17	Cluster weapon.
France	BL4 bomb	—	.15	1000	110	GP bomb.
France	BL5 bomb	—	.15	50	4	GP bomb.
France	BL6 bomb	—	.15	118	11	GP bomb.
France	BL7 bomb	—	.15	115	12	GP bomb.
France	BL8 bomb	—	.15	120	4	Frag bomb (airburst).
France	BL9 bomb	—	.15	120	4	Frag bomb (airburst).
France	BL18 bomb	—	.15	125	4	Frag bomb (airburst).
France	BL4 bomb	—	.15	1000	110	GP bomb.
France	EU2 bomb	—	.15	250	20	GP bomb.
France	EU3 bomb	—	.15	452	41	GP bomb.
France	T200 bomb	—	.15	345	35	GP bomb.
France	BM 400	5.4	.15	390	60	Cluster weapon, rocket-boosted.
France	531kg retarded bomb	—	.15	531	48	
France	Matra 155	2.1	.60	185	4	18x68mm SNEB rockets. FRG, UK use also.
France	Type 68-12 rocket pod	2.1	.45	98	2	12x68mm rockets.
France	Type 68-22 rocket pod	2.1	.67	180	4	22x68mm rockets.
France	Type 68-36 rocket pod	2.1	.85	390	7	36x68mm rockets.
France	Type 100-4 rocket pod	2.1	.15	240	2	4x100mm rockets.
France	Type 100-6 rocket pod	2.1	.25	370	4	6x100mm rockets.
France	Type F1 rocket pod	2.1	.85	270	7	36x68mm rockets.
France	SAMP 25 bomb	—	.15	247	20	GP bomb.
Italy	AL-18-50 rocket pod	1.0	.60	99	3	18x50mm rockets.
Italy	AL-25-50 rocket pod	1.0	.70	155	5	25x50mm rockets.
Italy	AL-6-68 rocket pod	2.0	.25	—	2	6x68mm rockets.
Italy	AL-18-68 rocket pod	2.0	.60	—	3	18x68mm rockets.
Italy	AL-6-70 rocket pod	2.0	.25	121	1	6x70mm rockets.
Italy	AL-18-70 rocket pod	2.0	.60	242	3	18x70mm rockets.
Italy	AL-6-80 rocket pod	2.0	.25	114	1	6x80mm rockets.
Italy	SAL-6-80 rocket pod	2.0	.25	163	1	6x80mm rockets. Supersonic rated.
Italy	SAL-12-80 rocket pod	2.0	.45	297	2	12x80mm rockets. Supersonic rated.
PRC	8x57mm rocket pod	1.0	.33	—	2	
PRC	18x57mm rocket pod	1.0	.60	—	5	Carried on F-7M, prob others.
PRC	7x90mm rocket pod	2.0	.30	—	4	Carried on F-7M, prob others.
PRC	Type 1 250 kg GP bomb	—	—	220	21	Same as USSR FAB-250 M46.
PRC	Type 2 100 kg GP bomb	—	—	103	6	Same as USSR FAB-100 M43. High drag.
PRC	50 kg bomb	—	.15	50	4	
PRC	500kg bomb	—	.15	500	45	
UK	BL755	—	.30	273	60	Cluster weapon.
UK	Green Parrot	—	—	—	20kt	Nuclear free-fall bomb.
UK	Mk1/2 bomb	—	.15	245	18	
UK	454 kg bomb	—	.15	453	40	Various marks. Can be fitted with retarder.
USA	B28 nuclear bomb	—	—	1053	350 kt	Nuclear free-fall bomb.
USA	B43 nuclear bomb	—	—	953	1 mt	Nuclear free-fall bomb.
USA	B57 nuclear bomb	—	—	237	5-20 kt	Nuclear free-fall bomb or depth bomb.
USA	B61 nuclear bomb	—	—	232	550 kt	Nuclear free-fall bomb.
USA	CBU-24	—	.30	—	150	Cluster bomb.
USA	CBU-72/B FAE	—	.05	227	38	Fuel air explosive.
USA	CBU-87/B	—	.30	431	65	Cluster bomb.
USA	CBU-95 FAE	—	.10	227	54	Fuel air explosive.
USA	LAU-68B	2.0	.50	98	2	7x2.75 FFAR.

1. **Nation:** Nation manufacturing the weapon. 2. **Name:** Standard designation for the weapon. 3. **Range:** Distance in nautical miles within which a surface target can be engaged and hit. 4. **Percent Hit Probability:** Percent chance of hitting a target. 5. **Hang Weight:** Weight of the weapon in kilograms. 6. **Damage Points:** Number of damage points each hit by a weapon inflicts on a surface target. 9. **Remarks:** Additional information about this weapon.

Notes: For statistics on nuclear weapons effects, see Annex I.

# Annex G<sup>1</sup>—Unguided Air Ordnance

1	2	3	4	5	6	7
Country	Name	Range (nm)	Ph	Hang Wt (kg)	Dam Pts	Remarks
USA	LAU-69B	2.0	.65	—	6	19x2.75 FFAR.
USA	Zuni 5 HVAR	4.3	.20	49	5	
USA	Mk101 Nuc DB	—	—	—	5-10kt	Nuclear depth bomb.
USA	Mk105 Nuc DB	—	—	—	5-10kt	Nuclear depth bomb.
USA	Mk20 Rockeye	—	.30	222	25	Cluster bomb.
USA	Mk81 250 lb bomb	—	.15	137	9	Weight for Snakeye retarded version.
USA	Mk82 500 lb bomb	—	.15	259	17	Weight for Snakeye retarded version.
USA	Mk83 1000 lb bomb	—	.15	447	40	No Snakeye version.
USA	Mk84 2000 lb bomb	—	.15	894	86	No Snakeye version.
USA	Mk117 750 lb bomb	—	.15	374	37	GP bomb.
USA	Mk118 3000 lb bomb	—	.15	1384	179	GP bomb.
USA	SUU-65/B	—	.15	454	38	Cluster bomb.
USSR	FAB-100M62	—	.15	100	9	General-purpose LD HE bomb.
USSR	FAB-250M62	—	.15	250	23	General-purpose LD HE bomb.
USSR	FAB-500M62	—	.15	499	43	GP bomb.
USSR	FAB-750	—	.15	750	65	General-purpose LD HE bomb.
USSR	FAB-1000M43	—	.15	998	92	Older series wide body bomb.
USSR	FAB-1500M54	—	.15	1393	133	GP bomb.
USSR	FAB-3000M46	—	.15	2983	293	GP bomb.
USSR	FAE	—	.10	250	40	Fuel air explosive.
USSR	TN-1000	—	—	1000	350kt	Nuclear free-fall bomb.
USSR	FF Nuke2	—	—	700	200kt	New model nuclear free-fall bomb.
USSR	PKT-250	—	.15	250	5	Cluster bomb.
USSR	RBK-180	—	.30	180	2	Cluster bomb.
USSR	RBK-250	—	.30	250	3	Cluster bomb.
USSR	RBK-500	—	.30	500	7	Cluster bomb.
USSR	S-13	—	.20	—	5	130 mm rocket.
USSR	M-100	—	.20	16	5	137 mm rocket.
USSR	S-16	—	.20	—	5	160 mm rocket.
USSR	TRS 190	—	.20	46	6	190mm rocket.
USSR	S-21/S-21M	—	.30	—	7	210 mm rocket.
USSR	ARS 212	—	.20	116	7	212mm rocket.
USSR	S-24	—	.20	—	8	240mm rocket M1976.
USSR	S-28	—	.20	—	9	280 mm rocket.
USSR	S-32/S-32M	—	.20	—	10	325 mm rocket.
USSR	UB-20 rocket pod	1.0	.60	—	16	20x80mm S-8 or S-8K rockets.
USSR	UV-8-57	1.0	.33	—	2	8x57mm S-5K or S-5MK rockets.
USSR	UV-16-57	1.0	.55	—	4	16x57mm S-5K or S-5MK rockets.
USSR	UV-19-57	1.0	.60	—	5	19x57mm S-5K or S-5MK rockets.
USSR	UV-32-57	1.0	.80	—	9	32x57mm S-5K or S-5MK rockets.

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Range: Distance in nautical miles within which a surface target can be engaged and hit. 4. Percent Hit Probability: Percent chance of hitting a target. 5. Hang Weight: Weight of the weapon in kilograms. 6. Damage Points: Number of damage points each hit by a weapon inflicts on a surface target. 9. Remarks: Additional information about this weapon.

Notes: For statistics on nuclear weapons effects, see Annex I.

## Annex G<sup>2</sup>—Aircraft Electronics Pods

1	2	3	4	5	6	7
Country	Name	Type	Range (nm)	Ph effect	Hang Wt (kg)	Remarks
France	Alligator	Off ECM pod	5	-0.10	500	Conformal dispenser fitted to underside of wing.
France	Alkan 5020	Chaff/flare	—	-0.10	—	
France	ATLIS 2	Laser desig.	—	—	160	
France	Barax	DECM pod	—	-0.05	82	
France	Barracuda	DECM Pod	—	-0.10	—	
France	Baslisk	Off ECM pod	5	-0.10	544	
France	Caiman	Off ECM pod	10	-0.10	550	
France	CT 51J	Off ECM pod	5	-0.05	—	
France	DB 3141	Off ECM pod	5	-0.10	175	
France	Phimat	Chaff	—	-0.10	54	
France	Remora	DECM pod	—	-0.15	175	Carries enough chaff for 3 minutes of operation.
France	Rubis	FLIR pod	—	—	—	
France	Syrel ELINT Pod	ESM	—	—	—	
Italy	ELT-457/8/9/60	Off ECM pod	10	-0.10	145	
Italy	ELT-555	DECM pod	—	-0.10	140	
Italy	SL/ALQ-234	DECM pod	—	-0.10	270	
Sweden	BOP 300	Chaff/flare	—	-0.10	—	
Sweden	BOZ 100	Chaff/flare	—	-0.10	—	
Sweden	BOZ 107	Flare	—	-0.10	—	
Sewden	Erijammer A100	Off ECM pod	3	-0.05	—	
UK	Sky Shadow	DECM pod	—	-0.15	—	Podded version of ASPJ.
UK	Blue Eric	DECM pod	—	-0.10	—	
USA	AAQ-8	DECM pod	—	-0.10	—	
USA	AAS-35	FLIR	—	—	154	
USA	ALE-18	Chaff	—	-0.05	—	
USA	ALE-30/32/37A	Chaff	—	-0.05	—	
USA	ALE-38/41	Chaff	—	-0.05	—	
USA	ALE-43	Chaff	—	-0.10	284	
USA	ALE-44	Chaff/flare	—	-0.10	22	
USA	ALQ-101	DECM pod	—	-0.05	—	
USA	ALQ-119	DECM pod	—	-0.10	259	Has FLIR sensor and laser designator. Unpowered decoy. Range of 20 nm when lofted by low altitude aircraft. Range of 70 nm when dropped from high altitude. Can execute up to three preprogrammed turns. Apparent fighter-sized contact.
USA	ALQ-123	IRCM pod	—	-0.10	—	
USA	ALQ-131	DECM pod	—	-0.15	272	
USA	ALQ-165	DECM pod	—	-0.15	172	
USA	ALQ-176	Off ECM pod	—	-0.10	121	
USA	ALQ-184	DECM pod	—	-0.15	260	
USA	Pave Knife	Laser desig.	—	—	—	
USA	Pave Spike	Laser desig.	—	—	193	
USA	Pave Tack	Laser desig.	—	—	580	
USA	Samson	Decoy	—	—	200	
USA	TALD	Decoy	2	-0.10	204	Follow-on to Samson. Unpowered decoy. Range of 20 nm when lofted by low altitude aircraft. Range of 70 nm when dropped from high altitude. Can execute up to three preprogrammed turns. Has Luneberg lens to increase RCS (apparent fighter-sized radar contact). Has chaff dispenser, active jammers.
USSR	DECM pod	DECM pod	—	-0.15	—	Estimated. Pod known to exist.
USSR	IRCM Pod	IRCM Pod	—	-0.10	—	Estimated. Existence of pod assumed.

1. Nation: Nation manufacturing the pod. 2. Name: Standard designation for the pod. 3. Type: Function of the pod. 4. Range: Distance in nautical miles within which an offensive ECM pod is effective. 5. Percent Hit Probability Effect: Reduction in the percent chance of hitting a target screened by this system, by radar or infrared-guided weapons or both. 6. Hang Weight: Weight of the pod in kilograms. 7. Remarks: Additional information about this system.

# Annex G<sup>3</sup>—Aircraft Cannon

1	2	3	4	5	6	7
Country	Name	Ph	Hang Wt (kg)	Dam Pts	ROF	Remarks
France	30mm DEFA 552	0.60	—	2	1250	
France	30mm DEFA 552A	0.60	—	2	1300	
France	30mm DEFA 553	0.60	—	2	1300	
France	30mm DEFA 554	0.60	—	3	1800	
France	30mm gun pod	0.60	—	2	1300	
France	GIAT 791B 30mm	0.60	—	2	1500	
France	GIAT M.621 20mm gun pod	0.60	170	1	1000	
FRG	Mauser 27mm	0.60	—	2	1000	
Italy	AEREA mg pod	0.50	84	1	750	2 7.62mm mg.
PRC	Type 2 30mm	0.60	—	2	1200	
PRC	Type 23-1 23mm	0.50	—	1	850	
Sweden	SA 10 30mm gun pod	0.60	340	2	1200	
UK	Aden 25mm	0.60	—	3	1650	
UK	Aden Mk4 30mm	0.60	—	2	1200	
USA	GAU-12/U 25mm rotary	0.70	588	5	3600	
USA	GAU-8 30mm rotary	0.65	—	6	2100	
USA	GPU-2/A 20mm gun pod	0.50	270	2	750	
USA	GPU-5/A 30mm pod	0.65	726	5	2400	
USA	Mk230 25mm	0.75	—	1	625	
USA	Mk4 20mm gun pod	0.50	630	2	700	
USA	SUU-11B/A gun pod	0.40	147	2	300	7.62mm minigun.
USA	SUU-16/A gun pod	0.70	780	4	6000	20mm Vulcan.
USA	SUU-23/A gun pod	0.70	785	4	6000	20mm Vulcan.
USA	Vulcan 20mm rotary	0.70	—	4	4000	
USSR	23mm rotary	0.70	—	4	5000	
USSR	2A42 30mm	0.40	—	1	250	
USSR	2NR-30 30mm	0.60	—	2	1000	
USSR	GSh-6-N-30 30mm rotary	0.70	—	5	4000	
USSR	UPK-23 23mm	0.70	250	2	3000	
USSR	GSh-23L 23mm	0.70	—	3	3000	
USSR	NR-23 23mm	0.50	—	2	850	
USSR	NR-37 37mm	0.40	—	2	400	
USSR	NS-23 23mm	0.40	—	2	550	

1. **Nation:** Nation manufacturing the weapon. 2. **Name:** Standard designation for the weapon. 3. **Percent Hit Probability:** Percent chance of hitting a surface target. 4. **Hang Weight:** Weight of a cannon pod in kilograms. 5. **Damage Points:** Number of damage points each hit by a weapon inflicts on a surface target. 6. **Remarks:** Additional information about this weapon.

**Notes:** For air-to-air ratings of cannon, see individual aircraft listings in Annex B.

Annex G<sup>4</sup>—Guided Air Ordnance

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Name	Min Range	Range (nm)	Ph	Hang Wt (kg)	Dam Pts	Speed (kts)	Dist/ Turn	Flight Path	Guidance	Target?	Remarks
Argentina	Martin Pescador	1.0	4.3	.50	140	8	1517	12.6	Ballistic	Cmd	Y	
France	AM.10	1.6	5.4	.50	96	6	541	4.5	Ballistic	Wire-G	Y	
France	AM.39 Exocet	2.0	38.0	.70	654	33	613	5.1	VLow Cruise	I/TARH	Y	
France	Armat	1.0	65.0	.80	545	32	594	5.0	High cruise	ARM	Y	A.
France	AS.12	0.8	4.3	.50	75	6	505	4.2	Ballistic	Wire-G	Y	
France	AS.15TT	0.5	8.0	.70	98	6	544	4.5	VLow Cruise	Cmd	Y	
France	AS.30	0.8	6.2	.70	520	46	990	8.3	Ballistic	Cmd	Y	
France	AS.30L	0.8	6.2	.80	520	46	990	8.3	Ballistic	SALH	Y	
France	BGL 250	0.5	5.5	.80	250	20	516	4.3	Ballistic	SALH	Y	
France	BGL 400	0.5	5.5	.80	400	35	516	4.3	Ballistic	SALH	Y	
France	BGL 1000	0.5	5.5	.80	1000	110	516	4.3	Ballistic	SALH	Y	
France/UK	AS.37 Martel	1.0	33.0	.70	530	30	1147	9.6	Ballistic	ARM	Y	
FRG	Kormoran	3.0	20.0	.70	600	32	627	5.2	VLow Cruise	I/TARH	Y	B.
FRG	Kormoran 2	3.0	30.0	.80	630	44	594	5.0	VLow Cruise	I/TARH	Y	B.
Intl	ANL	3.0	100.0	.80	950	33	1721/1320	14.3/11	High or VLow Cruise	I/TARH	Y	
Italy	Marte Mk II	2.0	13.5	.75	300	14	486	4.1	VLow Cruise	I/TARH	Y	
Japan	500 kg LGB	0.5	4.0	.80	500	30	528	4.4	Ballistic	SALH	Y	
Japan	750 kg LGB	0.5	4.0	.80	750	45	528	4.4	Ballistic	SALH	Y	
Japan	Type 80	2.0	25.0	.70	610	40	594	5.0	VLow Cruise	I/TARH	Y	
Norway	Penguin Mk3	1.4	30.0	.80	350	24	528	4.4	VLow Cruise	I/TIRH	Y	C.
PRC	C601 (CAS-N-1)	15.0	54.0	.60	2440	100	594	5.0	Low Cruise	I/TARH	N	
PRC	C801	3.0	35.0	.65	1000	30	726	6.1	VLow Cruise	I/TARH	Y	
UK	AJ.168	1.0	33.0	.70	550	30	594	5.0	Ballistic	EO(TV)	Y	H.
UK	Alarm	1.0	37.0	.80	280	10	1320	11.0	Ballistic	ARM	Y	D, E, K.
UK	Sea Eagle	3.0	60.0	.75	600	46	594	5.0	VLow Cruise	I/TARH	Y	
UK	Sea Skua	1.0	8.0	.80	145	4	594	5.0	VLow Cruise	SARH	Y	
USA	AGM-122A Sidarm	0.5	5.0	.80	91	2	1518	12.7	Ballistic	ARM	Y	B.
USA	AGM-129A Skipper II	0.5	9.0	.80	582	40	582	4.9	Ballistic	SALH	Y	
USA	AGM-12B Bullpup A	1.0	6.0	.60	260	23	1319	11.0	Ballistic	Cmd	Y	
USA	AGM-12C Bullpup B	1.0	9.0	.70	812	91	1319	11.0	Ballistic	Cmd	Y	
USA	AGM-130	0.5	13.0	.80	1330	181	360	3.0	Ballistic	EO(TV or IIR)	Y	
USA	AGM-65A Maverick	0.5	12.0	.70	210	11	791	6.6	Ballistic	EO(TV)	Y	
USA	AGM-65B Maverick	0.5	13.0	.75	210	11	791	6.6	Ballistic	EO(TV)	Y	
USA	AGM-65C Maverick	0.5	13.0	.80	210	11	791	6.6	Ballistic	SALH	Y	
USA	AGM-65D Maverick	0.5	13.0	.75	210	11	791	6.6	Ballistic	EO(IIR)	Y	
USA	AGM-65E Maverick	0.5	13.0	.80	288	27	791	6.6	Ballistic	SALH	Y	
USA	AGM-65F Maverick	0.5	13.0	.75	288	27	791	6.6	Ballistic	EO(IIR)	Y	
USA	AGM-65G Maverick	0.5	13.0	.80	288	27	791	6.6	Ballistic	EO(IIR)	Y	
USA	BLU-109/B	0.5	5.0	.80	907	80	528	4.4	Ballistic	SALH	Y	

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Minimum Range: Distance in nautical miles within which a surface target cannot be engaged. 4. Maximum Range: Distance in nautical miles within which a surface target can be engaged and hit. 5. Percent Hit Probability: Chance of the weapon hitting a surface target. 6. Hang Weight: Weight of each weapon in kilograms. 7. Damage Points: Number of damage points each hit by a mount inflicts on a surface target. 8. Speed: Speed in knots of the weapon in flight. 9. Distance Per Turn: Distance in nautical miles the weapon travels in each 30-second tactical turn. 10. Flight Path: Description of the weapon's trajectory after it is launched. 11. Guidance: Type of guidance system or systems used by the weapon. 12. VSmall Target?: Whether the weapon represents a Very Small (.1 m<sup>2</sup>) target to enemy defensive systems. 13. Remarks: Additional information about this weapon.

Notes to Remarks: A. Executes steep dive on target in last turn of flight. B. Launch at VLow altitude permitted. C. Can have up to three waypoints. D. Not tunable in flight. E. Stores target emitter location. F. Terminal pop-up. G. Airburst warhead. H. Requires data link pod. I. Tunable in flight. J. Alternate TARM guidance. K. Loiter capability. L. Med or High altitude launch.

Annex G<sup>4</sup>-Guided Air Ordnance

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Name	Min Range	Range (nm)	Ph	Hang Wt (kg)	Dam Pts	Speed (kts)	Dist/ Turn	Flight Path	Guidance	VSm. Target?	Remarks
USA	GBU-10A	0.5	3.0	.80	944	86	528	4.4	Ballistic	SALH	Y	
USA	GBU-10C	0.5	4.0	.80	944	86	528	4.4	Ballistic	SALH	Y	
USA	GBU-12A	0.5	3.0	.80	277	17	528	4.4	Ballistic	SALH	Y	
USA	GBU-12B	0.5	4.0	.80	277	17	528	4.4	Ballistic	SALH	Y	
USA	GBU-15(V)/B	0.5	4.0	.80	1187	181	528	4.4	Ballistic	EO (TV or IIR)	Y	
USA	GBU-16	0.5	4.0	.80	499	40	528	4.4	Ballistic	SALH	Y	
USA	GBU-22/B	0.5	4.0	.80	326	17	528	4.4	Ballistic	SALH	Y	
USA	GBU-24	0.5	3.0	.80	1037	86	528	4.4	Ballistic	SALH	Y	
USA	HARM	2.0	70.0	.70	366	13	1980	16.5	Ballistic	ARM	Y	G. I.
USA	Harpoon	3.0	60.0	.75	526	45	560	4.7	VLow Cruise	I/TARH	Y	F.
USA	Harpoon IB	3.0	60.0	.75	526	45	560	4.7	VLow Cruise	I/TARH	Y	No popup.
USA	Harpoon IC	3.0	80.0	.80	526	45	560	4.7	VLow Cruise	I/TARH	Y	Selectable F.
USA	Have Nap	2.0	50.0	.75	1361	68	594	5.0	VLow cruise	Inertial/EO	Y	
USA	Hellfire	0.3	6.7	.80	45	2	772	6.4	Ballistic	SALH	Y	
USA	KMU-420/B	0.5	4.0	.80	295	25	528	4.4	Ballistic	SALH	Y	
USA	Penguin Mk2 Mod7	1.4	15.0	.80	340	24	528	4.4	VLow Cruise	I/TIRH	Y	G.
USA	Shrike	2.0	8.6	.70	177	13	1320	11.0	Ballistic	ARM	Y	G.
USA	SLAM	3.0	50.0	.75	629	45	560	4.7	VLow Cruise	I/M/TEO(IIR)	Y	H.
USA	Standard ARM	2.0	35.0	.85	635	20	1162	9.7	Ballistic	ARM	Y	E.
USA	Tacit Rainbow	0.5	260.0	.85	200	4	521	4.3	VLow Cruise	ARM	Y	E, K.
USA	TOW	0.2	2.0	—	21	1	542	4.5	Ballistic	Wire-G	Y	
USA	Walleye I	1.0	14.0	.60	511	77	528	4.4	Ballistic	EO (TV)	Y	
USA	Walleye II	1.0	35.0	.70	1089	181	528	4.4	Ballistic	EO (TV)	Y	
USSR	AS-1 Kennel	13.0	55.0	.60	3000	200	516	4.3	High or Low Cruise	Cmd/TARH	N	High alt launch.
USSR	AS-2 Kipper	20.0	115.0	.60	4200	200	688	5.7	High or Low Cruise	I/M/TARH	N	A.
USSR	AS-3 Kangaroo	25.0	305.0	—	11000	800kt	918	7.7	High Cruise	Inertial	N	A.
USSR	AS-4 Kitchen	25.0	250.0	.70	6000	200	1147	9.6 or 6.6	VHigh or Low Cruise	I/TARH	N	A, J, L.
USSR	AS-5 Kelt	15.0	180.0	.60	3500	200	516	4.3	High or Low Cruise	I/TARH	N	A, J, High alt launch.
USSR	AS-6 Kingfish	25.0	250.0	.70	5000	200	1721	14.3 or 6.6	High or Low Cruise	I/M/TARH	N	A, J, High alt launch.
USSR	AS-7 Kerry	1.0	6.0	.70	400	20	396	3.3	Ballistic	Cmd	Y	
USSR	AS-9 Kyle	2.0	50.0	.80	750	30	528	4.4	Ballistic	ARM	Y	
USSR	AS-10 Karen	0.5	5.4	.80	300	20	528	4.4	Ballistic	SALH	Y	
USSR	AS-11 Kilter	2.0	27.0	.70	420	26	2008	16.7	Ballistic	ARM	Y	
USSR	AS-12 Kegler	1.0	70.0	.80	800	30	800	6.7	Ballistic	ARM	Y	
USSR	AS-14 Kedje	1.0	21.5	.70	625	50	660	5.5	Ballistic	SALH	Y	I, E.
USSR	AT-6 Spiral	0.2	5.0	.75	32	2	874	7.3	Ballistic	SALH	Y	
USSR	500 kg LGB	0.5	4.0	.75	500	43	528	4.4	Ballistic	SALH	Y	
USSR	750kg LGB	0.5	4.0	.75	750	45	528	4.4	Ballistic	SALH	Y	
USSR	1000kg LGB	0.5	4.0	.75	1000	92	528	4.4	Ballistic	SALH	Y	

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Minimum Range: Distance in nautical miles within which a surface target cannot be engaged. 4. Maximum Range: Distance in nautical miles within which a surface target can be engaged and hit. 5. Percent Hit Probability: Chance of the weapon hitting a surface target. 6. Hang Weight: Weight of each weapon in kilograms. 7. Damage Points: Number of damage points each hit by a mount inflicts on a surface target. 8. Speed: Speed in knots of the weapon in flight. 9. Distance Per Turn: Distance in nautical miles the weapon travels in each 30-second tactical turn. 10. Flight Path: Description of the weapon's trajectory after it is launched. 11. Guidance: Type of guidance system or systems used by the weapon. 12. VSmall Target?: Whether the weapon represents a Very Small (.1 m<sup>2</sup>) target to enemy defensive systems. 13. Remarks: Additional information about this weapon.

Notes to Remarks: A. Executes steep dive on target in last turn of flight. B. Launch at VLow altitude permitted. C. Can have up to three waypoints. D. Not tunable in flight. E. Stores target emitter location. F. Terminal popup. G. Airburst warhead. H. Requires data link pod. I. Tunable in flight. J. Alternate TARM guidance. K. Loiter capability. L. Med or High altitude launch.



## Annex H—Air-to-Air Missiles

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Name	Range (nm)	Speed (kts)	Dist/ Phase	Guidance	Max Alt	Hang Wt (kg)	All Aspect	Dog- fight	Snap U/D	ATA Rating	Remarks
France	Mica	27	2295	9.6	I/M/TARH or TIRH	24.4	110	Y	Y	Y	6	
France	Mistral	3	1492	6.2	IRH	15	20	Y	Y	N	6	
France	R.530	10	1721	7.2	SARH or IRH	20	195	Y	N	N	4	A.
France	R.550 Magic	5	1147	4.8	IRH	15	90	N	Y	N	5	
France	Magic 2	8	1721	7.2	IRH	15	90	Y	Y	N	5.5	
France	Super 530D	25	2008	8.4	SARH	24	265	Y	N	Y	4.5	B=9000 m.
France	Super 530F	15	2295	9.6	SARH	20	245	Y	N	Y	4.5	B=9000 m.
Intl	AIM-132 ASRAAM	8.1	1721	7.2	I/IRH	15	80	Y	Y	N	6	
Italy	Aspide	27	2295	9.6	SARH	20	220	Y	N	Y	4	
Japan	AAM-1	3.8	1434	6.0	IRH	15	70	N	Y	N	4	
PRC	PL-2	3	1147	4.8	IRH	15	70	N	Y	N	3	
PRC	PL-7	7.8	1147	4.8	IRH	15	90	N	Y	N	3.5	
UK	Red Top	6.5	1721	7.2	IRH	15	160	Y	Y	N	5	
UK	Sky Flash	27	2295	9.6	SARH	23.4	193	Y	N	Y	4.5	
USA	AIM-120 AMRAAM	40	2295	9.6	I/M/TARH	25	152	Y	Y	Y	6	
USA	AIM-54A Phoenix	110	2869	12.0	SARH/TARH	25.1	447	Y	Y	Y	4.5	
USA	AIM-54C Phoenix	110	2268	9.5	I/M/TARH	25.1	460	Y	Y	Y	5	
USA	AIM-7E Sparrow	12	2295	9.6	SARH	20	205	Y	N	N	4	
USA	AIM-7F Sparrow	24	2008	8.4	SARH	20	230	Y	N	N	4.5	
USA	AIM-7M Sparrow	24	2008	8.4	I/TSARH	20	230	Y	N	Y	4.5	
USA	AIM-9B Sidewinder	6	1147	4.8	IRH	15	75	N	Y	N	3	
USA	AIM-9D Sidewinder	6	1434	6.0	IRH	15	84	N	Y	N	5	
USA	AIM-9L Sidewinder	10	1434	6.0	IRH	15	85	Y	Y	N	6	
USA	AIM-9M Sidewinder	10	1434	6.0	IRH	15	85	Y	Y	N	6	
USSR	AA-2 Atoll	3.5	1434	6.0	IRH	15	70	N	Y	N	3	
USSR	AA-2-2 Adv. Atoll	3.5	1434	6.0	SARH	15	110	Y	Y	N	3.5	
USSR	AA-6A Acrid	27	2582	10.8	SARH	20	750	Y	N	N	4	C.
USSR	AA-6B Acrid	13	2582	10.8	IRH	20	650	Y	N	N	4	C.
USSR	AA-7A Apex	19	2008	8.4	SARH	20	320	Y	Y	Y	5	
USSR	AA-7B Apex	8	2008	8.4	IRH	20	320	N	Y	Y	5	
USSR	AA-8 Aphid	3.5	1721	7.2	IRH	15	55	N	N	N	4.5	
USSR	AA-9 Amos	41	2008	8.4	SARH/TARH	25	580	Y	N	Y	5.5	
USSR	AA-10 Alamo A	4.3	2008	8.4	SARH	20	155	Y	Y	Y	5.5	
USSR	AA-10 Alamo B	4.3	2008	8.4	IRH	20	155	Y	Y	N	5.5	
USSR	AA-10 Alamo C	16	2008	8.4	SARH	20	200	Y	Y	Y	5.5	
USSR	AA-10 Alamo D	16	2008	8.4	IRH	20	200	Y	Y	Y	5.5	
USSR	AA-11 Archer	4.3	1500	6.3	IRH	15	125	Y	Y	N	5	

1. **Nation:** Nation manufacturing the weapon. 2. **Name:** Standard designation for the weapon. 3. **Range:** Distance within which an air target can be engaged and hit. 4. **Speed:** Missile's speed in knots. 5. **Distance Per Phase:** Distance in nautical miles that the missile travels in one 15-second phase. 6. **Guidance:** Type of guidance system or systems used by the missile. 7. **Maximum Altitude:** Maximum altitude (in thousands of meters) that the missile may ascend to. 8. **Hang Weight:** Weight of a cannon pod in kilograms. 9. **All Aspect:** The missile may attack air targets from any angle. 10. **Dogfight:** The missile can be used at full effectiveness in a dogfight. 11. **Snap Up/Down:** The missile may engage targets above or below the firing aircraft without restriction. 12. **Air-to-Air Rating:** Performance value used in attacks on air targets. 13. **Remarks:** Additional information about this weapon.

**Notes to Remarks:** A. Both seeker versions all aspect. B. Maximum altitude separation. C. Minimum launch altitude Medium. Must be fired in level flight.

# Annex I—Nuclear Weapons

1	2	3	4	5	6	7
Country	Name or Designation	Warhead Yield (kt)	Kill Radius		Dmg. Radius	Burst Type
			Surf. Ship	Inflt. Aircr.		
Static Overpressure (PSI)			7	4	2	
France	AN52	15	0.8	1.1	1.7	S
France	ASMP	150	1.6	2.3	3.6	S
UK	Green Parrot	20	0.8	1.2	1.9	S
USA	ASROC	20	1.5	—	3.1	U
USA	B28	350	—	—	—	A
USA	B43	1000	—	—	—	A
USA	B57 Free-Fall	15	1.0/8	—/1.1	2.8/1.7	U/S
USA	B61	550	—	—	—	A
USA	Mk45 ASTOR	15	1.0	—	2.8	U
USA	Terrier BTN	1	0.3	0.4	0.7	A
USA	SUBROC	200	3.5	—	8.0	U
USA	Talos	5	0.5	0.7	1.3	A
USSR	152mm shell	5	0.5	0.7	1.3	A
USSR	AS-2	350	2.1	2.8	4.9	S
USSR	AS-3	800	2.7	4.2	6.5	S
USSR	AS-4	350	2.1	2.8	4.9	S
USSR	AS-5	350	2.1	2.8	4.9	S
USSR	AS-6	350	2.1	2.8	4.9	S
USSR	FRAS-1	200	3.5	—	8.0	U
USSR	TN-1000	350	2.1	2.8	4.9	S
USSR	Free-Fall #2	250	1.9	2.7	4.4	S
USSR	SA-N-3	3	0.4	0.6	1.1	A
USSR	SA-N-6	5	0.5	0.7	1.3	A
USSR	SS-N-2B/C	100	1.4	2.0	3.2	S
USSR	SS-N-3	350	2.1	2.8	4.9	S
USSR	SS-N-7	200	1.8	2.5	4.2	S
USSR	SS-N-9	100	1.4	2.0	3.2	S
USSR	SS-N-12	350	2.1	2.8	4.9	S
USSR	SS-N-15	200	3.5	—	8.0	U
USSR	SS-N-19	350	2.1	2.8	4.9	S
USSR	SS-N-22	200	1.8	2.5	4.2	S
USSR	Nuke DB	200	3.5	—	8.0	U
USSR	Type 53-56N	15	1.0	—	2.8	U
USSR	ET-80(66)	20	1.1	—	3.1	U
USSR	Type 53-68	20	1.1	—	3.1	U

## Notes:

- (1) All ship damage calculations assume 7 psi static overpressure to sink or gravely damage a surface ship or a surfaced submarine and a 2 psi overpressure is required to damage its weapons and sensors. Aircraft on the ground or on deck are included.
- (2) Aircraft and missiles in flight require a 4 psi overpressure to kill them or force a mission abort, or 2 psi to damage them or force a mission abort.
- (3) Airbursts are assumed to detonate at the target's altitude. Nuclear SAMs may be used against surface targets. They will detonate at low altitude over the target vessel, if they hit.
- (4) Aircraft in flight will be affected by an underwater burst. Use the kill radii of underwater bursts against aircraft in flight.
- (5) See section 6.7 for the effects of nuclear weapons.

1. Nation: Nation manufacturing the weapon. 2. Name: Standard designation for the weapon. 3. Warhead Yield: Yield of the weapon in kilotons. 4. Surface Ship Kill Radius: Distance from the center of the explosion within which all surface vessels are destroyed. 5. Inflight Aircraft Kill Radius: Distance from the center of the explosion within which all inflight aircraft are destroyed. 6. Damage Radius: Distance from the center of the explosion within which all surface vessels are damaged. 7. Burst Type: The type of explosion produced: air, surface, or underwater.

# Annex J—Ship-Mounted Search Radars

1	2	3	4	5	6	7	1	2	3	4	5	6	7
Country	Name	Range (nm) vs.					Country	Name	Range (nm) vs.				
		Large	Small	VSmall	Pd	Function			Large	Small	VSmall	Pd	Function
Canada	CMR-4	50	33	16	.80	AS	Italy	RAN-7S	54	36	17	.70	AS
Canada	LN-66	48	32	15	.70	SS	Italy	RAN-10S (SPS-774)	86	57	27	.80	AS, SS
Canada	LN-66/SP	32	21	10	.70	SS	Italy	RAN-11L/X	43/15	28/10	16/5	.80	AS/SS
Canada	Sperry Mk2	40	27	13	.75	SS	Italy	RAN-12L/X	43/15	28/10	16/5	.80	AS/SS
Canada	SPS-501	80	53	25	.70	AS	Italy	RAN-13X	20	13	6	.80	SS
Canada	SPS-502	25	17	8	.75	SS	Italy	RAN-14X	27	18	9	.80	SS
Canada	SPS-503	188	125	59	.80	AS	Italy	RAN-20S	120	80	38	.80	AS
Denmark	CWS-3	54	36	17	.70	AS	Italy	RAT-31S	225	150	71	.80	HF
Denmark	NWS-3	30	20	9	.70	SS	Italy	SPN-703	40	27	13	.80	SS
France	Arabel	57	38	18	.80	HF, FC	Italy	SPN-728	30	20	9	.70	SS
France	Astral	150	100	47	.80	HF	Italy	SPN-748	40	27	13	.70	SS
France	Calypso II	16	11	5	.80	SS	Italy	SPN-749(V)	40	27	13	.80	SS
France	Calypso III	18	12	6	.80	SS	Italy	SPQ-2/-2D/-2F	40	27	13	.80	AS, SS
France	Calypso IV	18	12	6	.80	SS	Italy	SPQ-701	40	27	13	.80	SS
France	Calypso V	11	7	3	.80	SS	Italy	SPS-702	40	27	13	.80	SS
France	DRBI 10	150	100	47	.80	HF	Japan	Furuno 904	30	20	9	.80	SS
France	DRBI 23	200	133	63	.80	HF	Japan	OPS-1	145	97	46	.70	AS
France	DRBJ 11	100	67	32	.80	HF	Japan	OPS-2	140	93	44	.70	AS
France	DRBN 30	12	8	4	.70	SS	Japan	OPS-9	48	32	15	.75	SS
France	DRBN 31	15	10	5	.70	SS	Japan	OPS-11	180	120	57	.80	AS
France	DRBN 32	60	40	19	.80	SS	Japan	OPS-12	200	133	63	.80	HF
France	DRBV 13	150	100	47	.80	HF, SS	Japan	OPS-13	30	20	9	.70	SS
France	DRBV 15	90	60	28	.70	AS, SS	Japan	OPS-14	220	147	70	.80	AS
France	DRBV 20	70	47	22	.70	AS	Japan	OPS-15	140	93	44	.70	AS
France	DRBV 22	70	47	22	.75	AS	Japan	OPS-16	40	27	13	.70	SS
France	DRBV 23	160	107	51	.80	AS	Japan	OPS-17	40	27	13	.70	SS
France	DRBV 26	150	100	47	.80	AS	Japan	OPS-18	30	20	9	.70	SS
France	DRBV 26C	160	107	51	.80	AS	Japan	OPS-19	30	20	9	.70	SS
France	DRBV 27	160	107	51	.80	AS	Japan	OPS-22	30	20	9	.70	SS
France	DRBV 31	15	10	5	.75	SS	Japan	OPS-24	240	160	76	.80	AS
France	DRBV 50	16	11	5	.70	SS	Japan	OPS-28	90	60	28	.70	SS
France	DRBV 51	24	16	8	.75	SS	Japan	OPS-29	30	20	9	.70	SS
France	DRUA 31	16	11	5	.80	SS	Japan	OPS-35	30	20	9	.70	SS
France	DRUA 33	18	12	6	.80	SS	Japan	OPS-36	30	20	9	.80	SS
France	Jupiter	148	99	47	.80	AS	Japan	OPS-37	30	20	9	.80	SS
France	Ramses	60	40	19	.70	AS	Japan	ZPS-2	10	7	3	.70	SS
France	Saturne I	90	60	28	.60	AS	Japan	ZPS-3	20	13	6	.70	SS
France	Saturne II	90	60	28	.60	AS	Japan	ZPS-4	30	20	9	.70	SS
France	Sea Tiger II	90	60	28	.80	AS, SS	Japan	ZPS-6	30	20	9	.80	SS
France	Triton	27	18	9	.50	SS	Nethl	DA.01	75	50	24	.80	AS
France	Triton C	24	16	8	.50	AS, SS	Nethl	DA.02	60	40	19	.70	AS
France	Triton G	24	16	8	.50	AS, SS	Nethl	DA.04	75	50	24	.70	AS
France	Triton II	33	22	10	.50	AS, SS	Nethl	DA.05, .05/2	112	75	35	.70	AS
France	Triton S	25	17	8	.50	AS, SS	Nethl	DA.08	165	110	52	.80	AS, SS
France	Triton X	16	11	5	.50	SS	Nethl	LW.01	90	60	28	.70	AS
FRG	SGR.110	30	20	9	.70	SS	Nethl	LW.02	100	67	32	.70	AS
Intl	Kelvin-Hughes series	30	20	9	.80	SS	Nethl	LW.03	100	67	32	.70	AS
Intl	Nav radar	30	20	9	.70	SS	Nethl	LW.04	180	120	57	.80	AS
Intl	Periscope radar	15	10	5	.70	SS	Nethl	LW.08	215	143	68	.80	AS
Italy	3RM series	40	27	13	.70	SS	Nethl	MW.08	150	100	47	.80	HF
Italy	BPS-704	20	13	6	.80	SS	Nethl	SMART	250	167	79	.80	HF
Italy	RAN-2C	150	100	47	.70	AS	Nethl	SPS-01	200	133	63	.80	AS, SS
Italy	RAN-3L (SPS-768)	150	100	47	.80	AS	Nethl	VI.01	150	100	47	.70	HF

1. Nation: Nation manufacturing the radar. 2. Name: Standard designation for the radar. 3. Range To Detect Large Target: Distance within which a Large radar target can be detected. 4. Range To Detect Small Target: Distance within which a Small radar target can be detected. Range To Detect Vsmall Target: Distance within which a Very Small radar target can be detected. 6. Function: Type of search the radar performs.

Abbreviations: AS: Air Search HF: Height Finding SS: Surface Search FC: Fire Control

# Annex J—Ship-Mounted Search Radars

1	2	3	4	5	6	7	1	2	3	4	5	6	7
Range (nm) vs.							Range (nm) vs.						
Country	Name	Large	Small	VSmall	Pd	Function	Country	Name	Large	Small	VSmall	Pd	Function
Nethl	ZW.01, ZW.03	48	32	15	.70	SS	UK	Type 1003	7	5	2	.70	SS
Nethl	ZW.04	20	13	6	.70	SS	UK	Type 1006	64	43	20	.80	SS
Nethl	ZW.06	14	9	4	.80	SS	UK	Type 1007	80	53	25	.80	SS
Nethl	ZW.07	16	11	5	.80	SS	UK	Type 1022	215	143	68	.80	AS
Nethl	ZW.08	32	21	10	.80	SS	USA	BPS-4	15	10	5	.70	SS
Nethl	ZW.09	20	13	6	.80	SS	USA	BPS-5	24	16	8	.70	SS
Nethl	ZW.10	15	10	5	.80	SS	USA	BPS-9	20	13	6	.70	SS
Nethl	ZW.11	15	10	5	.80	SS	USA	BPS-11	80	53	25	.80	SS
PRC	Bean Sticks						USA	BPS-12/14	30	20	9	.80	SS
	/Pea Sticks	120	80	38	.70	AS	USA	BPS-15/16	30	20	9	.80	SS
PRC	Eye Shield	100	67	32	.70	AS	USA	Mk23 TAS	90	60	28	.80	AS/SS
PRC	Fin Curve	48	32	15	.70	SS	USA	MLA-1, -1B	150	100	47	.60	AS,SS
PRC	Rice Screen	100	67	32	.70	HF	USA	Pathfinder	30	20	9	.70	SS
PRC	Type 354	50	33	16	.70	SS	USA	Raytheon series	30	20	9	.80	SS
PRC	Type 756	30	20	9	.70	SS	USA	SG-6	30	20	9	.60	AS
Sweden	9GR600	60	40	19	.80	SS	USA	SPQ-9A	20	13	6	.80	SS
Sweden	Sea Giraffe	27	18	9	.80	AS, SS	USA	SPS-5	20	13	6	.70	SS
Sweden	Sea Giraffe 50	27	18	9	.80	AS, SS	USA	SPS-6A	108	72	34	.70	AS
Sweden	Sea Giraffe 100	30	20	9	.80	AS, SS	USA	SPS-6B	145	97	46	.70	AS
Sweden	Sea Giraffe 150	42	28	13	.80	AS, SS	USA	SPS-6C	140	93	44	.70	AS
Sweden	Sea Giraffe 150HC	75	50	24	.80	AS, SS	USA	SPS-8, SPS-8A	90	60	28	.60	HF
Sweden	Skanter 009	30	20	9	.80	SS	USA	SPS-10	23	15	7	.75	SS
UK	AWS-1	60	40	19	.70	AS	USA	SPS-12	140	93	44	.75	AS
UK	AWS-2	90	60	28	.80	AS	USA	SPS-21	12	8	4	.70	SS
UK	AWS-3	140	93	44	.80	AS	USA	SPS-23	40	27	13	.60	AS
UK	AWS-5	43/107	28/71	14/34	.80	AS/SS	USA	SPS-28	100	67	32	.70	AS
UK	Decca 1226	48	32	15	.70	SS	USA	SPS-29	250	167	79	.75	AS
UK	Decca 1229	48	32	15	.80	SS	USA	SPS-30	225	150	71	.50	HF
UK	Decca 2459	60	40	19	.80	AS/SS	USA	SPS-32	400	267	126	.70	AS
UK	Decca Series	48	32	15	.70	SS	USA	SPS-33	400	267	126	.70	HF
UK	Type 267	30	20	9	.60	SS	USA	SPS-34	300	200	95	.70	HF
UK	Type 268	9	6	3	.60	SS	USA	SPS-35	32	21	10	.70	SS
UK	Type 277	55	37	17	.60	HF	USA	SPS-36	16	11	5	.75	SS
UK	Type 278	55	37	17	.70	HF	USA	SPS-37	200	133	63	.75	AS
UK	Type 291	23	15	7	.60	AS	USA	SPS-37A	261	174	83	.75	AS
UK	Type 293, Type 293Q	30	20	9	.70	SS	USA	SPS-39	267	178	84	.70	HF
UK	Type 294	15	10	5	.70	SS	USA	SPS-40	180	120	57	.80	AS
UK	Type 765	90	60	28	.70	AS	USA	SPS-43	300	200	95	.80	AS
UK	Type 960	170	113	54	.70	AS	USA	SPS-46	32	21	10	.80	SS
UK	Type 965/Type965M	200	133	63	.70	AS	USA	SPS-48, SPS-48E	220	147	70	.80	HF
UK	Type 967/968	150	100	47	.80	AS/SS	USA	SPS-49	445	297	141	.80	AS
UK	Type 974	24	16	8	.70	SS	USA	SPS-51	40	27	13	.70	SS
UK	Type 975	32	21	10	.70	SS	USA	SPS-52	360	240	114	.70	HF
UK	Type 978/979	48	32	15	.75	SS	USA	SPS-53	32	21	10	.75	SS
UK	Type 982	60	40	19	.70	AS	USA	SPS-55	40	27	13	.80	SS
UK	Type 983	40	27	13	.50	HF	USA	SPS-58	117	78	37	.80	SS
UK	Type 984	150	100	47	.70	HF	USA	SPS-59	48	32	15	.70	SS
UK	Type 992 series	90	60	28	.70	AS, SS	USA	SPS-60	32	21	10	.75	SS
UK	Type 993	45	30	14	.80	AS, SS	USA	SPS-63	40	27	13	.80	SS
UK	Type 994 (AWS-4)	70	47	22	.80	AS	USA	SPS-64	32	21	10	.80	SS
UK	Type 996 (AWS-9)	60	40	19	.80	HF	USA	SPS-65	117	78	37	.80	AS,SS
UK	Type 1001	6	4	2	.60	SS	USA	SPS-66	32	21	10	.80	SS
UK	Type 1002	7	5	2	.70	SS	USA	SPS-67	35	23	11	.67	SS

1. Nation: Nation manufacturing the radar. 2. Name: Standard designation for the radar. 3. Range To Detect Large Target: Distance within which a Large radar target can be detected. 4. Range To Detect Small Target: Distance within which a Small radar target can be detected. Range To Detect Vsmall Target: Distance within which a Very Small radar target can be detected. 6. Function: Type of search the radar performs.

Abbreviations: AS: Air Search HF: Height Finding SS: Surface Search FC: Fire Control

# Annex J—Ship-Mounted Search Radars

1	2	3	4	5	6	7	1	2	3	4	5	6	7
Country	Name	Range (nm) vs.					Country	Name	Range (nm) vs.				
		Large	Small	VSmall	Pd	Function			Large	Small	VSmall	Pd	Function
USA	SPY-1,-1D	175	117	55	.80	HF, SS, FC	USSR	Plate Steer	220	147	70	.80	HF
USSR	Ball End	20	13	6	.60	SS	USSR	Plinth Net	120	80	38	.80	SS
USSR	Ball Gun	20	13	6	.60	SS	USSR	Pot Drum	20	13	6	.80	SS
USSR	Band Stand	90	60	28	.70	AS	USSR	Pot Head	20	13	6	.80	SS
USSR	Big Net	100	67	32	.80	AS	USSR	Sea Gull	200	133	63	.70	AS
USSR	Cheese Cake	30	20	9	.75	SS	USSR	Sheet Curve	20	13	6	.75	SS
USSR	Cross Bird	30	20	9	.60	AS	USSR	Skin Head	15	10	5	.70	SS
USSR	Cross Slot	75	50	24	.70	AS	USSR	Sky Watch	300	200	95	.80	HF
USSR	Don, Don 2	15	10	5	.70	SS	USSR	Slim Net	15	10	5	.70	SS
USSR	Don Kay	15	10	5	.70	SS	USSR	Snoop Pair	15	10	5	.80	SS
USSR	Donets/Donets 2	15	10	5	.70	SS	USSR	Snoop Plate	10	7	3	.80	SS
USSR	Flat Spin	150	100	47	.80	AS	USSR	Snoop Slab	12	8	4	.80	SS
USSR	Hair Net	20	13	6	.70	SS	USSR	Snoop Tray	12	8	4	.80	SS
USSR	Head Net A/B	70	47	22	.75	AS	USSR	Snoop Head	12	8	4	.80	SS
USSR	Head Net C	70	47	22	.75	HF	USSR	Spar Stump	15	10	5	.80	SS
USSR	High Lune	90	60	28	.70	HF	USSR	Spin Trough	20	13	6	.80	SS
USSR	High Lune	90	60	28	.70	HF	USSR	Spoon Rest	150	100	47	.80	AS
USSR	High Sieve	20	13	6	.80	SS	USSR	Square Tie	70	47	22	.70	SS
USSR	Kivach	20	13	6	.80	SS	USSR	Strut Curve	150	100	47	.75	AS
USSR	Knife Rest A	90	60	28	.80	AS	USSR	Strut Pair	150	100	47	.80	AS
USSR	Knife Rest B	150	100	47	.80	AS	USSR	Top Knot	80	53	25	.80	AS
USSR	Low Sieve	20	13	6	.80	SS	USSR	Top Pair	300	200	95	.80	HF
USSR	Neptune	30	20	9	.75	SS	USSR	Top Plate	200	133	63	.80	HF
USSR	Palm Frond	40	27	13	.80	SS	USSR	Top Sail	300	200	95	.80	HF
USSR	Peel Cone	40	27	13	.80	AS, SS	USSR	Top Steer	200	133	63	.80	HF
USSR	Peel Pair	80	53	25	.80	SS	USSR	Top Trough	300	200	95	.80	AS
USSR	Plank Shave	200	133	63	.80	AS							

1. Nation: Nation manufacturing the radar. 2. Name: Standard designation for the radar. 3. Range To Detect Large Target: Distance within which a Large radar target can be detected. 4. Range To Detect Small Target: Distance within which a Small radar target can be detected. Range To Detect Vsmall Target: Distance within which a Very Small radar target can be detected. 6. Function: Type of search the radar performs.

Abbreviations: AS: Air Search HF: Height Finding SS: Surface Search FC: Fire Control

# Annex K—Weapon Directors

Name	Weapons Controlled	Mode	Name	Weapons Controlled	Mode
<b>Gunfire Control Radars</b>					
9LV200	Bofors Mk1 & Mk2 57mm/70 Compact 76mm/62, Bofors 40mm/70 Bofors Trinity 40mm/70	A,S	Type 904	Mk6 114mm/43	A,S
Bass Tilt	Auto 76mm/60, AK-630 30mm, 57mm/80	A,S	Type 909	Mk8 114mm/55	A,S
CRBF	Mk33 76mm/50, Mk6 40mm/60	A,S	Type 911	Mk8 114mm/55	A,S
DRBC 31	M1951 57mm/60, M1953 100mm/55	A,S	Type 912	Mk8 114mm/55	A,S
DRBC 32	M1953 100mm/55, M1968 100mm/55	A,S	Vega II	Compact 76mm/62, Dardo 40mm/70	A,S
DRBC 33	Compact 100mm/55, M1968 100mm/55	A,S	Wasp Head	37mm/63	A,S
DRBR 31	M1951 57mm/60	A,S	WM20	Bofors 76mm/50, Bofors 40mm/70 Type 107 40mm/70	A,S
DRBR 32	M1968 100mm/55	A,S	WM22	Mk33 76mm/50, Bofors Mk 1 57mm/70 Bofors 40mm/70, Mk3 40mm/60	A,S
Drum Tilt	AK-230 30mm/65	A,S	WM25	Compact 127mm/54, Bofors 120mm/50 M1968 100mm/55, Compact 76mm/62	A,S
FCS-1	Mk33 76mm/50, Mk42 127mm/54	A,S	WM27	Compact 76mm/62	A,S
FCS-2	Compact 76mm/62, Compact 127mm/54 Mk42 127mm/54, Mk33 76mm/50	A,S	WM28	Compact 76mm/62, Dardo 40mm/70	A,S
Hawk Screech	45mm/85, 57mm/70, 76mm/60	A,S	Wok Non	100mm/56	A,S
Kite Screech	Auto 100mm/60, Auto 130mm/70	A,S	<b>Missile Control Radars</b>		
LIROD	Dardo 40mm/70	A,S	Arabel	ASTER 15	A,S
M45	Bofors 120mm/50, 40mm/60 Compact 76mm/62, M1953 100mm/55, Type 106 & Type 107 40mm/70	A,S	Band Stand	SS-N-9, SS-N-22	S
M46	40mm/60	A,S	Cross Sword	SA-N-9	A,S
Mk13	406mm/50, Mk16 203mm/55	S	DRBR 51	Masurca	A
Mk25	Mk28 & Mk30 & Mk38 127mm/38	A,S	Fan Song	SA-N-2	A,S
Mk28	Mk16 152mm/47, Mk27 127mm/25	A,S	FCS-2	RIM-7H, RIM-7M	A,S
Mk34	Mk33 76mm/50, Mk1 40mm/60	A,S	Fog Lamp	RF61	A
Mk35	Mk42 127mm/54 Mk24 & Mk30 & Mk38 127mm/38, Mk 27 & Mk33 & Mk34 76mm/50	A,S	Front Dome	SA-N-7	A,S
Mk37	Mk24 127mm/38	A,S	Front Door		
Mk51	40mm/70	A,S	/Front Piece	SS-N-3A, SS-N-12	S
Mk60	Mk6 76mm/70	A,S	Head Light	SA-N-3A/B	A,S
Mk63	Mk33 76mm/50	A,S	Head Light	SS-N-14	S,U
Mk67	Mk42 127mm/54	A,S	M44	Sea Cat	A,S
Mk92	Compact 76mm/62, Mk75 76mm/62	A,S	Mirador IV	Crotale, Crotale EDIR	A
Muff Cob	AK-257 57mm/80	A,S	Mk91	RIM-7H, RIM-7M	A,S
Owl Screech	76mm/60	A,S	Mk115	RIM-7H, RIM-7M	A,S
Pollux	M1968 100mm/55, Compact 76mm/62	A,S	Peel Group	SA-N-1	A,S
Post Lamp	56-5M 130mm/58	A,S	Pop Group	SA-N-4	A,S
PVS-2	Meroka 20mm/120	A,S	RTN-10X	Albatros, RIM-7H, RIM-7M, Sea Cat	A,S
Rice Lamp	Type 76 57mm/70, 37mm/63	A,S	RTN-20X	Albatros	A,S
RTN-10X	Compact 127mm/54, Compact 76mm/62 Mk1 76mm/62, Mk38 127mm/38 Mk8 114mm/55	A,S	RTN-30X	Albatros	A,S
RTN-20X	Super Rapid & Compact 76mm/62 Dardo 40mm/70	A,S	Scoop Pair	SS-N-3B	S
SPG-34	Mk1 & Mk2 40mm/60 Mk33 & Mk34 76mm/50	A,S	SPG-49	Talos	A,S
SPG-35	Mk42 127mm/54, Mk30 127mm/38 Mk33 76mm/50	A,S	SPG-51	SM1MR	A,S
SPG-48	Mk33 76mm/50, Mk6 76mm/70	A,S	SPG-55	SM2ER, SM1ER, SM2MR, SM1MR	A,S
SPG-53	Compact 127mm/54	A,S	SPG-62	SM2MR	A,S
SPG-53	Mk42 127mm/54, Mk30 127mm/38	A,S	SPQ-5	Terrier	A,S
SPG-60	Mk42 127mm/54, Mk45 127mm/54	A,S	Square Tie	SS-N-2B, SS-N-2C, C801, HY-2	S
SPG-515	Mk33 76mm/50, Mk6 76mm/70	A,S	STIR	Albatros, SM1MR, RIM-7H, RIM-7M	A,S
SPY-1	Mk45 127mm/54	A,S	Top Dome	SA-N-6	A,S
STIR	M1953 100mm/55, Compact 76mm/62 Bofors Mk2 57mm/70	A,S	Trap Door	SS-N-12	A,S
Sun Visor	130mm/58, Bu-34 100mm/56 100mm/60, 100mm/50, 57mm/70	A,S	Type 262	Sea Cat	A,S
Top Bow	152mm/57, Bu-34 130mm/58, 130mm/50	A,S	Type 901	Sea Slug MkII	A,S
Type 262	Mk6 40mm/60, Mk2 40mm/60 STAAG	A,S	Type 903	Sea Cat	A,S
Type 275	Mk 6 114mm/45	A,S	Type 909	Sea Dart	A,S
Type 903	Mk26 152mm/52, Mk8 114mm/55 Mk5 & Mk6 114mm/45, Mk6 76mm/70	A,S	Type 910	Sea Wolf	A
			Type 911	LWT Sea Wolf, Sea Wolf, VL Sea Wolf	A
			Type 912	Sea Cat	A,S
			WM22	RIM-7H, RIM-7M	A,S
			WM25	RIM-7H, RIM-7M	A,S
			<b>ASW Systems</b>		
			Attack sonar	Terne III	U
			DUBA 3	Bofors 375mm mortar, 305mm mortar	U
			Eye Bowl	SS-N-14	U,S
			Ikara guidance	Ikara	U
			SQS-502	Mk10 Limbo	U
			Type 170	Mk10 Limbo, Squid	U

## Annex L—Airborne Search Radars

1	2	3			4	5	6	7	1	2	3			4	5	6	7
Country	Name	Range (nm) vs.					Pd	Function	Country	Name	Range (nm) vs.					Pd	Function
		Large	Small	VSmall							Large	Small	VSmall				
Canada	APS-503	49	33	15	.70	SS			USA	APG-71	180	120	57	.80	LD/SD		
Canada	ASV-21	30	20	9	.60	SS			USA	APQ-100	40	27	13	.70	AI		
Canada	LN-66/-66HP	48	32	15	.70	SS			USA	APQ-104	—	—	—	—	RO		
France	Agave	22	15	7	.60	AI			USA	APQ-110	—	—	—	—	TF		
France	Agrion 15	100	67	32	.70	SS			USA	APQ-120	40	27	13	.70	AI		
France	Aida I	—	—	—	—	RO			USA	APQ-126	5	3	2	.70	SS		
France	Aida II	—	—	—	—	RO			USA	APQ-144	60	40	19	.70	SS		
France	Anemone	45	30	14	.70	LD/SD			USA	APQ-156	90	60	28	.80	SS		
France	Cyrano IIbis	16	11	5	.60	AI			USA	APQ-160	10	7	3	.60	SS		
France	Cyrano IV/IVM	27	18	9	.70	AI			USA	APS-20	120	80	38	.60	SS		
France	DRAA 2A/2B	200	133	63	.70	SS			USA	APS-38	30	20	9	.60	SS		
France	Iguane	200	133	63	.80	SS			USA	APS-80	450	300	142	.60	SS		
France	ORB 31	43	29	14	.60	SS			USA	APS-81	40	27	13	.60	SS		
France	ORB 32	48	32	15	.70	SS			USA	APS-115	180	120	57	.70	SS		
France	RDI	78	52	25	.80	AI			USA	APS-116	180	120	57	.70	SS		
France	RDX	50	33	16	.80	AI, TF, SS			USA	APS-124	160	107	51	.70	SS		
Intl	Tornado radar	40	27	13	.80	SS, TF			USA	APS-125	250/130	167/87	79/41	.70	AS,SS		
Italy	APS-705	60	40	19	.70	SS			USA	APS-130	50	33	16	.70	SS		
Italy	APS-707	60	40	19	.70	SS			USA	APS-137	120	80	38	.80	SS (ISAR)		
Italy	F15A-41B	22	15	7	.60	AI			USA	APS-138	300/130	200/87	95/41	.80	AS,SS		
Italy	R21G/M1 Setter	22	15	7	.60	LD/SD			USA	APS-139	300/160	200/107	95/51	.80	AS,SS		
Japan	J/AWG-12	60	40	19	.70	LD/SD			USA	APS-145	350	233	111	.80	AS,SS		
UK	Airpass 1	30	20	9	.60	AI			USA	APY-1	360	240	114	.80	AS,SS		
UK	ARI 5955	50	33	16	.60	SS			USA	ASB-7	20	13	6	.70	SS		
UK	AW.391	40	27	13	.60	SS			USA	AWG-9	170	113	54	.70	LS/SD		
UK	AWG-11/12	60	40	19	.70	AI			USA	AWG-10	60	40	19	.70	LS/SD		
UK	Blue Fox	35	23	11	.70	LD/SD			USSR	Big Bulge A, B	230	153	73	.60	SS		
UK	Blue Kestrel	60	40	19	.70	SS			USSR	Down Beat	175	117	55	.70	SS		
UK	Blue Parrot	20	13	6	.60	SS			USSR	Fencer radar	60	40	19	.70	SS		
UK	Blue Vixen	40	27	13	.80	LD/SD			USSR	Flash Dance	130	87	41	.70	LD/SD		
UK	Foxhunter	120	80	38	.80	LD/SD			USSR	Flat Jack	250	167	79	.60	AS,SS		
UK	H2S	20	13	6	.60	SS			USSR	Fox Fire	54	36	17	.60	AI		
UK	Sea Spray	40	27	13	.70	SS			USSR	Foxhound radar	165	110	52	.70	LD/SD		
UK	Sea Spray Mk2	40	27	13	.80	SS			USSR	High Fix	—	—	—	.60	RO		
UK	Searchwater	173	115	55	.80	SS (ISAR)			USSR	High Lark	67	45	21	.60	LD/SD		
UK	Super Searcher	110	73	35	.80	SS			USSR	Izmrud	—	—	—	—	RO		
USA	APG-53	20	13	6	.40	SS			USSR	Jay Bird	29	19	9	.60	AI		
USA	APG-63	110	73	35	.70	LD/SD			USSR	Look Two	15	10	5	.40	SS		
USA	APG-65	100	67	32	.70	LD/SD			USSR	Mushroom	175	117	55	.70	SS		
USA	APG-66	57	38	18	.70	LD/SD			USSR	Puff Ball	175	117	55	.60	SS		
USA	APG-67	46	31	15	.70	LD/SD			USSR	Scan Fix	—	—	—	—	RO		
USA	APG-68	60	40	19	.80	LD/SD			USSR	Short Horn	115	77	36	.60	SS		
USA	APG-69	47	31	15	.70	LD/SD			USSR	Slot Back	130	87	41	.70	LD/SD		
USA	APG-70	120	80	38	.80	LD/SD			USSR	Wet Eye	90	60	28	.70	SS		

1. Nation: Nation manufacturing the radar. 2. Name: Standard designation for the radar. 3. Range To Detect Large Target: Distance within which a Large radar target can be detected. 4. Range To Detect Small Target: Distance within which a Small radar target can be detected. 5. Range To Detect Vsmall Target: Distance within which a Very Small radar target can be detected. 6. Function: Type of search the radar performs.

Abbreviations: AI: Air Intercept SS: Surface Search RO: Range-only radar (not a search sensor) LD/SD: Look-Down/Shoot-Down Air Intercept Radar ISAR: Inverse Synthetic Aperture Radar (imaging capability).



## Annex M—Search Sonars

1	2	3	4	5	6	7	8	9	10
Country	Name	Type	CZ Cap	Active Range	Passive Range	Active Pd	Pass. Pd	Platform	Remarks
Austr.	SSQ-801 Barra	S	—	—	4	—	.70	Air	
Canada	BQG-501 MICROPUFFS	Loc	—	—	6	—	.50	Sub	Localization sonar.
Canada	SQR-501 CANTASS	T	3	—	25	—	.65	Surf	
Canada	SQS-501	H	—	0.5	—	.70	—	Surf	
Canada	SQS-502	FC	—	—	—	—	—	Surf	
Canada	SQS-503	H	—	3	1.5	.55	.30	Surf	
Canada	SQS-504	T	—	4	2	.60	.40	Surf	
Canada	SQS-505	H or T	—	5	3	.65	.40	Surf	
Canada	SQS-507 Helen	T	—	3	1	.60	.40	Surf	
Canada	SQS-509	H	—	6	4	.65	.40	Surf	
Canada	SQS-510	H & T	3	5	25	.65	.65	Surf	
Canada	SSQ-517/518	S	—	—	2	—	.40	Air	LOFAR sonobuoys.
Canada	SSQ-519/521	S	—	—	2	—	.40	Surf	LOFAR sonobuoys.
Canada	SSQ-522	S	—	1	—	.50	—	Air	Provides range only.
Canada	SSQ-523 CANCESS	S	—	2	—	.50	—	Air	Provides range only.
Canada	SSQ-525	S	0	—	4	—	.70	Air	
Canada	SSQ-527B	S	—	—	2	—	.50	Air	
Canada	SSQ-529 DICANCESS	S	—	2	—	.60	—	Air	
Canada	SSQ-530 DIFAR	S	—	—	2	—	.60	Air	
Canada	SSQ-531	S	—	—	—	—	—	Air	
France	DUAV 4 Alcatel	D	—	1.5	0.5	.65	.30	Helo	
France	Diodon	H	—	3	1	.65	.50	Surf	
France	Sorel	T	—	3	1	.65	.50	Surf	
France	DSBV 61 FLUTE	T	2	—	18	—	.60	Surf	
France	DSTA 3	S	—	1	—	.50	—	Air	Provides range only.
France	DSTV 4M	S	—	—	1.5	—	.40	Air	
France	DSTV 7	S	—	—	2	—	.50	Air	Miniature (F size).
France	TSM 8030	S	—	2	—	.60	—	Air	
France	TSM 8050	S	—	2	—	.50	—	Air	
France	DMUX 20	H & T	1	6	10	.75	.65	Sub	
France	DSUV 2	H	1	—	7	—	.50	Sub	
France	DSUV 22	H	1	—	10	—	.60	Sub	
France	DSUV 23	H	1	—	7	—	.50	Sub	
France	DSUV 61	T	2	—	12	—	.55	Sub	
France	DSUV 62	T	2	—	18	—	.60	Sub	
France	DSUX 21	H	1	—	10	—	.60	Sub	
France	DUBA 25 Tarpon	H	—	4	2	.70	.50	Surf	
France	DUBA 26	H	—	5	3	.75	.60	Surf	
France	DUBV 23/43	H/T	—	6	5	.65	.50	Surf	23 is hull unit, 43 is towed unit.
France	DUBV 23C/43C	H/T	—	6	5	.75	.60	Surf	
France	DUBV 24	H	—	4	3	.65	.60	Surf	
France	DUUA 1	H	—	2	—	.60	—	Sub	
France	DUUA 2A	H	—	4	3	.65	.45	Sub	
France	DUUA 2B	H	—	4	3	.65	.50	Sub	
France	DUUA 2D	H	—	4	3	.65	.55	Sub	
France	DUUX 2A/B/C	Loc	—	—	4	—	.50	Sub	Localization sonar.
France	DUUX 5 Fenelon	Loc	—	—	7	—	.60	Sub	Localization sonar.
France	Eledone	H	1	5	9	.70	.60	Sub	
France	Flash	D	—	5	2	.75	.50	Air	
France	HS 12	D	—	2.5	—	.65	—	Helo	
France	Pirhana	H	—	3	—	.65	—	Surf	
France	Remora	H	—	3	1	.65	.50	Ship	

1. **Nation:** Nation manufacturing the sonar. 2. **Name:** Standard designation for the sonar. 3. **Type:** Mounting and deployment type. 4. **Convergence Zone Capability:** The number of convergence zones that the sonar can search under normal conditions. 5. **Active Direct Path Range:** Limit of detection in nautical miles in active mode with direct path propagation. 6. **Passive Direct Path Range:** Limit of detection in nautical miles in passive mode with direct path propagation. 7. **Active Probability of Detection:** Chance of detecting a vessel using active mode. 8. **Passive Probability of Detection:** Chance of detecting a vessel using passive mode. 9. **Remarks:** Additional information about this sonar.

**Abbreviations:** H: Hull T: Towed D: Dipping S: Sonobuoy Loc: Localization sonar (not a search sensor)

## Annex M—Search Sonars

1	2	3	4	5	6	7	8	9	10
Country	Name	Type	CZ Cap	Active Range	Passive Range	Active Pd	Pass. Pd	Platform	Remarks
France	Salmon	T	—	3.5	—	.70	—	Surf	
France	Sintra flank array	H	1	—	7	—	.60	Sub	
France	Spherion	T	—	4	1	.70	.40	Surf	
France	TSM-2633	H	—	6	2	.70	.45	Surf	
France	SS 12	D	—	2.5	—	.70	—	Surf	
France	HS 312S	D	—	3	1	.75	.45	Helo	
France	Baliste	H	—	2	—	.60	—	Surf	
France	Espadon	H	—	2	—	.60	—	Surf	
France	Beluga	H	—	5	3	.70	.60	Surf	
France	Pascal	H & T	—	4	1.5	.70	.50	Surf	
FRG	CSU 3-2	H	1	4	5	.50	.40	Sub	
FRG	CSU 3-4	H	1	4	8	.60	.50	Sub	
FRG	CSU 3-41	H	1	4	8	.60	.50	Sub	
FRG	DBQS-21 (CSU 83)	H & T	1	5	8	.70	.60	Sub	
FRG	DBQS-21 (CSU 83)	T	2	—	15	—	.60	Sub	
FRG	DSQS-21A (ASO86)	H or T	—	6	4	.70	.60	Surf	
FRG	DSQS-21B (ASO85)	H or T	—	5	3	.70	.60	Surf	
FRG	DSQS-21C (ASO84)	H or T	—	4	2	.70	.60	Surf	
FRG	DSQS-21D (ASO83)	H or T	—	3	1	.70	.60	Surf	
FRG	ELAC 1BV	H	—	4	2	.60	.30	Ship	
FRG	PRS 3-15	H	—	—	7	—	.40	Sub	
FRG	PRS 3-4	H	—	—	4	—	.40	Sub	
Italy	BIR	S	—	—	2	—	.50	Air	
Italy	BIT-3	S	—	—	2	—	.50	Air	
Italy	BIT-8	S	—	—	2	—	.50	Air	
Italy	IP 64	H	1	4	7	.60	.40	Sub	
Italy	IPD 70	H	1	5	7	.60	.50	Sub	
Italy	IPD 70/s	H	1	5	9	.70	.60	Sub	
Italy	MSR-810	S	—	—	1.5	—	.40	Air	
Italy	MD 64	H	—	—	4	—	.50	Sub	
Italy	MD 100/s	H	—	—	6	—	.60	Sub	
Japan	HQS-6B	S	—	—	2	—	.50	Air	
Japan	HQS-12	S	—	—	2	—	.60	Air	
Japan	HQS-21B	S	—	—	2	—	.50	Air	
Japan	HQS-31	S	—	1	—	.50	—	Air	Provides range only.
Japan	HQS-32 CASS	S	—	2	—	.50	—	Air	Provides range only.
Japan	HQS-?	S	0	—	4	—	.70	Air	
Japan	HQS-101	D	—	4	2	.65	.50	Air	
Japan	OQS-1	H	—	2.5	1	.45	.25	Surf	
Japan	OQS-2	H	—	4	2	.45	.25	Surf	
Japan	OQS-3	H	—	5	2	.55	.35	Surf	
Japan	OQS-4	H	—	6	3	.60	.40	Surf	
Japan	OQS-12	H	—	3	1.5	.45	.25	Surf	
Japan	OQS-14	H	—	3	1	.45	.25	Surf	
Japan	OQS-101	H	1	8	6	.70	.60	Surf	
Japan	OQR-1	T	3	—	25	—	.65	Surf	
Japan	ZQQ-1	H	1	—	5	—	.50	Sub	
Japan	ZQQ-3	H	1	—	7	—	.50	Sub	
Japan	ZQQ-4	H	1	—	8	—	.60	Sub	
Japan	ZQQ-5	H	1	7	9	.70	.65	Sub	
Japan	ZQQ-5	T	2	—	18	—	.65	Sub	
Nethl	CWE-10N	H	—	4	1	.55	.30	Surf	

1. **Nation:** Nation manufacturing the sonar. 2. **Name:** Standard designation for the sonar. 3. **Type:** Mounting and deployment type. 4. **Convergence Zone Capability:** The number of convergence zones that the sonar can search under normal conditions. 5. **Active Direct Path Range:** Limit of detection in nautical miles in active mode with direct path propagation. 6. **Passive Direct Path Range:** Limit of detection in nautical miles in passive mode with direct path propagation. 7. **Active Probability of Detection:** Chance of detecting a vessel using active mode. 8. **Passive Probability of Detection:** Chance of detecting a vessel using passive mode. 9. **Remarks:** Additional information about this sonar.

**Abbreviations:** H: Hull T: Towed D: Dipping S: Sonobuoy Loc: Localization sonar (not a search sensor)

# Annex M—Search Sonars

1	2	3	4	5	6	7	8	9	10
Country	Name	Type	CZ Cap	Active Range	Passive Range	Active Pd	Pass. Pd	Platform	Remarks
Nethl	PAE-1	H	—	2	—	.60	—	Surf	
Nethl	HSS-15	H	—	3	1	.60	.50	Surf	
Nethl	LWS.30	H	1	—	6	—	.50	Sub	
Nethl	Octopus	H	1	5	9	.70	.60	Sub	
Nethl	Signaal PHS-32	H	—	4	2	.65	.40	Surf	
Nethl	Signaal PHS-36	H	—	6	4	.65	.40	Surf	
Nethl	Zwaardvis sonar	H	1	3	5	.60	.40	Sub	
Norway	Simrad SS105	H	—	4	2	.70	.40	Surf	
Norway	Simrad SS240	H	—	3	—	.65	—	Surf	
Norway	Simrad SS304 Spira	H	—	2	—	.65	—	Surf	
Norway	Simrad SQ3D/SF	H	—	1.3	—	.65	—	Ship	
UK	Cormorant PMS 122	D	—	5	2.5	.75	.50	Helo	
UK	PMS 26/27	H	—	3	—	.60	—	Surf	
UK	PMS 56	H	—	5	2	.70	.50	Surf	
UK	SSQ-904/905	S	—	—	2	—	.50	Air	F-size LOFAR sonobuoy.
UK	SSQ-906/907	S	—	—	3	—	.60	Air	F-size LOFAR sonobuoy.
UK	SSQ-947B	S	—	1	—	.50	—	Air	Provides range only.
UK	SSQ-954	S	—	—	2	—	.60	Air	G-size DIFAR sonobuoy.
UK	SSQ-963 CAMBS	S	—	3	2	.65	.60	Air	A-size sonobuoy.
UK	Type 162/162M	H	—	0.6	—	.70	—	Surf	Classification sonar.
UK	Type 174	H	—	—	0.5	—	.30	Surf	
UK	Type 177	H	—	4	2	.65	.30	Surf	
UK	Type 184/184M	H	—	4	2	.65	.40	Surf	
UK	Type 186	H	—	—	5	—	.55	Sub	
UK	Type 187	H	—	4	3	.60	.50	Sub	
UK	Type 195/195M	D	—	3	1	.65	.30	Helo	
UK	Type 199	T	—	4	2	.60	.40	Surf	
UK	Type 2001	H	1	6	8	.60	.50	Sub	
UK	Type 2007	H	1	—	7	—	.60	Sub	
UK	Type 2016	H	1	6	5	.70	.50	Surf	
UK	Type 2020	H	1	6	10	.70	.60	Sub	
UK	Type 2023	T	2	—	12	—	.55	Sub	
UK	Type 2024	T	2	—	15	—	.60	Sub	
UK	Type 2026	T	2	—	18	—	.65	Sub	
UK	Type 2031	T	3	—	30	—	.65	Surf	
UK	Type 2040	H	1	5	9	.70	.60	Sub	
UK	Type 2044	T	3	—	25	—	.70	Sub	
UK	Type 2046	T	2	—	20	—	.70	Sub	
UK	Type 2050	H	1	8	6	.70	.60	Surf	
UK	Type 2051 Triton	H	1	4	8	.65	.60	Sub	
UK	Type 2052	T	2	—	15	—	.65	Sub	
UK	Type 2054	H	1	7	12	.75	.65	Sub	
UK	Type 2057	T	4	—	35	—	.70	Ship	
UK	Type 2062	T	2	—	20	—	.65	Sub	
UK	Type 2069	D	—	4	2	.75	.50	Air	
UK	Type 2074	H	1	7	11	.75	.65	Sub	
UK	Type 2075	H	1	5	10	.75	.65	Sub	
UK	Type 2078	H	1	8	13	.75	.70	Sub	
USA	EDO 610	H	—	4	2	.60	.30	Surf	
USA	EDO 700/701	T	—	5	3	.60	.30	Surf	
USA	AQS-10	D	—	1.5	0.75	.60	.30	Air	
USA	AQS-13	D	—	3	1	.65	.30	Air	

1. **Nation:** Nation manufacturing the sonar. 2. **Name:** Standard designation for the sonar. 3. **Type:** Mounting and deployment type. 4. **Convergence Zone Capability:** The number of convergence zones that the sonar can search under normal conditions. 5. **Active Direct Path Range:** Limit of detection in nautical miles in active mode with direct path propagation. 6. **Passive Direct Path Range:** Limit of detection in nautical miles in passive mode with direct path propagation. 7. **Active Probability of Detection:** Chance of detecting a vessel using active mode. 8. **Passive Probability of Detection:** Chance of detecting a vessel using passive mode. 9. **Remarks:** Additional information about this sonar.

**Abbreviations:** H: Hull T: Towed D: Dipping S: Sonobuoy Loc: Localization sonar (not a search sensor)

## Annex M—Search Sonars

1	2	3	4	5	6	7	8	9	10
Country	Name	Type	CZ Cap	Active Range	Passive Range	Active Pd	Pass. Pd	Platform	Remarks
USA	AQS-13F	D	—	3.5	1.5	.70	.50	Air	
USA	AQS-18	D	—	4	2	.70	.50	Air	
USA	HELTRAS	D	1	6	4	.75	.60	Air	CZ capable in active mode only.
USA	BQG-1/4 PUFFS	Loc	—	—	6	—	.50	Sub	Localization sonar.
USA	BQG-5 WAA	Loc	—	—	12	—	.70	Sub	Localization sonar.
USA	BQN-17	H	—	—	—	—	—	Sub	
USA	BQQ-1	H	—	—	—	—	—	Sub	
USA	BQQ-2	H	1	6	9	.60	.50	Sub	
USA	BQQ-5	H	1	7	10	.70	.60	Sub	Includes TB-16/BQ towed array.
USA	BQQ-5D	H	1	8	12	.70	.65	Sub	
USA	BQQ-6	H	1	—	12	—	.65	Sub	
USA	BQQ-9	T	3	—	30	—	.70	Sub	
USA	BQR-2/2B	H	1	—	5	—	.50	Sub	
USA	BQR-3	H	—	—	3	—	.50	Sub	
USA	BQR-7	H	1	—	8	—	.50	Sub	
USA	BQR-15	T	2	—	12	—	.55	Sub	
USA	BQR-21 DIMUS	H	1	—	8	—	.60	Sub	
USA	BQR-25 STASS	T	2	—	15	—	.55	Sub	
USA	BQS-4	H	—	4	—	.50	—	Sub	
USA	BSY-1	H	1	8	12	.70	.70	Sub	
USA	BSY-2	H	2	9	15	.75	.75	Sub	
USA	DE 1160/1160B	H	—	5	3	.70	.50	Surf	
USA	DE 1160LF	H	1	7	4	.70	.50	Surf	CZ capable in active mode only.
USA	DE 1163	T	—	5	3	.70	.50	Surf	
USA	DE 1164	H & T	—	5	3	.70	.50	Surf	
USA	DE 1167	H or T	—	4	2	.70	.50	Surf	
USA	DE 1167LF	H or T	—	6	4	.70	.50	Surf	
USA	QCU-2	H	—	1.5	1	.50	.20	Surf	
USA	QHB	H	—	1.5	—	.50	—	Surf	
USA	SQQ-23 PAIR	H	—	5	4	.55	.50	Surf	
USA	SQR-15	T	2	—	15	—	.55	Surf	
USA	SQR-18, -18A	T	2	—	18	—	.60	Surf	
USA	SQR-19	T	3	—	25	—	.65	Surf	
USA	SQS-4	H	—	2.5	1	.45	.25	Surf	
USA	SQS-10/10A	H	—	1.5	—	.50	—	Surf	
USA	SQS-11/11A	H	—	1	—	.50	—	Ship	
USA	SQS-17	H	—	3	1.5	.50	.30	Ship	
USA	SQS-23	H	—	5	2	.55	.40	Surf	
USA	SQS-26	H	1	7	5	.65	.50	Surf	
USA	SQS-29/30/31/32	H or T	—	4	2	.45	.25	Surf	
USA	SQS-35 IVDS	T	—	5	3	.60	.30	Surf	
USA	SQS-36, -36J	H or T	—	5	3	.60	.30	Surf, sub	
USA	SQS-38	H	—	6	3	.60	.30	Surf	
USA	SQS-39/40/41/42	H	—	5	3	.50	.30	Surf	
USA	SQS-43/44/45/46	H	—	5	3	.55	.35	Surf	
USA	SQS-49/50/51/52	H	—	5	3	.55	.35	Surf	
USA	SQS-53	H	1	8	6	.70	.60	Surf	
USA	SQS-56	H	—	5	3	.70	.50	Surf	
USA	SQQ-89	H	2	9	7	.75	.70	Surf	
USA	SSQ-41 LOFAR	S	—	—	2	—	.50	Air	
USA	SSQ-47	S	—	1	—	.50	—	Air	Provides range only.
USA	SSQ-50 CASS	S	—	2	—	.50	—	Air	Provides range only.

1. **Nation:** Nation manufacturing the sonar. 2. **Name:** Standard designation for the sonar. 3. **Type:** Mounting and deployment type. 4. **Convergence Zone Capability:** The number of convergence zones that the sonar can search under normal conditions. 5. **Active Direct Path Range:** Limit of detection in nautical miles in active mode with direct path propagation. 6. **Passive Direct Path Range:** Limit of detection in nautical miles in passive mode with direct path propagation. 7. **Active Probability of Detection:** Chance of detecting a vessel using active mode. 8. **Passive Probability of Detection:** Chance of detecting a vessel using passive mode. 9. **Remarks:** Additional information about this sonar.

**Abbreviations:** H: Hull T: Towed D: Dipping S: Sonobuoy Loc: Localization sonar (not a search sensor)

## Annex M—Search Sonars

1	2	3	4	5	6	7	8	9	10
Country	Name	Type	CZ Cap	Active Range	Passive Range	Active Pd	Pass. Pd	Platform	Remarks
USA	SSQ-53 DIFAR	S	—	—	2	—	.60	Air	
USA	SSQ-62 DICASS	S	—	2	1	.60	.40	Air	
USA	SSQ-75 ERAPS	S	1	6	—	.65	—	Air	
USA	SSQ-77 VLAD	S	0	—	4	—	.70	Air	Not subject to layer effects. Not subject to layer effects.
USA	SSQ-79 SVLA	S	0	—	4	—	.60	Air	
USA	TB-16	T	2	—	18	—	.60	Sub	
USA	TB-16B	T	2	—	18	—	.65	Sub	
USA	TB-16D	T	2	—	20	—	.70	Sub	
USA	TB-23	T	3	—	30	—	.65	Sub	
USA	TB-12X	T	3	—	35	—	.70	Sub	
USA	SURTASS	T	5	—	75	—	.75	Surf	
USSR	RGB-56	S	—	—	1	—	.25	Air	
USSR	RGB-64	S	—	—	1	—	.25	Air	
USSR	RGB Series	S	—	—	1	—	.30	Air	
USSR	BM Series (Active)	S	—	1.5	—	.50	—	Air	Provides range only.
USSR	BM-1	S	—	—	1	—	.35	Air	
USSR	BM Series (Passive)	S	—	—	1	—	.40	Air	Improved BM-1.
USSR	Type 75	S	—	—	2	—	.45	Air	
USSR	Type Series (Passive)	S	—	—	2	—	.50	Air	
USSR	Type Series (Active)	S	—	2	1	.55	.30	Air	
USSR	Bull Horn	H	—	4	2	.60	.40	Surf	
USSR	Bull Nose	H	—	5	3	.60	.40	Surf	
USSR	Elk Tail	D	—	2.5	1	.60	.25	Surf	
USSR	Feniks (Pike Jaw)	H	—	2	—	.55	—	Sub	
USSR	Foal Tail/Lamb Tail	D	—	2	1	.60	.35	Surf	
USSR	Hercules (Wolf Paw)	H	—	2	2	.55	.35	Sub, surf	
USSR	Horse Jaw	H	1	8	4	.65	.55	Surf	
USSR	Horse Tail	T	1	8	4	.65	.55	Surf	
USSR	LF Fin	T	2	—	15	—	.55	Sub	
USSR	Mare Tail	T	—	4	2	.60	.40	Surf	
USSR	Moose Jaw	H	1	6	3	.60	.50	Surf	
USSR	Pegas (Buck Toe)	H	—	3	2.5	.55	.30	Surf	
USSR	Perch Gill	H	—	1	—	.45	—	Sub	
USSR	Rat Tail	D	—	3	1	.60	.25	Surf	
USSR	Helix Dipping Sonar	D	—	3	1	.65	.30	Helo	
USSR	Shark Fin	H	—	4	2	.60	.30	Sub	
USSR	Shark Teeth	H	1	6	7	.65	.50	Sub	
USSR	Shark Gill	H	1	7	9	.70	.55	Sub	
USSR	Steer Hide	T	—	5	3	.65	.45	Surf	
USSR	Tamir 11/11M (Stag Ear)	H	—	1	1	.50	.25	Surf	
USSR	Tamir 5L	H	—	1	1	.25	.25	Sub	
USSR	Tamir 5N (Stag Hoof)	H	—	1	1	.50	.20	Surf	
USSR	Trout Cheek	H	1	—	4	—	.45	Sub	

1. **Nation:** Nation manufacturing the sonar. 2. **Name:** Standard designation for the sonar. 3. **Type:** Mounting and deployment type. 4. **Convergence Zone Capability:** The number of convergence zones that the sonar can search under normal conditions. 5. **Active Direct Path Range:** Limit of detection in nautical miles in active mode with direct path propagation. 6. **Passive Direct Path Range:** Limit of detection in nautical miles in passive mode with direct path propagation. 7. **Active Probability of Detection:** Chance of detecting a vessel using active mode. 8. **Passive Probability of Detection:** Chance of detecting a vessel using passive mode. 9. **Remarks:** Additional information about this sonar.

**Abbreviations:** H: Hull T: Towed D: Dipping S: Sonobuoy Loc: Localization sonar (not a search sensor)

## Annex N—Environment

The environment in which a naval encounter is fought may be specified in a **Harpoon** scenario, or it may be generated randomly. Elements which may be generated include: time of day, sea state, wind direction, visibility, and sonar variation.

**Time of Day.** Time is recorded using the 24-hour military clock: midnight is 0000 or 2400 hours; noon is 1200 hours; 7:30 p.m. is 1930 hours. After 59 minutes, time moves to the next hour; 1959 hours is followed by 2000 hours.

Generate a random time of day using 1D6 die throws. Determine the quarter of the day and note the number in parentheses. Throw 1D6 for the hour and add it to the number previously noted: This is the hour of the day. Throw for the 10-minute intermediate turn and add it to this hour.

### RANDOM TIME GENERATION

D6	Quarter	Hour	Turn
1	1st (0)	1	0 (00)
2	2nd (5)	2	1 (10)
3	3rd (11)	3	2 (20)
4	4th (17)	4	3 (30)
5	Roll	5	4 (40)
6	Roll	6	5 (50)

For example, a random starting time for a scenario is required. Roll 1D6 for the quarter: A 2 is rolled, which means the second quarter of the day, between 0600 and 1100 hours. Note the number (5) in parentheses. Roll 1D6 for the hour: A 1 is rolled and added to the 5 previously noted. The hour is 0600. The die is rolled a third time for the intermediate turn, and another 5 is rolled. The starting turn is 0650.

**Sea State.** Sea state is a standard method of describing wave heights. This table provides a method for determining the wave height, which can affect combat.

### SEA STATES

D100 Roll	Height of Seas (ft)	Wind (kts)	Beaufort Scale	Sea State	Description
01-05	Dead calm	0	0 & 1	0	Glassy
06-10	0	5	2	1	Rippled
11-20	2	10	3	2	Wavelets
21-40	4	15	4	3	Slight
41-60	6	20	5	4	Moderate
61-85	9.5	25	6	5	Rough
86-90	13.5	30	7	6	Very rough
91-92	18	40	8	6	Very rough
93-94	23	45	9	6	Very rough
95-96	29	50	10	7	High seas
97-98	37	60	11	8	Very high seas
99-00	45	65+	12	9	Phenomenal

- Missile boats cannot fire in sea state 5 or more.
- No combat is possible in Beaufort force 9 or more.
- Hydrofoils cannot remain foiborne in sea state 6 or more.

**Wind Direction.** Wind direction is given as a number in degrees ranging from 000 to 359, and is usually stated in relation to true north. This is the direction the wind is blowing from; thus, a wind from 000 degrees means that the wind is blowing directly north to south. Wind direction is generated by using this formula: Roll 1D6-1 times 60,

then add 1D6 times 10.

**Visibility.** Visibility describes the distance at which objects can be seen. With 100% visibility, objects can be seen at normal distances, sometimes at the visual horizon. Lower visibilities reduce the detection distance by some percentage. For example, if an aircraft can be spotted at 50 nautical miles, then in 50% visibility, it can only be seen at 25 nm.

### VISIBILITY

D100 Roll	Summer (Rain)	Winter (Snow)	Spring (Rain)	Fall (Fog)
01-40	100	100	100	100
41-60	80	80	60	60
61-80	40	60	20	20
81-95	20	40	10	10
96-00	5	10	5	5

**Procedure:** Throw D100 and add 5 times the sea state. Cross index the result with the season to get the percentage of full visibility in the game area.

- With 40% or less visibility, only all-weather aircraft can fly.

Night visibility is 33% of daylight values (including any visibility modifiers). Visibility during twilight (30 minutes before and after sunrise and sunset) is 66% of daylight values.

**Sonar Variations.** Sonar conditions can be varied in two ways: the direct path range, and the exact distance to the convergence zones.

**Direct path sonar ranges** are affected by various water conditions. Determine the sonar multiplier for a scenario using the formula  $7+1D6 \times 10\%$  (producing a range from 80% to 130%). This factor is applied to all direct path ranges during a scenario. It will not change during the game and is known to both sides as it affects all sonars equally. Convergence-zone ranges are unaffected by this factor.

**Convergence zones** are generated by rolling for the exact CZ range and width, which are constant for the entire scenario. CZ values are the same for all ships and are known to both sides at the start of the scenario.

- CZ range =  $27 + D6$  nm (i.e., 28 to 33 nm to the inner edge).
- CZ width =  $2 + D6/2$  nm (i.e., 2.5 to 5.0 nm wide).

The annuli are concentric, with the second ring twice as far as the first, and so on. Each CZ ring has the same width.

## Annex O—Sources

### BOOKS

- Aircraft of the Soviet Union*  
Bill Gunston
- Air Warfare in the Missile Age*  
Lon O. Nordeen, Jr.
- Arsenal of Democracy II: American Weapons Available for Export*  
Tom Gervasi
- Battleship Design and Development, 1905-1945\**  
Norman Friedman
- Combat Fleets of the World\**  
ed. Jean Labayale Couhat
- Conway's All the World's Fighting Ships, 1947-1982, Part I: The Western Powers*  
ed. Robert Gardiner
- The Complete Guide to Combat Planes, Vol I & II*  
William Green
- The Effects of Nuclear Weapons*  
ed. Samuel Gladstone & Phillip J. Dolan
- The Encyclopedia of World Airpower, 2nd edition\**  
ed. Bill Gunston
- Fighter Combat: Tactics and Maneuvering\**  
Robert Shaw
- Guide to the Soviet Navy, 3rd edition*  
Norman Polmar
- How to Make War*  
James F. Dunnigan
- The International Countermeasures Handbook*  
ed. Harry F. Eustace
- Jane's All the World's Aircraft*  
ed. John W. R. Taylor
- Jane's All the World's Ships*  
ed. John W. R. Taylor
- Jane's Pocket Book of Major Combat Aircraft*  
ed. John W. R. Taylor
- Jane's Pocket Book of Major Warships*  
ed. Capt. John E. Moore, R.N.
- Janes Weapons Systems*  
ed. Ronald T. Pretty
- MiG Master: The Story of the F-8 Crusader*  
Barrett Tillman
- Modern Air Combat\**  
Bill Gunston and Mike Spick
- Modern Naval Combat\**  
David Miller and Chris Miller
- Modern Warship Design & Development\**  
Norman Friedman
- Naval Ordnance & Gunnery*  
NAVPERS 10783-B  
U.S. Navy pub.
- Naval Radar\**  
Norman Friedman
- The Ships and Aircraft of the U.S. Fleet\**  
Norman Polmar
- Soviet Military Aircraft*  
Bill Sweetman
- Soviet Military Power*  
U.S. Department of Defense pub.

- Soviet Military Helicopters*  
John Everett-Heath
- The Soviet Navy Today*  
Capt. John E. Moore, R. N.
- Understanding Soviet Naval Developments*  
U.S. Navy pub. NAVSO P-3560 (Rev. 1/81)
- U.S. Aircraft Carriers: An Illustrated Design History*  
Norman Friedman
- U.S. Destroyers: An Illustrated Design History*  
Norman Friedman
- U.S. Battleships: An Illustrated Design History*  
Norman Friedman
- U.S. Cruisers: An Illustrated Design History*  
Norman Friedman
- U.S. Naval Weapons\**  
Norman Friedman
- US Nuclear Weapons: The Secret History*  
Chuck Hansen
- U.S.S.R. Aircraft, Fighters & Bombers*  
Louis J. Arold, Jr.
- Warships of the Royal Navy*  
Capt. John E. Moore, R. N.
- Warships of the Soviet Navy*  
Capt. John E. Moore, R.N.
- Weyer's Warships of the World*  
Gerhard Albrecht
- World Naval Weapons Systems\**  
Norman Friedman

### PERIODICALS

- Aerospace Daily*
- Air Enthusiast*
- Air Force*
- Air International\**
- Armies & Weapons*
- Armed Forces*
- Armed Forces Journal*
- Aviation Week & Space Technology\**
- Defence*
- Defense Electronics*
- Defense News*
- Defense Weekly*
- Defence Today*
- Flight International*
- For Your Eyes Only*
- Illustrated Encyclopedia of Aircraft*
- Interavia*
- International Defense Review*
- Jane's Defence Weekly\**
- Jane's Soviet Intelligence Review*
- Marine—Rundschau*
- Maritime Defense*
- National Defense*
- Naval Forces*
- Naval Institute Proceedings\**
- Naval News & Undersea Technology*
- Newsweek*
- Time*
- U.S. News & World Report*
- Warplane\**
- Warship World*

\*Recommended



## Annex P—Abbreviations

-G	Suffix to a ship class indicating major missile armament (e.g. DDG, SSG, CG)	LOFAR	Low frequency analysis and recording (sonobuoy type)
-N	Suffix to a ship class designation indicating nuclear propulsion (e.g. SSN, CGN)	LOS	Line of sight
A/C	Aircraft	LRMTS	Laser ranger and marked target seeker
AAM	Air-to-air missile	MAD	Magnetic anomaly detector
AEW	Airborne early warning	Mk	Mark (version, type, model)
ASCM	Antiship cruise missile	mm	Millimeter or millimeters
ASH	Antiship	msl	Missile
ASM	Air-to-surface missile	MT	Weapons mount
ASROC	Antisubmarine rocket (U.S.A.)	nm	Nautical mile (2000 yards)
ASW	Antisubmarine warfare	PHM	Patrol hydrofoil missile ship
ATA	Air-to-air	PRH	Passive radar homing
BB	Battleship	RO	Range-only (variety of aircraft radar)
BC	Battlecruiser	RWR	Radar warning receiver (specialized ESM)
Beam-R.	Beam-rider (missile guidance)	SA-N-	USSR surface-to-air missile designator (NATO)
BPDMS	Basic point defense missile system (U.S.A.)	SALH	Semiactive laser homing
CA	Heavy cruiser	SAM	Surface-to-air missile
CAH	Through-deck cruiser	SARH	Semiactive radar homing
Can	Cannon (aircraft)	SS	Submarine (diesel-powered)
CAP	Combat air patrol	SS-N-	USSR surface-to-surface missile designator (NATO)
CASS	Command-activated sonobuoy	SU-W-N-	USSR surface-to-underwater missile launcher (NATO)
CEC	Combat engagement center	TASH	Terminal active sonar homing
CHP	Critical hit protection	TF	Task force
CL	Light cruiser	TT	Torpedo tube
CLC	Command cruiser	TVM	Track-via-missile (guidance)
CODAG	Combined diesel and gas propulsion	USG	US gallons
CODLAG	Combined diesel-electric and gas turbine propulsion	VDS	Variable depth sonar
CODOG	Combined diesel or gas propulsion	VTOL	Vertical takeoff and landing
CONAS	Combined nuclear and steam propulsion		
COSAG	Combined steam and gas turbine propulsion		
CV	Aircraft carrier		
CVH	Helicopter carrier		
D6	Six-sided die		
D10	Ten-sided die		
D100	Percentile dice		
DD	Destroyer		
DICASS	Directional command-activated sonobuoy		
DIFAR	Direction finding and recording		
EMCON	Emission control (radar and sonar silence)		
EO	Electro-optic (guidance type)		
ESM	Electronic support measures		
FAE	Fuel air explosive		
FF	Frigate		
FFL	Corvette		
FLIR	Forward-looking infrared (thermal TV camera)		
GFCS	Gunfire control system		
GRP	Glass-reinforced plastic (fiberglass)		
I/TARH	Inertial with terminal active radar homing		
I/TSARH	Inertial with terminal semiactive radar homing		
IIR	Imaging infrared (variety of EO guidance)		
IRH	Infrared homing		
kt	Knot (one nautical mile per hour)		
kg	Kilogram or kilograms		
L	Liter		
L&L	Launch and leave (missile type)		
Lch	Launch or launcher		

## Annex Q—Conversion Factors and Scales

### SCALES

One tactical turn equals 30 seconds.

One intermediate turn equals 10 minutes or 20 tactical turns.

Recommended tactical distance scale is 1 nm=2 inches (which will mean that speed in kts/60=distance travelled in inches).

Speed in knots/120 equals nautical miles covered in one turn.

Mach 1=659.5 kts at Very Low and Low altitude.

648.7 kts at Medium altitude.

573.7 kts at High and Very High altitude.

1 nm equals 1.852 km; 2000 yards; 1.14 land miles; one minute of latitude (one degree of latitude equals 60 nm).

### DAMAGE POINT COMPUTATIONS

Damage point capacity of ships depends on their standard displacement (submerged displacement for subs). If the displacement is:

0 to 500 tons:	(T/20)
501 to 5000 tons:	(T/30)+9
5001 to 12,000 tons:	(T/50)+76
12,000 tons and above:	(T/60)+116

This damage point total is modified by the following:

Multiply a fleet auxiliary's points by .75.

Multiply submarine, SES/hovercraft, and merchant ship's points by .5.

Multiply a supertanker's points by .25.

Multiply any Soviet-designed vessel's points (except subs) by .9.

Multiply a ship with aluminum, GRP, or wood construction point's by .75.

Some ship classes, because of special construction techniques (titanium hulls, for example), have a damage modifier listed along with other data. This factor is already taken into account in the damage point value.

The damage point levels are computed at 25, 50, 75, 90, and 100 percent total damage.

**Damage Points Inflicted:** The warhead weight is divided by the number indicated for different types of attacks to determine the damage points a successful attack inflicts.

Type of Attack	Formula
Above-water attacks	Warhead wt/5.0
Underwater attacks vs. surface ships	Warhead wt/2.0
Underwater attacks vs. submarines	
• Torpedoes 406mm or less, mortars	Warhead wt/2.0
• Torpedoes 407mm or more, DCs	Warhead wt/4.0

**Surface Gun Systems:** Surface gun systems damage inflicted equals the weight of the shell in kilograms/15 time (0-50% range accuracy) times rate of fire per turn; the damage inflicted is never less than the weight of the shell in kilograms/5. The result is the damage done by each barrel of the gun mount (exception: treat rotary guns as one barrel per mount).

## Annex R—US Carrier Air Groups

### STANDARD CARRIER AIR GROUP

2 fighter squadrons each with 12 F-14s.

2 light attack squadrons each with 10 F/A-18s.

1 medium attack squadron with 10 A-6E/TRAMs and 4 KA-6Ds.

1 antisubmarine squadron with 10 S-3s.

1 helicopter ASW squadron with 6 SH-3Hs.

1 electronic warfare detachment with 5 EA-6Bs.

1 airborne early warning detachment with 5 E-2Cs.

1 EA-3A Skywarrior ELINT aircraft.

**Note:** USS *Midway* and *Coral Sea* substitute F/A-18s for the F-14s.

USS *Kennedy* and *Ranger* substitute a second squadron of 10 A-6E/TRAMs for the two light attack squadrons.

The 6 SH-3Hs will eventually be replaced by SH-60Fs.

The EA-3A will eventually be replaced by an ES-3.

The KA-6Ds are being removed.

The A-6Es can all carry a "buddy" refueling store.

## Rules Supplement

**4.3.6 Aircraft Endurance.** The distance an aircraft can fly varies widely depending on its warload, speed, the altitude at which it flies, and its throttle setting. Aircraft spend most of their time at cruise speed, the engines set at 75% of the maximum available power. This speed allows them to cover the maximum distance for fuel burned. Adding ordnance or flying at higher speeds will reduce the range, sometimes dramatically.

The greatest effect on aircraft endurance comes from its *throttle setting*. All aircraft operate at three or four basic speeds. An aircraft is said to be *loitering*, *cruising*, at *full military power*, or *on afterburner*, corresponding to throttle settings made by the pilot. The exact speed in knots will vary with altitude, load carried, and, of course, aircraft type. These figures are listed in Annex B for each aircraft. See also section 4.3.2.

Players controlling aircraft in *Harpoon* must declare their aircraft to be flying at one of the four throttle settings: loiter, cruise, full military power, or afterburner (if available). This setting determines how quickly the aircraft will burn up its fuel. It also determines how fast the aircraft can fly.

The aircraft may fly slower than the maximum speed for that throttle setting, but will gain no benefit in range or endurance. For example, an aircraft that can cruise at 600 knots can also cruise at 590 knots. There is no significant change in the fuel consumption rate.

Aircraft speeds are affected by *altitude*. The denser air at low altitude slows down jet aircraft, forcing them to burn fuel quickly. The air above 36,000 feet allows them to fly at maximum speed, but is too thin for turbo-prop aircraft or helicopters, which operate most efficiently in the dense air at sea level.

Finally, the *payload* carried by a plane will affect its speed and endurance. Bombs, missiles, and other objects hung under a plane cause drag, which slows it down. An aircraft can be *clean*, carrying no payload, *lightly loaded* (same definition as section 6.1), or *fully loaded*. The payload's weight also affects the aircraft's range and speed, and this effect is combined into the load reduction. Additionally, fully loaded aircraft cannot fly at supersonic speeds.

**4.3.6.1 Aircraft Ranges.** The maximum range of an aircraft flying at cruise speed is given in Annex B. This is based on internal fuel capacity only. Two things can be done to increase its basic range.

- **Drop Tanks.** Annex B lists the number of drop tanks a plane can carry with each load. It also shows the additional cruise range that each tank gives. A drop tank also occupies a pylon, precluding it from being used to carry ordnance.

- **In-Flight Refueling.** Many aircraft may be refueled in flight by tanker aircraft. A tanker may be a dedicated refueler or may be a similar aircraft equipped with "buddy refuel" stores containing a hose reel. The tanker and the receiving aircraft must have compatible equipment. The US Navy and US Marines use one method, and the US Air Force a different method. See section 4.3.6.5 for rules covering in-flight refueling. If an aircraft runs out of fuel without reaching a base or tanker, it crashes.

**4.3.6.2 Ordnance Effects on Endurance and Speed.** Bombs, missiles, and external fuel tanks all create drag, which slows down the aircraft and causes extra fuel to be burned. If the aircraft carries only air-to-air missiles and gun pods, singly or in clusters, it is considered lightly loaded. This affects not only its range and speed, but also its air-to-air maneuverability (see section 6.1 of *Harpoon*). If the aircraft is carrying any drop tanks, ASW ordnance, or air-to-ground weapons (except gun pods), the plane is fully loaded. A plane carrying air-to-air missiles, gun pods, and drop tanks is fully loaded, but can become lightly loaded by jettisoning its drop tanks. If they have any fuel in them, that range is lost.

### ORDNANCE EFFECTS

Ordnance Load	Range Reduction	Speed Reduction
No ordnance	0%	0%
Lightly loaded	5%	10%
Fully loaded	10%	15% (no supersonic flight)

**4.3.6.3 Mission Planning.** A mission profile must be developed for each combination of aircraft type, ordnance loadout and target. A typical mission profile might describe a MiG-23 Flogger G armed with two AA-7 and four AA-8 missiles, and one drop tank, taking off, flying to a patrol area a certain distance from base, patrolling there for a specified period, then returning. Because of preflight planning, the player knows that he can have the MiG patrol for one hour at 100 nm or three hours at 50 nm. *Harpoon* Form 5 is a worksheet for computing a mission.

A typical strike mission profile is hi-lo-hi. This means that the plane cruises out at high altitude to maximize fuel efficiency, then descends to penetrate the defenses near the target, then climbs back to altitude to cruise home. Be sure to take into account the effects of altitude (section 4.3.4) when computing fuel consumption.

1. Measure the distance from the aircraft's base to the target in nautical miles. This is the mission radius. Since the aircraft must fly to the target and return, multiply by two to get the "mission" range.

2. If the plane might be in combat, using maximum power or afterburner, extra fuel must be allowed for. A margin of 400 nm for a fighter at cruise is only 160 nm at full power, equalling 14 minutes of combat at 650 knots. If the afterburner is used, this is only 12.8 nm, or at Mach 2.0 half a minute!

Also, if the aircraft is a jet and will be making its attack run at low altitude (often done to help evade detection), remember that it consumes fuel as if it is at full military power. Thus, the amount of time might be determined by how long the attack run is.

Decide how many minutes at full military power or on afterburner you want to allow: The formula is:

$$(\text{Minutes at FMP}/60) \times \text{FMP speed} \times \text{FMP endurance modifier} = \text{Cruise range needed}$$

$$(\text{Minutes at afterburner}/60) \times \text{Afterburner speed} \times \text{Afterburner endurance modifier} = \text{Afterburner range needed}$$

This procedure is included in *Harpoon* Form 5. The "combat margin" is then added to the mission range. This is the total amount of endurance the plane needs to make it to the target and return.

3. Compare the mission range with the basic range given in Annex B. The basic range represents the amount of fuel carried in the plane's own internal tanks. If the aircraft has a basic range in excess of the mission range, then the flight can be launched with a full ordnance load.

4. If the basic range is less than the mission range, then add drop tanks. Single drop tanks are usually carried on the centerline; pairs are carried with one under each wing. Annex B lists various ordnance loads, including the drop tanks, and the increase in cruising range for each drop tank carried.

If the increased range is sufficient, then subtract the weight of the drop tanks from the ordnance payload and decide on the ordnance to be carried (step 5).

If the range with the drop tanks is still insufficient to complete the mission, you must then either cancel the mission or use in-flight refueling. In-flight refueling may be used in conjunction with drop tanks.

5. Decide on the ordnance to be carried on the remaining pylons. Make sure that the aircraft can carry the weight by checking it against the payload figure in and the allowable loads in Annex B.

6. Determine if the aircraft is lightly or fully loaded, and reduce the range (including the range gained from drop tanks) and all of the plane's speeds by the stated percentage (excluding minimum speed).

7. Double-check that the range reduction because of the ordnance has not prevented the aircraft from reaching the target.

8. It is also good planning to carry a 10% reserve over what the mission needs to allow for unknown circumstances. For instance, the target may have moved farther away; evasive action might have to be taken; or the target may be changed after the flight has taken off. This means that on a 1000 nm mission, the plane must have fuel for 1100 nm.

**Example 1:** An A-6E Intruder is being assigned to strike a target 500 nm away (step 1). Total distance there and back is 1000 nm. The player decides to allow for 10 minutes of combat (step 2). The A-6E's full military power (FMP) speed at sea level is 570 knots, and the FMP modifier for a NATO jet is 2.5. Using the calculation on the form, 10 minutes of combat at sea level requires about 240 nm of cruise endurance, so the

total mission range is 1240 nm (step 3). The player decides he wants to carry four Mk84 bombs and an ECM pod (step 5). The aircraft is fully loaded, so its range must be reduced by 10% (to 1440 nm) and its maximum speeds at all altitudes by 15% (step 6). The margin over mission range is reduced to 200 nm. A good reserve is 10% of 1240 nm or 125 nm, so the load is confirmed, and the aircraft is readied for launch.

**Example 2:** An F-18 Hornet will escort a strike to a target 500 nm away. The mission range is 1000 nm. To allow for 10 minutes of combat, the plane needs 270 nm. On afterburner, this same range is worth 21 nm or 2 tactical turns. The increased mission range is 1270 nm or more than the aircraft's basic range on internal fuel of 1200 nm. It will need drop tanks (step 4). Annex B states that the plane can carry three drop tanks, each worth 124 nm of range. This increases the cruise range to 1572. Carrying drop tanks, the plane is fully loaded even though it is carrying air-to-air missiles. The cruise range must be reduced by 10% to 1415 nm, still 145 nm over the mission range (step 7). A good reserve would be 157 nm, close enough to the 145 nm figure. The F-18 is ready to launch on its mission.

**Example 3:** A P-3C Orion is to patrol a station 300 nm from its base. The mission range is 300 times two or 600 nm. Ten minutes of full power for the P-3C will use up 92 nm of cruise range. The basic range of the P-3C is 4405 nm. This cannot be increased by adding external fuel tanks, and the P-3C is not capable of in-flight refueling. The difference between the basic range and the mission range is 3713 nm and is the amount of endurance that can be used to loiter on station. The difference is divided by the loiter modifier of 0.75, giving 4950. This is then divided by the cruise speed of 308 knots, giving a result of 16 hours on station.

**4.3.6.3.3 Fuel Consumption in Flight.** Once in the air, the aircraft use up one mile of range for each mile they fly at cruise speed. If a Sea Harrier cruises for 10 minutes at 450 knots, it uses up 450/6 or 90 nm of range. If it flies at its maximum speed, 650 knots at low altitude, it uses up much more fuel. Take the time spent at full military power, 10 minutes, and multiply the amount burned at cruise speed (90) times the full military power modifier for a NATO jet aircraft (2.5) to determine the amount of range equivalent burned to cover the 650 nm (90x2.5=225). With a total basic range of 600 nm, this is a major reduction in its endurance.

In general, take the distance flown at that power setting, and compute the cruise mile equivalents burned for that period using that power setting. It should become quickly apparent that jet aircraft cannot stay at afterburner for too long and must be careful even when using full military power.

#### ENDURANCE MODIFIERS

Aircraft	Loiter	Cruise	FMP	Afterburner
NATO Jet	0.75	1.0	2.5	12.5
USSR Jet	0.75	1.0	3.2	17.0
Turboprop	0.75	1.0	1.5	—
Helicopter	1.00	1.0	1.0	—

**4.3.6.3.4 Mission Planning for Aircraft Formations.** A group of aircraft uses the launch time of the first aircraft to determine the endurance. The first aircraft will have to loiter until the rest of the formation has joined up and will have consumed the most fuel.

**Example:** The lead A-6E of a group of 20 is launched from a carrier and climbs to wait for the rest of the planes to be launched. A carrier with four catapults can launch one plane each tactical turn (see section 4.3.5 in the Harpoon rules), so it will take 20 tactical turns or 10 minutes to launch them all. It loiters at high altitude for 10 minutes, using up 7.5 minutes of cruise endurance. Divide the plane's cruise speed (415 knots) by 60 (6.9 nm per minute) to get the miles used per minute and multiply times 7.5 to see how much cruising range is lost. This is 51 nm.

**4.3.6.3.5 General Considerations.** The referee (if present) should help the players conducting flight planning and should verify the mathematics. The players are ultimately responsible for their aircraft running out of fuel.

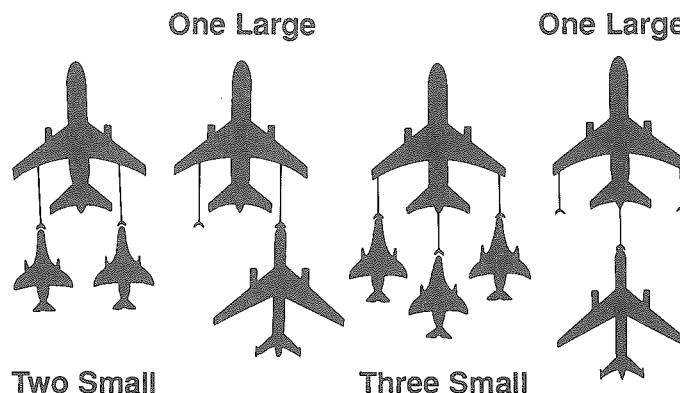
Aviators tend to be a cautious group and will not continue to fly the mission when the "bingo" fuel limit is reached. The bingo fuel limit is the amount of fuel required to get home, plus reserves. If the plane is engaged in air-to-air combat, it will attempt to disengage once the bingo point is reached.

If a plane makes it back to base but a mathematical error is detected later and the plane should have crashed due to fuel exhaustion, assume that the plane had a tailwind and made it back on fumes. One should be wary of players with permanent tailwinds.

**4.3.6.5 Aircraft In-Flight Refueling.** An aerial tanker can transfer any portion of its fuel to another aircraft. To conduct refueling, the tanker flies at cruise speed. Each plane that is to be refueled matches location, altitude, speed and heading with the tanker. It refuels—fighter/attack aircraft taking 1D6 minutes, bombers and other large aircraft taking 1D6+6 minutes—then breaks off so that another plane can be refueled.

Annex B shows whether an aircraft may be refueled in flight. It also shows whether an aircraft can refuel other aircraft. If the "Y" or "N" is followed by a slash and a number, that is the number of small aircraft it can refuel at the same time. The entry for the Victor K.2 is "Y/3." This means that the Victor can be refueled (Y) and that it can refuel three small aircraft (3) simultaneously.

A tanker that can refuel one aircraft can refuel one of either size. If it can refuel two small it may refuel one large instead. If it can refuel three small it can refuel one large instead. A buddy refuel store may refuel only one aircraft at a time.



To determine the amount of fuel the tanker can off-load:

1. Measure the range back to the tankers base, and subtract this amount from the remaining range in the tankers endurance. If the tanker is 700 nm from its base and has a remaining endurance of 1700 nm, it can off-load 1000 nm of fuel.

2. Divide the tanker's internal fuel by its cruise range to find out how many kilograms of fuel the tanker uses to fly one nm. Multiply the off-load range by the number of kilograms to determine total kilograms available to off-load.

3. Divide the weight of the fuel by the kg/nm rate of the receiving aircraft. This is the amount of range the aircraft gains in the process. The maximum amount of range after refueling cannot exceed the receiving aircraft's original maximum range.

$$\text{Tanker range} / \text{Tanker kg/nm} \times \text{Receiving aircraft kg/nm} = \text{Receiving aircraft's range gained}$$

It takes five minutes to refuel, plus one minute for each 2000 kg of fuel.

**4.3.6.6 HIFR (Helicopter In-Flight Refueling).** This operation can be carried out between any NATO ship and helicopter. The helicopter approaches the ship and hovers off the fantail. The ship steams with the wind 30 degrees off the port bow. The combined ship/wind speed must equal 30 knots. The helicopter lowers a line, and the deck crew attaches a fuel hose. The hose is winched up to the helicopter and plugged into the fuel system. After 1D6+5 minutes, the helicopter is refueled. It lowers the fuel hose to the deck, then continues its mission. The ship does not have to have a helo pad or other aviation facilities to accomplish this evolution, just a refueling system. This methodology will also allow a large helicopter to be refueled from a small ship's deck.

# Aircraft Mission Planning Form

1. Aircraft Name/Designation

2. Engine Type	3. Max Payload (kg)	Speeds	Cruise	Full Military Power	Afterburner
4. Basic Range (kg)	5. Mission Type	VLow			
6. Ordnance Loadout Description		Med			
		High			
7. Loadout Weight (kg)	Fully Loaded / Lightly Loaded	VHigh			

Mission range=Distance to target  
or patrol station \_\_\_\_\_x2=\_\_\_\_\_

Combat margin at FMP=\_\_\_\_\_ min/60x \_\_\_\_\_ ktsx \_\_\_\_\_ = \_\_\_\_\_ nm  
FMP speed FMP modif.

Combat margin afterburner=\_\_\_\_\_ min/60x \_\_\_\_\_ ktsx \_\_\_\_\_ = \_\_\_\_\_ nm  
Aftb. speed Aftb. modif.

Use the modifiers in this table to help calculate the combat margin:

## ENDURANCE MODIFIERS

Aircraft	Loiter	Cruise	FMP	Afterb.
NATO jet	0.75	1.00	2.5	12.5
USSR jet	0.75	1.00	3.2	17.0
Turboprop	0.75	1.00	1.5	—
Helicopter	1.00	1.00	1.0	—

## MISSION SUMMARY

Distance to Target: \_\_\_\_\_ nm  
Combat Margin: \_\_\_\_\_ nm  
Mission Range: \_\_\_\_\_ nm  
Final Aircraft Range: \_\_\_\_\_ nm  
Reserve: \_\_\_\_\_ nm  
Loiter Time: \_\_\_\_\_ min

Use Annex B or Harpoon Form 10 to find out what ordnance loads are permitted.

Add combat margin \_\_\_\_\_ nm to mission range  
\_\_\_\_\_ nm=new mission range \_\_\_\_\_ nm

Is basic range more  
than mission range?

No

Add \_\_\_\_\_ drop tanksx \_\_\_\_\_ nm  
per drop tank=\_\_\_\_\_ nm added

Yes

Total aircraft range=basic range  
\_\_\_\_\_ nm+added drop tank range  
\_\_\_\_\_ nm=\_\_\_\_\_ nm

Yes

Is aircraft range more  
than mission range?

No

Decide on ordnance load to be carried;  
total individual weapon weights; double  
check against maximum payload

Lightly  
Loaded

Fully or lightly loaded?

Fully Loaded

Reduce aircraft range by 5%,  
cruise and max speeds by 10%

Reduce aircraft range by 10%;  
cruise and max speeds by 15%;  
no supersonic flight allowed

Enter the reduced  
speeds in the speed  
& altitude matrix  
at upper right.

Is aircraft range more  
than mission range?

No

Change loadout, add drop  
tanks, change combat  
margin, use inflight refuel-  
ing, or abort mission

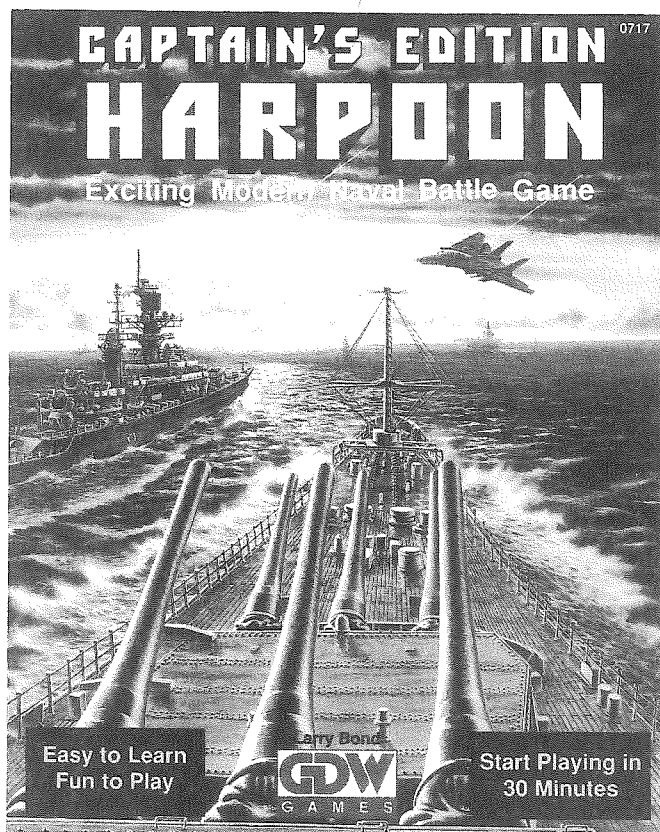
Yes

Customary reserve is  
10% of mission range.

Reserve=Mission range  
\_\_\_\_\_ nm-Aircraft range  
\_\_\_\_\_ nm=\_\_\_\_\_ nm



# CAPTAIN'S EDITION HARPOON®



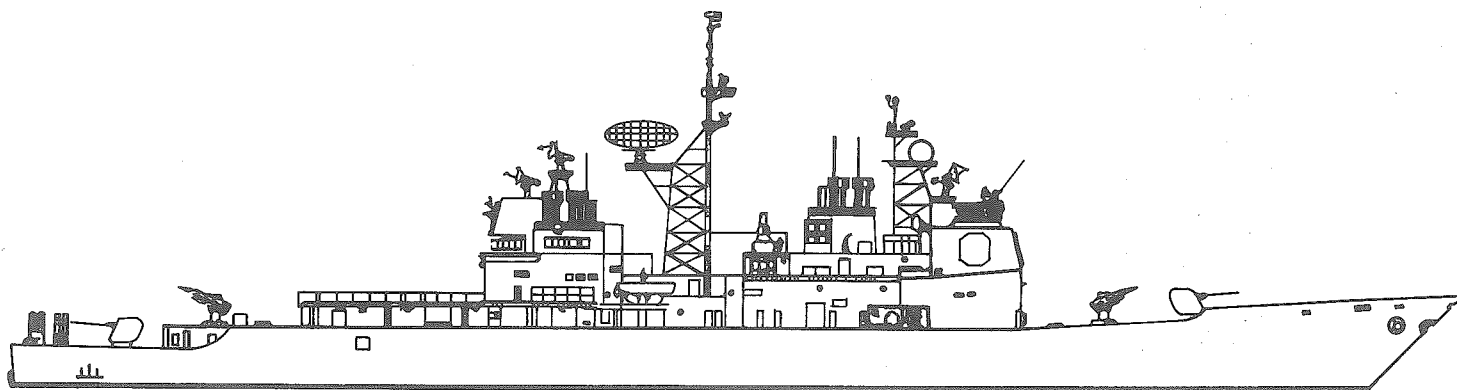
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**Data Annex  
cannot be used  
without Harpoon.**