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BY T G Hill ON 12/19/96

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GROUP 4 DOCUMENT
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

Standard Aircraft Characteristics

Reg # 624007

NAVY MODEL
S-3A
AIRCRAFT

(TITLE UNCLASSIFIED)

This publication shall not be carried in aircraft on combat missions or when there is a reasonable chance of its falling into the hands of an unfriendly nation, unless specifically authorized by the "Operational Commander."

PUBLISHED BY DIRECTION OF THE COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

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JANUARY 1973

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STANDAR AIRCRAFT CHARACTERISTICS, NAWEPS FORM 13100/4B (Rev. 7-65)

STANDARD AIRCRAFT CHARACTERISTICS

S-3A

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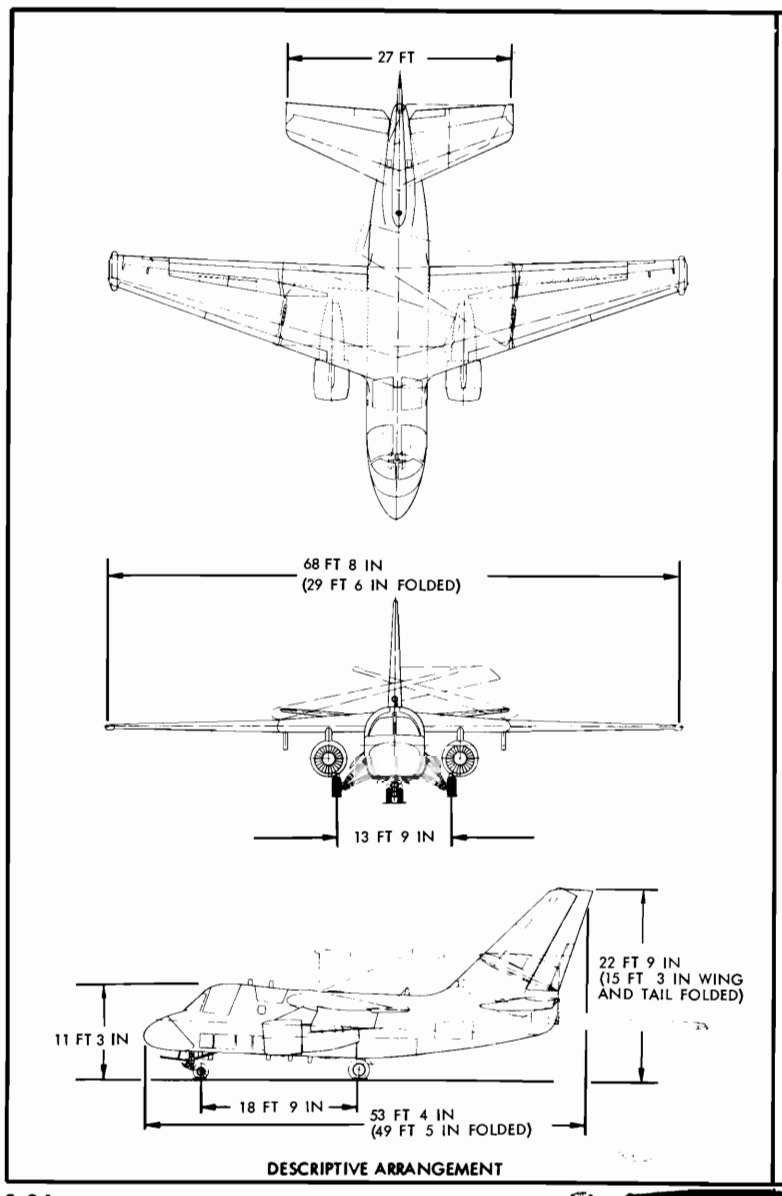
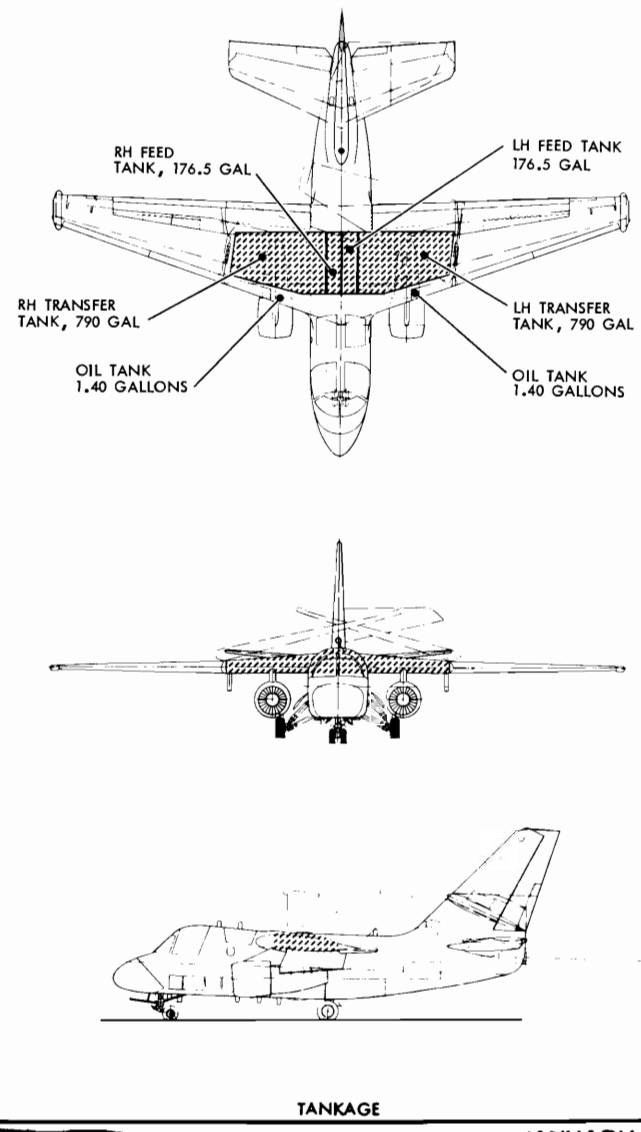


DESCRIPTIVE ARRANGEMENT



TANKAGE

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/48 (Rev. 7-65)

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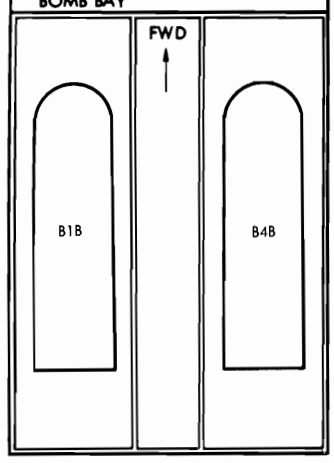
NOTE: NUMBERS SHOWN ARE STORES RELEASE STATIONS

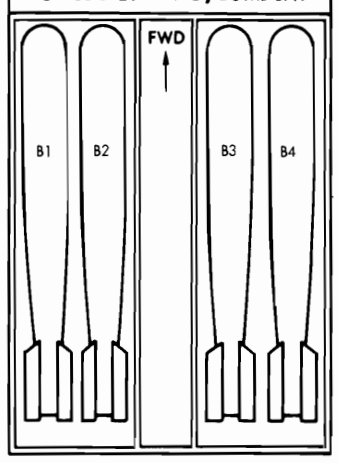
ALL INTERNAL STATIONS UTILIZE AERO 65A1 BOMB RACKS

SPECIAL WEAPONS LOADING, BOMB BAY



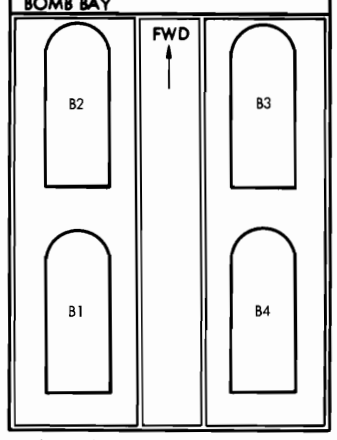
STORES STATIONS - TOP VIEW

TORPEDO LOADING, BOMB BAY



STORES STATIONS - TOP VIEW

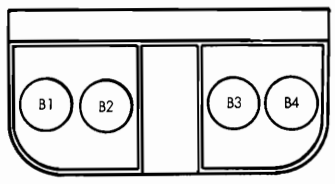
MINE AND DEPTH BOMB LOADING, BOMB BAY



STORES STATIONS - TOP VIEW

ARMAMENT

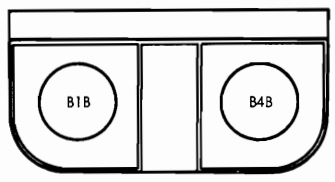
TORPEDO LOADING, BOMB BAY



(4) TORPEDOES

STORES STATIONS - VIEW LOOKING FORWARD

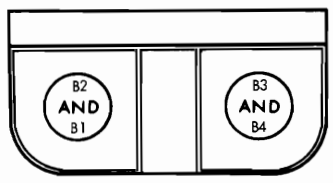
SPECIAL WEAPONS LOADING, BOMB BAY



(2) MK 57 SPECIAL WEAPON

STORES STATIONS - VIEW LOOKING FORWARD

MINE AND DEPTH BOMB LOADING, BOMB BAY



(4) MK 53, 500 LB MINE
(4) MK 54 DEPTH BOMBS

STORES STATIONS - VIEW LOOKING FORWARD

ARMAMENT

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4B (Rev. 7-65)

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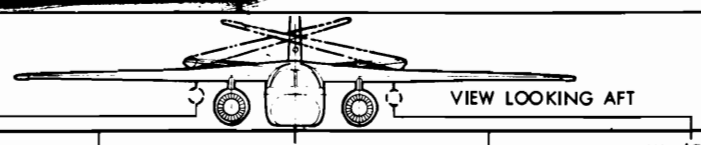

	W_2 (STBD)	INTERNAL	W_1 (PORT)
BOMBS	(1) OR (3) MK 82 LD OR SNAKEYE (1) A/A 37B -5 (TER-7) WITH (3) MK 76 MOD 5 OR (3) MK 106 MOD 5	(4) MK 54 (4) MK 82 LD	(1) OR (3) MK 82 LD OR SNAKEYE (1) A/A 37B -5 (TER-7) WITH (3) MK 76 MOD 5 OR (3) MK 106 MOD 5
CLUSTER BOMBS	(1) OR (3) MK 20 MOD 2		(1) OR (3) MK 20 MOD 2 * *
TORPEDOES		(4) MK 46/0 (4) MK 46/1	
FLARE PODS	(1) OR (3) SUU 44/A * *		(1) OR (3) SUU 44/A * *
MINES	(1) OR (3) MK 36 DST (1) MK 55 * (1) MK 56 * (1) MK 52 *	(4) MK 53 (4) MK 36 DST	(1) OR (3) MK 36 DST (1) MK 55 * (1) MK 56 * (1) MK 52 *
SPECIAL WEAPONS		(2) MK 57/0	
MISSILES OR ROCKETS	(1) OR (3) LAU 10A/A * * (1) OR (3) LAU 68/A * * (1) OR (3) LAU 61/A * * (1) OR (3) LAU 69/A * *		(1) OR (3) LAU 10A/A * * (1) OR (3) LAU 68/A * * (1) OR (3) LAU 61/A * * (1) OR (3) LAU 69/A * *
FUEL TANKS	(1) 300 GAL AERO 1B		(1) 300 GAL AERO 1B
RACKS	(1) BRU-11A (1) TER-7 * * *	(4) BRU-14A	(1) BRU-11A (1) TER-7 * * *

NOTE:
- * —AND ASSOCIATED TRAINING UNITS
- * * (1) EACH ON BRU-11A RACK; (3) EACH ON TER-7 RACK
- * * * (1) EACH ON BRU-11A RACK

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POWER PLANT

GENERAL ELECTRIC

No. and Model	Turbofan Model TF34-GE-2
Manufacturer	General Electric Company
Specification	E1130A, dated 1 AP 1970
Length	100 In.
Diameter	52.4 In.
Compressor Type	Axial Flow
Tail Pipe Nozzle	Fixed

RATINGS

Rating	Fan RPM	Compressor RPM	Thrust (LB)	SFC (LB/HR/LB)
Maximum (5 min)	7365	17,900	9275	.363
Intermediate(30 min)	6930	17,340	8159	.349
Maximum Continuous	6690	17,130	7513	.343

ELECTRONICS

SEARCH AND KILL STORES SUBSYSTEM

ACOUSTIC PROCESSING SUBSYSTEM

DATA PROCESSING, DISPLAY, AND CONTROL SUBSYSTEM

NON-ACOUSTIC SENSORS SUBSYSTEM

NAVIGATOR AFCS SUBSYSTEM

COMMUNICATIONS SUBSYSTEM

(FOR DETAILED ELECTRONICS LISTS SEE NOTES)

MISSION AND DESCRIPTION

The Lockheed S-3A is a two engine ASW airplane capable of operating off CVS-11 class or better aircraft carriers. This airplane has the ability to detect, localize, and destroy enemy submarines and surface vessels using a variety of sensor weapons including mines, torpedoes, and rockets. A crew of 4 consists of the pilot, copilot, sensor operator, and TACCO. All have ejection seats with 0-0 capability. Crew compartment is pressurized to 8,000 feet when the airplane altitude is 40,000 feet.

This airplane has inflight refueling capability for extended mission performance. Wing upper and lower surface spoilers provide the capability of steep dive angles and high roll control response. The horizontal stabilizer is electrically powered for pitch trim. Longitudinal, lateral, and directional control surfaces are actuated by dual, hydraulic powered, irreversible control systems. High lift system consists of Fowler flaps and leading edge flaps.

DEVELOPMENT

First Flight Date	JAN. 1972
FLEET Introduction	FEB. 1974

DIMENSIONS

WING:
- Area . . . . . 598 Sq Ft
- Span
  - Folded . . . . . 29.50 ft
  - Unfolded . . . . . 68.67 ft
- M.A.C. . . . . 118.24 in

LENGTH:
- Folded . . . . . 49.42 ft
- Unfolded . . . . . 53.33 ft

HEIGHT: . . . . . 22.75 ft

TREAD: . . . . . 165.0 in

WEIGHTS

LOADINGS	LB	LIMIT L.F.
Empty	26,581	-
Design	36,574	3.5
Combat	38,192	3.35
Take-off, Normal		
Field	43,449	2.95
Catapult	43,449	2.95
Max Take-off, Design	52,539	2.5
Max Landing, Design		
Field	45,914	2.79
Arrested	37,695	3.40
Max In-flight	52,539	2.5

FUEL AND OIL

TANK	GALS.	LOCATION
	966.5	Left Wing
	966.5	Right Wing
	600.0	External
Total Usable	2533.0	

Fuel Grade JP-5
Fuel Spec MIL-T-5624

OIL

Total Usable Capacity (Gals)/ENG 1.4
Specification MIL-L-7808 & MIL-L 23699

ORDNANCE

STATIONS	PAYLOAD
INTERNAL	
B1, B2, B3 & B4	600 lb (MAX.)
B1B & B4B	600 lb (MAX.)
EXTERNAL	
W1 & W2	2,500 lb (MAX.))

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100 4C (Rev. 7-65)

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PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION		HI-HI-HI (1) CLEAN	SEARCH & ATTACK (3) 2 MK 57 Depth Bombs 48 Sonobuoys	SURFACE SURVEIL. (5) 2 MK 57 Depth Bombs 48 Sonobuoys	CONTACT INVEST. #1 (7) 4 MK 46 (1) Torpedoes 60 Sonobuoys	CONTACT INVEST. #2 (9) 4 MK 46 (1) Torpedoes 60 Sonobuoys	FERRY RANGE (11) (D)
TAKE-OFF WEIGHT	lb.	40,941	43,449	43,449	44,947	44,947	45,516
Fuel internal/external (JP-5)	lb./lb.	13,142/ -	13,142/ -	13,142/ -	13,142/ -	13,142/ -	13,142/4,080
Payload	lb.	0	2,458	2,458	3,906	3,906	0
Wing loading	lb./sq. ft.	68.5	72.7	72.7	75.2	75.2	76.1
Stall speed—power-off (25 Deg. Flap)	kn.	97	100	100	102	102	103
Take-off run at S.L.— calm (A)	ft.	1,800	2,040	2,040	2,210	2,210	2,270
Take-off run at S.L.— 25 kn. wind (A)	ft.	1,110	1,310	1,310	1,420	1,420	1,470
Take-off to clear 50 ft.— calm (A)	ft.	2,500	2,790	2,790	2,970	2,970	3,030
Max. speed/altitude (B)	kn./ft.	-	393/40,000	429/S.L.	429/S.L.	429/S.L.	-
Rate of climb at S.L. (B)	fpm.	4,450	4,150	4,150	4,000	4,000	3,780
Time: S.L. to 20,000 ft. (B)	min.	5.8	6.3	6.3	6.6	6.6	6.9
Time: S.L. to 30,000 ft. (B)	min.	10.9	12.0	12.0	12.6	12.6	13.7
Service ceiling (100 fpm) (B)	ft.	40,900	39,800	39,800	39,100	39,100	38,500
Combat range	n.mi.	2,765	2,628	1,439	2,506	1,310	3,368
Average cruising speed	kn.	348	356	210	355	276	346
Cruising altitude(s)	ft.	39,000/40,000	37,800/40,000	1,500	36,400/40,000	20,000/40,000	35,500/40,000
Combat radius/mission time	n.mi./hr.	1,360/8.1	458/7.2	0/7.7	826/6.9	609/5.3	-
Average cruising speed	kn.	345	353	-	346	435/347 C	-
Search time/altitude	hr./ft.	4.5/40,000	4.5/40,000	7.7/SEA LEVEL	2.0/SEA LEVEL	2.0/SEA LEVEL	-
Search Speed	kn.	370	370	165	168	166	-
COMBAT LOADING CONDITION		(2) CLEAN	(4) STORES RETAINED	(6) STORES RETAINED	(8) STORES RETAINED	(10) STORES RETAINED	
COMBAT WEIGHT	lb.	35,684	38,192	38,192	39,690	39,690	-
Engine power		INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	-
Fuel	lb.	7,885	7,885	7,885	7,885	7,885	-
Combat speed/combat altitude	kn./ft.	410/40,000	405/40,000	429/SEA LEVEL	429/SEA LEVEL	429/SEA LEVEL	-
Rate of climb/combat altitude	fpm/ft.	560/40,000	420/40,000	4,750/SEA LEVEL	4,550/SEA LEVEL	4,550/SEA LEVEL	-
Combat ceiling (500 fpm)	ft.	40,700	39,400	39,400	38,500	38,500	-
Rate of climb at S.L.	fpm.	5,120	4,750	4,750	4,550	4,550	-
Max. speed at S.L.	kn.	429	429	429	429	429	-
Max. speed/altitude	kn./ft.	447/20,000	447/20,000	447/20,000	447/20,000	447/20,000	-
LANDING WEIGHT	lb.	28,877	31,409	31,409	32,920	32,920	29,593
Fuel	lb.	1,078	1,102	1,102	1,115	1,115	1,299
Stall speed—power-off/approach power	kn./kn.	78/77	81/80	81/80	83/82	83/82	78/77
Landing distance-ground roll/over 50 ft. obst.	ft./ft.	1,900/2,860	2,045/3,060	2,045/3,060	2,140/3,180	2,140/3,180	1,940/2,920

NOTES

RANGE AND/OR RADIUS ARE BASED ON INSTALLED ENGINE SPECIFICATION DATA INCREASED 5%

PERFORMANCE BASIS: CONTRACTOR ESTIMATED

(A) MAXIMUM POWER; STANDARD DAY (59°F)
(B) INTERMEDIATE POWER
(C) OUTBOUND SEGMENT/RETURN SEGMENT
(D) EXTERNAL FUEL TANKS RETAINED THROUGHOUT MISSION

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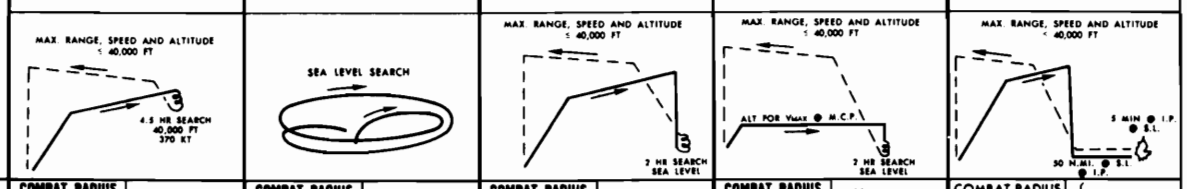
MISSION SUMMARY — ALTERNATE LOADINGS



		SEARCH & ATTACK		SURFACE SURVEILLANCE		CONTACT INVEST. #1		CONTACT INVEST. #2		MINELAYING	
STORE LOADING	T.O.G.W.	COMBAT RADIUS n. mi.	MISSION TIME hr.	COMBAT RADIUS n. mi.	MISSION TIME hr.	COMBAT RADIUS n. mi.	MISSION TIME hr.	COMBAT RADIUS n. mi.	MISSION TIME hr.	COMBAT RADIUS N. MI.	MISSION TIME hr.
(3) 2 MK-57 DEPTH BOMBS 48 SONOBUOYS	43,449	458	7.2	0	7.7	870	7.0	630	5.3	-	-
(7) 4 MK-46 MOD 1 TORPEDOES 60 SONOBUOYS	44,947	407	6.8	0	7.4	826	6.9	609	5.3	-	-
(12) 1 MK-57 DEPTH BOMB 2 MK-46 MOD 1 TORPEDOES 49 SONOBUOYS	43,900	443	7.1	0	7.7	857	7.0	622	5.4	-	-
(13) 2 MK-57 DEPTH BOMBS 48 SONOBUOYS 2 - 300 GALLON EXT TANKS	48,499	677	8.5	0	9.3	1114	8.5	862	6.6	-	-
(14) 4 MK-46 MOD 1 TORPEDOES 60 SONOBUOYS 2 - 300 GALLON EXT TANKS	49,997	618	8.1	0	9.0	1072	8.2	840	6.5	-	-
(15) 2 MK-46 MOD 1 TORPEDOES 2 MK-54 BOMBS 60 SONOBUOYS 2 LAU-61 ROCKET PACKS: EXT.	45,927	306	6.3	0	7.1	749	6.4	572	5.1	-	-
(16) 2 MK-46 MOD 1 TORPEDOES 2 MK-82 L.D. BOMBS 60 SONOBUOYS 6 LAU-10 A/A 2 TERS: EXT.	48,471	-	-	0	6.1	526	5.3	449	4.6	-	-
(17) 1 MK-57 DEPTH BOMB 2 MK-46 MOD 1 TORPEDOES 49 SONOBUOYS 2 - 300 GALLON EXT TANKS	48,950	655	8.3	0	9.2	1108	8.5	858	6.6	-	-
(18) 10 MK-36 DST MINES 4 INTERNAL 6 EXTERNAL	47,626	-	-	-	-	-	-	-	-	853	5.2

NOTES

STANDARD AIRCRAFT CHARACTERISTICS. NAVWEPS FORM 13100/41 (Rev. 7-65)

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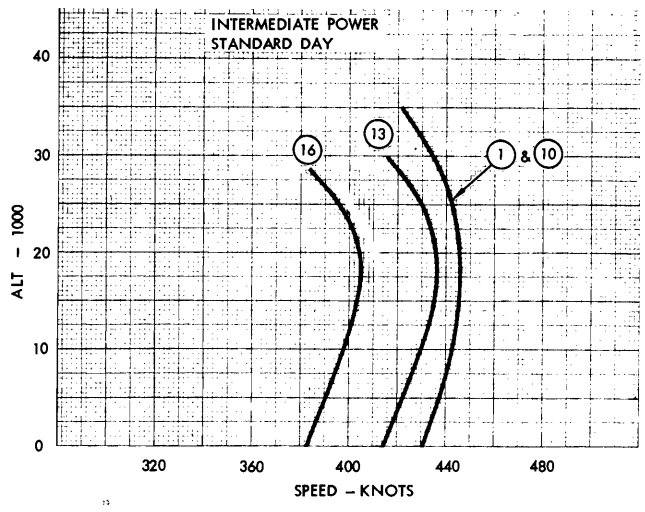
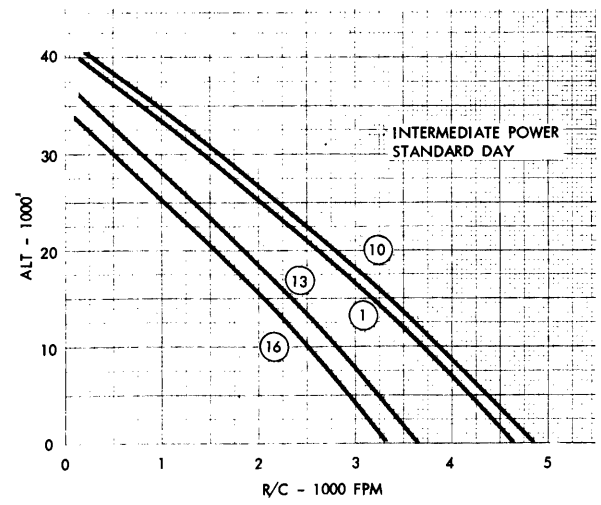
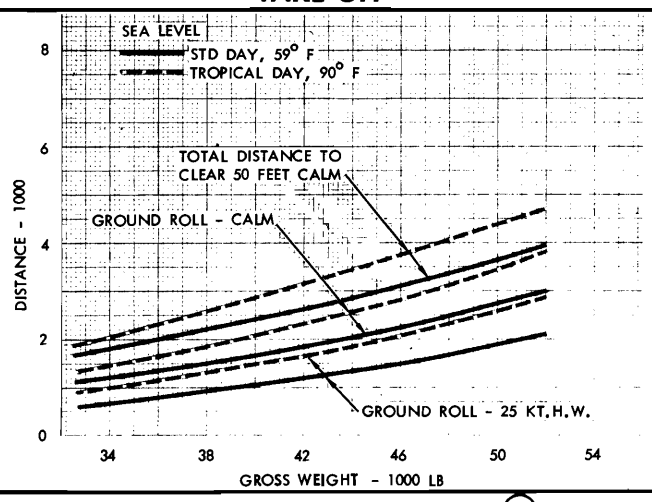
SPEED



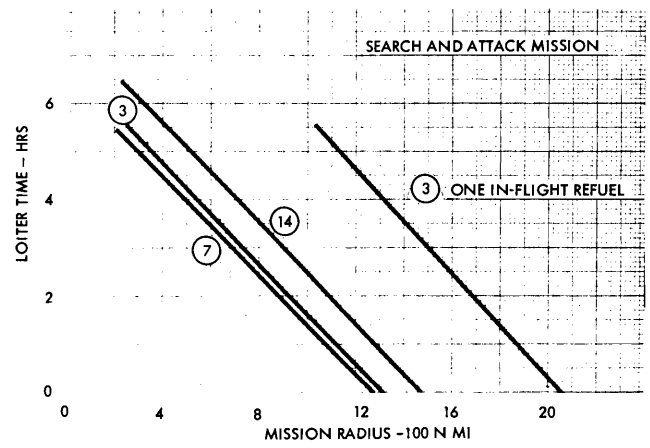
CLIMB



TAKE-OFF



LOITER ON STATION



◯ LOADING CONDITION COLUMN NUMBER

STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100/4F (Ref. 7-65)

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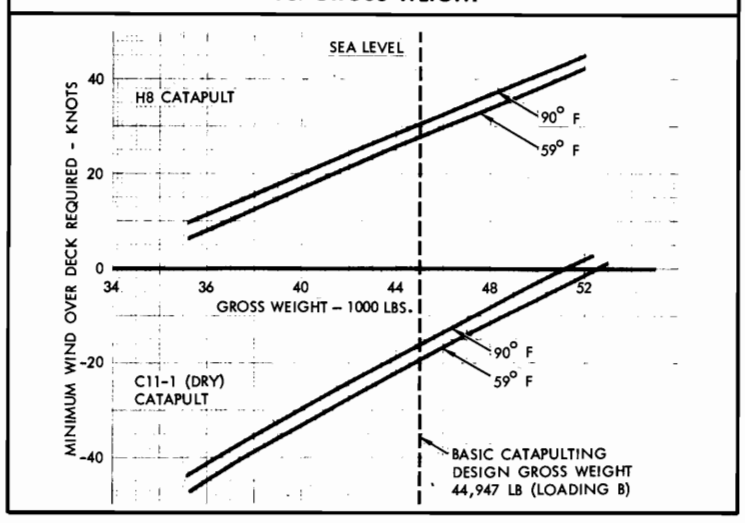
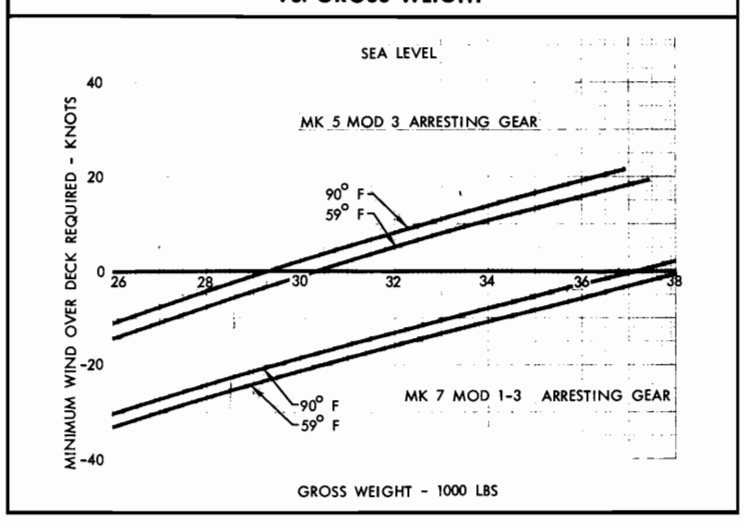
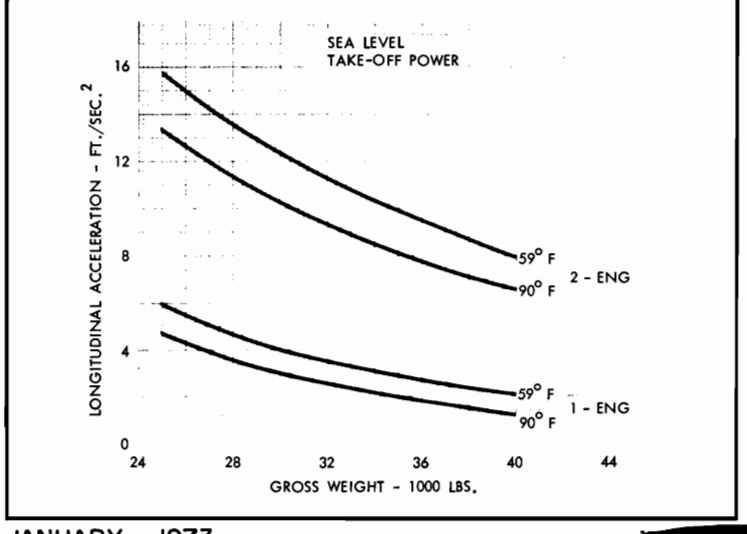
MINIMUM WIND OVER DECK REQUIRED FOR CATAPULTING VS. GROSS WEIGHT



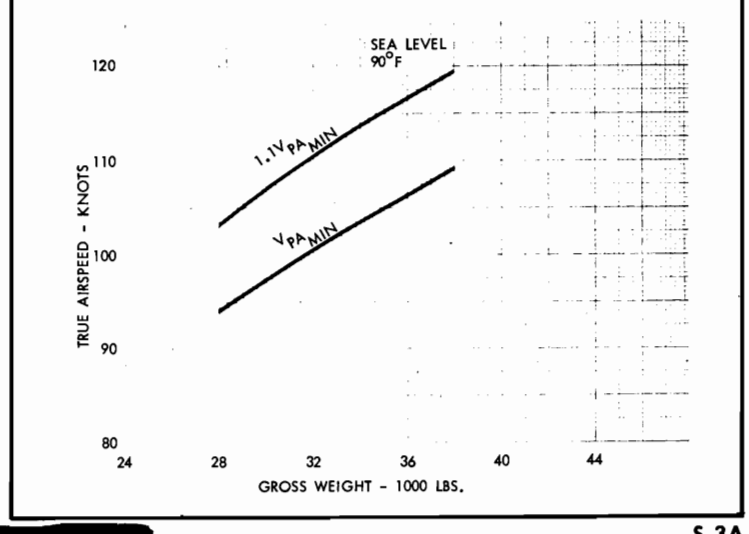
MINIMUM WIND OVER DECK REQUIRED FOR ARRESTING VS. GROSS WEIGHT



WAVE-OFF ACCELERATION



MINIMUM CARRIER APPROACH SPEEDS



NOTES

SEARCH AND ATTACK MISSION

WARM-UP, TAXI AND TAKE-OFF: 5 minutes at maximum continuous power at sea level.

CLIMB: On course to maximum range altitude* with intermediate power.

CRUISE-OUT: At maximum range speed and altitude.*

SEARCH: At 370 knots for 4.5 hours at maximum endurance altitude.*

CRUISE-BACK: At maximum range speed and altitude.*

RESERVE: 5% of initial fuel load plus fuel for 20 minutes at speed for maximum endurance at sea level.

*not exceeding 40,000 ft

SURFACE SURVEILLANCE MISSION

WARM-UP TAXI, AND TAKE-OFF: 5 minutes at maximum continuous power at sea level.

LOITER: At sea level and speed for maximum endurance but not less than 150 knots.

RESERVE: 5% of initial fuel load plus fuel for 20 minutes at speed for maximum endurance at sea level.

MINELAYING MISSION

WARM-UP, TAXI AND TAKE-OFF: 5 minutes at maximum continuous power at sea level.

CLIMB: On course to maximum range altitude* with intermediate power

CRUISE-OUT: At maximum range speed and altitude.*

DESCEND: To sea level - no fuel used; no distance gained.

RUN-IN: 50 nautical miles with intermediate power at sea level.

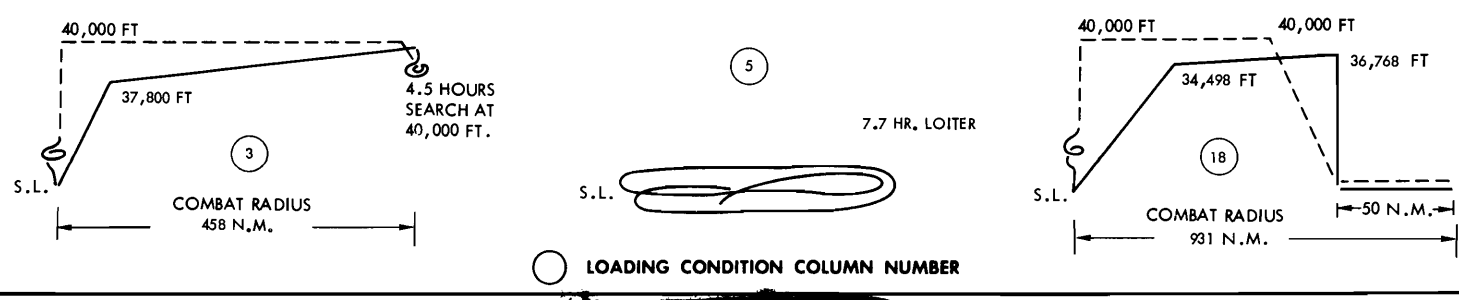
FUEL ALLOWANCE: 5 minutes at intermediate power at sea level. Drop Stores.

RUN-OUT: 50 nautical miles with intermediate power at sea level.

CLIMB: On course to maximum range altitude* with intermediate power.

CRUISE-BACK: At maximum range speed and altitude.*

RESERVE: 5% of initial fuel load plus fuel for 20 minutes at speed for maximum endurance at sea level.



STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100 4G (Rev. 7-65)

NOTES

HI-HI-HI

WARM-UP, TAXI AND TAKE-OFF: 5 minutes at maximum continuous power at sea level.

CLIMB: On course to maximum range altitude with intermediate power.

CRUISE-OUT: At maximum range speed and altitude.

COMBAT: 5 minute intermediate power at cruise altitude.

CRUISE-BACK: At maximum range speed and altitude.

RESERVE: 5% of initial fuel load plus fuel for 20 minutes at speed for maximum endurance at sea level.

CONTACT INVESTIGATION NO. 1

WARM-UP, TAXI AND TAKE-OFF: 5 minutes at maximum continuous power at sea level.

CLIMB: On course to maximum range altitude with intermediate power.

CRUISE-OUT: At maximum range speed and altitude.

DESCEND: To sea level - no fuel used; no distance gained.

LOITER: At sea level for 2 hours at speed for maximum endurance.

CLIMB: On course to maximum range altitude with intermediate power.

CRUISE-BACK: At maximum range speed and altitude.

RESERVE: 5% of initial fuel load plus fuel for 20 minutes at speed for maximum endurance at sea level.

CONTACT INVESTIGATION MISSION NO. 2

WARM-UP, TAXI AND TAKE-OFF: 5 minutes at maximum continuous power at sea level.

CLIMB: On course with intermediate power, to altitude for V_{max} with maximum continuous power.

CRUISE-OUT: At maximum continuous power at altitude for V_{max}.

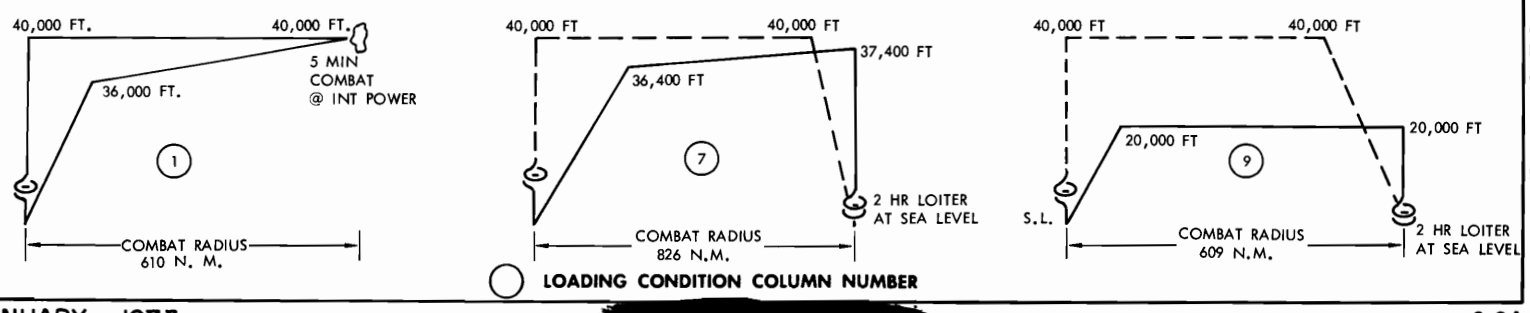
DESCEND: To sea level - no fuel used; no distance gained.

LOITER: At sea level for 2 hours at speed for maximum endurance.

CLIMB: On course to maximum range altitude with intermediate power.

CRUISE-BACK: At maximum range speed and altitude.

RESERVE: 5% of initial fuel load plus fuel for 20 minutes at speed for maximum endurance at sea level.



STANDARD AIRCRAFT CHARACTERISTICS, NAVWEPS FORM 13100 4G (Rev. 7-65)

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NOTES

ELECTRONICS

SEARCH & KILL STORES SUBSYSTEM

Search Stores Control Group, OK-185/ASQ-147
Armament Control Group, OK-183/ASQ-147
Armament Monitor & Control

ACOUSTIC PROCESSING SUBSYSTEM

Radio Computing-Tracking Group, OL-82/AYS
Radio Receiving Set, AN/ARR-76
Recorder-Reproducer Set, AN/ASH-27

DATA PROCESSING, DISPLAY, & CONTROL SUBSYSTEM

Digital Computer, AN-AYK-10
Tactical-Acoustic Indicator Display Group, AN/ASA-82
Signal Data Recorder-Reproducer, RD-348/ASH

NON-ACOUSTIC SENSORS SUBSYSTEM

Magnetic Compensator Group, AN/ASA-65A
Magnetic Detection Set, AN/ASQ-81(V)
Infrared Detecting Group, OR-89/AA
Countermeasures Receiving Set, AN/ALR-47
Radar Set, AN/APS-116
Radar Set Converter-Control Group, OU-78/AP
Interrogator Set, AN/APX-76A(V)
Transponder Set, AN/APX-72

NAVIGATION & AFCS SUBSYSTEM

Direction Finder Set, AN/ARN-83
Direction Finder Set, AN/ARA-50
Electronic Altimeter Set, AN/APN-201
Navigation Indicator Group, OD-59/A
Airspeed-Altitude Computer Set, AN/AYN-5
Radar Navigation Set, AN/APN-200
Tactical Air Navigation Set, AN/ARN-84
Sonobuoy Bearing Range Receiving Set, AN/ARS-2
Induction Compass Transmitter, T-1214/A
Compass Transmitter Compensator, CN-1381/A
Inertial Navigation Set, ASN-92
Inertial Navigation Control Group, AN/ASA-84
Receiving-Decoding Group, ARA-63
Attitude Heading Reference Set, AN/ASN-107
Automatic Flight Control Set, AN/ASW-33
Radar Beacon, AN/APN-202
Data Communications Set, AN/ASW-25B
Rate Gyro

COMMUNICATIONS SUBSYSTEM

Digital to Analog Converter, CV-2830/AYC
Radio Set (HF), AN/ARC-153
Radio Receiver-Transmitters (UHF), RT-1017/ARC
Intercommunication-Communication Control Group, OK-173(V)/AI
Secure Data Keyer, TSEC/KG-40
Secure Keyer Control
Secure Voice Keyer, TSEC/KY-28
Radio Set Control, C-8057/ARC

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