

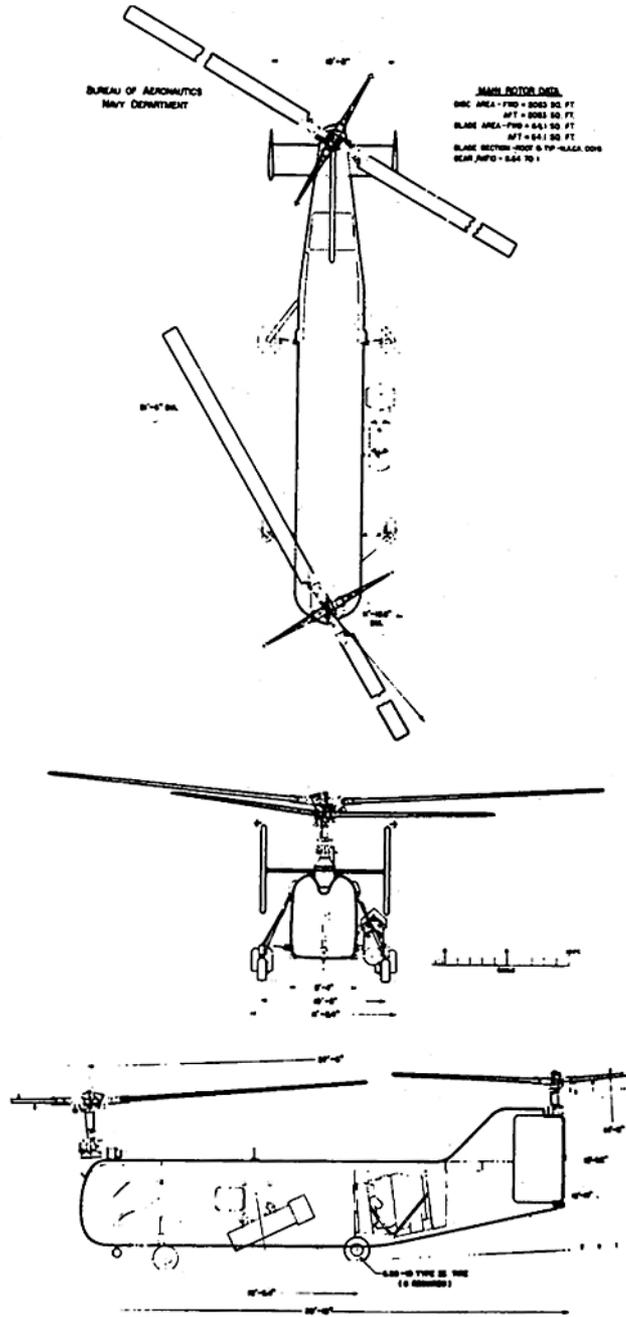
STANDARD AIRCRAFT CHARACTERISTICS

HSL-1

BELL

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

MAIN ROTOR DIA.
DISC AREA - 750 - 0000 SQ FT
APT - 5000 SQ FT
BLADE AREA - 750 - 0000 SQ FT
APT - 5000 SQ FT
BLADE SECTION - 4000 & TP - 14400 SQ FT
BLADE PITCH - 844 TO 1



DESCRIPTIVE ARRANGEMENT

Standard Aircraft Characteristics NAVAER 1335B (REV. 1-49)

POWER PLANT

NO. & MODEL.....(1) R-2800-50
 MFR.....Pratt and Whitney
 SUPERCHG.....1 Stage, 1 Speed
 ROTOR GEAR RATIO.....0.1117

RATINGS

	Bhp	Rpm	Alt
T. O.	1,900	2,600	7,000'
NORMAL	1,900	2,600	7,000'

SPEC. NO. N-8143

ORDNANCE

Type	Size	Location	No.
Mine	Mk.24 #800	External	1

ACCOMMODATIONS

CREW.....3(Search), 2(Attack)
 FLOOR SPACE (SONAR GEAR
 REMOVED)....10 ft. x 4.5 ft.
 LIMIT FLOOR LOADS.....
 216 lb./sq. ft.
 HOIST CAPACITY.....800 lbs.

MISSION AND DESCRIPTION

The primary mission of the HSL-1 helicopter is to detect, identify, track and/or destroy enemy submarines in ocean areas. It may also be used for ship-to-ship, ship-to-shore liaison and general utility. This helicopter is designed for operation from shipboard under all weather conditions.

As a search helicopter, it will be capable of carrying electronic, radio and safety equipment, with a crew of three on flights which involve repeated hovering stops a few feet above the water in order to detect the presence of submarines.

As an attack helicopter it will be capable of carrying a mine or similar weapon weighing approximately 800 lbs. with a crew of two, plus electronic, radio, and safety equipment.

Design features include rotor blades of all metal bonded construction, gyroscopic action stabilizer bars, rotor blade restrainers, hydraulically operated servo controls, windshield anti-icing, and rotor blade de-icing.

DEVELOPMENT

First flight - - - - - January 1953
 Service use - - - - - August 1953

DIMENSIONS

DISC AREA*.....3,840 sq. ft.
 ROTOR DIA.....51' -6"
 LENGTH**.....39' -11"
 HEIGHT.....14' -6"
 TREAD.....11' -8"
 STABILIZER AREA... 25 sq. ft.
 BLADE AREA.....128 sq. ft.
 FIN AREA.....132 sq. ft.

* Projected
 ** Blades folded

WEIGHTS

Loadings	Lbs.	L.F.
EMPTY.....	12,451
BASIC.....	12,613
DESIGN.....	14,418	3.5..
MAX.T.O.....	20,000	2.6..
MAX.LAND.....	20,000

All weights are estimated.

FUEL AND OIL

Gal.	No. Tanks	Location
450	1	Fuselage
FUEL GRADE.....	115/145	
FUEL SPEC.....	MIL-F-5572	

OIL

CAPACITY(Gals).....	30
GRADE.....	1100
SPEC.....	MIL-O-6082

ELECTRONICS

MHF TRANS-RECEIVER..AN/ARC-2
 UHF TRANS-RECEIVER..AN/ARC-27
 INTERPHONE.....AN/AIC-4A
 RADIO ALTIMETER...AN/APN-1
 HOMING RECEIVER....AN/ARR-2A
 RECEIVER.....R-11A
 IFF.....AN/APX-6
 SONAR.....AN/AQS-4A

PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION	(1) ASW SEARCH Crew - 3 AN/AQS-4 Sonar	(2) ASW ATTACK Crew - 2 AN/AQS-4 Sonar 1 Mk. 24 Mine			
TAKE-OFF WEIGHT	lb.	15,963	15,963		
Fuel	lb.	2,538	2,070		
Payload	lb.	--	690		
Disc loading	lb./sq.ft.	4.2	4.2		
Vertical rate of climb at S.L. (A/B)	fpm.	1,140/1,140	1,140/1,140		
Absolute hovering ceiling (A/B)	ft.	9,900	9,900		
Max. rate of climb at S.L. (A)	fpm.	1,640	1,620		
Service ceiling (100 fpm) (A)	ft.	15,500	15,000		
Speed at S.L. (A)	kn.	135	135		
Max. speed/altitude (A)	kn./ft.	135/S.L.	135/S.L.		
Combat range	n.mi.	405	320		
Average cruising speed	kn.	98	98		
Cruising altitude	ft.	1,500	1,500		
Combat radius	n.mi.	--	165		
Average cruising speed	kn.	--	99		
Search endurance sea level.		3.4	--		

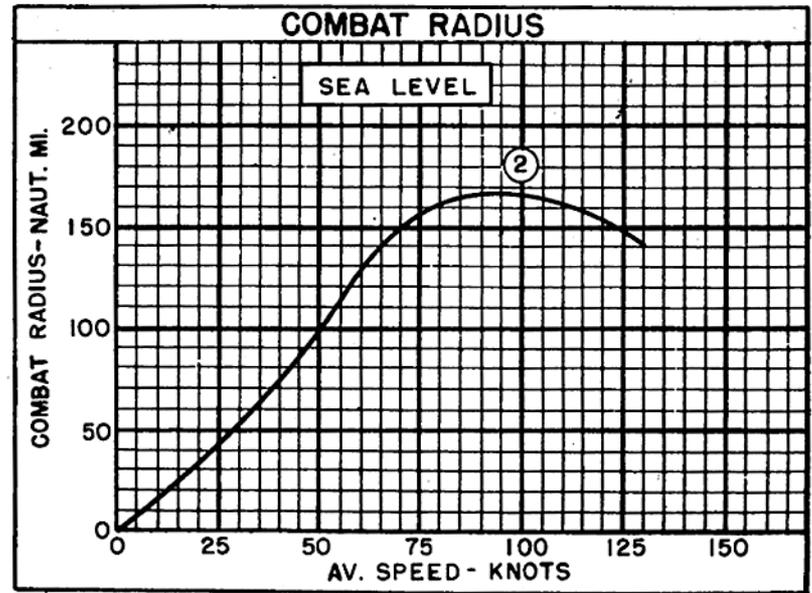
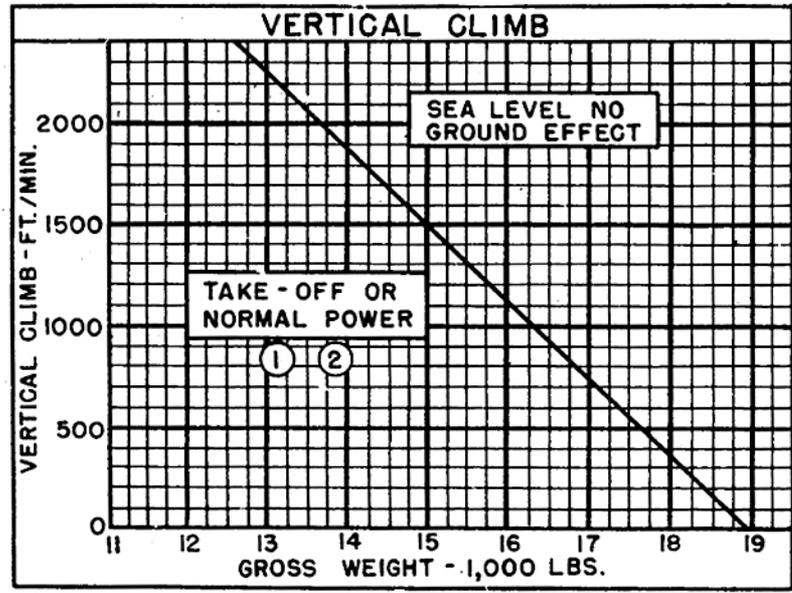
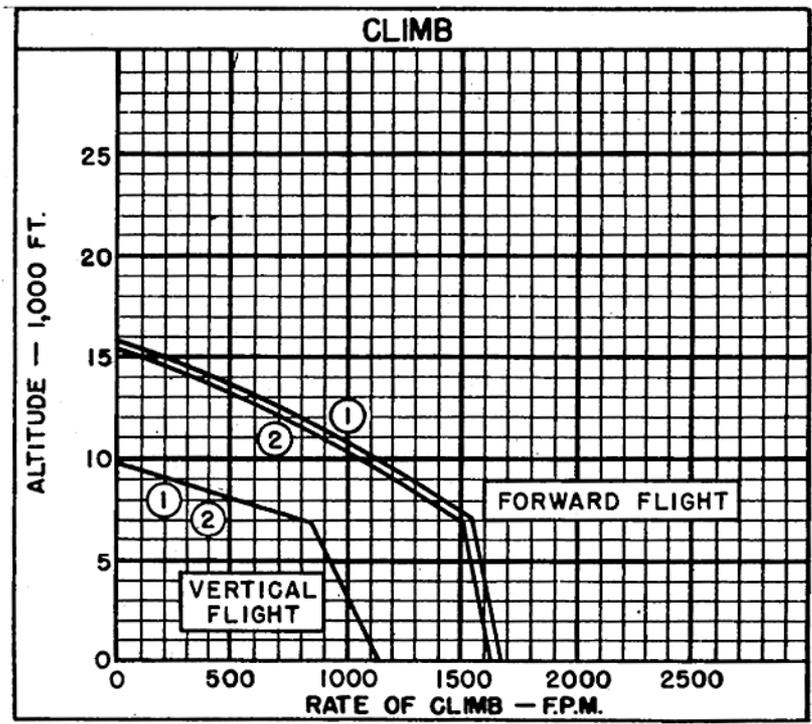
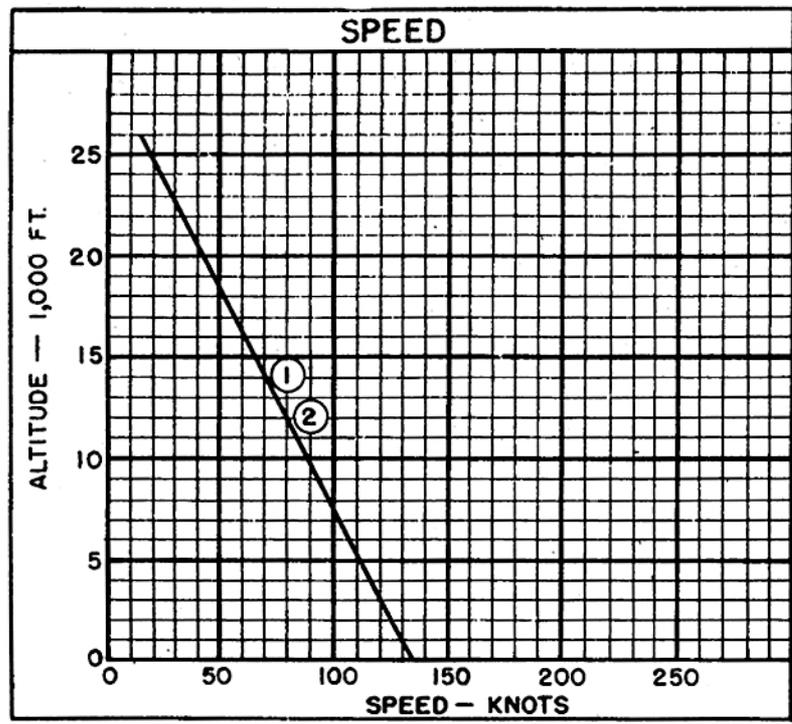
NOTES

- (A) Normal power
(B) Take-off power

Performance is based on calculations:

Range, endurance, and radius are based on optimum RPM, engine specification fuel consumption increased by 5%.

Sonar gear weighing 603 pounds considered part of weight empty



Standard Aircraft Characteristics MAYAER 1335E (REV. 2-50)

○ LOADING CONDITION COLUMN NUMBER

NOTES

ASW SEARCH ENDURANCE PROBLEM

WARM-UP AND TAKE -OFF: 5 min. at NRP
 CRUISE: At 100 knots 40% of time at sea level
 HOVER: Out of ground effect 60% of time at sea level
 RESERVE: 10% of initial fuel load

SEARCH ENDURANCE = CRUISE TIME+HOVER TIME

ASW COMBAT RADIUS PROBLEM

WARM-UP AND TAKE-OFF: 5 min. at NRP
 CRUISE TO TARGET: At 100 knots at sea level
 DROP MINE
 RETURN CRUISE: At speed for maximum range at sea level
 RESERVE: 10% of initial fuel load.

COMBAT RADIUS = CRUISE DISTANCE FROM START OF CRUISE TO TARGET

CHARACTERISTICS SUMMARY

BASIC MISSION

HSL-1

RADIUS PROBLEM

WARM-UP AND TAKE-OFF: 5 min. at N.R.P.

CLIMB: to cruise altitude

CRUISE: at speed for maximum radius at an altitude of 1,500 ft.

RESERVE: 10% of initial fuel load

PERFORMANCE

COMBAT RADIUS	MAX. ENDURANCE	SPEED
122 naut. mi. 84 knots avg. Cruise altitude 1,500 ft.	naut. mi. knots avg. 3.5 hours	108 knots at S.L. ft. knots at ft. knots at ft. Search Weight T.O. Power
CLIMB	CEILING	TAKE OFF
1,475 ft./min. Sea Level, T. O. wt. Normal Power	14,400 ft. 100 ft./min., T. O. wt. Normal Power	VERTICAL
1,200 ft./min. Vertical Flight Sea Level, T.O. Wt. T.O. Power	10,750 ft. Absolute Hover Ceiling T.O. Wt., T.O. Power	
LOAD	WEIGHTS	STALLING SPEED
Fuel 423 gal. fixed 423 drop Max. Cap. 450 gal.	Empty 13,073 lbs. Search 16,958 lbs. Attack 16,853 lbs.	knots Flaps down, T. O. wt. TIME TO CLIMB ft. in min. Combat Wt., Max. Power

NOTES

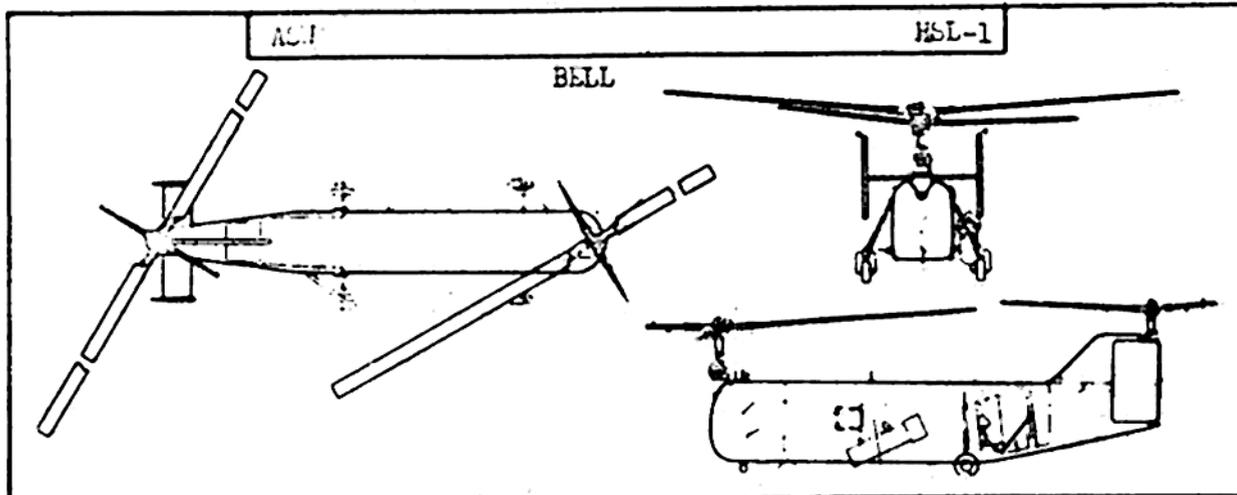
Performance is based on NATC Preliminary Evaluation.

Range is based on optimum RPM, engine specification fuel consumption increased by 5%.

All performance is out of ground effect.

NAVER-15198 (Rev. 10-51)

CHARACTERISTICS SUMMARY



WING AREA 3,840 sq. ft.
WING SPAN 51' - 6"

*LENGTH 39'-11"
HEIGHT 14'- 6"
*Blades Folded

AVAILABILITY			PROCUREMENT			
NUMBER AVAILABLE			NUMBER DELIVERED			
			IN FISCAL YEARS			
ACTIVE	RESERVE	TOTAL				

STATUS

First flight - - - - - MARCH 1953

Service use - - - - - FEBRUARY 1956

ENGINES	
1	P & W R-2800-50
	BHP ~ RPM ~ ALT
T.O.	2,100 2,600 S.L.
NORM.	1,900 2,400 S.L.

FEATURES
Folding rotor
All weather operation
Windshield anti-icing
Hoist capacity -
800 lbs.
Crew (Search) - - - - 4
(Attack) - - - - 3

ARMAMENT
2 MK 43 Torpedoes

NAVAER 1519 A (REV. 1-49)