

STANDARD AIRCRAFT CHARACTERISTICS

HRS-1

SIKORSKY

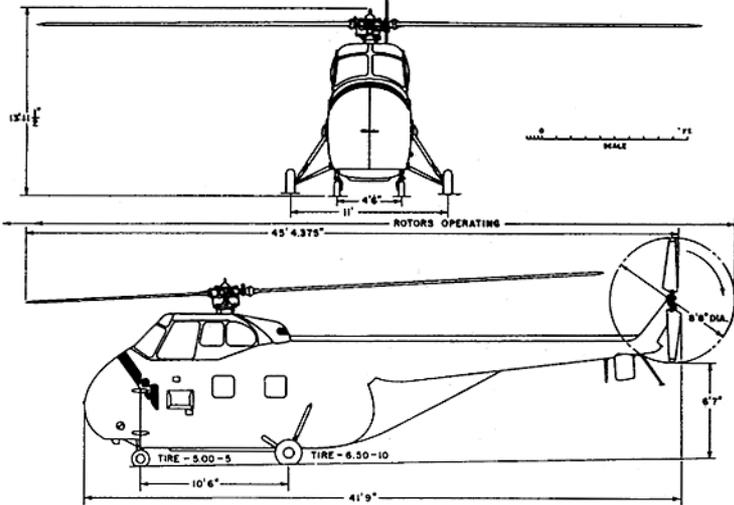
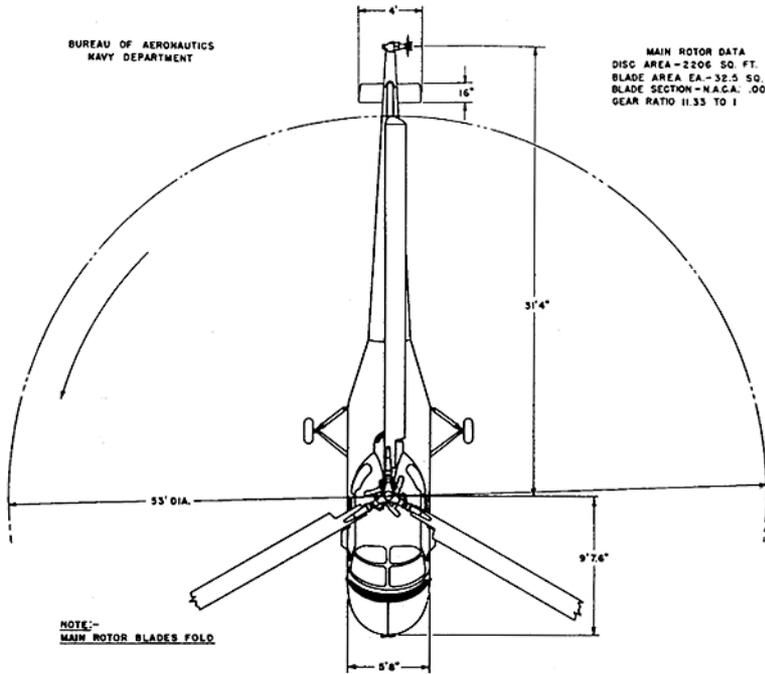
Standard Aircraft Characteristics NAVAER 1335a (REV. 1-49)

1 MAY 1951

HRS-1

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

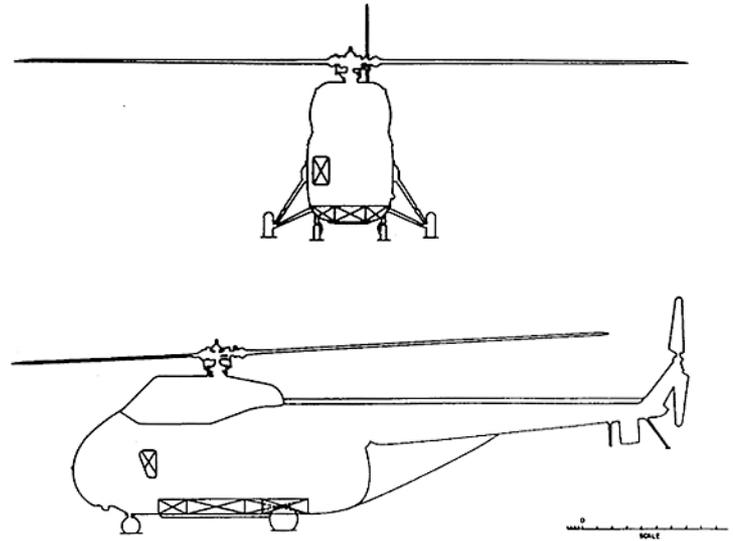
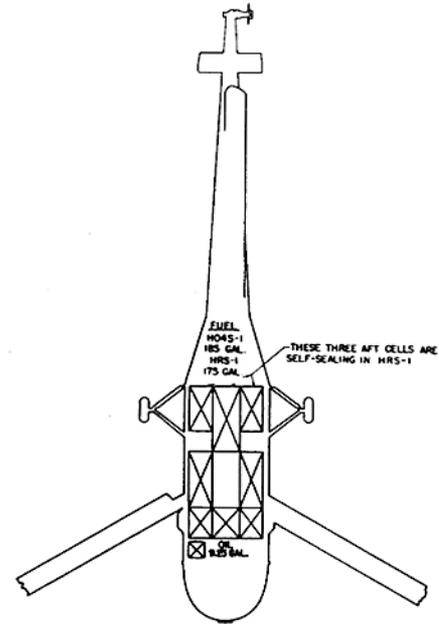
MAIN ROTOR DATA
DISC AREA - 2206 SQ. FT.
BLADE AREA EA - 32.5 SQ. FT.
BLADE SECTION - NACA .0012
GEAR RATIO 11.33 TO 1



DESCRIPTIVE ARRANGEMENT

BUREAU OF AERONAUTICS
NAVY DEPARTMENT

NON SELF-SEALING TANKS



ARMAMENT & TANKS

Standard Aircraft Characteristics NAVAR 13358 (REV. 1-49)

MISSION AND DESCRIPTION

The HRS-1 is being procured as an interim assault transport helicopter. The primary mission of this helicopter is to transport assault troops and equipment from ships or land bases to the objective area and the evacuation of wounded. It may also be used for ship-to-ship, ship-to-shore liaison and general utility.

As an assault transport it is capable of carrying 8 assault troops or 1,800 pounds of cargo. Provisions are made for an external cargo sling capable of carrying up to 2,000 pounds underneath the fuselage.

Design features include engine mounted behind clamshell doors in nose, a removable panel in the firewall between the engine compartment and the cabin, cabin located directly beneath the main rotor, both main and auxiliary rotor blades of all-metal construction, anti-coning blade restrainers for shipboard operation, instrumentation and lighting suitable for night contact flight, non-scuffing quadricycle type landing gear, and self-sealing fuel tanks of 75 gallon capacity. Hydraulically operated servo controls are provided.

Mock-up held -- None
 First flight -- March 1951
 Service use to start -- March 1951

DIMENSIONS

DISC AREA.....2,206 sq. ft.
 BLADE AREA.....98 sq. ft.
 BLADE DIA.....53' - 0"
 LENGTH*.....41' - 9"
 HEIGHT.....14' - 0"
 TREAD.....11' - 0"
 STABILIZER AREA.....6 sq. ft.

*Blades Folded

WEIGHTS

Loadings	Ibs.	L.F.
EMPTY.....	4,642.....	
BASIC.....	4,706.....	
DESIGN.....	6,400.....	2.67
MAX.T.O.....	8,070.....	2.12
MAX.LAND.....	8,070.....	

All weights are actual.

FUEL AND OIL

Gal.	No. Tanks	Location
175	2	Fuselage
FUEL GRADE.....91/98		
FUEL SPEC...MIL-F-5572		

OIL

CAPACITY (Gals.).....	9
GRADE.....	1100/1120
SPEC.....	MIL-O-6082

ELECTRONICS

VHF TRANSMITTER...T-23/ARC-5
 VHF RECEIVER.....R-19
 MHF TRANSMITTER...T-19/ARC-5
 MHF RECEIVER.....T-26/ARC-5
 RANGE RECEIVER.....R-11A

POWER PLANT

NO. & MODEL.....(1) R-1340-57
 MFR.....Pratt and Whitney
 SUPERCH.....1 Stage, 1 Speed
 ROTOR GEAR RATIO.....0.0882
 TAIL ROTOR RATIO.....0.617

RATINGS

Bhp @ Rpm @ Alt.

T. O. 600 2,250 S.L. to
 6,200'

NORMAL 550 2,200 8,000'

SPEC. NO. P&W 1066

ACCOMMODATIONS

PILOT.....1
 CO-PILOT.....1
 COMBAT TROOPS.....10
 LITERS.....3
 DOOR SIZE.....48" x 48"

MAX. CARGO LOAD.....1,800 lbs.



PERFORMANCE SUMMARY				
LOADING CONDITION		(1) TROOP TRANSPORT 1 Pilot 8 Troops	(2) RESCUE 1 Pilot 3 Litter Patients	(3) CARGO TRANSPORT 1 Pilot 2,000# Cargo
TAKE-OFF WEIGHT	lbs.	7,153	6,595	7,181
Fuel	lbs.	402	1,050	210
Pay Load	lbs.	1,800	570	2,000
Engine Power	bhp/rpm.	550/2,200	550/2,200	550/2,200
Disc Loading	lbs./sq.ft.	3.2	3.0	3.3
Power Loading	(A) lbs./bhp.	13.0	12.0	13.1
Maximum Speed-S.L.	(B) kn.	99	101	99
Maximum Speed/Alt.	(B) kn./ft.	101/2,200	106/3,800	101/2,200
Rate of Climb-S.L.	(B) ft./min.	800	1,000	800
Speed for Rate of Climb-S.L.	(B) kn.	45	45	45
Time-to-Climb 5,000 ft.	(B) min.	6.5	5.1	6.5
Time-to-Climb 10,000 ft.	(B) min.	13.9	10.6	13.9
Service Ceiling	(B) ft.	14,500	16,800	14,500
Vertical Rate of Climb-S.L. (B/C)	ft./min.	-/80	210/530	-/50
Abs. Hover Ceil. No Grd. Effect (B/C)	ft.	-/2,800	4,700/7,700	-/2,400
Abs. Hover Ceil. In Grd. Effect (B/C)	ft.	3,900/6,800	9,100/9,400	3,700/6,600
Combat Range/Vav 1,500 ft.	n.mi./kn.	115/75	355/80	55/74
Max. Endur./Vav 1,500 ft.	hr./kn.	1.9/50	5.4/47	0.9/50
Combat Radius/Vav S. L.	n.mi./kn.	55/80	175/80	25/80

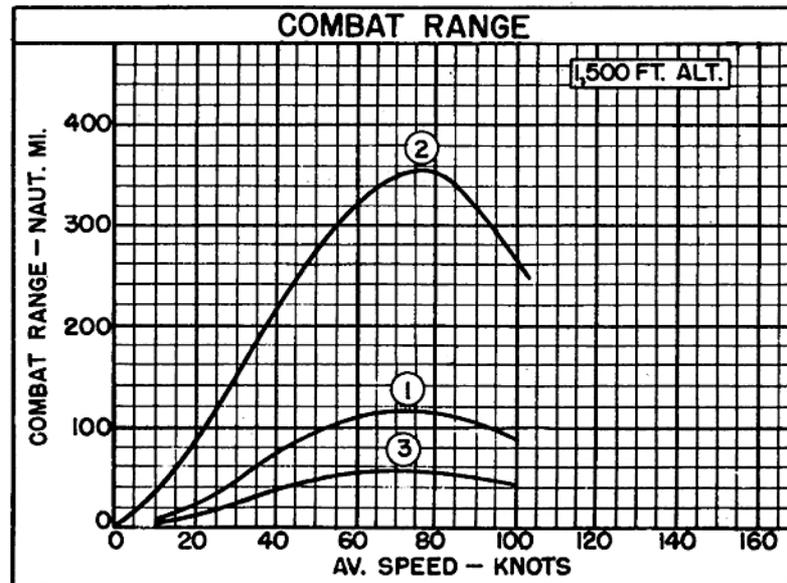
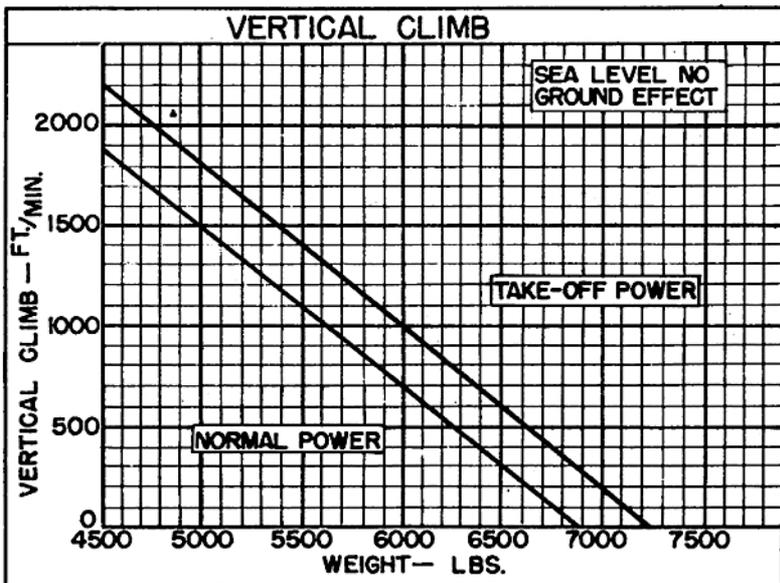
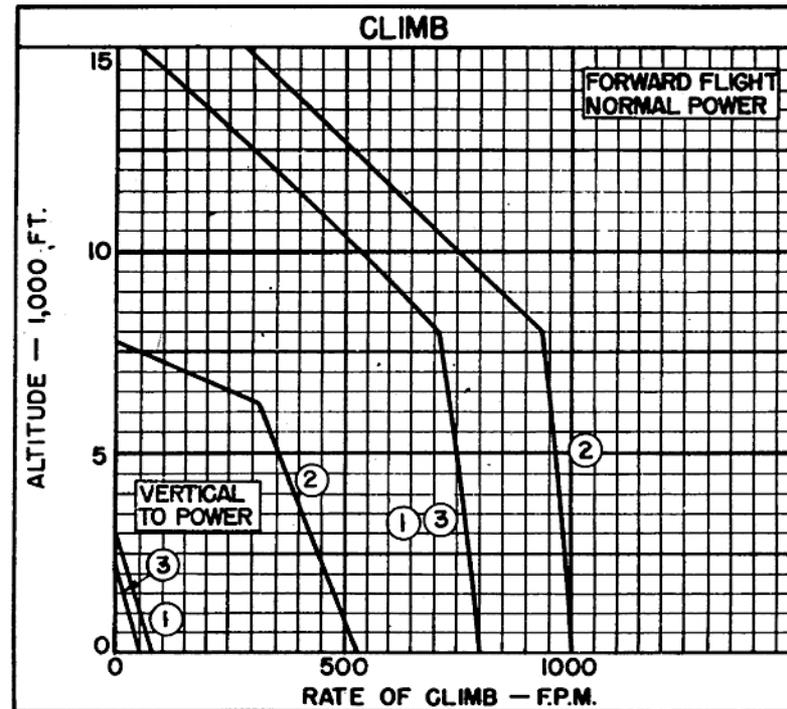
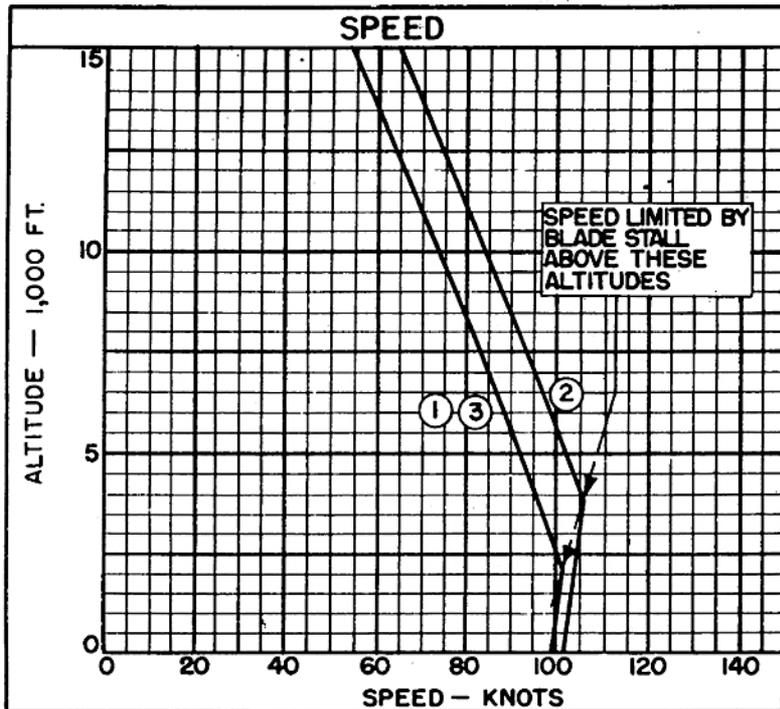
NOTES

- (A) BHP at Maximum Critical Altitude
- (B) Normal BHP
- (C) Take-Off Power

Performance is based on flight test of S-55, YH-19, and HO4S-1 helicopters.

Sea Level data do not include ground effect. Performance in ground effect is based on the assumption that rotor disc is one radius above ground.

Range, endurance, and radius are based on 2,200 RPM and engine specification fuel consumption increased by 5%. Range and endurance are based on fuel allowance for warm-up and take-off (5 min. at NRP) and a 10% fuel reserve.



○ LOADING CONDITION COLUMN NUMBER

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

NOTES

Spotting: 200 ft. length is required to spot 32 helicopters on the 96 ft. wide deck immediately aft of the forward ramp on the CV-9 class carriers.

ASSAULT COMBAT RADIUS PROBLEM

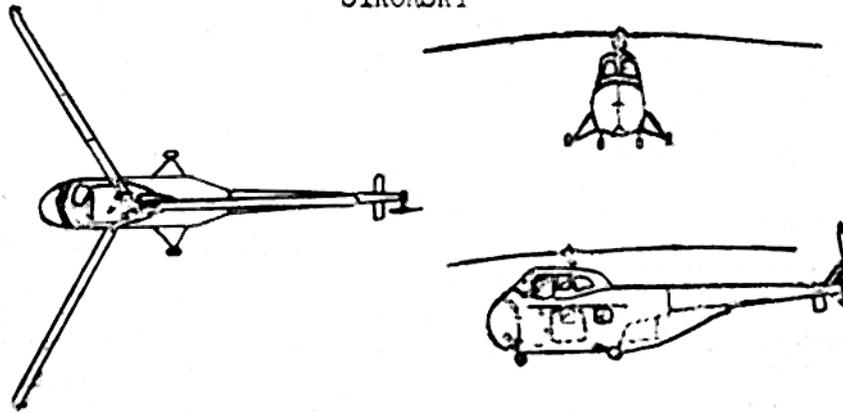
<u>WARM-UP, TAKE-OFF RENDEZVOUS, AND LANDING AND TAKE- OFF AT TARGET</u> 25 min. at 1/2 Normal RPM plus 3 min. at T. O. power	<u>CRUISE-OUT</u> At Sea Level 80 knots	<u>LAND AT TARGET TAKE-OFF</u> at same weight; no fuel used (Fuel for second T. O. is in first T. O. allowance)	<u>CRUISE-BACK</u> at Sea Level 80 knots	<u>RESERVE</u> 10% of initial fuel load
COMBAT RADIUS = CRUISE-OUT = CRUISE-BACK				

CHARACTERISTICS SUMMARY

ASSAULT HELICOPTER

HRS-1

SIKORSKY



DISC AREA 2,206 Sq. Ft.

ROTOR DIA. 53' - 0"

*LENGTH 41' - 9"

*ROTOR BLADES FOLDED

HEIGHT 14' - 0"

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

STATUS	
First Flight.....	March 1951
Service Use.....	May 1951

ENGINES			
1	P&W R-1340-57		
	<u>BHP.</u>	<u>RPM.</u>	<u>ALT.</u>
T. O.	600	2,250	6,200
NORM.	550	2,200	8,000

FEATURES	
Crew.....	2
Clamshell Door	
Folding All-Metal Rotor Blades	
Self-Sealing rear Fuel Tank (75 gal.)	
175 gallons fuel, Maximum capacity	
2,000 lbs. External Cargo, Max. Cap.	

ARMAMENT	
NONE	

<u>ACCOMMODATIONS</u>	
Pilot.....	1
Co-Pilot.....	1
Troops.....	8
Total.....	10

NAVER-1519E (Rev. 6-56)

CHARACTERISTICS SUMMARY

BASIC MISSION

HRS-1

Warm-up, take-off, rendezvous, and landing and take-off at target area:
 25 min. at $\frac{1}{2}$ normal RPM plus 3 min. at take-off power
 Cruise to target at 80 knots at 1,500 ft.
 Return cruise at 80 knots at 1,500 ft.
 Reserve: 10% of initial fuel load
 8 troops carried both to and from target

PERFORMANCE

ENDURANCE	COMBAT RADIUS	SPEED
2.1 hours	62 naut. mi.	89 knots at S. L.
50 knots avg.	80 knots avg.	knots at ft.
1,500 ft. alt.	1,500 ft. alt.	Normal Gross Weight Normal Power
FORWARD FLIGHT CLIMB	SERVICE CEILING	HOVERING CEILING
745 ft./min.	9,400 ft.	Sea Level
Sea Level, N. G. Wt., Normal Power	100 ft /min., N. G. Wt., Normal Power	N. G. Wt., T.O. Power out of ground effect
		3,400 ft. N. G. Wt., T. O. Power in ground effect
LOAD	WEIGHTS	VERTICAL CLIMB
Fuel 67 gal.	Empty 4,642 lbs.	Unable to climb vertically,
Internal 67 gal.	Normal Gross 7,159 lbs.	Sea Level, N. G. Wt., T. O. Power
External gal.	Overload ----- lbs.	
Payload 1,800 lbs.		

NOTES

Performance is based on flight test of HRS-1 helicopter.
 Endurance and radius are based on 2,200 RPM and engine specification fuel consumption increased by 5%.
 This sheet supersedes previously issued sheet of 1 May 1951.
 Reason for reissue: Final Flight test data available.