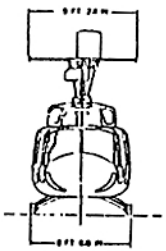
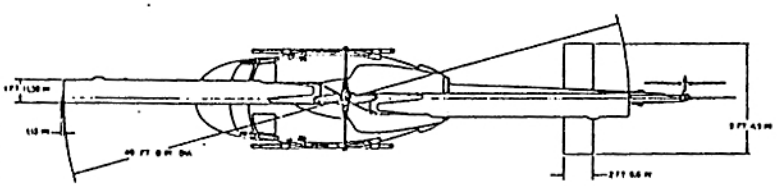
STANDARD AIRCRAFT CHARACTERISTICS

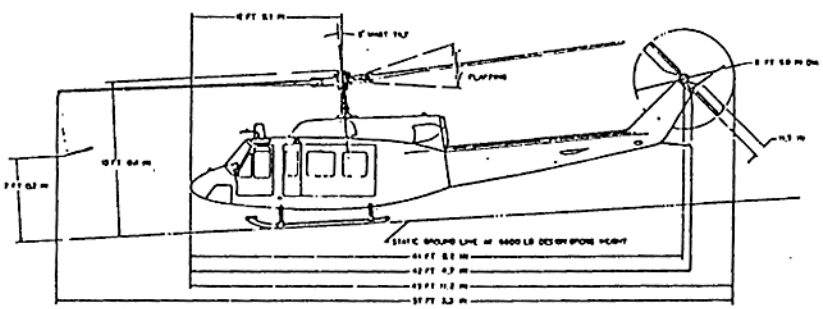
UH-1N

BELL

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT



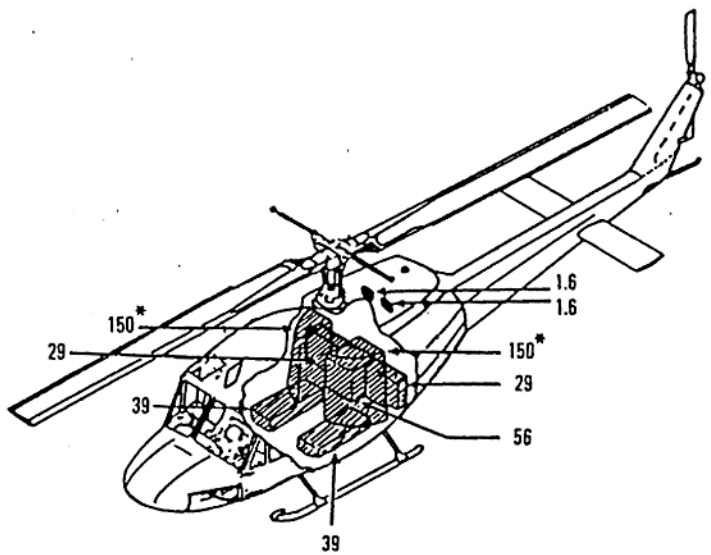




DESCRIPTIVE ARRANGEMENT

NAVAL AIR SYSTEMS COMMAND
NAVY DEPARTMENT

Disc Area	1809.0 sq ft	Airfoil Section (Root to 80%)
Blade Area	93.5 sq ft	10.8% thick;(80% to Tip) Tapers
Engine/Rotor Gear Ratio	20.38:1	to 5.4% thick at tip, modified
		droop snoot.
		Chord (Root to Tip)= 23 3/8 in



FUEL (GAL) *Auxiliary fuel tanks OIL (GAL)
Crashworthy Non-crashworthy

ARMAMENT AND TANKAGE

POWER PLANT

No. & Model ..... (1) T400-CP-400
Manufacturer ..... United Aircraft of Canada (Pratt and Whitney)
Engine Spec. No..... 712 C
Type ..... Twin Section Free Power Turbine with Reduction Gearbox
Gear Reduction Ratios
Main Rotor..... 20.383:1
Tail Rotor..... 3.974:1

RATINGS

	SHP	RPM	ALT
Intermediate	1800	6600	SL
Maximum Continuous	1530	6600	SL
Single Power Section			
Intermediate	900	6600	SL
Maximum Continuous	765	6600	SL
Transmission Limits			
Intermediate	1290 SHP		
Maximum Continuous	1134 SHP		

ELECTRONICS

VHF-FM Radio Set	AN/ARC-114
Altimeter Encoder	AAU-21/A
UHF-AM Radio Set	AN/ARC-116
Communication Sys	C-6533/ARC
Gyromag Compass Set	AN/ASN-43( )
UHF Dir Find Sys	AN/ARA-50
TACAN Navigation Set	AN/ARN-105
Transponder Set	AN/APX-72
HF Radio Set	AN/ARC-102
Auto Direc Finder	AN/ARN-89
Radar Altimeter	AN/APN-171(V)
Transponder Test Set	TS-1843A/APX

PROVISIONS FOR

Loudspeaker System Kit	
Commun Security Set	TSEC/KY-28
VHF-AM Radio Set	AN/ARC-115
Mark XII Computer	KIT-1A/TSEC

MISSION AND DESCRIPTION

The basic missions of the UH-1N are visual observation and target acquisition, reconnaissance and command control. The UH-1N is capable of flight from established airfields, carriers of the LPH and CVS class, advanced based, areas or ships with individual landing platforms or limited landing facilities, and from unprepared fields. It may be handled on carrier elevators without any folding of components.

In addition, the UH-1N may be used for medical evacuation, to transport personnel, special teams or crews, equipment and supplies. These missions may be performed under instrument operations including light icing and day or night flight.

The twin power section installation improves both hot day and altitude performance.

The semi-monocoque fuselage is of all metal construction as are the tail rotor blades and the two main rotor blades. The large sliding door along each side allows rapid entry and exit and simplified straight-through loading from either side or both sides simultaneously. The knee-high cargo floor also contributes to loading ease.

DEVELOPMENT

Contract Placement	September 1969
First Flight (Comm. 212)	April 1969
(USAF UH-1N)	March 1970
(USN UH-1N)	January 1971
First Delivery	March 1971

DIMENSIONS

Rotor Diameter	48.0'
Length	
Rotors Operating	57.3'
Rotors Static	57.3
Fuselage	42.4'
Span (Max Lateral)	9.2'
Height	14.9'
Tread	8.5'
Ground Clearance (Static, Against Stops)	7.0'

WEIGHTS

Loading	Weight	L.F.
Empty	6370	
Basic	6455	
Operating	6877	
Design	6600	3.0
Maximum Takeoff	10,000*	1.9

*10,500 lb. for external load

FUEL AND OIL

FUEL

Gal.	No. of Tanks	Locations
191.9*	5	Fuselage
300.0	2	Cabin

Fuel Grade.....JP-4/JP-5/JP-8
Fuel Spec.....MIL-J-5624

*Crashworthy Fuel System

OIL

Engine (Gal.)..... 3.2
Spec.....MIL-L-23699

ORDNANCE

ACCOMMODATIONS

Crew (Observation)..... 4
Cabin Size Clearance:
Length (Overall) 7.8'
Width (Maximum) 7.7'
Height (Maximum) 4.1'
Usable Volume
Cargo Area 220 Cu-ft
Copilot Area 20 Cu-ft
Provision for Troop Seats..... 8
Provision for Litters..... 6
Cargo Hook Capacity.....5,000 lb
Limit Floor Loading 100 lb/sq.ft. at L.F. 3.5

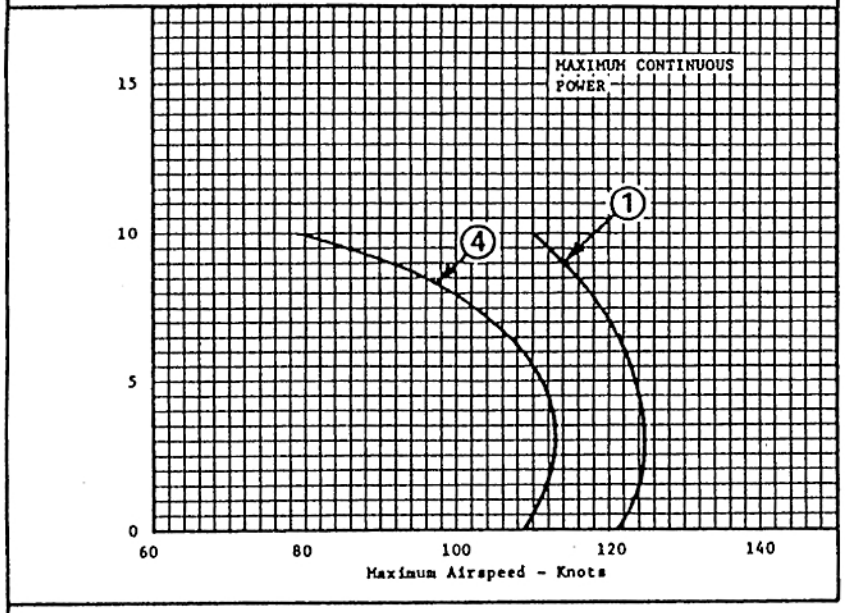
PERFORMANCE SUMMARY

TAKE-OFF LOADING CONDITION			① OBSERVATION	② RESCUE	③ MEDICAL EVACUATION	④ TROOP TRANSPORT	⑤ EXTERNAL TRANSPORT	⑥ FERRY
TAKE-OFF WEIGHT		lb.	8582	8740	8622	9982	10500	10000
Fuel Internal/external (JP-5)		lb./lb.	1305/0	1305/0	1305/0	1305/0	1305/0	3010
Payload OUT/ RETURN		lb.	0/0	0/200	0/1200	1800/0	2318/0	0/0
Disc loading		lb./sq. ft.	4.74	4.83	4.77	5.52	5.80	5.53
Vertical rate of climb at S.L.	(A)	fpm.	1855	1720	1835	800	425	810
Absolute hovering ceiling (OGE)	(A)	ft.	14000	13400	13900	9200	5200	9250
Max. rate of climb at S.L.	(A)	fpm.	2450	2400	2440	1730	1600	1750
Service ceiling	(A)	ft.	21600	21200	21500	18000	16900	18100
Speed at S.L.	(B)	kn.	121	119	121	109	106	109
Max speed/altitude	(B)	kn./ft.	125/3500	123/3500	125/3500	113/3000	111/3000	113/3000
O.E.I. Service ceiling	(A)	ft.	14200	13800	14100	10500	9200	10600
Min. speed (O.E.I.)	(A),(D)	kn.	14	15	14	24	26	24
Max. speed (O.E.I.)	(A), (D), (E)	kn.	110	109	110	102	98	102
Combat radius		n. mi.	81	72	85	82	70	-
Mission time		hrs.	1.48	1.54	1.62	1.45	1.60	-
Average cruising speed		kn.	124	124	120	123	98	-
Cruising altitude		ft.	SL	SL	5000	SL	SL	-
Range		n. mi.	172	171	190	165	131	491
Average cruising speed		kn.	124	124	121	115	80	118
Cruising altitude		ft.	SL	SL	5000	SL	SL	2000 to 10000
Maximum endurance	(C)	hrs.	2.00	2.00	2.25	1.93	1.74	5.87
Endurance speed		kn.	56	56	57	59	50	58
Endurance altitude		ft.	SL	SL	5000	SL	SL	2000 to 10000

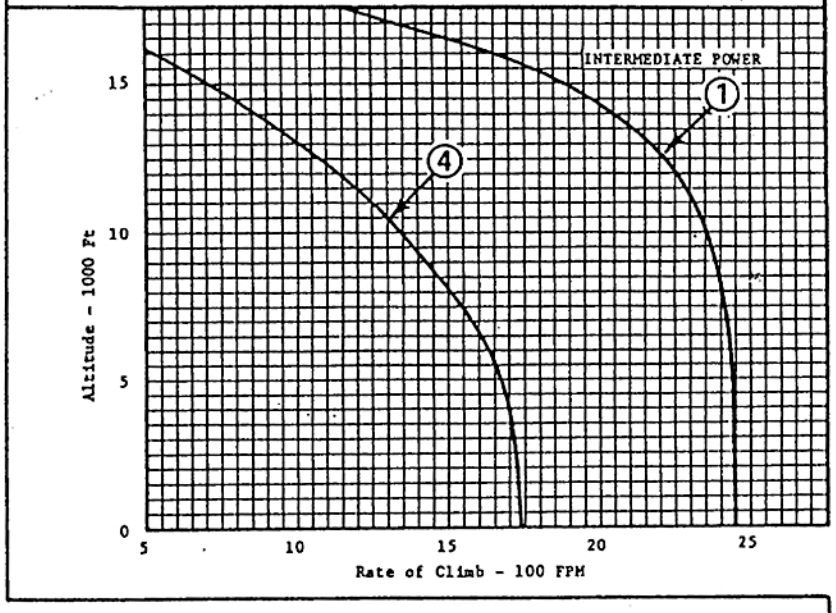
NOTES

(A) At intermediate power or 1290 hp take-off transmission limit.
(B) At V_{NE}.
(C) Endurance time excludes engine start and take-off, climb to altitude, and reserve.
(D) At sea level.
(E) At maximum continuous power.
(F) All performance at standard day conditions.
(G) Engine specification fuel flow increased 5%.
(H) Data basis: UH-1N and Model 212 flight test.

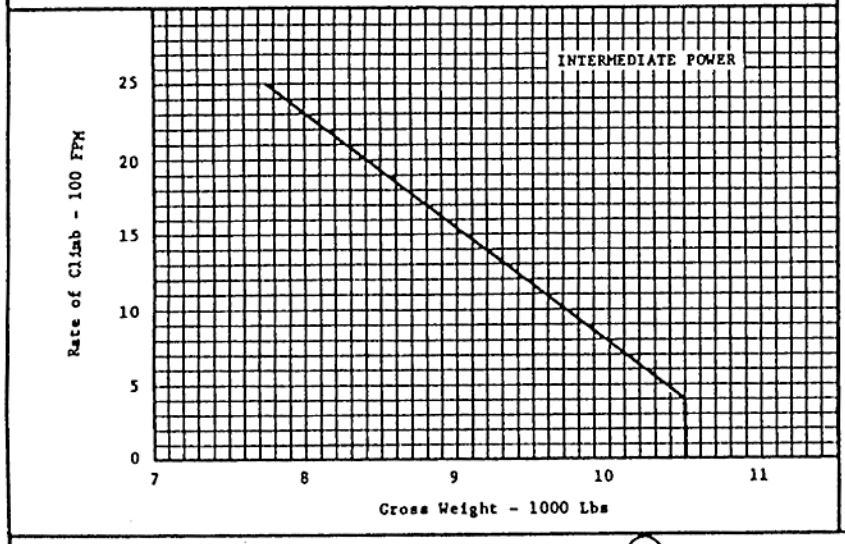
SPEED



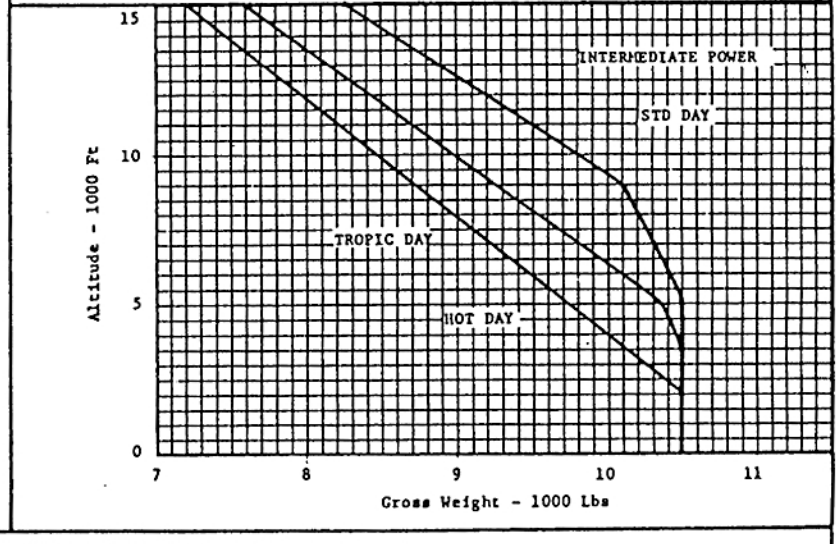
CLIMB



VERTICAL CLIMB



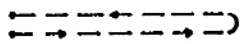
HOVER CEILING — OGE



○ LOADING CONDITION COLUMN NUMBER

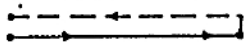
NOTES

① OBSERVATION



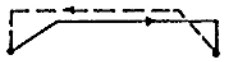
1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: At speed for best range at sea level.
3. Hover: 5 minutes out ground effect at mid-mission.
4. Cruise back: To home base at speed for best range at sea level.
5. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

② RESCUE



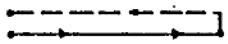
1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Dash out: To target at maximum cruise speed for maximum continuous power at sea level.
3. Search: Over target at speed for best endurance for 15 minutes at sea level.
4. Pick up survivor: Hover out of ground effect 2 minutes at sea level.
5. Cruise back: To base at speed for maximum range at sea level.
6. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

③ MEDICAL EVACUATION



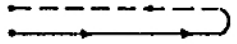
1. Warm-up and take-off: Fuel allowance 5 minutes at maximum continuous power.
2. Climb out: On course at speed for best climb at intermediate power to 5000 feet.
3. Cruise out: To remote base at 5000 feet at maximum continuous power.
4. Descend to sea level: No fuel used, no distance gained.
5. Land, pick up six (6) litter patients: Mid-point fuel allowance of 2 minutes at maximum continuous power at sea level.
6. Climb back: On course at best climb speed at maximum continuous power to 5000 feet.
7. Cruise back: To home base at 5000 feet at maximum continuous power.
8. Descend to sea level: No fuel used, no distance gained.
9. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

④ TROOP TRANSPORT



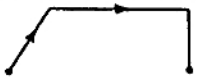
1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: To remote base at maximum continuous power at sea level.
3. Land and unload troops: Mid-point fuel allowance of 2 minutes at maximum continuous power at sea level.
4. Cruise back: To home base at maximum continuous power at sea level.
5. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

⑤ EXTERNAL TRANSPORT



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: To remote base with payload at 80 knots at sea level.
3. Hover: 5 minutes out of ground effect at sea level with payload.
4. Release payload.
5. Cruise back: To home base without payload at speed for best range at sea level.
6. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

⑥ FERRY



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Climb out: On course at best climb speed at intermediate power to optimum cruise altitude not to exceed 10,000 feet (unless limited by cruise ceiling).
3. Cruise out: To remote base at speed for maximum range at optimum cruise altitude not to exceed 10,000 feet (unless limited by cruise ceiling).
4. Descend to sea level: No fuel used, no distance grained.
5. Landing reserve: Fuel for 30 minutes at speed for maximum range at sea level.

⑦ RANGE MISSION

1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Climb to specified cruise altitude at best climb speed at maximum continuous power.
3. Cruise out to remote base at speed for maximum range at specified altitude.
4. Landing reserve: 10% of initial fuel or fuel for 20 minutes at speed for maximum range at sea level, whichever is greater.

⑧ ENDURANCE MISSION

1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Climb to specified cruise altitude at best climb speed at maximum continuous power.
3. Loiter at speed for minimum fuel flow at specified altitude.
4. Landing reserve: 10% of initial fuel or fuel for 20 minutes at speed for maximum range at sea level, whichever is greater.

◯ LOADING CONDITION COLUMN NUMBER

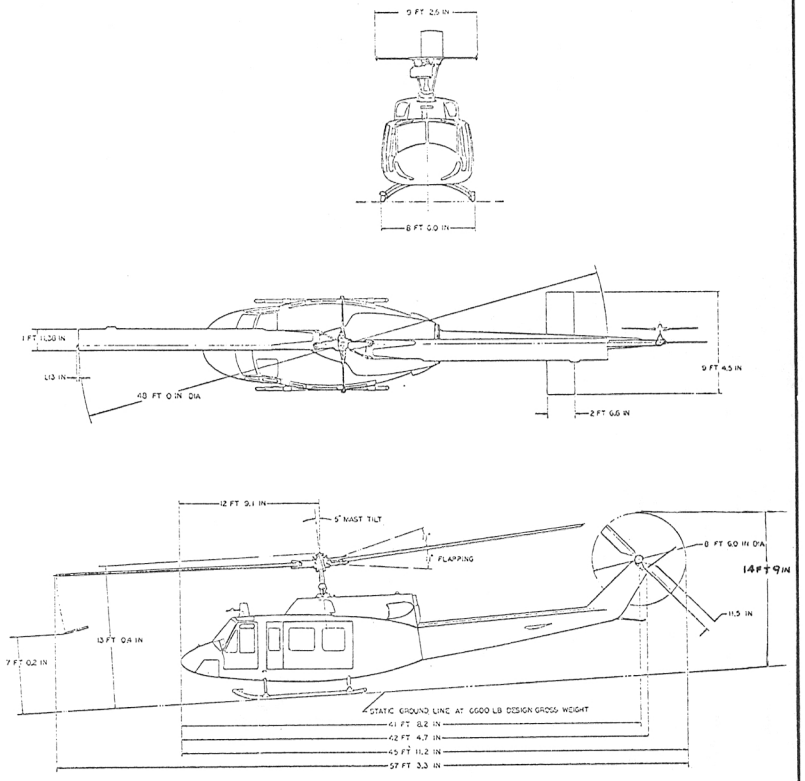
GU.S. GOVERNMENT PRINTING OFFICE: 1982/505-009/8914

STANDARD AIRCRAFT CHARACTERISTICS

UH-1N

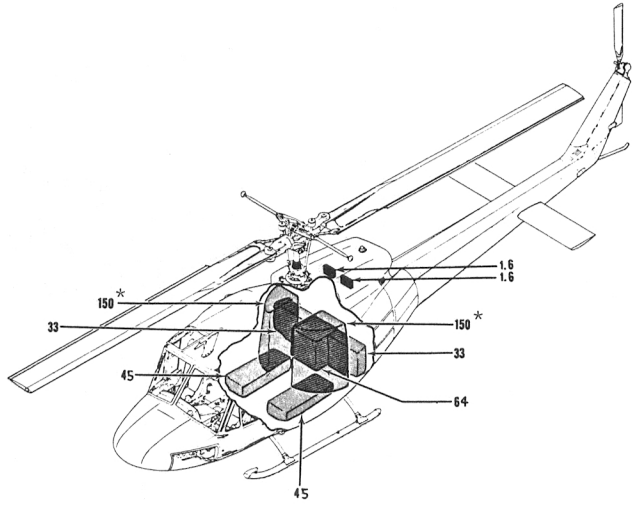
BELL

T400-CP-400 ENGINE



DESCRIPTIVE ARRANGEMENT

Disc Area	1809.0 sq ft	Airfoil Section (Root to 80%) 10.8% thick; (80% to Tip) Tapers to 5.4% thick at tip, modified droop snoot.
Blade Area	93.5 sq ft	Chord (Root to Tip)= 23 3/8 in
Engine/Rotor Gear Ratio	20.38:1	



▨ FUEL (GAL) *Auxiliary fuel tanks ■ OIL (GAL)

ARMAMENT AND TANKAGE

POWER PLANT

No. & Model.....(1) T400-CP-400
Manufacturer.....United Aircraft of Canada (Pratt and Whitney)
Engine Spec. No.....712 C
Type.....Twin Section Free Power Turbine with Reduction Gearbox

Gear Reduction Ratios
Main Rotor.....20.383:1
Tail Rotor.....3.974:1

RATINGS

	SHP	RPM	ALT
Intermediate	1800*	6600	SL
Maximum Continuous	1530**	6600	SL
Single Power Section			
Intermediate	900	6600	SL
Maximum Continuous	765	6600	SL

Transmission Limits
*1290 SHP
**1134 SHP

ELECTRONICS

VHF-FM Radio Set	AN/ARC-114
Altimeter Encoder	AAU-21/A
UHF-AM Radio Set	AN/ARC-116
Communication Sys	C-6533/ARC
Gyromag Compass Set	AN/ASN-43( )
UHF Dir Find Sys	AN/ARA-50
TACAN Navigation Set	AN/ARN-105
Transponder Set	AN/APX-72
HF Radio Set	AN/ARC-102
Auto Direc Finder	AN/ARN-89
Radar Altimeter	AN/APN-171(V)
Transponder Test Set	TS-1843A/APX

PROVISIONS FOR

Loudspeaker System Kit	
Commun Security Set	TSEC/KY-28
VHF-AM Radio Set	AN/ARC-115
Mark XII Computer	KIT-1A/TSEC

MISSION AND DESCRIPTION

The basic missions of the UH-1N are visual observation and target acquisition, reconnaisance and command control. The UH-1N is capable of flight from established airfields, carriers of the LPH and CVS class, advanced bases, areas or ships with individual landing platforms or limited landing facilities, and from unprepared fields. It may be handled on carrier elevators without any folding of components.

In addition, the UH-1N may be used for medical evacuation, to transport personnel, special teams or crews, equipment and supplies. These missions may be performed under instrument operations including light icing and day or night flight.

The twin power section installation improves both hot day and altitude performance.

The semi-monocoque fuselage is of all metal construction as are the tail rotor blades and the two main rotor blades. The large sliding door along each side allows rapid entry and exit and simplified straight-through loading from either side or both sides simultaneously. The knee-high cargo floor also contributes to loading ease.

DEVELOPMENT

Contract Placement	September 1969
First Flight (Comm. 212)	April 1969
(USAF UH-1N)	March 1970
(USN UH-1N)	January 1971
First Delivery	March 1971
Final Delivery	In Production

DIMENSIONS

Rotor Diameter	48.0'
Length	
Rotors Operating	57.3'
Rotors Static	57.3'
Fuselage	42.4'
Span (Max Lateral)	3.2'
Height	14.9'
Tread	8.5'
Ground Clearance (Static, Against Stops)	7.0'

WEIGHTS

Loading	Weight	L.F.
*Empty	6032	
Basic	6277	
Operating	7101	
Design	6600	3.0
Combat	7968	2.5
Overload	10,500	1.9
Maximum Takeoff	10,500	1.9
Maximum Landing	10,500	1.9

*UH-1N (Navy) is 91 lbs. Heavier

FUEL AND OIL

FUEL

Gal.	No. of Tanks	Locations
220.0*	5	Fuselage
300.0	2	Fuselage

Fuel Grade.....JP-4/JP-5
Fuel Spec.....MIL-J-5624
* Estimated with Foam.

OIL

Engine (Gal.).....3.2
Spec.....MIL-L-7808

ORDNANCE

ACCOMMODATIONS

Crew (Observation).....4
Cabin Size Clearance:
Length (Overall) 7.8'
Width (Maximum) 7.7'
Height (Maximum) 4.1'
Usable Volume
Cargo Area 220 Cu-ft
Copilot Area 20 Cu-ft
Provision for Troop Seats.....8
Provision for Litters.....6
Cargo Hook Capacity.....5,000lb.
Limit Floor Loading.....100lb/sq.ft. at L.F. 3.5

PERFORMANCE SUMMARY

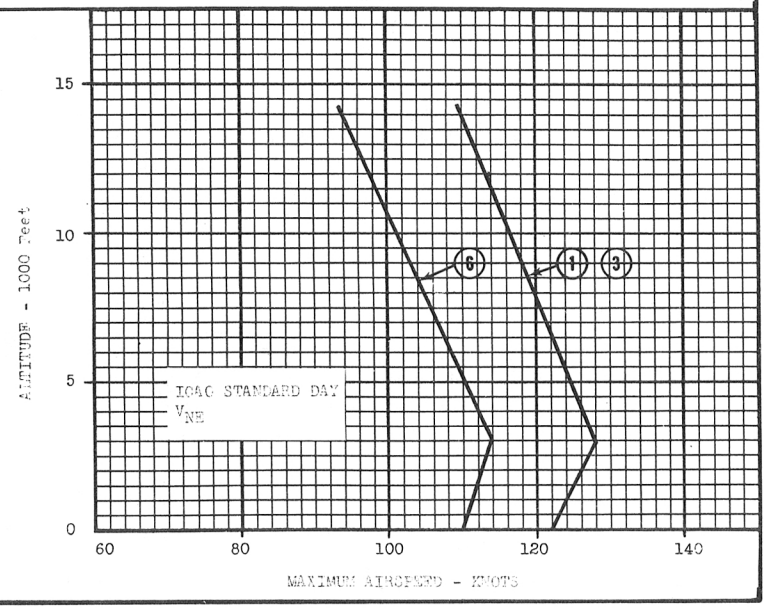
TAKE-OFF LOADING CONDITION	① OBSERVATION	② RESCUE	③ MEDICAL EVACUATION	④ TROOP TRANSPORT	⑤ EXTERNAL TRANSPORT	⑥ FERRY
TAKE-OFF WEIGHT lb.	8546	8704	8586	9946	10,500	10,000
Fuel internal/external (JP-5) lb./lb.	1445/0	1445/0	1445/0	1445/0	799/0	3186/0
Payload Outbound/Inbound lb/ lb.	0/0	200/0	0/ 1200	1800/0	3000/0	0/0
Disc loading lb./sq.ft.	4.72	4.81	4.74	5.50	5.80	5.52
Vertical rate of climb at S.L. (A) fpm.	2010	1880	1970	900	460	880
Absolute hovering ceiling (OGE) ft.	13,000 (B)	12,500 (B)	12900 (B)	7800 (A)	4000 (A)	7400 (A)
Max. rate of climb at S.L. (A) fpm.	2310	2260	2300	1830	1660	1810
Service ceiling (C) ft.	21,600	21100	21400	17800	16500	17700
Speed at S.L. (D) kn.	122	120	121	111	110	110
Max. speed/altitude (D) kn./ft.	128/3000	126/3000	127/3000	115/3000	115/3000	115/3000
O.E.I. Service ceiling (B) ft.	14450	14000	14400	10600	9100	10400
Min. speed (O.E.I.) kn.	11	15	11	29	34	30
Max. Speed (O.E.I.) kn.	120	119	120	111 (D)	110 (D)	110 (D)
Combat radius n.mi.	96	87	105	97	31	----
Mission time (E) hrs.	1.58	1.68	1.77	1.59	.69	----
Average cruising speed kn.	128	125	122	122	105	----
Cruising altitude ft.	SL	SL	5000	SL	SL	----
Range n.mi.	181	--	--	--	46	565
Average cruising speed kn.	128	--	--	--	80	117
Cruising altitude ft.	SL	--	--	--	SL	8000
Maximum endurance hrs.	2.02	--	--	--	--	----
Endurance speed kn.	67	--	--	--	--	----
Endurance altitude ft.	SL	--	--	--	--	----

NOTES

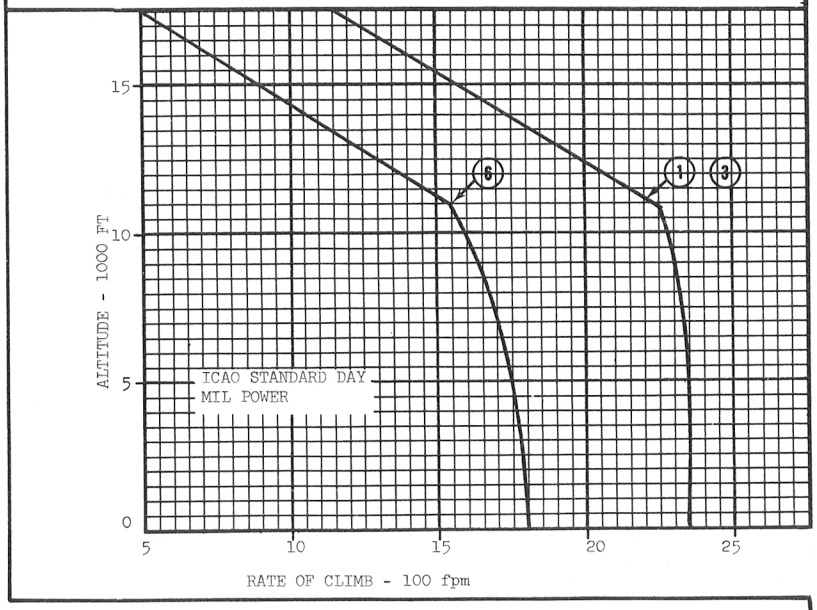
(A) Take-off Transmission Rating of 1290 HP
(B) Military Rated Power
(C) Maximum Continuous Power
(D) V_{NE}
(E) Mission Time - Time in air (excludes time before start of enroute climb and reserve, unless otherwise specified and noted).

Performance Basis:
(1) All performance at standard day conditions.
(2) Aerodynamic flight test data.
(3) Engine specification fuel consumption increased 5%

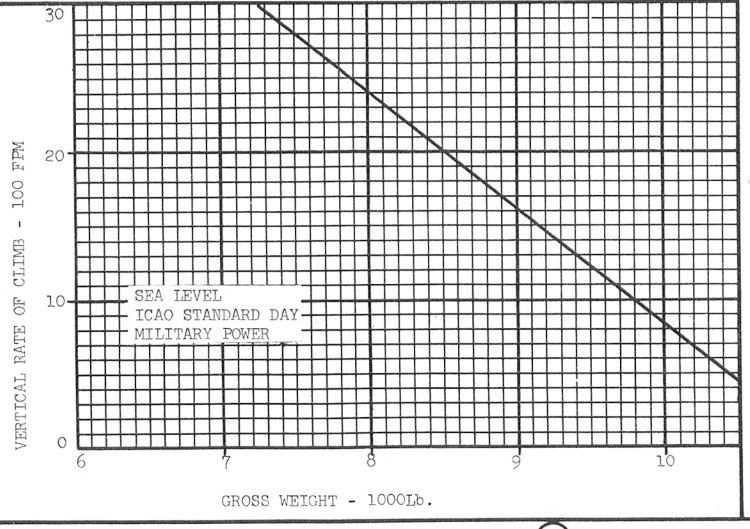
SPEED



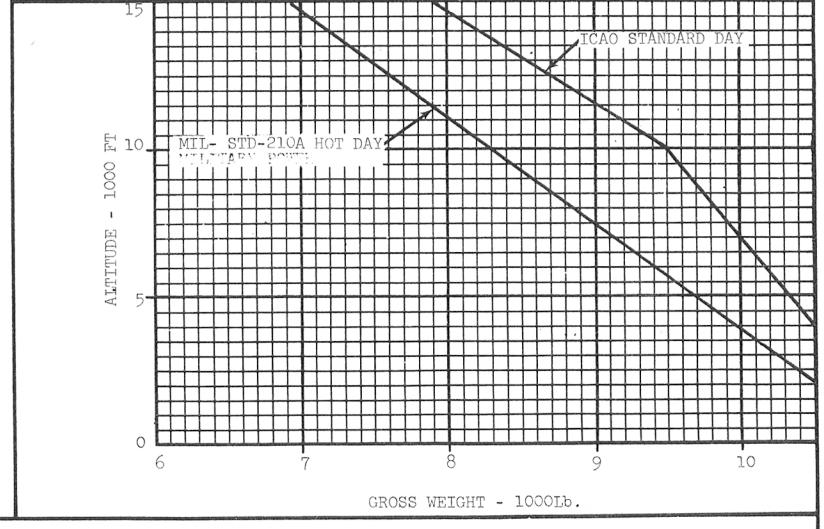
CLIMB



VERTICAL RATE OF CLIMB

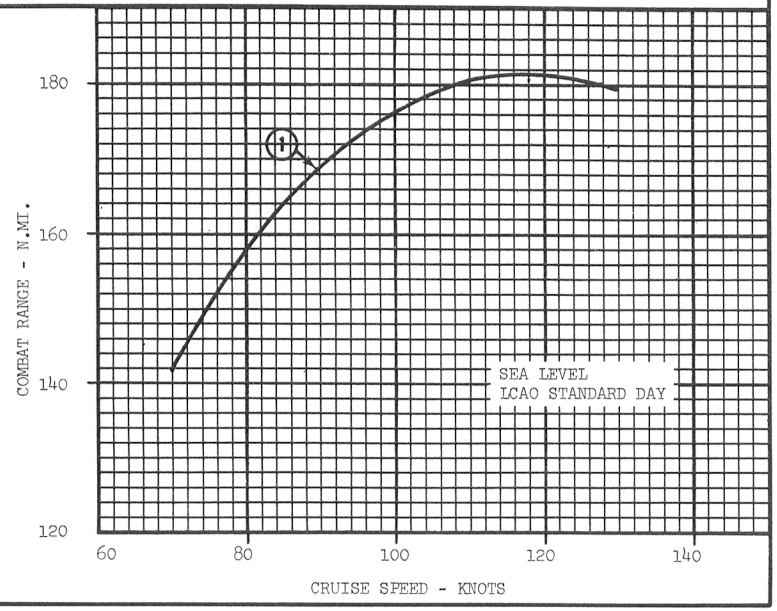


HOVER CEILING—O.G.E.

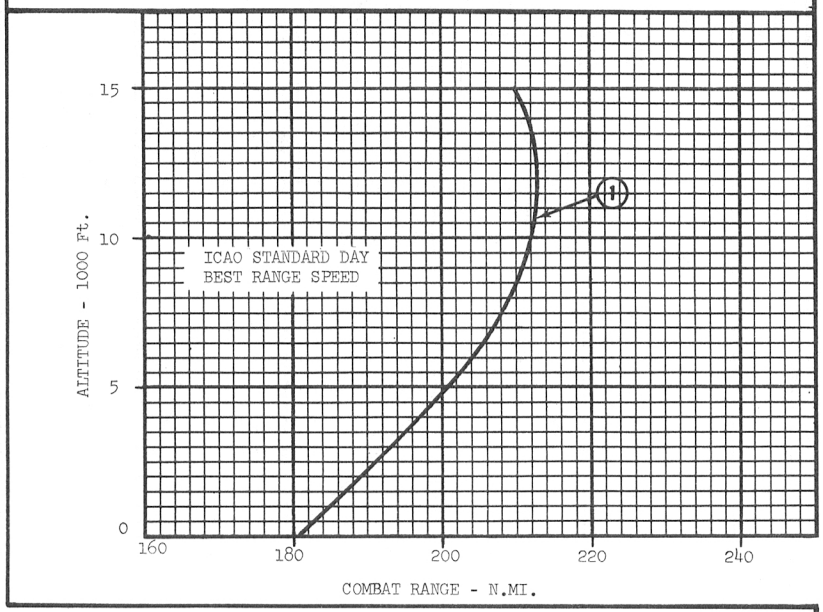


○ LOADING CONDITION COLUMN NUMBER

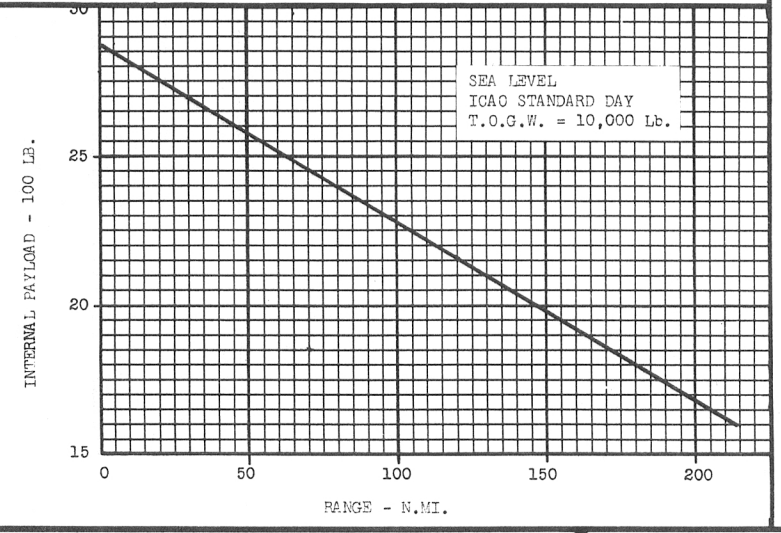
COMBAT RANGE



COMBAT RANGE



PAYLOAD-RANGE

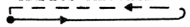


(1) LOADING CONDITION COLUMN NUMBER

NOTES

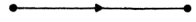
(1) OBSERVATION

RADIUS MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: At speed for best range at sea level.
3. Hover: 5 minutes out of ground effect at mid-mission.
4. Cruise back: To home base at speed for best range at sea level.
5. Landing Reserve: Fuel for 20 minutes at speed for maximum range at speed at sea level.

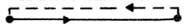
RANGE MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: To remote base speed for maximum range at sea level.
3. Landing Reserve: Fuel for 30 minutes at speed for maximum range at sea level.

(2) RESCUE

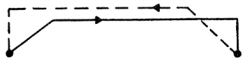
RADIUS MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Dash out: To target at maximum cruise speed for maximum continuous power at sea level.
3. Search: Over target at speed for best endurance for 15 minutes at sea level.
4. Pick up survivor: Hover out of ground effect 2 minutes at sea level.
5. Cruise back: To base at speed for maximum range at sea level.
6. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

(3) MEDICAL EVACUATION

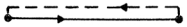
RADIUS MISSION



1. Warm-up and take-off: Fuel allowance 5 minutes at maximum continuous power.
2. Climb out: On course at speed for best climb at intermediate power to 5000 feet.
3. Cruise out: To remote base at 5000 feet at maximum continous power.
4. Descend to sea level: No fuel used, no distance gained.
5. Land pick up six (6) litter patients: Mid-point fuel allowance of 2 minutes at maximum continuous power at sea level.
6. Climb back: On course at best climb speed at maximum continuous power to 5000 feet.
7. Cruise back: To home base at 5000 feet at maximum continuous power.
8. Descend to sea level: No fuel used, no distance gained.
9. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

(4) TROOP TRANSPORT

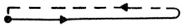
RADIUS MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: To remote base at maximum continuous power at sea level.
3. Land and unload troops: Mid-point fuel allowance of 2 minutes at maximum continuous power at sea level.
4. Cruise back: To home base at maximum continuous power at sea level.
5. Landing reserve: Fuel for 20 minutes at speed for maximum range at sea level.

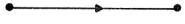
(5) EXTERNAL TRANSPORT

RADIUS MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: To remote base with payload at 80 knots at sea level.
3. Hover: 5 minutes out of ground effect at sea level with payload.
4. Release payload
5. Cruise back: To home base without payload at speed for best range at sea level.
6. Landing Reserve: Fuel for 20 minutes at speed for maximum range at sea level.

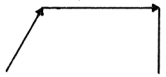
RANGE MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Cruise out: To remote base with payload at 80 knots at sea level.
3. Landing Reserve: Fuel for 30 minutes at speed for maximum range at sea level.

(6) FERRY

RANGE MISSION



1. Warm-up and take-off: Fuel allowance of 5 minutes at maximum continuous power at sea level.
2. Climb out: On course at best climb speed at intermediate power to optimum cruise altitude not to exceed 10,000 feet (unless limited by cruise ceiling).
3. Cruise out: To remote base at speed for maximum range at optimum cruise altitude not to exceed 10,000 feet (unless limited by cruise ceiling).
4. Descend to sea level: No fuel used, no distance gained.
5. Landing reserve: Fuel for 30 minutes at speed for maximum range at sea level.

(○) LOADING CONDITION COLUMN NUMBER

☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-603-149/287