

EMERGENCY PROCEDURE TABS

ENG. FAIL.

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NAVAIR 01-110HCA-1B

*it's
okay*NATOPS
PILOT

POCKET CHECKLIST

UH-1E, UH-1L, TH-1L & HH-1K

HELICOPTERS

ISSUED BY AUTHORITY OF
THE CHIEF OF NAVAL OPERATIONS
AND UNDER THE DIRECTION
OF THE COMMANDER, NAVAL
AIR SYSTEMS COMMAND

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NATOPS PILOT POCKET CHECKLIST

UH-1E, UH-1L, TH-1L & HH-1K

HELICOPTERS

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LATEST CHANGED PAGES SUPERSEDE
THE SAME PAGES OF PREVIOUS DATE

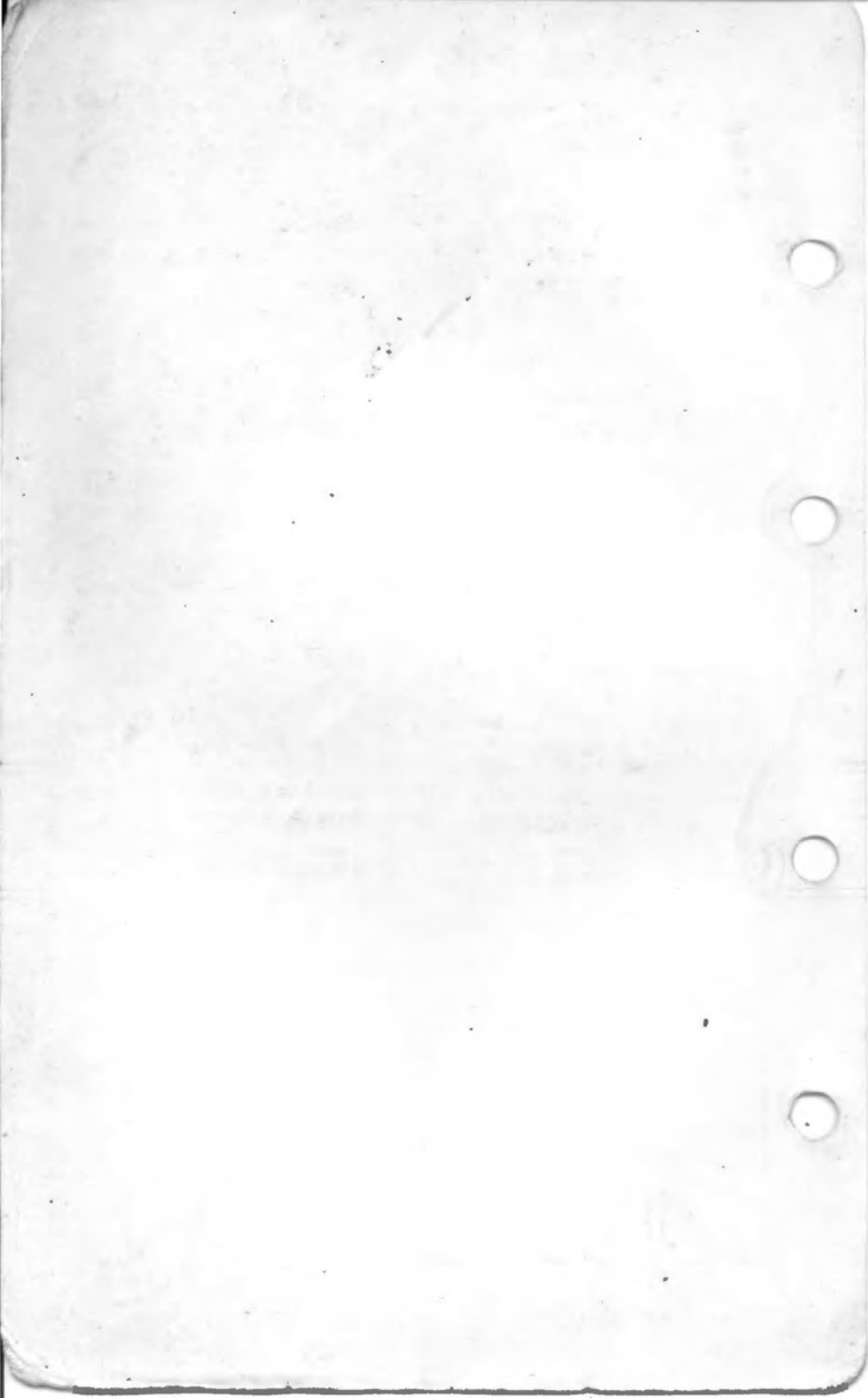
Insert changed pages into basic
publication. Destroy superseded pages

NOTE

THIS SHEET IS FOR STOCKING AND DISTRIBUTION PURPOSES ONLY AND SHOULD BE REMOVED AND DISCARDED BY THE FLIGHT CREWMEMBER UPON RECEIPT

1 SEPTEMBER 1966

Changed 15 August 1969



FOREWORD

CODE SYSTEM

This manual covers variations of the UH-1E with the standard or 204 rotor system, the UH-1E with the 540 rotor system, and the UH-1L, TH-1L and HH-1K. The UH-1L, TH-1L and HH-1K helicopters are nearly identical among themselves and have only minor differences. All three models are, in turn, very similar to the UH-1E with the latest 540 rotor system installed. The major difference is that the UH-1L, TH-1L and HH-1K have the Lycoming T53-L-13 engine installed. For maximum clarity when information applies to a specific model a code system has been used and is as follows:

UH-1E UH-1E only

TH-1L TH-1L only

UH-1L UH-1L only

HH-1K HH-1K only

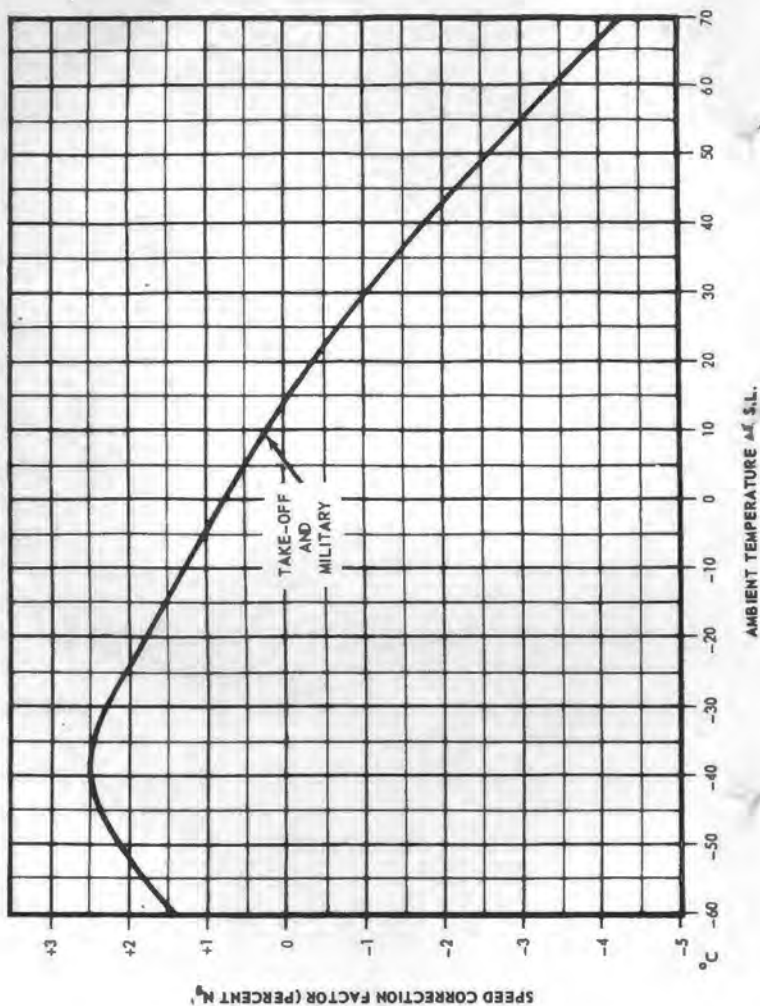
540 All helicopters using **540** rotor system. All items coded UH-1L/TH-1L apply also to the HH-1K unless specifically coded only for the HH-1K. Generally, information coded **540** will be equally applicable to the UH-1L, TH-1L and HH-1K unless specifically stated otherwise.

ENGINE FAILURE**ENGINE FAILURE ON TAKE-OFF OR LOW ALTITUDE HOVER (IGE)**

1. Instantly **FREEZE** collective pitch and allow helicopter to settle.
2. Maintain heading with directional control pedals.
3. Just prior to ground contact - **INCREASE** collective pitch to cushion landing.

AFTER LANDING.

4. Throttle - **CLOSE.**
5. Fuel - **OFF.**
6. Oil valve - **CLOSE.**
7. Battery - **OFF.**



TEMPERATURE BIAS CURVE

**ENGINE FAILURE AT LOW ALTITUDE AND
LOW AIRSPEED**

1. Reduce collective pitch sufficiently to maintain rotor rpm which will provide energy to cushion landing.
2. Maintain heading with directional control pedals.
3. Just prior to ground contact - INCREASE collective pitch a sufficient amount to cushion landing.

AFTER LANDING

4. Throttle - CLOSE.
5. Fuel - OFF.
6. Oil valve - CLOSE.
7. Battery - OFF.

HOVERING OUT OF GROUND EFFECT

MAXIMUM GROSS WEIGHT FOR HOVERING

TAKE-OFF POWER

2°C INLET TEMPERATURE RISE

Navy Model(s): UH-1E

Date as of: March 15, 1967

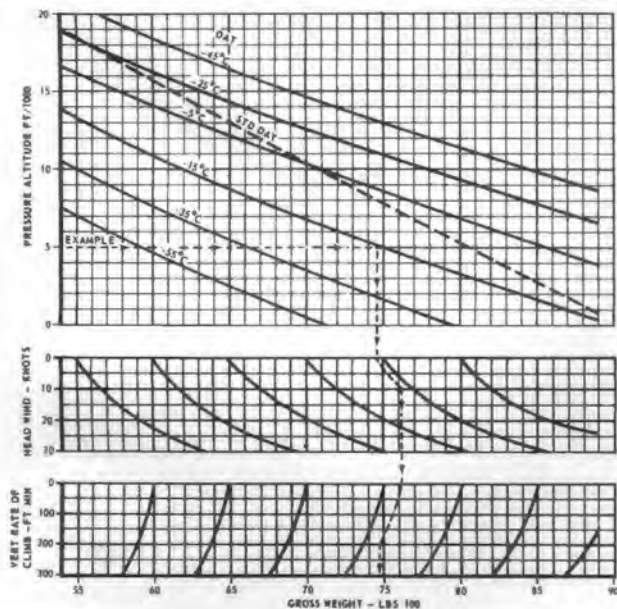
DATA BASIS: FT23-37R-04

Engines: Lycoming T53-L-11B

Engine RPM: 8600

Fuel Grade: JP-4/JP-5

Fuel Density: 6.5 lbm/gal



REMARKS:

HOVERING OUT-OF-GROUND EFFECT

ENGINE FAILURE DURING FLIGHT

1. Collective pitch - Adjust as required to maintain rotor rpm.
2. Reduce forward speed to desired autorotative airspeed for existing conditions.
3. Throttle - CLOSE.
4. Fuel - OFF.
5. Oil Valve - CLOSE.
6. Transmit Distress Signal (altitude permitting).
7. Battery - OFF.
8. Shoulder harness - LOCK.
9. At low altitude, flare to lose excessive speed.
10. Execute an autorotative landing.

ENGINE FAILURE AT HIGH AIRSPEED AND LOW ALTITUDE

1. Collective pitch - Reduce to maintain rotor rpm.
2. Execute an autorotative landing.
3. External stores should be jettisoned as soon as possible after commencing autorotation.

HOVERING OUT OF GROUND EFFECT

MAXIMUM GROSS WEIGHT FOR HOVERING
NORMAL POWER

Model: UH-1E(940)

Data as of: April 1, 1967

DATA BASIS: Army Phase D

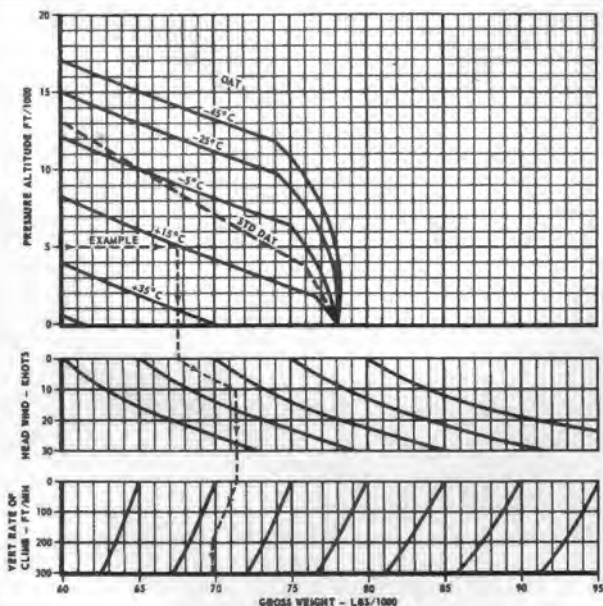
2°C INLET TEMPERATURE RISE

Engines: Lycoming T53-L-11B

Engine RPM: 6000

Fuel Grade: JP-4/JP-5

Fuel Density: 6.8 lbs/gal



REMARKS:

HOVERING OUT-OF-GROUND EFFECT (540)

RESTARTING ENGINE IN FLIGHT

1. Establish an autorotative glide.
2. Throttle - RETARD TO FLIGHT IDLE position.
3. Engine fuel GOVERNOR - EMERGENCY position.
4. Starter-ignition trigger - PULL and HOLD.
5. Gas producer percent tachometer - Observe for rpm increase to determine if engine has started. (Monitor EGT.)
6. Starter-ignition trigger - RELEASE after engine has started.

MAXIMUM GLIDE

A forward glide speed of approximately 80 knots will result in obtaining maximum gliding distance.

HOVERING OUT OF GROUND EFFECT

MAXIMUM GROSS WEIGHT FOR HOVERING

TAKE-OFF POWER

Model: UH-1E(540)

Data as of: April 1, 1967

DATA BASIS: Army Phase D

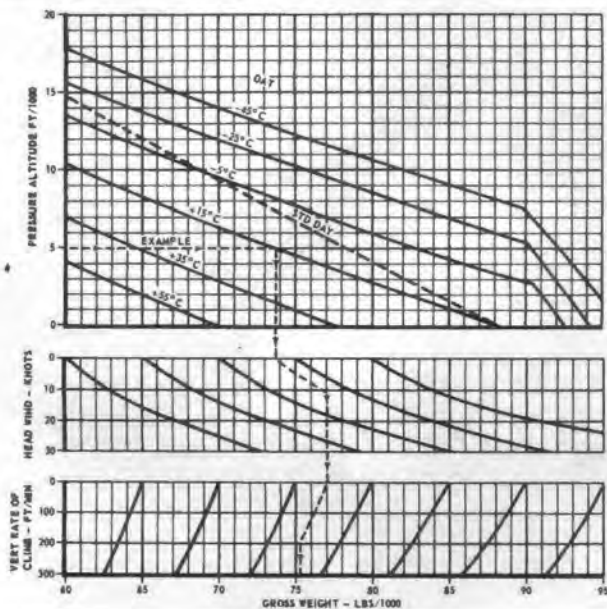
2°C INLET TEMPERATURE RISE

Engines: Lycoming T53-L-11B

Engine RPM: 8600

Fuel Grade: JP-4/JP-5

Fuel Density: 6.6 lbs/gal



REMARKS:

HOVERING OUT-OF-GROUND EFFECT (540)

FUEL BOOST PUMP FAILURE

1. Descend to a pressure altitude of 4600 feet or less.
2. Fuel - Check ON.
3. Fuel valves, oil valve and fuel pump circuit breakers - Check IN.
4. Attempt, if necessary, **RESTARTING ENGINE IN FLIGHT** in accordance with instructions in this section.
5. If trouble is not corrected, follow **ENGINE FAILURE** procedures as outlined in this section.

ENGINE FUEL PUMP FAILURE

Failure of one pump element will illuminate the **MASTER CAUTION LIGHT** and the **ENGINE FUEL PUMP** fault light. To extinguish the master caution light, move the caution panel switch to **RESET**; however, the **ENGINE FUEL PUMP** fault light will remain illuminated. Land as soon as practicable.

RANGE CHART

STANDARD DAY

CLEAN CONFIGURATION - LONG RANGE

NAVY MODEL(S): UN-1E
 DATA AS OF: SEPTEMBER, 1963
 DATA BASE: FLIGHT TESTS (FTC-TOR-63-21, "TUN-18
 CATEGORY B PERFORMANCE TESTS") AND LYCOMING
 ENGINE SPECIFICATION NO. 104.22B (1) & 104.28

ENGINE(S): LYCOMING T53-L-11
 FUEL GRADE: JP-4/JP-5
 FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS					RANGE -- Nautical Air miles											
		ENGINE SPEED	APPROX.		SPEED/KNOTS		1073	1000	900	800	700	600	500	400	300	200	100	
			TORQUE PSIG	FUEL LBS/HR			LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	
POUNDS	FEET	RPM			TAS	CAS												
6000	SL	6600	29.3	556	113	113	218	203	182	160	140	120	102	80	60	40	20	
	2000		28.5	526	112	109	229	213	192	168	147	126	107	84	63	42	21	
	4000		27.7	505	113	106	240	224	202	176	154	132	112	88	66	44	22	
	6000		26.8	480	112	102	252	234	211	184	161	138	117	92	69	46	23	
	8000		25.9	455	112	99	264	246	222	200	175	150	123	100	75	50	25	
	10000		22.9	408	106	91	280	260	234	208	182	156	130	104	78	52	26	
	12000		20.7	374	101	84	290	270	243	216	189	162	135	108	81	54	27	
	14000		19.0	346	95	76	295	275	248	224	196	168	137	112	84	56	28	
	16000		18.2	322	87	68	290	270	243	216	189	162	135	108	81	54	27	
	18000		18.0	314	80	60	274	255	230	208	182	156	128	104	78	52	26	
	20000	6600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6500	SL	6600	30.5	585	113	113	215	200	180	160	140	120	100	80	60	40	20	
	2000		29.5	540	112	109	224	208	186	166	147	126	104	84	63	42	21	
	4000		28.9	520	113	106	233	217	195	176	154	132	108	88	66	44	22	
	6000		27.8	491	112	102	245	228	205	184	161	138	114	92	69	46	23	
	8000		26.4	462	110	97	256	238	214	192	168	144	119	96	73	48	24	
	10000		24.7	428	106	91	268	248	224	200	175	150	124	100	75	50	25	
	12000		22.3	394	101	84	273	254	229	204	178	152	127	102	76	51	25	
	14000		21.5	376	95	76	272	253	228	204	178	152	127	102	76	51	25	
	16000		21.2	363	87	68	258	240	216	192	166	144	120	96	72	48	24	
	18000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	20000	6600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

REMARKS:

1. Engine Specification fuel flow increased 5% per MIL-M-7700A.
2. Range = $\frac{\text{Fuel Available} \times \text{TAS}}{\text{Fuel Flow}}$
3. Cargo mirror installation will reduce range 8%.
4. Test data show that a continuous use of anti-ice bleed will reduce range 4 1/2% up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART

FUEL CONTROL FAILURE

The following are symptoms of fuel control failure:

1. Erratic rpm (Nf).
2. Fluctuating gas producer rpm (Ng).
3. Fluctuating exhaust gas temperature.

OVERSPEEDING Nf GOVERNOR

1. Collective pitch control - Increase.
2. Throttle - Decrease to 6400 rpm to remove authority of Nf governor.
3. Continue flight with conventional throttle control.
4. Land as soon as practicable.

UNDERSPEEDING Nf GOVERNOR

1. Collective pitch control - FULL DOWN, if altitude permits.
2. Throttle - Decrease to flight idle.
3. Engine GOVERNOR - EMERGENCY.
4. Throttle - ADVANCE slowly to obtain engine operating rpm.
5. Land as soon as practicable.

RANGE CHART

STANDARD DAY

CLEAN CONFIGURATION - LONG RANGE

NAVY MODEL(S): UH-1E
 DATA AS OF: SEPTEMBER, 1962
 DATA BASE: FLIGHT TESTS (FTC-TDR-62-21, "YUH-1B
 CATEGORY II PERFORMANCE TESTS") AND LYCOMING
 ENGINE SPECIFICATION NO. 104.22B (1) & 104.28

ENGINE(S): LYCOMING T55-L-11
 FUEL GRADE: JP-4/JP-5
 FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS					RANGE - Nautical Air miles															
		ENGINE SPEED	APPROX.		SPEED/KNOTS		1073	1000	900	800	700	600	500	400	300	200	100					
			TORQUE PERCENT	FUEL FLOW LB/HR																		
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS	FUEL	FUEL	FUEL	FUEL	FUEL	FUEL	FUEL	FUEL	FUEL	FUEL	FUEL					
7000	SL	6600	32.0	580	113	113	210	195	176	156	137	117	98	78	59	39	20					
	2000		30.1	550	112	109	219	204	184	163	143	122	102	82	61	41	20					
	4000		28.6	529	112	105	228	212	191	168	147	126	106	84	63	42	21					
	6000		28.4	502	111	101	237	221	198	176	154	132	110	88	66	44	22					
	8000		25.8	456	105	93	247	230	207	184	161	138	115	92	69	46	23					
	10000		24.2	425	100	86	253	235	212	192	168	144	118	96	72	48	24					
	12000		23.1	405	94	78	250	232	208	184	161	138	116	92	69	46	23					
	14000		23.3	395	87	70	236	220	198	176	154	132	110	88	66	44	22					
	16000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	18000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	20000	6600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
7500	SL	6600	30.5	564	108	108	205	192	173	152	133	114	96	78	57	38	18					
	2000		29.5	540	108	105	215	200	180	160	140	120	100	80	60	40	20					
	4000		28.0	510	106	100	223	207	187	166	145	124	104	83	62	42	21					
	6000		26.5	476	102	92	230	214	193	171	150	128	107	86	64	43	21					
	8000		25.1	441	96	85	233	217	195	176	154	132	108	88	66	44	22					
	10000		24.7	430	92	79	230	214	193	168	147	126	107	84	63	42	21					
	12000		24.7	425	85	71	215	200	180	160	140	120	100	80	60	40	20					
	14000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	16000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	18000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	20000	6600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

REMARKS:

- Engine Specification fuel flow increased 5% per MIL-M-7700A.
- Range = $\frac{\text{Fuel Available} \times \text{TAS}}{\text{Fuel Flow}}$
- Cargo mirror installation will reduce range 8%.
- Test data show that a continuous use of anti-ice bleed will reduce range 4 1/2% up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART

COMPRESSOR STALL

Below 10,000 feet altitude.

- 1. Reduce collective and reduce severity of maneuver - Note EGT. If EGT decreases slowly increase collective to maintain powered flight.**
- 2. If no change or continued rise in EGT, retard throttle and governor switch - EMER.**

Above 10,000 feet altitude.

Proceed as in UNDERSPEEDING N_f GOVERNOR

RANGE CHART STANDARD DAY

CLEAN CONFIGURATION - LONG RANGE

NAVY MODEL(S): UH-1E
DATA AS OF: SEPTEMBER, 1962
DATA BASIS: FLIGHT TESTS (FTC-TDR-62-21, "YUH-1B
CATEGORY B PERFORMANCE TESTS") AND LYCOMING
ENGINE SPECIFICATION NO. 104.22B (1) & 104.28

ENGINE(S): LYCOMING T53-L-11
FUEL GRADE: JP-4/JP-5
FUEL DENSITY: 6.8 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS						RANGE - Nautical Air miles											
		ENGINE SPEED	APPROX. TORQUE PRESS.	FUEL FLOW	SPEED/KNOTS		1073	1000	900	800	700	600	500	400	300	200	100		
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL		
8000	SL	6600	29.0	545	102	102	201	187	168	152	133	114	94	76	57	38	19		
	2000		27.0	515	101	98	211	196	176	156	137	117	98	78	59	39	20		
	4000		27.1	503	100	94	214	199	179	160	140	120	100	80	60	40	20		
	6000		25.4	475	96	88	217	202	182	162	141	121	101	81	61	40	20		
	8000		25.2	460	91	81	213	198	178	158	139	119	99	79	59	40	20		
	10000		26.4	456	85	73	200	186	167	152	133	114	94	76	57	38	19		
	12000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	14000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	16000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	18000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	20000	6600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8500	SL	6500	27.2	528	95	95	193	180	162	144	126	108	90	72	54	36	18		
	2000		27.0	514	95	92	199	185	167	148	129	111	92	74	55	37	18		
	4000		26.9	497	93	86	201	187	168	152	133	114	94	76	57	38	19		
	6000		26.6	479	88	81	198	184	166	144	126	108	92	72	54	36	18		
	8000		26.0	466	84	75	186	173	156	138	119	102	86	68	51	34	17		
	10000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	12000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	14000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	16000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	18000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	20000	6500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

REMARKS

- Engine Specification fuel flow increased 5% per MIL-M-7700A.
- Range = Fuel Available $\times$ TAS
Fuel Flow
- Cargo mirror installation will reduce range 8%.
- Test data show that a continuous use of anti-ice bleed will reduce range 4 1/2% up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART

TAIL ROTOR FAILURE

The physical loss of the tail rotor or component parts will normally cause an immediate violent turn to the right and a nose tuck and rolling moment. This condition can be directly attributed to the instantaneous forward shift of CG and torque induced from the main rotor. As the airspeed decreases the controllability of the aircraft decreases. This factor is due to the minimal sail area afforded by the boom. The possibility of further forward flight is extremely doubtful. The pilot must be prepared for a nearly uncontrollable right-hand turn, and an immediate landing must be made.

WARNING

The loss of the tail rotor or component parts may result in uncontrollable flight.

RANGE CHART STANDARD DAY LONG RANGE CRUISE

NAVY MODEL(S): UN-1E
DATA AS OF: SEPTEMBER 1962
DATA BASIS: FLIGHT TEST (FTC-TOR-82-31, "YHU-1B CAT. II PERFORMANCE TESTS) AND LYCOMING ENGINE SPEC. NO. 104.28

ENGINE: LYCOMING T53-L-11
FUEL GRADE: JP-4/JP-5
FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS						RANGE - Nautical Air miles											
		ENGINE SPEED	TORQUE PRES	APPROXIMATE			SPECIFIC FUEL CON. LB	1573	1500	1400	1300	1200	1100	1000	900	800	700	600	500
				FUEL FLOW	SPEED/KNOTS	TAS													
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS		LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL
6000	SL	6600	29.3	556	113	113	.203	319	304	284	263	243	223						
	2,000		28.5	526	112	109	.213	335	320	298	277	255	234						
	4,000		27.7	505	113	106	.224	352	336	314	291	269	246						
	6,000		26.8	480	112	102	.233	366	349	326	302	279	256						
	8,000		25.9	455	112	99	.245	387	369	344	320	295	271						
	10,000		22.9	408	106	91	.260	409	390	364	338	312	286						
	12,000		20.7	374	101	84	.270	425	405	378	351	324	297						
	14,000		19.0	346	95	76	.274	431	411	383	356	328	301						
	16,000		18.2	322	87	68	.270	425	405	378	351	324	297						
	18,000		18.0	314	80	80	.255	401	382	357	332	306	280						
	20,000	6600	-	-	-	-	-	-	-	-	-	-	-						
6500	SL	6600	30.5	565	113	113	.200	314	300	280	260	240	220						
	2,000		29.5	540	112	109	.206	327	312	291	270	250	229						
	4,000		28.9	520	113	106	.217	341	325	303	282	260	238						
	6,000		27.8	491	112	102	.228	358	342	319	296	273	250						
	8,000		26.4	462	110	97	.238	374	357	333	309	285	262						
	10,000		24.7	428	106	91	.248	390	372	347	322	297	273						
	12,000		22.3	394	101	84	.256	402	384	358	333	307	281						
	14,000		21.5	376	95	78	.253	397	379	354	328	303	276						
	16,000		21.2	363	87	68	.240	377	360	336	312	288	264						
	18,000		-	-	-	-	-	-	-	-	-	-	-						
	20,000	6600	-	-	-	-	-	-	-	-	-	-	-						

REMARKS: 1. Engine Spec. Fuel Flow increased 5% per MIL-M-7700A.

2. Range = $\frac{\text{Fuel Available} \times \text{TAS}}{\text{Fuel Flow}}$

3. Cargo Mirror Installation will reduce range 8%.

4. Test Data shows that a continuous use of anti-ice bleed will reduce range 4.5% up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART - S/N 151860 THRU 151873

TAIL ROTOR FAILURE**FAILURE DURING TAKE-OFF**

1. Throttle - CLOSE.
2. Accomplish - AUTOROTATIVE LANDING.

HOVERING BELOW 10 FEET

1. Throttle - CLOSE.
2. Accomplish - AUTOROTATIVE LANDING.

FAILURE DURING FLIGHT

1. Throttle - CLOSE.
2. Airspeed - REDUCE to 50 to 60 knots.
3. Accomplish - FORWARD SPEED AUTOROTATIVE LANDING.

FAILURE DURING LANDING

1. Throttle - CLOSE.
2. Accomplish - AUTOROTATIVE LANDING.

RANGE CHART **STANDARD DAY** LONG RANGE CRUISE

NAVY MODEL(S): UH-1E
 DATA AS OF: SEPTEMBER 1962
 DATA BASE: FLIGHT TEST (FTC-TOR-62-31, "YUH-1B CAT. II
 PERFORMANCE TESTS) AND LYCOMING ENGINE
 SPEC. NO. 104.28

ENGINE: LYCOMING T53-L-11
 FUEL GRADE: JP-4/JP-5
 FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS						RANGE - Nautical Airmiles											
		ENGINE SPEED	TORQUE PRESS	APPROXIMATE			SPECIFIC RANGE P.H. 1A	1573	1500	1400	1300	1200	1100	1000	900	800	700	600	500
				FUEL FLOW	SPEED/KNOTS	CAS		LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL						
POUNDS	FEET	RPM	PSG	LB/HR	TAS	CAS													
7000	SL	6600	32.0	580	113	113	.195	306	292	273	253	234	214						
	2,000		30.1	550	112	109	.204	320	320	287	265	245	224						
	4,000		29.6	529	112	106	.212	333	318	296	275	254	233						
	6,000		28.4	502	111	101	.221	347	331	309	287	265	243						
	8,000		25.8	456	105	93	.230	361	345	322	299	276	253						
	10,000		24.2	425	100	86	.235	369	352	329	305	282	258						
	12,000		23.3	405	94	78	.232	365	348	325	302	278	255						
	14,000		23.3	395	87	70	.220	346	330	308	286	264	242						
	16,000		-	-	-	-	-	-	-	-	-	-	-						
	18,000		-	-	-	-	-	-	-	-	-	-	-						
	20,000	6600	-	-	-	-	-	-	-	-	-	-	-						
7500	SL	6600	30.5	554	108	108	.192	302	288	268	246	226	211						
	2,000		29.5	540	108	105	.200	314	300	280	260	240	220						
	4,000		28.0	510	108	100	.208	327	312	291	270	250	239						
	6,000		26.5	476	102	93	.214	336	321	299	278	256	235						
	8,000		25.1	441	96	85	.218	343	327	305	283	262	240						
	10,000		24.7	430	92	79	.214	336	321	299	278	256	235						
	12,000		24.7	425	85	71	.200	314	300	280	260	240	220						
	14,000		-	-	-	-	-	-	-	-	-	-	-						
	16,000		-	-	-	-	-	-	-	-	-	-	-						
	18,000		-	-	-	-	-	-	-	-	-	-	-						
	20,000	6600	-	-	-	-	-	-	-	-	-	-	-						

REMARKS: 1. Engine Specification Fuel Flow increased 5% per MIL-L-7700A.

2. Range - Fuel Available $\pm$ TAS

3. Cargo Mirror Installation will reduce range 5%

4. Test Data shows that a continuous use of anti-ice bleed will reduce range 4.5% up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART - S/N 151860 THRU 151873

FIRE**ENGINE FIRE ON START OR SHUT DOWN**

1. Throttle - CLOSE and continue to motor engine.
2. Fuel - OFF.
3. Battery switch - OFF and APU - DISCONNECTED (if applicable) (after fire is extinguished).

ENGINE FIRE IN FLIGHT

1. Immediately enter autorotation and prepare for a Power-Off landing.
2. Battery - OFF.
3. Fuel - OFF.
4. External stores should be jettisoned as soon as possible after commencing autorotation.
5. AC GENERator, INVTR (inverter) and DC GENERator - OFF, except when power is required to operate lights or avionics equipment.
6. Shoulder harness - LOCK.
7. Execute an autorotative descent and landing.

RANGE CHART STANDARD DAY LONG RANGE CRUISE

NAVY MODEL(S): UB-12
DATA AS OF: SEPTEMBER 1962
DATA BASE: FLIGHT TEST (FTC-TOR-63-21, "YHU-1B CAT. II PERFORMANCE TESTS) AND LYCOMING ENGINE SPEC. NO. 104.28

ENGINE: LYCOMING T53-L-11
FUEL GRADE: JP-4/JP-5
FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS						RANGE — Nautical Air miles												
		ENGINE SPEED	TORQUE PRESS	APPROXIMATE			SPECIFIC RANGE P.H. LB.	1573 LBS FUEL	1500 LBS FUEL	1400 LBS FUEL	1300 LBS FUEL	1200 LBS FUEL	1100 LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL			
				FUEL FLOW	SPEED/KNTS															
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS														
8000	SL	6600	29.0	545	102	102	.187	294	280	262	243	224	205							
	2,000	↑	27.0	515	101	98	.196	308	294	274	255	235	205							
	4,000		21.1	503	100	94	.199	313	298	279	259	239	219							
	6,000		26.4	475	98	88	.202	318	303	283	263	242	222							
	8,000		26.2	460	91	81	.198	311	297	277	257	238	218							
	10,000		26.4	456	85	73	.188	292	279	260	242	223	205							
	12,000		-	-	-	-	-	-	-	-	-	-	-							
	14,000		-	-	-	-	-	-	-	-	-	-	-							
	16,000		-	-	-	-	-	-	-	-	-	-	-	-						
	18,000		-	-	-	-	-	-	-	-	-	-	-	-						
	20,000	↓	6600	-	-	-	-	-	-	-	-	-	-	-						
8500	SL	6600	27.2	528	95	95	.180	283	270	252	234	216	198							
	2,000	↑	27.0	514	95	92	.185	291	277	259	240	222	203							
	4,000		26.9	497	93	86	.187	294	280	262	243	224	206							
	6,000		26.8	479	88	80	.184	289	276	257	239	220	202							
	8,000		28.0	486	84	75	.173	272	259	242	225	207	190							
	10,000		-	-	-	-	-	-	-	-	-	-	-							
	12,000		-	-	-	-	-	-	-	-	-	-	-							
	14,000		-	-	-	-	-	-	-	-	-	-	-							
	16,000		-	-	-	-	-	-	-	-	-	-	-	-						
	18,000		-	-	-	-	-	-	-	-	-	-	-	-						
	20,000	↓	6600	-	-	-	-	-	-	-	-	-	-	-						

- REMARKS: 1. Engine Spec. Fuel Flow Increased 5% per MIL-M-7700A.
2. Range = $\frac{\text{Fuel Available} \times \text{TAS}}{\text{Fuel Flow}}$
3. Cargo Mirror Installation will reduce range 8%.
4. Test Data shows that a continuous use of anti-ice bleed will reduce range 4.5% up to 10,000 feet 14% at 15,000 feet.

RANGE CHART - S/N 151860 THRU 151873

FUSELAGE FIRE

1. If smoke enters cabin, open pilot's sliding windows, cabin ventilators and cargo doors.
2. Battery switch - OFF.
3. External stores - Manually jettison.
4. AC GENERator, INVTR (inverter) and DC GENERator - OFF (ON if lighting or electronic equipment is to be used).
5. Accomplish landing and use fire extinguisher if fire is not severe.

ELECTRICAL FIRE

1. Instruments - Check for correct reading.
2. Battery-AC GENERator and DC GENERator - OFF.
3. Circuit breakers - OUT.
4. DC GENERator - ON, if dc generator circuit is shorted, return generator to OFF, and turn battery switch ON.
5. Circuit breakers - IN one at a time, and allow a short period of time to identify defective circuit.

RANGE CHART

540

STANDARD DAY

LONG RANGE - CRUISE SPEED

NAVY MODEL(5): UB-1E (540)

DATA AS OF: FEBRUARY 1964

DATA BASIS: MILITARY POTENTIAL TEST OF THE MODEL 540
"DOOR HINGE ROTOR SYSTEM"

ENGINE: LYCOMING T53-L-11

FUEL GRADE: JP-4/JP-5

FUEL DENSITY: 6.5 LB/GAL

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS					RANGE - Nautical Air miles															
		ENGINE SPEED RPM	TORQUE PRESS PSIG	APPROXIMATE FUEL FLOW LB/HR			1575 LBS FUEL	1400 LBS FUEL	1300 LBS FUEL	1200 LBS FUEL	1000 LBS FUEL	900 LBS FUEL	800 LBS FUEL	700 LBS FUEL	600 LBS FUEL	500 LBS FUEL	400 LBS FUEL					
				SPEED/KNOTS	TAS	CAS																
POUNDS	FEET																					
6000	0	6600	33.4	596	114.8	114.9	302	268	249	230	192	173	153	134	115	96	77					
	2000		31.3	562	113.7	110.4	318	283	263	243	202	182	162	142	121	101	81					
	4000		30.3	537	114.4	107.8	335	298	277	256	213	192	170	149	128	106	85					
	6000		28.5	504	113.7	103.9	355	316	293	271	226	203	181	158	135	113	90					
	8000		27.4	477	113.3	100.4	374	333	309	285	238	214	190	166	143	119	95					
	10000		26.6	455	113.3	97.5	393	349	324	300	250	225	200	175	150	125	100					
	12000		25.7	434	113.0	94.0	406	364	338	313	260	234	208	182	155	130	104					
	14000		24.8	412	111.4	89.8	425	378	351	324	270	243	216	189	162	135	108					
	16000		23.9	393	108.9	85.0	435	387	359	331	276	249	221	193	166	138	110					
	18000		23.0	379	105.3	78.4	437	389	361	334	278	250	222	195	167	139	111					
	20000	8600	22.9	373	103.3	75.3	435	387	359	332	276	248	221	194	166	138	111					
8500	0	6600	34.8	607	114.9	114.9	398	265	246	227	189	170	152	133	114	95	76					
	2000		31.8	569	113.5	110.3	314	279	259	239	200	180	160	140	120	100	80					
	4000		30.8	544	114.1	107.5	330	293	273	252	210	189	168	147	126	106	84					
	6000		29.3	512	113.1	103.4	347	309	287	265	221	199	177	155	132	110	88					
	8000		28.0	485	112.1	99.4	364	324	301	278	231	208	185	162	139	116	93					
	10000		27.5	467	112.0	96.7	379	337	313	289	241	217	193	169	145	120	96					
	12000		26.7	446	110.9	92.3	391	348	328	292	249	224	199	174	149	124	99					
	14000		25.7	424	108.4	87.3	401	357	332	306	255	230	204	179	153	128	102					
	16000		25.4	414	106.3	82.9	404	359	333	308	257	231	205	180	154	128	103					
	18000	8600	25.1	406	103.1	77.8	397	354	328	303	253	227	202	177	152	126	101					

- REMARKS:
1. Engine specification fuel flow increased 5% per MIL-M-7700A.
 2. Range = $\frac{\text{Fuel Available} \times \text{TAS}}{\text{Fuel Flow}}$
 3. Cargo mirror installation will reduce range 5%.
 4. Test data show that a continuous use of anti-ice bleed will reduce range 4 1/2 up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART (540)

SMOKE AND FUME ELIMINATION

1. Bleed air heat selector - OFF.
2. Pilot's and copilot's windows - Slide OPEN.
3. Cabin ventilators - OPEN.
4. Cargo doors - OPEN.

BAIL OUT

1. Warn passengers of intent and radio position.
2. Reduce airspeed to 60 knots.
3. Slide cargo doors open as required.
4. Release jettisonable doors.
5. Bail out when ready through nearest exit.

EMERGENCY DESCENT

Maximum rate of descent may be attained by minimum collective pitch and maximum safe airspeed.

RANGE CHART

540

STANDARD DAY

LONG RANGE - CRUISE SPEED

NAVY MODEL(S): UH-1E (540)

DATA AS OF: FEBRUARY 1964

DATA BASIS: MILITARY POTENTIAL TEST OF MODEL 540
"DOOR EDGE" ROTOR SYSTEM

ENGINE: LYCOMING T53-L-11

FUEL GRADE: JP-4/JP-5

FUEL DENSITY: 6.5 LB/GAL

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS						RANGE — Nautical Airmiles											
		ENGINE SPEED	TORQUE PRESS	FUEL FLOW	APPROXIMATE SPEED/KNOTS		1573	1400	1300	1200	1000	900	800	700	600	500	400		
					PSIG	LB/HR	TAS	CAS	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL		
7000	0	5600	34.6	814	114.8	114.8	294	262	248	224	187	168	150	131	112	93	75		
	2000		32.5	527	113.3	110.0	309	275	255	235	096	077	057	037	008	98	78		
	4000		31.6	553	113.4	106.9	323	287	267	246	205	185	164	144	123	103	82		
	6000		30.3	526	112.8	103.1	337	300	279	257	214	193	171	150	129	107	86		
	8000		29.0	498	111.3	98.7	351	313	290	268	223	201	179	156	134	112	80		
	10000		28.5	480	110.5	94.9	362	323	299	276	230	207	184	161	138	115	92		
	12000		27.6	459	107.8	89.7	369	329	305	282	235	211	188	164	141	117	94		
	14000		27.3	446	105.9	85.3	374	332	309	285	237	214	190	166	142	119	95		
	16000	5600	27.6	442	102.6	80.8	368	328	304	281	234	211	187	164	140	117	94		
7500	0	5600	35.3	823	114.5	114.5	289	257	239	221	184	165	147	129	110	92	74		
	2000		33.7	593	113.7	110.4	301	268	248	230	192	172	153	134	115	96	77		
	4000		32.1	562	112.2	105.7	314	280	260	240	200	180	160	140	120	100	80		
	6000		30.9	535	111.0	101.5	327	291	270	248	208	187	168	145	125	104	83		
	8000		30.0	512	109.3	98.9	336	299	279	256	214	192	171	150	128	107	85		
	10000		29.5	494	107.5	92.4	342	306	283	261	218	196	174	152	131	109	87		
	12000		28.9	476	104.8	87.2	346	308	286	264	220	198	175	154	132	110	88		
	14000	5600	29.1	472	102.5	82.6	342	304	283	261	217	196	174	152	130	109	87		

- REMARKS: 1. Engine specification fuel flow increased 5% per MIL-M-7700A.
 2. Range = $\frac{\text{Fuel Available} \times \text{TAS}}{\text{Fuel Flow}}$
 3. Cargo mirror installation will reduce range 8%.
 4. Test data show that a continuous use of anti-ice bleed will reduce range 4 1/8% up to 10,000 feet and 14% at 15,000 feet.

RANGE CHART (540)

DITCHING**IMMEDIATE DITCHING**

1. Transmit distress signal.
2. Warn cabin occupants.
3. Notify cabin occupants to open cabin doors.
4. Shoulder harness locked.
5. Secure engine prior to entering water.
6. Upon contact with water, continue to increase collective pitch to slow rotor blades.
7. Apply rotor brake.
8. Abandon aircraft.
9. DO NOT inflate life preservers or raft until out of aircraft.

RANGE CHART

540

STANDARD DAY

LONG RANGE - CRUISE SPEED

NAVY MODEL(S): UH-1E (540)

DATA AS OF: FEBRUARY 1964

DATA BASIS: MILITARY POTENTIAL TEST OF THE MODEL 540

"DOOR HINGE" ROTOR SYSTEM

ENGINE: LYCOMING T53-L-11

FUEL GRADE: JP-4/JP-5

FUEL DENSITY: 6.5 LB. GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS							RANGE – Nautical Air miles										
		ENGINE SPEED	TORQUE	APPROXIMATE FUEL FLOW			SPEED KNOTS	1573	1400	1300	1200	1000	900	800	700	600	500	400	
				PSIG	LB/HR	TAS													CAS
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	LB FUEL	
8000	0	6600	35.9	832	113.9	113.9	284	252	234	216	180	162	144	126	108	90	72		
	2000	↑	34.3	802	112.4	109.1	294	261	243	224	187	168	149	131	112	98	75		
	4000	↑	32.7	871	110.5	104.1	305	271	252	232	194	174	155	136	116	97	77		
	6000	↑	31.5	848	108.3	99.0	314	279	259	239	199	180	160	140	120	100	80		
	8000	↑	31.1	827	105.7	94.5	318	283	263	243	202	182	162	142	121	101	81		
	10000	↑	30.9	814	104.9	90.1	321	286	265	245	204	184	163	143	122	102	82		
	12000	6600	30.7	804	101.8	84.7	317	283	263	242	202	182	161	141	121	101	81		
8500	0	6600	36.5	840	112.6	112.6	277	246	229	211	176	158	141	123	106	88	70		
	2000	↑	34.9	810	110.7	107.5	285	254	236	218	181	163	145	127	109	91	73		
	4000	↑	33.3	880	108.0	101.8	293	261	242	224	186	168	149	130	112	93	75		
	6000	↑	32.6	859	105.8	96.7	298	265	246	227	189	170	151	133	114	95	76		
	8000	↑	32.3	849	104.4	92.5	299	268	247	228	190	171	152	133	114	95	76		
	10000	↑	32.4	837	101.4	87.1	297	264	245	226	189	170	151	132	113	94	75		
		6600																	
9000	0	6600	37.1	849	111.0	111.0	269	240	223	205	171	154	137	120	103	86	68		
	2000	↑	35.6	819	108.4	105.2	275	245	228	210	175	158	140	123	105	88	70		
	4000	↑	34.4	896	105.7	96.8	279	248	231	213	177	160	142	124	106	89	71		
	6000	↑	34.1	882	103.8	94.9	281	250	232	214	178	161	143	125	107	89	71		
	8000	↑	34.1	878	101.4	89.9	278	246	230	212	177	159	141	124	106	88	71		
	10000	↑																	
		6600																	
9500	0	6600	37.7	857	108.8	108.8	260	232	215	199	166	149	132	116	99	83	66		
	2000	↑	36.6	836	106.3	103.2	263	234	217	201	167	150	134	117	100	84	67		
	4000	↑	35.5	812	103.1	97.1	265	236	219	202	168	152	135	118	101	84	67		
	6000	↑	35.8	806	101.6	92.9	262	234	217	200	167	150	132	117	100	83	67		
	8000	6600																	

- REMARKS
1. Engine specification fuel flow increased $2\frac{1}{2}\%$ per MIL-M-7700A.
 2. Range = Fuel Available $\div$ TAS Fuel Flow
 3. Cargo mirror installation will reduce range $1\frac{1}{2}\%$.
 4. Test data show that a continuous use of anti-ice bleed will reduce range 4 1, 2 up to 10,000 feet and $14\frac{1}{2}\%$ at 15,000 feet.

RANGE CHART (540)

PLANNED DITCHING

1. Transmit distress signal.
2. Warn cabin occupants.
3. Have crew prepare all survival equipment for jettison and open cabin doors.
4. Shoulder harness locked.
5. Establish a low hover into the wind a safe distance from any personnel in the water.
6. Have non-essential cabin occupants evacuate helicopter while in low hover, then air taxi downwind.
7. Land the aircraft in water, close **THROTTLE** immediately and continue to increase collective pitch to slow rotor.
8. Apply rotor brake.
9. Abandon aircraft.
10. **DO NOT** inflate life preservers until out of aircraft.

MAXIMUM ENDURANCE

STANDARD DAY

CLEAN CONFIGURATION 1

5500 RPM

NAVY MODEL(S): UH-1E

DATA AS OF: SEPTEMBER 1962

DATA BASE: FLIGHT TESTS (FTC-TDR-62-21, "YUH-1B

CATEGORY B PERFORMANCE TESTS") AND LYCOMING

ENGINE SPECIFICATION NO. 104.32B (1) & 104.28

ENGINE(S): LYCOMING TS3-L-11

FUEL GRADE: JP-4/JP-5

FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT POUNDS	PRESS. ALT. FEET	POWER SETTINGS					ENDURANCE - Hours											
		ENGINE SPEED RPM	APPROX.		SPEED/KTS TAS CAS	1073 LBS FUEL	1000 LBS FUEL	900 LBS FUEL	800 LBS FUEL	700 LBS FUEL	600 LBS FUEL	500 LBS FUEL	400 LBS FUEL	300 LBS FUEL	200 LBS FUEL	100 LBS FUEL		
			TORQUE PERCENT	FUEL FLOW GPH														
7000	SL	5500	17.7	425.9	57.5	57.5	2.5	2.3	2.1	1.9	1.6	1.4	1.2	0.9	0.7	0.5	0.2	
	2,000	↑	17.7	409.0	58.4	56.7	2.6	2.4	2.2	2.0	1.7	1.5	1.2	1.0	0.7	0.5	0.2	
	4,000	↑	17.7	393.7	59.3	55.9	2.7	2.5	2.3	2.0	1.8	1.5	1.3	1.0	0.8	0.5	0.3	
	6,000	↑	17.8	378.1	60.2	55.0	2.8	2.6	2.4	2.1	1.9	1.6	1.3	1.1	0.8	0.5	0.3	
	8,000	↑	17.9	364.6	61.0	54.1	2.9	2.7	2.5	2.2	1.9	1.6	1.4	1.1	0.8	0.5	0.3	
	10,000	↑	18.3	357.4	61.9	52.9	3.0	2.8	2.5	2.2	2.0	1.7	1.4	1.1	0.8	0.6	0.3	
	12,000	↑	18.2	354.1	61.7	51.4	3.0	2.8	2.5	2.3	2.0	1.7	1.4	1.1	0.8	0.6	0.5	
	14,000	6500	20.8	361.9	61.4	49.5	3.0	2.8	2.5	2.2	1.9	1.7	1.4	1.1	0.8	0.6	0.3	
7500	SL	5500	19.0	439.0	58.5	58.5	2.4	2.3	2.1	1.8	1.6	1.4	1.1	0.9	0.7	0.5	0.2	
	2,000	↑	19.0	422.6	59.4	57.7	2.5	2.4	2.1	1.9	1.7	1.4	1.2	0.9	0.7	0.5	0.2	
	4,000	↑	19.1	407.6	60.3	56.8	2.6	2.5	2.2	2.0	1.7	1.5	1.2	1.0	0.7	0.5	0.2	
	6,000	↑	19.2	393.9	61.1	55.8	2.7	2.5	2.3	2.0	1.8	1.5	1.3	1.0	0.8	0.5	0.3	
	8,000	↑	19.7	384.1	61.6	54.6	2.8	2.6	2.3	2.1	1.8	1.6	1.3	1.0	0.8	0.5	0.3	
	10,000	↑	20.7	383.9	61.7	53.0	2.8	2.6	2.3	2.1	1.8	1.6	1.3	1.0	0.8	0.5	0.3	
	12,000	6500	22.4	391.8	61.3	51.0	2.7	2.6	2.3	2.0	1.8	1.5	1.3	1.0	0.8	0.5	0.3	
8000	SL	5500	20.3	452.3	59.5	59.5	2.4	2.2	2.0	1.8	1.5	1.3	1.1	0.9	0.7	0.4	0.2	
	2,000	↑	20.3	436.7	60.4	58.6	2.5	2.3	2.1	1.8	1.6	1.4	1.1	0.9	0.7	0.5	0.2	
	4,000	↑	20.5	425.5	61.1	57.6	2.5	2.4	2.1	1.9	1.7	1.4	1.2	0.9	0.7	0.5	0.2	
	6,000	↑	21.1	413.9	61.6	56.3	2.6	2.4	2.2	1.9	1.7	1.4	1.2	1.0	0.7	0.5	0.2	
	8,000	↑	22.1	411.7	61.7	54.7	2.6	2.4	2.2	1.9	1.7	1.5	1.2	1.0	0.7	0.5	0.2	
	10,000	6500	23.9	422.0	61.3	52.7	2.5	2.4	2.1	1.9	1.7	1.4	1.2	0.9	0.7	0.5	0.2	

REMARKS

1. Engine Specification Fuel Flow increased 3/2 per MIL-M-7700A
2. Cargo mirror installation will reduce endurance 3%.
3. Endurance data not shown where power required exceeds normal rated power available.

MAXIMUM ENDURANCE CHART

TRANSMISSION OIL SYSTEM FAILURE**OVER LAND**

If the transmission oil pressure should drop below 30 psi or if the oil temperature should exceed the red line on the temperature gage, while in flight, make an immediate landing since the transmission is not receiving proper lubrication. The flight should not be resumed until the cause has been determined and corrected.

AT SEA

In the event any of the following conditions occur at sea, a ditching may be prevented by heading for the nearest landing site (either ship or shore) at a slow cruising speed and a low altitude.

TRANSMISSION TEMPERATURE EXCEEDS RED LINE

1. Prepare to ditch.
2. Head for nearest landing site (ship or shore).
3. If oil pressure begins to drop, establish a slow cruise speed and a low enough altitude to permit a quick flare followed by ditching at first signs of failure.

MAXIMUM ENDURANCE STANDARD DAY

NAVY MODEL(S): UH-1E
 DATA AS OF: SEPTEMBER 1962
 DATA BASE: FLIGHT TEST (YTC-TOR-82-21, "YHU-1B CAT. II
 PERFORMANCE TESTS) AND LYCOMING ENGINE
 SPEC. NO. 104.28

ENGINE: LYCOMING T55-L-11
 FUEL GRADE: JP-4/JP-5
 FUEL DENSITY: 6.5 LB/GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS					ENDURANCE — Hours									
		ENGINE SPEED	APPROX.		SPEED-KNOTS	1573 LBS FUEL	1500 LBS FUEL	1400 LBS FUEL	1300 LBS FUEL	1200 LBS FUEL	1100 LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL	LBS FUEL
			TORQUE PRESS	FUEL FLOW												
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS										
7000	SL	6800	17.7	425.6	57.5	57.5	3.7	3.5	3.3	3.1	2.8	2.6				
	2,000		17.7	409.0	56.4	56.7	3.9	3.7	3.4	3.2	2.9	2.7				
	4,000		17.7	393.7	56.3	55.9	4.0	3.8	3.6	3.3	3.0	2.8				
	6,000		17.8	378.1	60.2	55.0	4.2	4.0	3.7	3.4	3.2	2.9				
	8,000		17.9	364.6	61.0	54.1	4.3	4.1	3.8	3.6	3.3	3.0				
	10,000		18.3	357.4	61.5	52.9	4.4	4.2	3.9	3.6	3.4	3.1				
	12,000		17.2	354.1	61.7	51.4	4.4	4.2	4.0	3.7	3.4	3.1				
	14,000	6600	20.8	361.9	61.4	49.4	4.6	4.1	3.9	3.6	3.3	3.0				
7500	SL	6800	19.0	439.0	56.5	56.5	3.6	3.4	3.2	3.0	2.7	2.5				
	2,000		19.0	422.6	59.4	57.7	3.7	3.6	3.3	3.1	2.8	2.6				
	4,000		19.1	407.6	60.3	56.8	3.9	3.7	3.4	3.2	3.0	2.7				
	6,000		19.2	393.9	61.1	55.8	4.0	3.8	3.6	3.3	3.0	2.8				
	8,000		19.7	384.1	61.6	54.6	4.1	3.9	3.7	3.4	3.1	2.9				
	10,000		20.7	383.9	61.7	53.0	4.1	3.9	3.7	3.4	3.1	2.9				
	12,000	6600	22.4	391.8	61.3	51.0	4.6	3.8	3.6	3.3	3.1	2.8				

- REMARKS: 1. Engine specification fuel flow increased 5% per MIL-M-7700A.
 2. Cargo mirror installation will reduce endurance 5%.
 3. Endurance data not shown where power required exceeds normal rated power available.

MAXIMUM ENDURANCE CHART - S/N 151860 THRU 151873

**TRANSMISSION OIL PRESSURE ZERO,
TEMPERATURE WITHIN LIMITS**

1. Check XMSN OIL PRESS IND circuit breaker.
2. Prepare to ditch.
3. Head for nearest landing site (ship or shore).

**ELECTRICAL POWER SUPPLY SYSTEM
FAILURE****AC GENERATOR FAILURE**

1. AC GENERator switch - TEST then ON.
2. MASTER CAUTION light - RESET.
3. AC voltmeter - CHECK.
4. Inverter - Check output.

INVERTER FAILURE

1. Inverter power circuit breaker - IN.
2. Inverter switch - ON.
3. AC voltmeter - CHECK.

ENGINE: LYCOMING T53-L-11
FUEL GRADE: JP-4/JP-5
FUEL DENSITY: 6.5 LB/GAL

[illegible]

REMARKS: 1. Engine specification fuel flow increased 5% per MIL-M-7700A.
2. Cargo mirror installation will reduce endurance 3%.
3. Endurance data not shown where power required exceeds normal rated power available.

MAXIMUM ENDURANCE CHART - S/N 151860 THRU 151873

DC SYSTEM FAILURE

1. DC GEN circuit breaker - IN.
2. DC GENerator - RESET.
3. MASTER CAUTION - RESET.
4. Unnecessary equipment - OFF. (If DC power not available - check DC Volt-meter.)

HYDRAULIC POWER SYSTEM FAILURE

1. HYDraulic CONT circuit breaker - Check IN.
2. HYDraulic CONTROL - ON, OFF if power is not restored.
3. Airspeed - Adjust as desired, to obtain most comfortable control movement level.
4. Landing - Accomplish as soon as practicable.

540

1. Either system failure - Land as soon as practicable.
2. If landing is impossible - Establish low altitude slow cruise speed.
3. At first indication of malfunction of remaining boost system - DITCH.

MAXIMUM ENDURANCE

540

STANDARD DAY

8600 RPM

NAVY MODEL(S): US-1E (540)

DATA AS OF: FEBRUARY 1964

DATA BASIS: MILITARY POTENTIAL TEST OF MODEL 540
"DOOR HINGE" ROTOR SYSTEM

ENGINE: LYCOMING T55-L-11

FUEL GRADE: JP-4/JP-8

FUEL DENSITY: 8.5 LB./GAL.

GROSS WEIGHT	PRESS. ALT.	POWER SETTINGS						ENDURANCE - Hours											
		ENGINE SPEED	TORQUE PRESS	APPROXIMATE			1573 LBS FUEL	1400 LBS FUEL	1300 LBS FUEL	1200 LBS FUEL	1000 LBS FUEL	900 LBS FUEL	800 LBS FUEL	700 LBS FUEL	600 LBS FUEL	500 LBS FUEL	400 LBS FUEL		
				FUEL FLOW	SPEED/KNOTS	CAS													
POUNDS	FEET	RPM	PSIG	LB/HR	TAS	CAS													
7000	0	6600	19.6	445.8	57.9	57.9	3.5	3.1	2.9	2.7	2.5	2.0	1.8	1.6	1.3	1.1	0.9		
	2000		19.3	425.7	59.4	57.7	3.7	3.3	3.1	2.8	2.3	2.1	1.9	1.6	1.4	1.2	0.9		
	4000		19.0	407.1	60.7	57.3	3.9	3.4	3.2	2.9	2.5	2.2	2.0	1.7	1.5	1.3	1.0		
	6000		18.8	389.0	61.9	56.8	4.0	3.6	3.3	3.1	2.6	2.3	2.1	1.8	1.5	1.3	1.0		
	8000		18.6	372.0	62.8	55.7	4.2	3.8	3.5	3.2	2.7	2.4	2.2	1.9	1.6	1.3	1.1		
	10000		18.5	358.4	63.6	54.6	4.4	3.9	3.6	3.3	2.8	2.5	2.2	1.9	1.7	1.4	1.1		
	12000		18.5	347.5	64.1	53.4	4.5	4.0	3.7	3.5	2.9	2.6	2.3	2.0	1.7	1.4	1.2		
	14000		18.6	338.4	64.4	51.9	4.6	4.1	3.8	3.5	3.0	2.7	2.4	2.1	1.8	1.5	1.3		
	16000		19.8	339.6	64.5	50.3	4.6	4.1	3.8	3.5	2.9	2.7	2.4	2.1	1.8	1.5	1.3		
	18000	6600	21.8	361.8	64.0	48.3	4.3	3.9	3.6	3.3	2.8	2.5	2.2	1.9	1.7	1.4	1.1		
7500	0	6600	20.6	455.9	59.6	58.6	3.5	3.1	2.9	2.6	2.3	2.0	1.8	1.5	1.3	1.1	0.9		
	2000		20.3	436.7	60.9	59.2	3.6	3.2	3.0	2.7	2.3	2.1	1.8	1.6	1.4	1.1	0.9		
	4000		20.1	418.8	62.0	58.4	3.8	3.3	3.1	2.9	2.4	2.1	1.8	1.7	1.4	1.3	1.0		
	6000		19.9	401.5	62.9	57.5	3.9	3.5	3.2	3.0	2.5	2.3	2.0	1.7	1.5	1.2	1.0		
	8000		19.8	385.4	63.6	56.4	4.1	3.6	3.4	3.1	2.6	2.3	2.1	1.8	1.6	1.3	1.0		
	10000		19.9	375.4	64.1	55.1	4.2	3.7	3.5	3.2	2.7	2.4	2.1	1.9	1.6	1.3	1.1		
	12000		20.1	368.0	64.4	52.8	4.3	3.8	3.6	3.3	2.7	2.5	2.2	1.9	1.6	1.4	1.1		
	14000		21.1	365.5	64.4	51.9	4.3	3.8	3.6	3.3	2.7	2.5	2.2	1.9	1.6	1.4	1.1		
	16000	6600	23.5	388.2	62.9	49.9	4.1	3.6	3.3	3.1	2.6	2.3	2.1	1.8	1.5	1.3	1.0		

REMARKS

1. Engine specification fuel flow increased 3% per HELL-M-7100A.
2. Cargo mirror installation will reduce endurance 3%.
3. Endurance data not shown where power required exceeds normal rated power available.

MAXIMUM ENDURANCE CHART (540)

540 HYDRAULIC POWER SYSTEM (WITH ACCUMULATOR) FAILURE

SYSTEM NO. 1. Anti-torque Inoperative.

SYSTEM NO. 2. Armament Inoperative.

FAILURE OF BOTH SYSTEMS

1. Airspeed - In excess of 50 knots.
2. Accumulator Switch - OFF.
3. Select landing site.
4. In landing approach - Accumulator Switch - ON.

DEPLETION OF COLLECTIVE ACCUMULATOR PRESSURE. Collective accumulator depletion will be evident by the force required for collective movement. As collective stored energy is depleted, the force required to move collective control to the high or low position will increase and will be more evident at low airspeeds. A touchdown airspeed of 20 to 30 knots is recommended if terrain permits.

MAXIMUM ENDURANCE

540

STANDARD DAY

6600 RPM

NAVY MODEL(S): UH-1E (540)

DATA AS OF: FEBRUARY 1964

DATA BASIS: MILITARY POTENTIAL TEST OF MODEL 540
"DOOR HINGE" ROTOR SYSTEM

ENGINE: LYCOMING T53-L-11

FUEL GRADE: JP-4/JP-6

FUEL DENSITY: 6.5 LB/GAL

[illegible]

REMARKS

1. Engine specification fuel flow increased 9% per MIL-M-7700A.
2. Cargo mirror installation will reduce endurance 9%.
3. Endurance data not shown where power required exceeds normal rated power available.

MAXIMUM ENDURANCE CHART (540)

LOST PLANE PROCEDURES

1. CONFESS.
2. COMMUNICATE.
3. CLIMB.
4. CONSERVE.
5. CONFORM.
6. Know any peculiar local area/ship procedures. Detail information may be found in NWP41(A) and the current edition of FLIP enroute supplements.

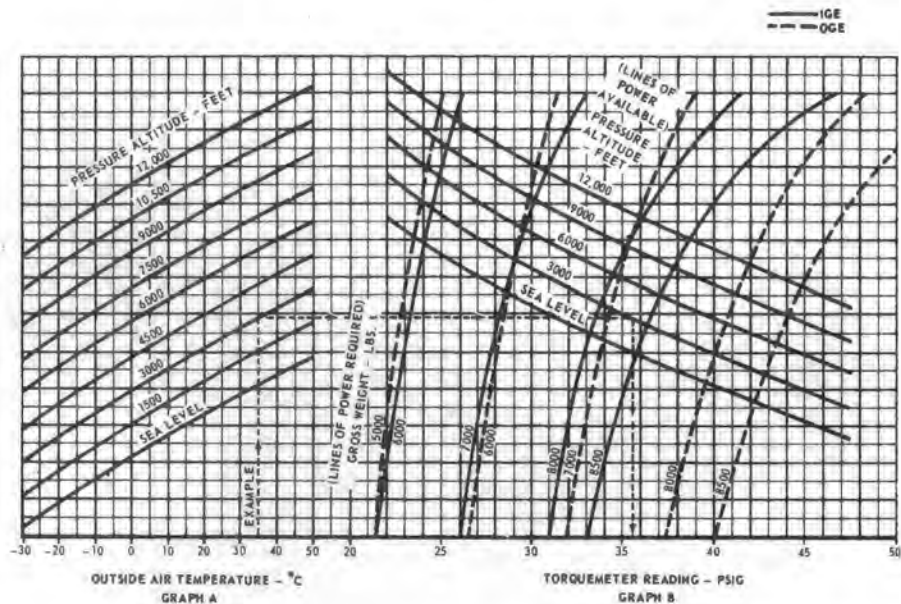
INADVERTENT ENTRY INTO IFR CONDITIONS

When a formation enters IFR condition unexpectedly, helicopters will maintain position in formation; and a 180-degree turn will be effected to return to a clear area. If the wingman lost sight of the leader under such conditions, the following procedures are recommended:

T53-L-11 POWER CHART.

MODEL: UH-1E
 DATA AS OF: MARCH 1967
 DATA BASIS: PT 23 - 37R - 64

ENGINE: T53-L-11
 FUEL GRADE: JP-4
 FUEL DENSITY: 6.5 LB/GAL



**INADVERTENT ENTRY INTO IFR
CONDITIONS (Cont)**

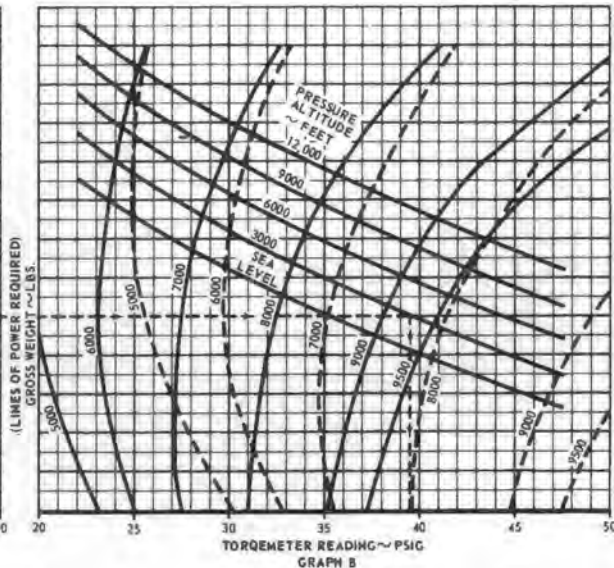
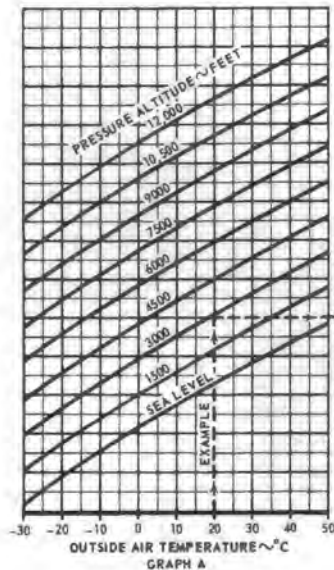
1. Leader maintains heading, altitude, and airspeed and will pass his course, speed and altitude to the flight by radio as soon as possible after separation.
2. Helicopters in number two and number three positions turn away from the leader 20 degrees and hold this heading for 30 seconds; then they resume original heading and climb 200 and 400 feet, respectively.
3. Helicopter in number four position turns away from leader 40 degrees and hold this heading for 30 seconds; then he resumes original heading and climbs 600 feet.
4. All climbs will be made at 500 feet per minute.
5. If tops are known and practical, order a climb to on-top at 500 feet per minute.
6. Contact competent control agency to effect individual instrument let-downs.
7. If situation warrants, declare an emergency.

T53-L-11 (540) POWER CHART

MODEL: UH-1E (540)
 DATA AS OF: MARCH 1967
 DATA BASIS: ARMY PHASE D

ENGINE: T53-L-11
 FUEL GRADE: JP-4
 FUEL DENSITY: 6.5 LB/GAL

— ICE
 - - - OGE



FIRE IN ROCKET POD

Immediately jettison pod by any of the following methods:

1. Electrical Pod - Jettison (Selective).
2. Manual Pod - Jettison (Both).
3. Crew Chief - Manual Jettison (Selective)

RUNAWAY MACHINE GUN

1. Keep aircraft pointed toward target or away from populated areas, friendly lines or friendly aircraft.
2. Twist belt feed chute to stop ammunition feed.



SECTION II

NORMAL PROCEDURES

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PRESTART/START

1. Main rotor tiedown - REMOVED.
2. Controls - CHECK (540 not applicable)
3. Chip detector - Both.
4. Hoist power - OFF 540.
5. Armament panel - ALL OFF.
6. Radios and IFF - OFF
7. ICS and compass - AS REQD.
8. Bleed air/defrost - OFF.
9. Windshield wiper - OFF.
10. Lights - AS DESIRED.
11. Pitot heater - OFF.
12. Circuit breakers - IN.
13. Starter bus - SELECT.
14. DC Voltmeter - CHECK BATT.
15. AC & DC generators - ON.
16. Inverters - OFF.
- *17. Battery - ON.
18. Rotor brake - OFF.
19. Warning lights - TEST.
20. Force trim - ON.
21. Boost - ON (Both for 540)
22. Accumulator switch - OFF
(if applicable)
23. MSTR warning panel - TEST.
24. De-ice - OFF.
25. Oil valve - ON (if applicable).
26. Fuel - ON.
27. Right fuel boost LGT - OUT.
28. Start fuel - ON.

29. Fuel control select - AUTO.
 30. Throttle - FULL RANGE THEN TO FLIGHT IDLE.
 31. Governor rpm - FULL DECR.
 32. Rotor path - ALL CLEAR.
- *APU should be connected when available.

START

1. Starter - ENGAGE. *-40 sec MAX*
 2. Oil PRESS WARN LGTS - CHECK.
 3. Starter - RELEASE @ 40% Ng.
 4. Inverter - ON, CHECK VOLT. (3 phases)
 5. TRANS & ENG oil PRESS - CHECK.
 6. FLGT idle rpm - 56-58% Ng.
 7. APU - DISCONNECT.
- MAX EGT 760°
650° - 5 sec*

POST START

1. Copilot's gyro - CAGE.
2. Radios - ON.
3. Visually check APU - CLEAR.
4. Controls (boost ON/OFF) - CHECK.
540 Isolate each system - CHECK.
5. Hydraulic boost - ON.
6. Force trim - ON.
7. Fuel quantity gauge - CHECK.
8. DC fuel pump PRESS - CHECK.
9. Throttle full open - (EGT)
10. RPM audio warning - ON.
11. Governor - CHECK & SET 6600.
12. AC GEN voltage - CHECK. *107-108 / 115V*
13. DC GEN voltage - CHECK. *28V*

14. AC fuel pump PRESS - CHECK.
15. DE-ICE switch - ON, note EGT rise.
16. DE-ICE switch - OFF, note EGT drop.
17. Compass - SET.

PRETAKE-OFF

1. Anti-collision light - ON.
2. Crew chief - CHECKED.
3. Take-off check list - CHECK.

INSTRUMENT FLIGHT CHECKLIST

AFTER ENGINE/ROTOR START

1. De-icing, heating and defrosting equipment - CHECK operation and utilize as necessary.
2. Pitot heater - ON. Utilize as required.
3. Windshield wiper - CHECK operation.
4. Standby magnetic compass - CHECK for current deviation card.
5. Vertical Velocity indicator - CHECK.
6. Altimeter - SET.
7. Clock - SET.
8. Radios - CHECK operation.

AIR TAXIING

9. MA-1 compass - CHECK alignment and operation.

10. Turn and slip indicator - CHECK alignment and operation.
11. Attitude indicator - CHECK alignment and operation.

BEFORE TAKE-OFF

12. Exterior lights - AS REQUIRED.
13. Attitude indicator - ADJUST horizontal bar.



Bleed air heater and DE-ICE OFF
for all take-offs.

inverted ✓ 107-122 ✓



PRELANDING

1. Landing check list - CHECK.
2. Crew chief - CHECK.

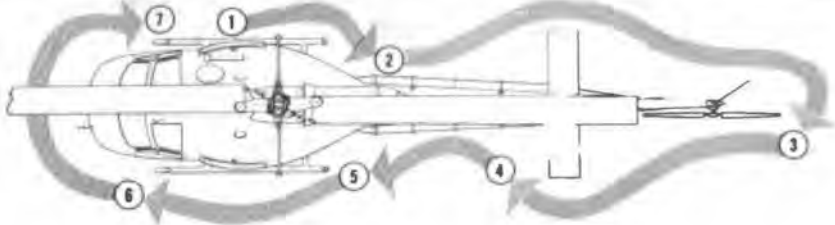
CAUTION

Bleed air heater and DE-ICE OFF
for all landings.

SHUTDOWN

1. Anti-Collision Light - OFF.
2. Governor RPM - FULL DECRS.
3. RPM Audio - OFF.
4. Throttle - FLT IDLE.
5. Engine - FLT IDLE for one minute.
6. Radio and IFF - OFF.
7. Inverter - OFF.
8. Throttle - OFF.
9. Fuel Valves - OFF.
10. Rotor Brake - ON (100 RPM or LESS).
11. Oil Valve - (At 0% Ng) OFF (if applicable)
12. Battery - OFF.
13. Lights - OFF (if applicable)
14. 540 with accumulator - After rotor has stopped, move collective UP and DOWN SLOWLY through a range of 4 inches off the deck until it can no longer be moved

WALK AROUND INSPECTION



1. Right cargo doors (latched or removed).
Hoist installation.
Fuel quantity and cap security.
Transmission oil level.
Engine oil level.
Hydraulic fluid level.
Oil or fuel leaks in transmission and engine compartments.
Wiring, hoses and linkage to engine and transmission.
All access doors and panels secured right side.
Right skid tube and aft cross tube.
Mast, control linkage, blades and dampers from right side.
2. Tail rotor coupling and hanger beneath tailpipe
Tail rotor cable on pulley.
Antennas.
Tailpipe, thermocouples, of Nf turbine blades.
Fuselage and tail boom right side.
Elevator for damage or excessive play (gent.)
42° gearbox oil level and cap, and feel for leaks.
90° gearbox oil level and cap.
3. Tail stinger.
Tail rotor.
Tail rotor drive shaft cover.
4. Elevator for damage or excessive play (gent.)
Fuselage and tail boom left side.
Tail rotor cable on pulley.
5. Mast, control linkage, blades and dampers from left side.
Fuel Quantity and cap security 540
Left skid tube.
Landing light.
Cargo suspension unit.
All access doors and panels secured, left side.
Left cargo and crew doors.
Forward landing gear cross tubes.
6. Search light.
Nose section for security and damage.
Pitot cover removed.
7. Windshield.
Cargo mirror if installed.
Inspect pilot's door for proper operation and latching.

204947-32A

COMPUTATION CARD

- (1) Take-off pressure alt _____ ft. OAT _____ °C Wind _____ knots
 (2) No-wind HOGE max. gross _____ lbs.
 (3) Wind Correction (+) _____ lbs.
 (4) HOGE max gross w/wind _____ lbs.
 (5) Operating Weight (basic wt., crew, misc.) (-) _____ lbs.
 (6) Payload plus fuel _____ lbs.
 (7) Range out _____ NM, Time/Fuel Out _____ min _____ lbs.
 (8) Range in _____ NM, Time/Fuel In _____ min _____ lbs.
 (9) Fuel for start, TO, and reserve _____ lbs.
 (10) Total fuel required _____ lbs.
 (11) Total fuel aboard (guage reading) (-) _____ lbs.
 (12) Payload out _____ lbs.
 (13) Landing pressure alt. _____ ft., Land temp _____ °C Wind _____ knots
 (14) Landing no-wind HOGE max gross _____ lbs.
 (15) Wind correction (landing) (+) _____ lbs.
 (16) Landing HOGE max. gross w/wind _____ lbs.
 (17) Fuel out (+) _____ lbs.
 (18) *Max. gross permitted at TO due to landing conditions _____ lbs.

*If this weight is less than line (4) above, substitute this weight in line (4) and recompute payload.

NOTE: This form may be abbreviated for daily local area operation.

LIFE RAFT PAULIN SIGNALS

NOTE -- Solid lines -- blue. Dotted lines -- yellow.

The pilot of the rescue plane will answer your messages either by dropping a note or by dipping the nose of his plane for the affirmative (yes) and fish-tailing his plane for the negative (no).



Have abandoned plane.
LAND -- Walking this direction.
SEA -- Drifting.



LAND -- Need quinine or atabrine.
SEA -- Need sun cover.



LAND -- Need warm clothing.
SEA -- Need exposure suit or clothing shown.



LAND and SEA Plane is flyable.
Need tools.



SEA -- Need equipment as indicated.
Signals follow.



LAND -- Need gas and oil.
Plane is flyable.



LAND and SEA Need medical attention.



LAND and SEA Need first aid supplies.



LAND and SEA Need food and water.



LAND -- Indicate direction nearest habitation.
SEA -- Indicate direction of rescue craft.



LAND -- Should we wait for rescue plane?
SEA -- Notify rescue agency of my position.



LAND O.K. to land.
and SEA Arrow shows landing direction.



LAND and SEA Do not attempt landing.

BODY SIGNALS



Need medical assistance--Urgent.
Lie prone.



Do not attempt to land here.



Land here (Point in direction of landing.)



All O.K. Do not wait.



Can proceed shortly--
Wait if practicable.



Our receiver is operating.



Use drop message.



Need mechanical help or parts--Long delay.



Pick us up--
plane abandoned



Affirmative (Yes)



Negative (No)

SIGNAL - PAULIN, BODY

GROUND / AIR EMERGENCY CODE

To Be Used to Amplify Distress Signals

NavWeps 00-25-513

INSTRUCTIONS

1. Lay out these symbols by using strips of fabric or parachutes, pieces of wood, stones, or any other available material.

2. Endeavor to provide as big a color contrast as possible between the material used for the symbols and the background against which the symbols are exposed.

3. Symbols should be at least 8 ft. in height or larger, if possible. Care should be taken to lay out symbols exactly as depicted to avoid confusion with other symbols.

4. In addition to using these symbols, every effort is to be made to attract attention by means of radio, flares, smoke, or other available means.

No.	Meaning	Symbol	No.	Meaning	Symbol	No.	Meaning	Symbol
1.	Require doctor. Serious injuries		7.	Require signal lamp with battery and radio		13.	Require fuel and oil	
2.	Require medical supplies		8.	Indicate direction to proceed		14.	All well	
3.	Unable to proceed		9.	Am proceeding in this direction		15.	NO	
4.	Require food and water ...		10.	Will attempt take-off		16.	YES	
5.	Require firearms and ammunition		11.	Aircraft seriously damaged		17.	Not Understood	
6.	Require map and compass		12.	Probably safe to land here		18.	Require Engineer	

AIRCRAFT ACKNOWLEDGMENTS

Message Received and Understood. -- An aircraft will indicate that ground signals have been seen and understood by--

1. Rocking from side to side, or
2. Making green flashes on signalling lamp.

Message NOT Understood. -- An aircraft will indicate that ground signals are not understood by--

1. Making a complete right-hand circuit or
2. Making red flashes on signalling lamp.

A02-1-18-B

BRIEFING GUIDE

GENERAL

1. Helicopter assignment, call sign, and deck spot (if applicable).
2. Flight leader and alternate.
3. Time for manning helicopter, engine and rotor start, air taxi, and/or take-off.
4. Visual signals and formation instructions.

MISSION

1. Primary.
2. Secondary.
3. Operating and landing areas.
4. Control agency.
5. Time on station.

FLIGHT PLANNING AND OPERATIONAL DATA

1. Fuel aboard, fuel required for flight, minimum fuel state and fuel availability at destination.
2. Gross weight limitations.
3. Load computation card completed. (When required.)
4. Approach and retirement routes.
5. Obstacles to flight.
6. Charts and cross-country packet.

COMMUNICATIONS

1. Frequencies and call signs.
2. Radio procedure and discipline.
3. Navigational aids.
4. Identification and recognition procedures.

WEATHER

1. Local area.
2. Local area, enroute and destination forecast.
3. Procedures when inadvertently encountering IFR conditions.
4. Minimum operational weather.

EMERGENCY PROCEDURES

1. Aborts.
2. Downed pilot/aircraft.
3. SAR facilities.
4. Radio failure.
5. Loss of visual contact with flight.
6. Systems failure.
7. Aircraft emergencies.
8. Wave-off patterns.

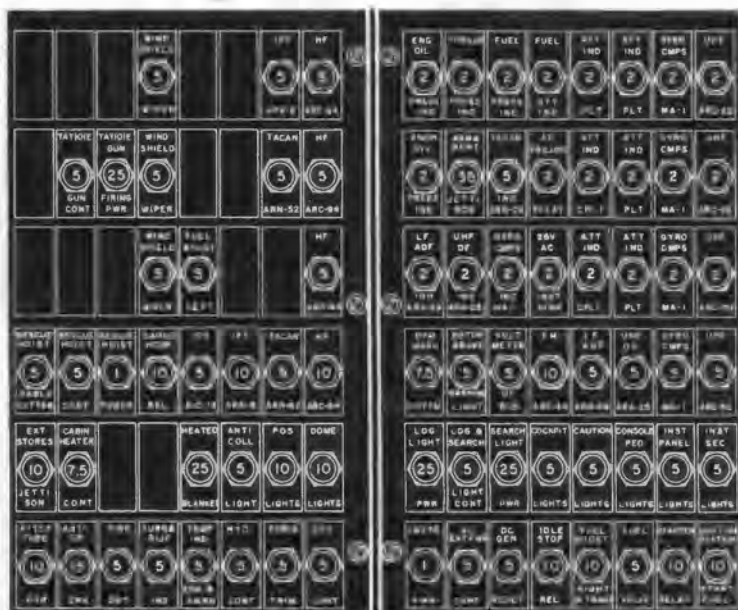
SPECIAL INSTRUCTIONS

1. Intelligence.
2. Fire plans.
3. Aircraft and landing zone lighting for night flight.

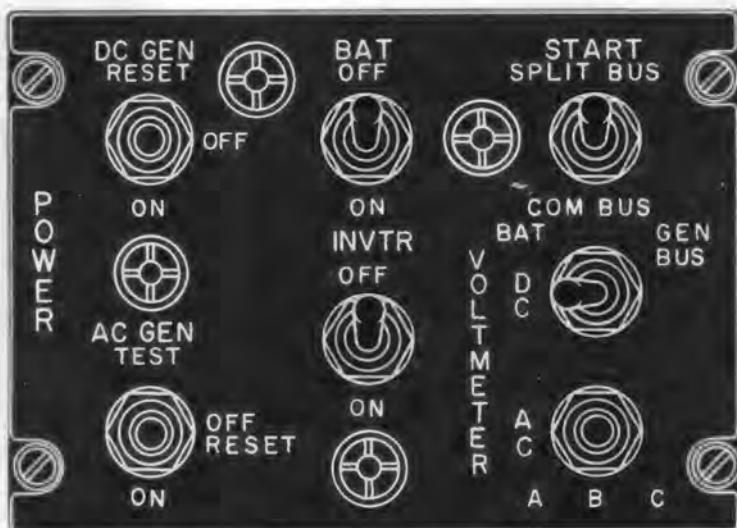
INFORMATION REQUIRED FOR ACCIDENT REPORTING

1. Date and time of mishap.
2. Location of mishap.
3. Location of helicopter relative to an easily found landmark (town, airfield, highway, intersection, etc.).
4. Name and rank of injured or deceased personnel.
5. Name (and rank where applicable) of injured or deceased personnel not passengers of the helicopter.
6. Name, Rank, and Serial number of pilots.
7. Brief description of damage to helicopter.
8. Damage to other property.
9. Material failure -- if involved.
10. Can helicopter be repaired and/or flown out.

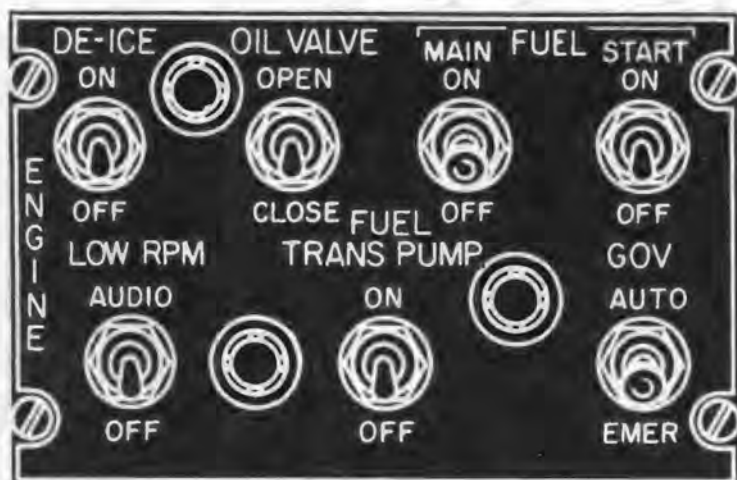
11. What spare parts and service are required.
12. Location of nearest airport or safe landing area.
13. Location and number of telephone where you can be reached.
14. Other information that will aid in expediting salvage or rescue operations.



CIRCUIT BREAKER PANEL



POWER CONTROL PANEL



ENGINE CONTROL PANEL

CONTROL PANELS



CHIP DETECTOR AND HOIST POWER CONTROL PANEL

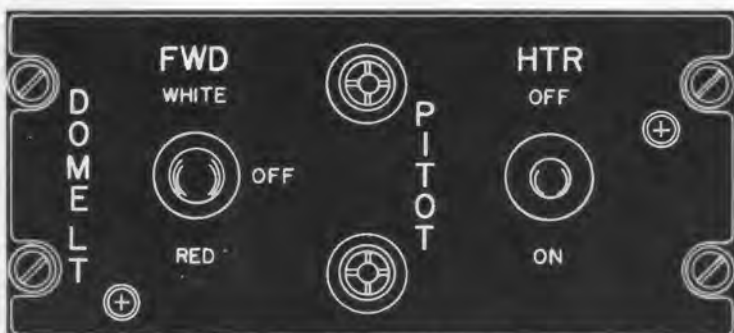


HYDRAULIC, FORCE TRIM, AND HOIST POWER CONTROL PANEL



EXTERNAL LIGHTS CONTROL PANEL

CONTROL PANELS

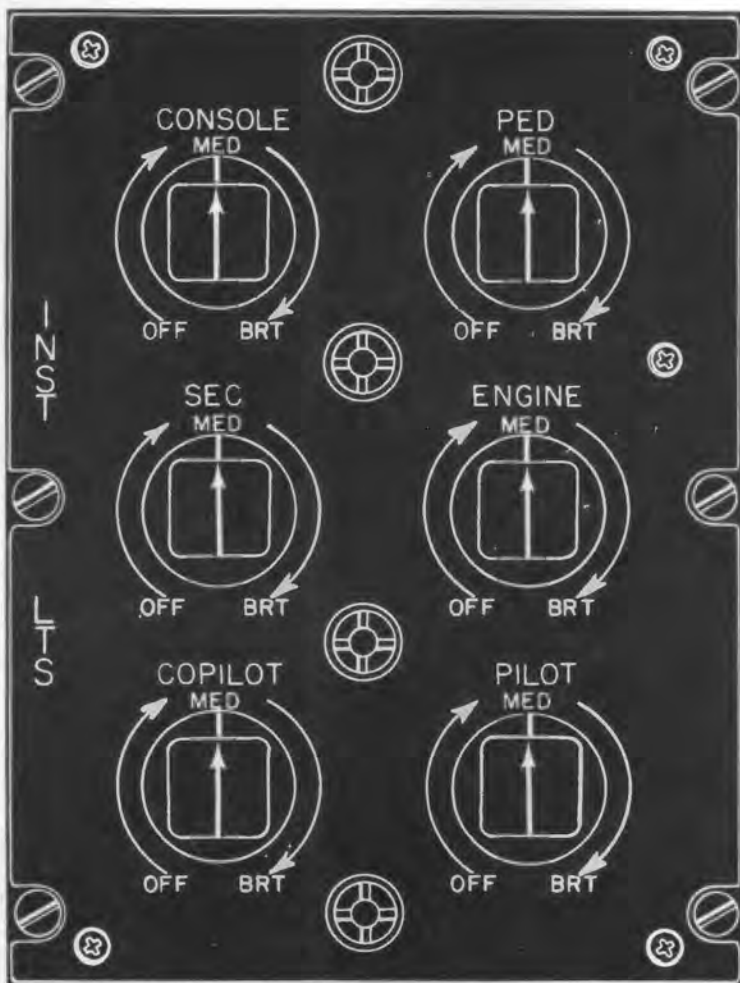


**DOME LIGHT AND PITOT HEATER PANEL
(PILOT)**



MISCELLANEOUS CONTROL PANEL

CONTROL PANELS



INSTRUMENT LIGHTS CONTROL PANEL

SECTION III

WEAPONS

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ARMAMENT KIT WEIGHT BREAKDOWN

2 ea. mounting platform w/bomb racks @ 65 lbs.	>	284 lbs.
4 ea. M60C machine guns, chuting and cans @ 25 lbs.		
2 ea. LAU/3A rocket pods w/18 rockets, wiring, switches, gunsights @ 400 lbs. (Utilization of other type rocket pods will add or detract from this basic weight.)		800 lbs.
2300 rounds 7.62 mm ammunition		150 lbs.

TOTAL WEIGHT 1234 lbs.

PREFLIGHT

In addition to the normal helicopter pre-flight for all armament flights, check the following items:

1. M60C machine guns - Chamber and feed trays clear.
2. Ammunition cans - Secured.
3. Feed chutes - Secure, free from crimps, attached to ammunition cans and guns.
4. Electrical wiring - Secure.
5. Bomb racks - Secure, safety pins inserted.
6. Jettison mechanism - Cocked.
7. Jettison cable - Connected.

8. Armament switches - OFF, armament panel circuit breaker pulled and pod jet-tison switch safety wired.

LOADING (ROCKETS) WITH A/C TURNED UP

WARNING

To preclude any possibility of injury or damage from an inadvertent rocket firing during the loading phase, the helicopter must be pointed into an open area, away from any buildings, equipment or personnel.

1. Radios and IFF - OFF.
2. Armament switches - OFF
3. External lights - Steady bright.
4. Inverter - OFF.
5. Battery - OFF.
6. AC and DC generators - OFF.
7. Rocket pods - Loaded by qualified ordnance crew.

STRAY VOLTAGE CHECK

On signal from ordnance crew leader:

1. AC and DC generators - ON.

2. Battery - ON.
3. Inverter - ON.
4. Radios and IFF - ON.
5. Rotating Beacon - ON.
6. Weapons circuit breaker - IN.
7. Weapon station selector switch - RIGHT/LEFT, ON.
8. Weapons selector switch - PODS.
9. Master armament switch - ON.
10. Stray voltage check - Performed by qualified ordnance crew.

Then on signal from the ordnance crew leader:

1. Armament switches - OFF
2. Rockets - Armed by qualified ordnance crew.

LOADING (M60C MACHINE GUN)

The M60C machine gun will not be loaded on the flight line. It can be loaded, on command from the pilot, by the crew chief in flight, when the helicopter nears the target area.

WARNING

The crew chief will wear a gunner's belt anytime he is working in the vicinity of an open cargo door.

FIRING

At the flight leader's discretion:

1. Weapon station selector switch - As desired LEFT/RIGHT, ON.
2. Weapon selector switch - PODS or GUNS.
3. Master armament switch - ON.

WARNING

The Master Armament Switch should be turned OFF immediately after each firing pass and turned on only after the helicopter is in its firing run, pointed toward the target area.

WARNING

When firing rockets or guns, the pilot and copilot windows will be closed and protective visors should be kept down to prevent any injury or eye damage from debris, smoke or partially burned propellant carried through the window and into the aft cabin.

WARNING

If hung rockets remain, avoid flying over populated areas or jettison the rocket pack prior to flying over populated area.

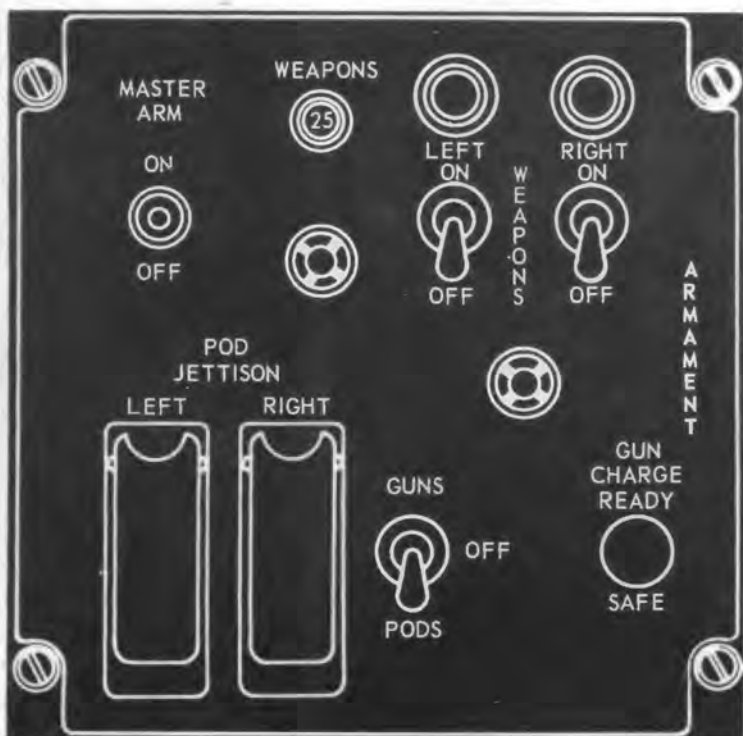
WARNING

In the event of a runaway gun, keep the aircraft pointed toward the target area or away from populated areas, friendly lines or other aircraft, until the crew chief can stop the runaway or the gun fires out.

DE-ARMING

Guns will be unloaded in flight by the crew chief and determined safe by ensuring that ammunition is clear of feed trays and the bolt is home. For rocket de-arming, land and ensure the helicopter is pointed toward a clear area away from buildings, equipment or personnel.

1. Armament switches - OFF armament panel circuit breaker - PULLED.
2. Rocket pods - De-armed by qualified ordnance crew.



ARMAMENT PANEL

TAT-101E WEAPON SYSTEM CHECKLIST**TYPICAL WEIGHT CONFIGURATION
(TAT-101E)**

Aircraft	5219 lbs
Oil	28
Pilots (2)	400
Crew (3)	600
Pilot seat armor	200
Miscellaneous equipment	100
Ballast weight at Station 420	30
Armament Kit with	
Ammunition and Rockets	1234
Fuel, 230 Gallons JP-4	1500
TOTAL	9554 lbs.

PRE-FLIGHT (TAT-101E)

In addition to the normal helicopter pre-flight for all armament flights check the TAT-101E for the following items:

1. Armament function switch - OFF.
2. M60C machine guns - Barrel locked and in carry position.
3. Ammunition cans - Secure.

LOADING (TAT-101E)**WARNING**

To preclude any possibility of injury or damage from inadvertent firing during arming or de-arming, the helicopter must be pointed into an open area, away from buildings, equipment and personnel. The maximum range of the 7.62 mm ball cartridge is 3,725 meters.

1. Armament function switch - OFF.
2. ARMED and SAFE function lights - OUT.
3. RIGHT/LEFT gun circuit breakers - OUT.
4. Hands clear of cyclic armament fire control switch and sighting station stowed.
5. Armed/Loaded by qualified ordnance personnel.

FIRING (TAT-101E)

From the gunner's sighting station.

1. Overhead circuit breaker panel - TAT-101E circuit breakers - IN.

2. RIGHT/LEFT gun circuit breakers - IN.
3. Gun sight switch - ON (rheostat adjusted).
4. Function switch - ARMED.
5. ARMED warning light - ON.
6. ACTION switch - Depressed.
7. TRIGGER switch - Depressed.

From the pilot's cyclic trigger (stowed position).

1. Overhead circuit breaker panel - TAT-101E circuit breakers - IN.
2. Gun circuit breakers - IN.
3. Function switch - ARMED.
4. ARMED warning light - ON.
5. Cyclic armament fire control switch - Depressed.

WARNING

The function switch should be turned to SAFE after each firing pass and turned to ARMED only after the helicopter is in its firing pass, pointed toward the target area.

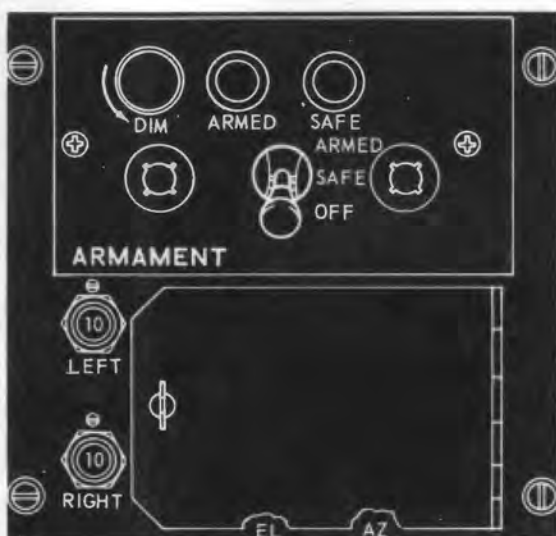
WARNING

In the event of runaway guns, keep the guns pointed toward the target area or away from populated areas, friendly lines or other aircraft until the gun fires out.

DE-ARMING (TAT-101E)

Land the helicopter pointed toward a clear area away from buildings, equipment and personnel.

1. Function switch - OFF.
2. ARMED and SAFE function lights - OUT.
3. RIGHT/LEFT circuit breakers - OUT.
4. Hands clear of cyclic armament fire control switch and sighting station stowed.



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TAT-101E CONTROL PANEL

3-13/3-14

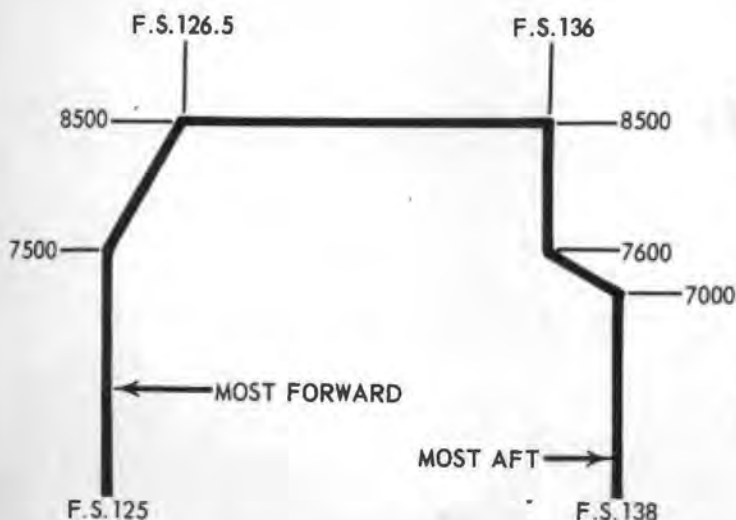


SECTION IV

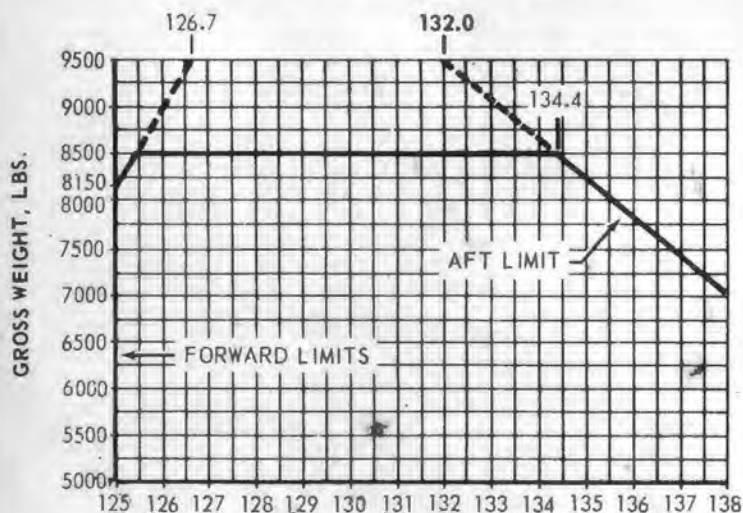
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CENTER OF GRAVITY LIMITS



CENTER OF GRAVITY LIMITS (540)

1. Rotor Brake Reservoir
2. Hydraulic Reservoirs (2) and Fluid Level Sight Gages (2)
3. Engine Oil Tank
4. Transmission Oil Filler
5. Tail Rotor Intermediate Gearbox Oil Level Sight Gage
6. Tail Rotor Intermediate Gearbox Oil Filler
7. Tail Rotor Gearbox Oil Level Sight Gage
8. Tail Rotor Gearbox Oil Filler
9. Fuel Filler



ENGINE FUEL - MIL-J-5624 Grade JP-5
(MIL-J-5161, Grade II NP-5; F-35 (NATO))
Capacity 165 U.S. Gals. 242 U.S. Gals.
MIL-J-5624 Grade JP-4
(MIL-J-5161, Grade I, JP-4; F-40 (NATO))

ENGINE OIL - MIL-L-7808 (NATO G-148)
- MIL-L-23699 (NATO G-156)
Capacity 3.25 U.S. Gals. Normal
3.25 U.S. Gals. Ferry

TRANSMISSION OIL - MIL-L-7808 (NATO G-148)
- MIL-L-23699 (NATO G-156)
Capacity 2.25 U.S. Gals.

TAIL ROTOR INTERMEDIATE GEAR OIL -
MIL-L-7808 (NATO G-148)
MIL-L-23699 (NATO G-156)
Capacity 0.375 U.S. Pints

TAIL ROTOR GEARBOX OIL -
MIL-L-7808 (NATO G-148)
MIL-L-23699 (NATO G-156)
Capacity 8.50 U.S. Gals.

HYDRAULIC FLUID - MIL-H-5606 (NATO OHA)
Capacity 4.0 U.S. Pints - Reservoir
3.0 U.S. Pints - Refill Level
Dual Hydraulic System Capacity
3.3 U.S. Pints - Reservoir (2)

HYDRAULIC RESERVOIR - ROTOR BRAKE -
MIL-H-5606 (NATO OHA)
Capacity 0.75 U.S. Pints
Refill to 0.5 In. Below Bottom of Fill Neck

COMMERCIAL FUEL (ASTM D-1655 TYPE A)
(A) AVTUR 40
(B) ESSO TURBO FUEL 1-B
(C) GULFITE TURBINE FUEL A
(D) SHELL 640
(E) TEXACO CODE NO. 406 TURBINE FUEL K-40

COMMERCIAL FUEL (ASTM D-1655 TYPE A-1)
(A) ATLANTIC TURBINE FUEL
(B) AVTUR - 50
(C) ESSO TURBO FUEL 1A
(D) ESSO TURBO FUEL 3
(E) SHELL 660

There are no limitations involved in the use of these specified fuels.

* The following **EMERGENCY** fuel may be used:
(A) Unleaded Gasoline (White Gasoline)
(B) MIL-G-5572, Aviation Gasoline
(Use Lowest Grade Available)
(C) MIL-G-3065 Automotive Gasoline
(Use Lowest Grade Available)
(D) MIL-F-16884, Grades 1 and 2 (Diesel Fuel)

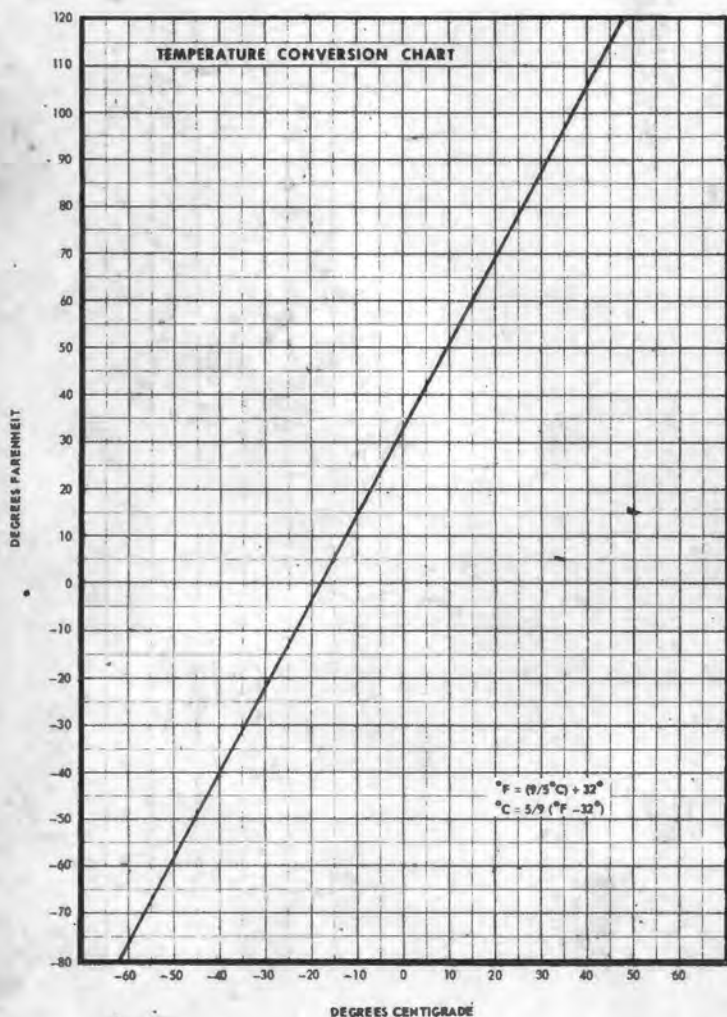
An entry shall be made (engine operating time, type fuel used) on appropriate form after using any **EMERGENCY** fuel.

204470-53A

SERVICING DIAGRAM

Changed 1 May 1967

4-3



TEMPERATURE CONVERSION CHART