Marshall

TH-55 CHECK LIST

COCKPIT PROCEDURE

a. COCKPIT CHECK

1 Blade in Cover

(1) PEDALS, SEAT BELTS, SHOULDER HARNESS
(2) CONTROLS FREE, THEN FRICTIONED
(3) PITCH DOWN AND LOCKED
(4) FUSES, SWITCHES, FUEL VALVE, MIXTURE
(5) INSTRUMENTS, ALTIMETER
(6) COMPASS, MAP LIGHTS

b. STARTING PROCEDURE

(1) BATTERY ON, INSTRUMENTS, WARNING LIGHTS
(2) FUEL BOOST, CRACK THROTTLE 1/8", MAGS BOTH
(3) PRIME ENGINE, CLOSE THROTTLE
(4) START, RPM 1200 TO 1600, OIL PRESSURE
(5) ALTERNATOR, RADIO, HELMET ON

c. ROTOR ENGAGEMENT

(1) RPM 1600, CONTROLS NEUTRAL
(2) CLEAR, BEACON
(3) ENGAGE, NEEDLES JOIN, RPM 1850

d. ENGINE WARMUP

(1) ALTERNATOR CHECK, FUEL BOOST CHECK
(2) MAG CHECK, SPLIT NEEDLES, IDLE CHECK, 1850

e. BEFORE TAKE-OFF CHECK

(1) FUEL PUMP, MAGS, MIXTURE, FUEL ON
(2) RADIO, ENGINE INSTRUMENTS, WARNING LIGHTS
(3) DOORS, CONTROLS, TIP PATH CHECK
(4) TRIM, TIME, ALTIMETER

18 June 1969

FACILITIES AND RADIO FREQUENCIES

HELIPORTS					
Wltrs(Pri)	Wltrs Twr	229.4	139.40	892'	1500'W
Wltrs(Sec)	Wltrs Twr	241.0	139.00	892'	1800'E
Down(Pri)	Down Twr	257.9	139.20	964'	1500'
Down(Sec)	Down Twr	241.0	139.00	964'	1500'
Demp(Pri)	Demp Twr	229.8	141.10	1153'	1700'
Demp(Sec)	Demp Twr	241.0	139.00	1153'	1700'
EMERGENCY FREQUENCIES					
ALL TOWERS & FAA STATIONS		243.0	121.50		
Medical Evac	Med Evac	241.0	141.50		
STAGEFIELDS - PRIMARY I NORTH (SERVED BY WOLTERS HELIPORT)					
Stagefield 1	Pinto	230.1	141.05	1003'	1500'
Stagefield 2	Sundance	231.0	142.95	1013'	1500'
Stagefield 4	Mustang	248.8	139.45	1094'	1600'
Stagefield 6	Bronco	229.7	148.90	1053'	1600'
Stagefield 7	Wrangler	248.4	141.20	1040'	1600'
Chu Lai	Chu Lai	241.4	148.75	1019'	1600'
Da Nang	Da Nang	248.2	143.20	1120'	1600'
Qui Nhon	Qui Nhon	231.1	141.90	1125'	1600'
STAGEFIELDS - PRIMARY I SOUTH (SERVED BY DOWNING HELIPORT)					
Stagefield 3	Ramrod	248.6	149.60	955'	1500'
Stagefield 5	Rawhide		149.90	845'	1400'
An Khe	An Khe	231.2	143.30	1010'	1500'
Cam Ranh	Cam Ranh		142.35	1135'	1600'
My Tho	My Tho		143.10	790'	1300'
Phu Loi	Phu Loi		140.40	1082'	1600'
Tuy Hoa	Tuy Hoa	241.5	143.85	1282'	1800'
Vung Tau	Vung Tau		148.80	850'	1400'

STAGEFIELDS - PRIMARY II (SERVED BY DEMPSEY HELIPORT)

Bac Lieu	Bac Lieu	241.1	141.45	974'	1500'
Ben Cat	Ben Cat	245.5	141.40	1456'	2000'
Can Tho	Can Tho	245.1	142.30	976'	1500'
Hue	Hue	246.4	141.35	1068'	1600'
Pleiku	Pleiku	245.3	143.40	968'	1500'
Soc Trang	Soc Trang	229.5	139.10	908'	1400'
Tay Ninh	Tay Ninh	246.3	148.85	1225'	1800'
Vinh Long	Vinh Long	245.7	124.15	1120'	1700'
Bien Hoa (MOI)	Bien Hoa	229.6	148.65	1070'	1600'

MISCELLANEOUS FREQUENCIES

Air to Air	XC	229.3*	139.25*
Air to Air	XC	242.4	141.15
Air to Air	XC	246.2	141.25
Air to Air	XC	246.5	143.05
Air to Air	XC		149.75

(*Also used for communication between aircraft and Abilene and Waco Towers.)

LOCAL CONTROL (MILITARY/CIVILIAN DOWNING TOWER)

Down(Pri)	Down Twr	119.50
Down(Sec)	Down Twr(MILF/W)	139.30
Down (Ground Cont, F/W)	Down GRND CONT	121.70

FAA FREQUENCIES

Flt Svc Sta	(Fac Name)	Rad	255.4	122.6 or 123.6
FAA Towers	(Fac Name)	Twr	257.8	(as listed)
Air Force Twrs	(Fac Name)	Twr	236.6	126.2
Army Twrs	(Fac Name)	Twr	241.0	126.2

TH-55A HELICOPTER PREFLIGHT INSPECTION

Initial Preflight Inspection

1. Untie Main Rotor.
   a. Place tie downs under left seat.
   b. Magneto and master switch off.
2. Battery Quick Disconnect.
3. Cockpit Check:
   a. Parts 12, 13 and 14 of Form 2408.
   b. Lights and fuel quantity gauge.
4. Bubble for condition.
5. Pitot tube cover - removed.
6. Air cleaner cover - Security.
7. Exterior Inspection - Left Side - CHECK:
   a. Cockpit Check (Left Side)
   b. L.H. Cabin Door - Security.
   c. Fuel Level - Drain Sump.
   d. Drain Fuel Strainer.
   e. Check Rosebud for top cap.
   f. Check Oil Level.
   g. Engine for condition and leaks.
   h. Left skid and strut.
   i. Alternator belt for tension.
   j. Damper 4 1/2 to 5 - fluid level.
8. Tail Boom and Tail Rotor, CHECK:
   a. Align tail rotor drive shaft.
   b. Tail boom and tail boom supports.
   c. Antennas for condition.
   d. Tail rotor blades for condition.

e. Tail rotor gear box for oil level, leaks and security.

f. Tail light for security.

g. Tail rotor drive shaft alignment.

h. Stabilizer for condition and security.

9. Exterior Inspection - Right Side - CHECK:

a. Tail rotor drive shaft damper.

b. Tail rotor cables for condition and security.

c. Inspect idler pulley for freedom and smoothness by rotating pulley.

d. Clutch belts (8) for condition and security.

e. Clutch actuator.

f. Transmission oil level - leaks.

g. Main rotor system for security and condition.

h. Engine for condition and leaks.

i. R.H. Cabin Door - security.

j. Position one main rotor blade directly in front of aircraft.

Secondary Preflight Inspection
(To be used only after Initial Preflight)

1. Untie main rotor blades.
2. Switches "OFF - 2408-13.
3. Helicopter Exterior - Front.
4. Fuel and oil quantity - drain sump.
5. Exterior Inspection (Left Side).
6. Strainer.
7. Tail rotor drive system.
8. Exterior Inspection (Right Side).
9. Inspect idler pulley for freedom and smoothness by rotating pulley.
10. Transmission.
11. Main rotor system.
12. Position one main rotor blade directly in front of aircraft.

Complete Preflight Inspection

1. Preflight Inspection.

a. Cockpit Right Side CHECK:

(1) Untie main rotor blades and insure 20 yards clearance (hub to hub). Insure one blade is positioned directly in front of aircraft.

(2) Mags and master switch "OFF".

(3) Connect battery.

(4) Dash 12, 13 and 14 of 2408 insert date on dash 12 & 13.

(5) Mixture full lean.

(6) Fuel valve on.

(7) Battery on, check fuel quantity gauge.

(8) Beacon, position lights on, fuel boost on.

(9) Check Beacon, position lights for operation. Turn off switches.

(10) Check first aid kit, fire extinguisher, for security.

(11) Shoulder harness and seat belt for security

(12) Right upper canopy, slat for condition and security.

(13) Heater motor, and right door attaching pins.

b. Exterior Inspection Right Side, Front and Left Side.

(1) Inspect right front strut for inflation one inch minimum, right position light (green).

(2) Right front half of skid and ground handling wheel for locking pin and inflation.

(3) Bubble for cracks and security.

(4) Pitot tube and front cowl for condition.

(5) Air filter safetied and air inlet clear of obstructions.

(6) Lower beacon for security and condition.

(7) Front cross bar and supports for condition and security.

(8) Left ground handling wheel for safety and inflation.

(9) Inspect left skid front hald, left front strut for inflation one inch minimum, and left position light (red).

c. Cockpit Left Side, CHECK:

(1) Left shoulder harness and seat belt for security.

(2) Left door and attaching pins for condition and security.

d. Left Rear Exterior, CHECK:

(1) Fuel tank for security, quantity and fuel cap for security.

(2) Check fuel overflow pan for security.

(3) Drain fuel sump.

(4) Drain fuel strainer.

(5) Check rosebud fitting for top cap.

(6) Oil level (6 - 7 1/2 qts).

(7) Drain plug for safety.

(8) Left side engine for general condition, oil leaks, chafing wires and lines.

(9) Left skid, rear half, left rear strut for inflation, 3/8 inch minimum.

(10) Left drag brace for freedom and alignment.

(11) Generator/alternator drive belt for tension.

(12) Lower mounting bolts, impeller shroud and six impeller bolts for security and safety.

(13) Check fore and aft play in short shaft.

(14) Check belt drive pulley strut.

(15) Landing light for security and condition and rear cross bar for deflection.

e. Damper Alignment and Fluid Level.

(1) If dampers align between 4 1/2 to 5, no adjustment is necessary. If necessary to realign the blades, hold the tail rotor blade and push main rotor blade opposite to normal rotation until stopped by the damper, then gently push main rotor blade in direction of rotation until stopped by damper. Bolts on each damper arm should line up at 4 3/4 to 5 mark and all blades should be nearly identical. Do not attempt to force the dampers into position by using excessive force.

(2) Align the tail rotor drive shaft by aligning the mark on the shaft with the mark on the tail boom.

f. Tail Boom, Tail Rotor and Connecting Controls.

(1) Tail boom supports and boom left side for condition and security.

(2) Aft rotating beacon support for cracks in fiberglass.

(3) Antenna and mount for security.

(4) Left side upper and lower fin for condition.

(5) T/R gear box attaching bolts for safety and security.

(6) Tail rotor blade for condition, pitch change links, teetering hinge and security of attaching nut.

(7) Tail skid for condition and security.

(8) T/R gear box for leaks, oil level and plugs for safety.

(9) T/R pitch control rod and bell crank for freedom of movement.

(10) Check aft inspection cap for tail rotor drive shaft alignment.

(11) Aft position light for condition (clear) and security of rivets to stabilizer.

(12) Inspect fixed stabilizer for condition and security of attachment (do not press).

(13) Right side upper and lower fin for condition and security.

(14) Center inspection cap check tail rotor drive shaft damper assembly block, press with finger to feel contact with shaft.

(15) Right tail boom for condition and boom supports for security.

(16) Tail rotor, control rod, bell crank, control cables and turn buckles for safety and condition.

(17) Battery for security and condition.

g. Main Rotor (V) Belt Drive Assembly.

(1) Inspect idler pulley for freedom and smoothness by rotating pulley.

(2) Inspect clutch belts (8) for condition.

(3) Check for radial freedom of lower pulley shaft extension.

(4) Inspect V-belt cover for condition and security.

(5) Visually inspect clutch actuator (fully disengaged), clutch actuator turn buckle, pulley and cable. Inspect turn buckle eye and upper actuator attachment lug for cracks and bends. Check cable for fraying by compressing the actuator spring with a straight pull on the actuator cable below the spring assembly. Do not pull the cable forward of the cable pulley. Avoid any side loading of the spring or actuator assemblies during inspection to prevent bending of the upper attachment lug or the turn buckle eye.

h. Main Transmission and Main Rotor Head.

(1) Inspect main transmission for leaks, check oil level, safeties on drain and filter plugs and check air vents.

(2) All push pull tubes for condition and rod end bearings for freedom.

(3) Rotor head for general condition and security of the attaching nuts (avoid dephasing main rotor blades).

(4) Main rotor blades for condition (top side and bottom side for cracks, dents, and wrinkles).

i. Right Side Engine, Exterior, CHECK:

(1) Heater hose and shroud for condition.

(2) Oil cooler and lines for condition and security.

(3) Right side of engine for condition and leaks, chafing wires and lines.

(4) Right rear strut for proper inflation 3/8 min.

(5) Right drag brace for freedom and condition and rod ends.

(6) Inspect right rear half of skid.

2. Cockpit Procedure.

a. Cockpit Check.

(1) Adjust pedals.

(2) Fasten seat belts, shoulder harness and check for positive locking.

(3) Controls for full travel and freedom. (Cyclic should be positioned using fore and aft alignment marks.) Set cyclic friction (ONLY ENOUGH TO HOLD CYCLIC IN POSITION).

(4) Throttle closed, collective pitch full down and full friction applied.

(5) Fuses tight.

(6) All switches off.

(7) Fuel valve on.

(8) Mixture full lean.

(9) Engine and flight instruments for static position.

(10) Set altimeter field elevation.

(11) Compass for condition.

(12) Map lights off.

b. Starting Procedure.

(1) Battery on and check all electrically operated instruments. NOTE: If fuel pressure gauge indicates a pressure reading, bleed off pressure by putting mixture control lever to the full rich position briefly until needle begins to drop, then return to full lean.

(2) Gear box warning light on.

(3) Fuel low warning light press to test.

(4) Clutch light on and switch in release position.

(5) Fuel boost on, pressure 14 to 30 psi.

(6) Throttle cracked approximately 1/8 inch.

(7) Mag switch both.

(8) Prime engine by placing mixture in full rich position from 1 to 3 seconds (OMIT FOR HOT OR FLOODED ENGINE), then return mixture to full lean.

(9) Close throttle. Gloves must be on prior to starting and remain on during flight.

(10) Engage starter, when engine runs, place mixture control lever in full rich position. CAUTION: If engine fails to continue to run, return mixture lever to the full lean position at once or flooding will result.

(11) Stabilize engine RPM 1200 to 1600.

(12) Oil pressure 25 psi within 30 seconds (COLD WEATHER: VISIBLE RISE WITHIN 30 SECONDS).

(13) Generator/Alternator on.

(14) Radio switches on.

(15) Helmet on.

c. Rotor Engagement.

(1) Oil pressure stabilized.

(2) Engine RPM 1600 RPM.

(3) Collective down and frictioned, cyclic and pedals in neutral position.

(4) Visually clear helicopter (call clear). NOTE: Maintain fixed throttle during engagement.

(5) Beacon on.

(6) Place clutch control switch in hold position, observe main rotor, move control switch to engage, watch for rotor movement and return switch to hold, regulate engagement rate by moving switch from engage to HOLD, then back to engage as required. From 3 to 4 times is proper technique. CAUTION: Avoid engine speeds below 1100 RPM.

(7) When needles join, place clutch switch in engage position and close guard.

(8) Clutch warning light out, increase RPM to 1850.

(9) Gear box warning light out.

d. Engine Warmup.

(1) Move generator/alternator switch to off, check ammeter for drop, return switch to on position and recheck ammeter for charge condition.

(2) Fuel boost pump off. Check fuel pressure 14 to 30 psi and engine continues to run, return pump switch on.

(3) Collective pitch down and friction ON. Make magneto check at 2900 RPM and minimum pitch. (2 to 4 seconds) 225 RPM maximum drop with no engine roughness. Do not switch to OFF.

(4) Split the needles to check operation of the overrun clutch. Check engine idle speed 1200-1400 RPM. WARNING: Helicopter will not be flown if needles fail to split.

(5) When needles re-join, return to 1850 RPM.

e. Before Take-Off Check.

(1) Fuel pump on.

(2) Mag switch to both.

(3) Mixture full rich.

(4) Fuel on.

(5) Radio and transmitter selector switch to proper position.

(6) Engine instruments in the green arc, with a visible rise on cylinder head temp allowable.

(7) All warning lights off (except governor).

(8) Trim selector in proper position.

(9) Door latches fastened.

(10) Loosen friction check tip path plane at 2900 RPM.

(11) Check cyclic trim operation by moving cyclic trim selector fore and aft, and left and right just enough to verify its operation (both positions should be checked if dual).

(12) Clear for take-off.

(13) Check take-off time.

(14) Recheck and set altimeter to field elevation.

f. Shutdown Procedure.

(1) Reduce engine RPM to 1850.

(2) Collective pitch full down and frictioned. Level tip path plane and friction cyclic. (Cyclic should be positioned using fore and aft alignment marks).

(3) Beacon off.

(4) Check magnetos at 2900 RPM and minimum pitch.

(5) Close throttle smoothly to split needles, simultaneously add right pedal, move clutch to disengage while needles are split.

(6) Accomplish magneto ground check at engine idle RPM. NOTE: Rotor RPM below engine RPM before check.

(7) Allow main rotor to run down sufficiently to have minimum engine tachometer needle bounce.

(8) Move mixture control from full rich toward idle cut-off position. Note type Manifold Pressure Gauge installed; if earlier type with flow meter, then as engine tachometer is monitored, a slight rise in engine RPM (25 - 50 RPM) indicates a proper mixture setting. If Manifold Pressure Gauge installed is sensitive type (large scale dial), engine RPM rise should be only a slight amount (0-25 RPM) and Manifold Pressure on the large scale dial gauge should read approximately 7.5" to 8.5"; this will vary slightly between aircraft.

(9) Return mixture control to full rich position.

(10) Fuel pump off.

(11) Cool to 200 degrees oil temperature and visible drop on cylinder head temperature.

(12) Mixture full lean, when engine stops, turn magnetos off.

(13) All other switches off.

(14) Collective locked using manual lock.

(15) Secure main rotor.

(16) Accomplish "walk-around" post flight inspection.

(17) Complete 2408-12 and 13 and place in proper position to denote refueling is required.

TH-55 TIE-DOWN PROCEDURES

After each flight one main rotor blade will be tied down in the following manner: Friction all controls and use the mechanical lock. Center one blade over the tail boom and place the tie-down sleeve over the blade tip, putting just enough tension on the tie-down cord to place the droop stop at its lower limit (do not bend blade), secure the tie-down cord with a half hitch tied immediately in front of the vertical fin. Extend the remaining cord forward to the tail boom saddle fitting and secure it with at least one wrap around the tail boom and a suitable knot. At the completion of each flight training period (morning, afternoon or night), or when ground time is to exceed one hour, or when winds are, or are forecast to be 30 knots or above, or when thuderstorms are forecast, all three blades will be tied down. All controls will be frictioned (use the mechanical lock) and one blade will be tied down as explained above. The pockets of the other tie-downs will be put over the blade tips and slack removed (do not bend blades), and the cords secured to the oleo struts left and right front, and tail boom rear.

AIRCRAFT MISHAP REPORTING

1. In the event of an aircraft mishap the following information is required by the most expeditious means of communications. Information must be relayed to one of the three (3) heliport control towers in order to provide immediate assistance by necessary agencies. If this information cannot be transmitted by radio and a telephone is available, call collect to 327Ext3289.

2. Relay the following items of information in sequence:

a. Report of:
(1) Precautionary landing (further flight inadvisable). Note: Do not fly until aircraft is cleared by maintenance personnel.

(2) Forced landing (further flight impossible).

b. Damage.

c. Aircraft type and serial number.

d. Fire, yes or no.

e. Injuries, yes or no.

f. Dual, solo or buddy ride.

g. Class number of occupant(s), if known.

h. Location (be specific).

AIRCRAFT MISHAP PROCEDURES

1. Precautionary landing:

a. Follow procedures in Aircraft Mishap Reporting.

b. Remain with aircraft, except to telephone, and do not attempt to fly the aircraft until it is inspected and released by maintenance personnel.

2. Forced landing:

a. Follow procedures in Aircraft Mishap Reporting.

b. Signal other aircraft by:

(1) OH-13 and OH-23 - Align main rotor blades perpendicular to the fuselage.

(2) TH-55 - Place one blade straight out in front of the fuselage. Place a T-shirt or flight jacket (orange side out) on the tip of the forward blade.

c. Remain with aircraft, except to telephone, and do not attempt to fly the aircraft until it is inspected and released by maintenance personnel.

3. Accidents or incidents:

a. Follow procedures in Aircraft Mishap Reporting.

b. Remain with aircraft, except to telephone, and do not attempt to fly the aircraft until it is inspected and released by maintenance personnel.

c. Report to the Flight Surgeon as soon as possible and prior to your next flight.

TELEPHONE DIRECTORY

FT. WOLTERS - From off-post dial 327 then dial extension

MILITARY FLT DEPT A 2651

MILITARY FLT DEPT B 2651

MILITARY FLT DEPT C 2253/2450

Southern Airways Br A 2754

Southern Airways Br B 3237

Center Safety Div 3246

Weather 3206/3207/2588

OTM 3636/3611/3344

Flt Eval Dept 3298/3396

Post Transportation 2225

Fixed Wing Operations 3421/3422/3423

MWL APT FSS 325-5922

Stagefield 1 3219

Stagefield 2 3218

Stagefield 3 3217

Stagefield 4 3223

Stagefield 5 3619

Stagefield 6 3542

Stagefield 7 3610

Beach Army Hosp Emergency 3548/2548

Med Evac, Dempsey Heliport 2428

Helicopter Crash Calls 3289

TH-55A OVERSPEEDS
(H10-360 ENGINE)

2000 or more engine RPM with belt drive disengaged - shut down and aircraft is grounded.

3201 or more engine RPM - land at nearest available clear area and shut down. Follow rules for precautionary landing.

3240 or more engine RPM or 540 or more rotor RPM - land at nearest available clear area and shut down. Follow rules for precautionary landing.

NOTE: Due to the inherent "needle bounce" in the Hughes standard tachometer, all overspeeds on the TH-55A will be investigated and evaluated by the Aircraft Maintenance Division Branch at the heliport to which the aircraft is assigned. All instructors and students should personally notify their flight as soon as possible should an overspeed occur.

f. SHUTDOWN PROCEDURE

(1) RPM 1850, CONTROLS FRICTIONED, BEACON
(2) MAG CHECK
(3) ROTOR DISENGAGE, MIXTURE CHECK
(4) COOL, MIXTURE LEAN, SWITCHES OFF
(5) SECURE ROTOR, POST FLIGHT, COMPLETE 2408-12 & 13