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MATR Complete Loss of Tail Rotor Thrust

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-If the aircraft is uncontrollable, Autorotate immediately. Ifsafe landing area   
is not immediately available and powered flight is possible, continue flight to a suitable landing area at   
above minimum rate of descent airspeed. Degree of roll and sideslip may be varied by varying throttle   
*andlor* collective.

At a hover if helicopter heading cannot be controlled with pedals. AUTOROTATE.

Analyze the Situation- Indications include pedal input has no effect on helicopter, nose of the helicopter   
turns to the right (left sideslip), roll of fuselage along the longitudinal axis, and nose down tucking.

Analyze as Complete Loss of Tail Rotor Thrust

Take Proper Action- When landing area is reached, make an autorotationallanding (THROTTLE OFF).   
During the descent, airspeed above minimum rate of descent airspeed should be maintained and turns kept   
to a minimum. If the landing area is suitable, touchdown above ETL. If unsuitable a minimum ground   
run autorotation must be performed. Start to decelerate at about 75 feet so that ground speed is at a   
minimum when the helicopter reaches 10 to 20 feet. Execute the touchdown with a rapid collective pull   
just prior to touchdown in a level attitude with minimum ground speed.

AUTOROTATE is defined as adjusting the flight controls as necessary to establish an autorotational   
descent. Steps for are:

I. Collective Adjust

1. Pedals Adjust
2. Throttle Adjust
3. Airspeed Adjust

Reference Checklists as Time and ConditionsPermit-Sf or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

WARN INGSICA UTIONSINOTES

WARNING - At airspeeds below 30 to 40 knots, the sideslip may become uncontrollable, and the   
helicopter will begin to revolve on the vertical axis (right or left depending on power, gross weight, etc.)

CAUTION - Thc flare and the abrupt use of collective will cause the nose to rotate left, but do not   
correct with throttle. Although application of throttle will result in rotation to the right, addition of power   
is a very strong response measure and is too sensitive for the pilot to manage properly at this time. DO   
NOT ADD POWER AT THIS TIME. Slight rotation at time of impact at zero ground speed should not   
cause any real problem.

NOTE - Upon pitch application at touchdown, the fuselage may tend to turn in the same direction that   
the main rotor is turning (left) due to an increase of friction in the transmission system ..

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Ditching-Power ON

During the conduct of the malfunction ensure SP utilizes the MATR principle,

Maintain AircraftControl- Maintain straight and level flight.

Analyze the Situation-Tfit becomes necessary to ditch.

Analyze as Ditching-Power ON.

Take Proper Action-Boldface does not apply.

Refcl'cnce Checklists as Time and ConditionsPermit-Sf> or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

Ditching-Power ON. */fit becomes necessaryto ditch the helicopter. accomplish all approach 10 em approximate 3-   
loot hovel' above the water and proceed as foltows:*

I. Cockpit doors - Jettison at a hover.

1. Cabin doors - Open.
2. Crew (except pilot) and passengers - Exit.
3. Hover a safe distance away from personnel.
4. Throttle - OFF and autorotate. *ApPZy fntt collective pitch prior 10 the main rotor blades entering the   
   water. Maintain a level attttude as the helicoptersinks and 1I1l1i1 if begins 10 roll, then apply cyclic in   
   direction of the roll.*
5. Pilot - Exit when the main rotor is stopped.

WARNINGS/CAUTIONS/NOTES   
None

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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MATR Main Generator Malfunction

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Maintain straight and level flight.

Analvze the Situation- Indications will include DC GEN segment light associated with a master caution light, and   
zero indication of the Main Generator Loadmeter.

Analyze as a Main Generator Malfunction.

Take Proper Action-Boldface does not apply.

Reference Checklists as Time and ConditionsPermit-Sf> or designated crewrnember reference checklists for   
boldface or non-boldface procedures. Utilize the -\ 0 as necessary.

MAIN GENERATOR MALFUNCTION

1. GEN & BUS RESET circuit breaker - In
2. MAIN GEN switch - Reset then ON

If main generator is not restored or if it goes off again

1. MAIN GEN switch - OFF

WARNINGS/CAUTIONSINOTES

NOTE: Check that the standby generator loadmeter is indicating a load. Flight may be continued using the standby   
generator.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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MATR Clutch Fails to Disengage

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control- Immediately apply throttle to the full open position.

Analyze the Situation- A clutch failing to disengage inflight will be indicated by the rotor rpm decaying   
with engine rpm as the throttle is reduced to the engine idle position when entering autorotational descent.   
This condition resuits in total loss of autorotational capability.

Analyze as Clutch Fails to Disengage

Take Proper Action- Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

CLUTCH FAILS TO DISENGAGE   
I. Throttle - ON

2. Land as soon as possible

WARN *INGS/CA* UTIONSINOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Clutch Fails to Re-engage

During the conduct of the malfunction ensure SP utilizes the MATR principle.

**Maintain Aircraft Control- Continue** autorotation.

Analyze the Situation- During recovery from autorotational descent clutch malfunction may occur and   
will be indicated by a reverse needle split (engine rpm higher than rotor rpm):

Analyze as Clutch Fails to Re-engage

Take Proper Action- Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

CLUTCH FAILS TO RE-ENGAGE   
I. Autorotate

2. Emer Shutdown

WARNINGS/CAUTIONSINOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Collective Bounce

During the conduct of the malfunction ensure SP utilizes the MA TR principle.

**l\tlaintain Aircraft Control- Maintain controls.**

Analyze the Situation- The collective begins to vibrate in an up and down movement

Analyze as Collective Bounce

Tllke Proper Action- Boldface does not apply.

**Reference Checklists as Time and Conditions** Permit-Sf' **or designated crewmember reference**checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

COLLECTIVE BOUNCE

I. Relax pressure on collective. (Do not "stiff ann" the collective.)

1. **Make a significant collective application either up or down.**
2. Increase collective friction

WARNINGS/CAUTIONSINOTES   
None.

Note: Take the Stand-up ErE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Control Stiffness

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Maintain straight and level flight.

Analyze the Situation-Review aircraft flight indications and cockpit indications to determine the problem. A   
failure within the irreversible valve may cause extreme stiffness in the collective or two of the four cyclic control   
quadrants. If the failure is in one of the two cyclic irreversible valves, caution is necessary to avoid over controlling   
between the failed and operational quadrants.

Analyze as a Control Stiffness.

To ke Proper Action-Boldface does not apply.

Reference Checklists as Time and Conditions PCI"mit-SPor designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -I 0 as necessary.

CONTROL STifFNESS

I. HYD CONT switch - OFF then ON

*Check/or res/oration of normatflight control movements. Repeat as necessmy.*Ifcontrol response is not restored:

1. HYD CONT switch - OFF
2. Land as soon as practicable with a run-on landing at or above ETL.

WARNINGS/CAUTIONS/NOTES

\VARNING - During actual or simulated hydraulic failure, do not pull or push circuit breakers or move the HYD   
CONT switch during takeoff, nap of the earth flying, approach and landing or while the aircraft is not in level flight.   
This prevents any possibility of a surge in hydraulic pressure and the resulting Joss of control.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft, Ensure SP is familiar with PL checklist.

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MATR Droop Compcns n tor

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Take action to maintain rotor RPM within the normal range of 294-324 Continuous.   
Apply pedal to put the aircraft in trim. Make minimum collective movements

Analyze the Situation-Review aircraft flight indications and cockpit indications to determine the problem.   
Indications are engine tends to overspeed as collective pitch is decreased and underspeeds as collective pitch is   
increased

Analyze as a Droop Compensator Failure.

Take Proper Action-Boldface does not apply.

ll.efcl'ence Checklists as Time and ConditionsPermit-Sf' or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary. Checklist indicates to perfonn EMER GOY   
OPNS. SP should reference the -10 which states:

Droop compensator failure will be indicated when engine rpm fluctuates excessively during application of collective   
pitch. 111e engine will tend to overspeed as collective pitch is decreased and will underspeed as collective pitch is   
increased. If the droop compensator fails, make minimum collective movements and execute a shallow approach to   
the landing area. If unable to maintain the operating rpm limits:

Ji:M Ji:R GOY OI'NS

EMER GOY OPNS is defined as manual control of the engine RPM with the GOY AUTO/EMER switch in the   
EM ER position. Because automatic acceleration, deceleration, and overspccd control are not provided with the   
GOY switch in the EMER position, throttle and collective coordinated control movements must be smooth to   
prevent compressor stall, overspeed, overtemperature, or engine failure. Steps are:

I GOY - switch - EMER

1. Throttle - adjust as necessary to control RPM
2. Land as soon as possible

WARNINGS/CAUTIONSINOTES

CAUTION - TI1C maximum engine torque available for any ambient condition will be reduced by 6-8 PSI when the   
GOY AUTOIEMER switch is placed in the EMER position,

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SI' is familiar with PL checklist.

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MATR Electrical Fire-Flight

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control- Reduce power and begin descent if able.

Analyze the Situation- A *Metallic* smell is encountered in the cockpit. Smoke and fumes filtering thru   
the CB panel.

Analyze as Electrical Fire-Flight

Take Proper Action- Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

ELECTRICAL FIRE-FLIGHT

Prior to shutting off all electrical power, the pilot must consider the equipment that is essential to a   
particular night environment that will be encountered, e.g., flight instruments, and fuel boost pumps. In   
the event of electrical fire or suspected electrical fire in flight:

I. BAT, STBY and MAIN GEN switches - OFF   
2. Land as soon as possible

If landing area not available. *if landing cannot be made soon as possible ondflight must he   
continued, the defective circuits may be identified and isolated asfollows:*

3. Circuit Breakers - Out *As each a/the/allowing steps is accomplished. checkfor indications ofthe   
source ofthefire.*

1. MAIN GEN switch - On
2. Stalter GEN switch - STBY GEN
3. BAT Switch - On
4. Circuit Breakers - In. one at a time in priority. *One at a lime in the priority required, GEN BUS   
   RESE?)irst. When malfunctioning circuit is identified, pullthe applicable circuit breaker out.*

WARNINGS/CAUTIONSINOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MA TR Engine Compressor Stall

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Reduce power or aircraft maneuvering requiring increased power.

Analyze the Situation-Review aircraft night indications and cockpit indications to determine   
the problem. Indications are sharp rumble or loud sharp reports, severe engine vibration and   
rapid rise in exhaust gas temperature (EGT) depending on the severity of the serge.

Analyze as an Engine Compressor Stall.

Tal<e Proper Action-Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

ENGINE COMPRESSOR STALL   
I. Collective - Reduce

1. DE-ICE and BLEED AIR switches - OFF
2. Land as soon as possible

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is   
familiar with PL checklist.

MATR Engine Malfunction - Low Altitude/Low Airspeed or Cruise

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Take immediate action steps to maintain rotor and aircraft attitude. Reduce collective   
in order to increase rotor RPM into the normal range of294-324 Continuous. Apply pedal to put the aircraft in trim.   
Throttle adjust as required. Airspeed adjust as necessary to attain "ax glide or min rate of descent(At 314 RPM   
min rate of descent airspeed is 63 KIAS and rnax glide distance airspeed is 98 KIAS). Maintain autorotational   
attitude of aircraft turning as necessary to an available landing site.

Analyze the Situation-Review aircraft night indications and cockpit indications to determine the problem.   
Indications are left. yaw (due to the loss oftq as indicated), decrease in engine RPM, decrease in rotor RPM,   
illumination of the "PM light and "PM audio.

Analyze as an Engine Malfunction - Low Altitude/Low Airspeed or Cruise.

Take Proner Action-Verbalize and perform boldface.

ENGINE MALFUNCTION LOW ALTITUDE/LOW AIRSPEED OR CRUISE   
AUTOROTATE

EMER GOY OI'NS

AUTO ROTATE is defined as adjusting the flight controls as necessary to establish an autorotational descent. Steps   
for are:

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lVIATR Engine Malfunction - Low Altitude/Low Airspeed or Cruise Ilitching-Powcr OFF

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Airnaft Control-Take immediate action steps to maintain rotor and aircraft attitude. Reduce collective   
in order to increase rotor RPM into the normal range of294~324 Continuous. Apply pedal to put the aircraft in trim.   
Throttle adjust as required. Airspeed adjust as necessary to attain max glide or min rate of descent (At 314 RPM   
min rate of descent airspeed is 63 KIAS and max glide distance airspeed is 98 KIAS). Maintain autorotational   
attitude of aircraft turning as necessary to an available landing site.

Analyze the Situation-Review aircrafl flight indications and cockpit indications to determine the problem.   
Indications are left yaw (due to the loss oftq as indicated). decrease in engine RPM, decrease in rotor RPM,   
illumination of the RPM light and RPM audio.

Analyze as an Engine Malfunction - Low Altitude/Low Airspeed or Cruise.

Take Proner Action-Verbalize and perform boldface.

ENGINE MALFUNCTION LOW ALTITUDE/LOW AIRSPEED OR CRUISE   
AUTOROTATE

EMER GOY OPNS

AUTO ROTATE is defined as adjusting the flight controls as necessary to establish an autorotational descent. Steps   
for are:

|  |  |  |  |
| --- | --- | --- | --- |
| 5. | Collective Adjust | 9. | Collective Adjust |
| 6. | Pedals Adjust | 10 Pedals Adjust | |
| 7. | Throttle Adjust | I I. Throttle Adjust | |
| 8. | Airspeed Adjust | 12 Airspeed Adjust | |

EMER GOY OPNS is defined as manual control of the engine "PM with the GOY AUTO/EMER switch in the   
EMER position. Because automatic acceleration, deceleration, and overspeed control are not provided with the   
GOV switch in the EMER position, throttle and collective coordinated control movements must be smooth to   
prevent compressor stall, overspeed, overternperature, or engine failure. Steps are:

1. GOY - switch - EMER
2. Throttle - adjust as necessary to control RPM
3. Land as soon as possible

Reference Checklists ~,s Time and ConditionsPermit-Sf" or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

WARNINGS/CAUTIONS/NOTES

\VAI{NING - Do not close the throttle. Do not respond to the rpm audio and/or warning light illumination without   
first confirming engine malfunction by one or more of the other indications. Normal indications signify the engine   
is functioning properly and that there is a tachometer generator failure or an open circuit to the warning system,   
rather than an actual engine malfunction.

CAUTION - The maximum engine torque available for any ambient condition will be reduced by 6-8 PSI when the   
GOY AUTO/EMER switch is placed in the EMER position.

NOTE -If time permits. during the autorotative descent. transmit a «May Day" call. set transponder to emergency.   
jettison external stores. and lock shoulder harness.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

EMER GOV OPNS is defined as manual control of the engine RPM with the GOY AUTO/EMER switch in the   
EMER position. Because automatic acceleration. deceleration, and overspeed control are not provided with the   
GOV switch in the EMER position. throttle and collective coordinated control movements must be smooth to   
prevent compressor stall. overspeed, overternperature, or engine failure. Steps are:

1. GOY - switch - EMER
2. Throttle - adjust as necessary to control RPM
3. Land as soon as possible

DITCHING-PO\VER OfF Ifditching is imminent, accomplish engine malfunction emergency procedures.   
Decelerate to zero forward speed as the helicopter nears the water. Apply all of the collective pitch as the helicopter   
enters the water. Maintain a level attitude as the helicopter sinks and until it begins to roll, then apply cyclic in the   
direction of the roll. Exit when the main rotor is stopped.

1. Cockpit doors - Jettison prior to entering water.
2. Cabin doors - open prior to entering water
3. Exit when main rotor has stopped

Reference Checklists as Time and Conditions Pcrmit-SP or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

W ARNINGS/CA UTIONS/NOTES

\VARNING - Do not close the throttle. Do not respond to the rprn audio and/or warning light illumination without   
first confirming engine malfunction by one or more of the other indications. Normal indications signify the engine   
is functioning properly and that there is a tachometer generator failure or an open circuit to the warning system,   
rather than an actual engine malfunction.

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CAUTION - The maximum engine torque available for any ambient condition will be reduced by 6-8 PSI when the   
GOV AUTO/EMER switch is placed in the EMER position.

NOTE - If time permits, during the autorotative descent, transmit a "May Day" call, set transponder to emergency,   
jettison external stores, and lock shoulder harness.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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l\'IATR Engine Overs peed

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Take action to maintain rotor RPM within the normal range of 294-324 Continuous.   
Increase collective. Throttle Reduce. Apply pedal to put the aircraft in trim.

Analyze the Situation-Review aircraft flight indications and cockpit indications to determine the problem.   
Indications are engine and rotor is overspeeding with no reduction ofRPM when throttle is reduced.

Analyze as an Engine Overspeed (Fuel Control Malfunction).

Take Proper Action-Verbalize and perform boldface.

ENGINE OVERSPEED   
COLLECTIVE-INCREASE   
TH ROTTLE-REDUCE   
EMER GOV OPNS

EMER GOV OPNS is defined as manual control of the engine RPM with the GOV AUTO/EMER switch in the   
EMER position. Because automatic acceleration, deceleration, and overspeed control are not provided with the   
GOV switch in the EMER position, throttle and collective coordinated control movements must be smooth to   
prevent compressor stall, overspeed, overternperature, or engine failure. Steps are:

I GOV - switch - EMER

1. Throttle - adjust as necessary to control RPM
2. Land as soon as possible

Refel"cnce Chccldists as Time and Conditions Pennit-SP or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -1 0 as necessary.

WARN.INGS/CAUTIONS/NOTES

CAUTION - The maximum engine torque available for any ambient condition will be reduced by 6-8 PSI when the   
GOV AUTO/EMER switch is placed in the EMER position.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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MA TR Fire-Engine Start

During the conduct of the malfunction ensure SP utilizes the MA TR principle.

Maintain Aircraft Control-Take immediate action steps to maintain prevent engine over   
temperature.

Analyze the Situation-Review aircraft cockpit indications to determine if EGT limits are   
exceeded, or ifit becomes apparent that they will be exceeded.

Analyze as a Fire - Engine Start.

Take Proper Action- Verbalize and perform boldface.

FIRE - ENGINE START

START SWITCH - PRESS   
THROTTLE - OFF

EMER GOV OPNS

Start switch - Press. The starter must be held until EGT is in the normal operating range of 400-   
610.

Throttle - Off. The throttle must be closed immediately as the starter switch is pressed.

Flames emitting from the tailpipe are acceptable if the EGT limits are not exceeded.

Reference Checklists lIS Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -I 0 as necessary.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SI' is   
familiar with PL checklist.

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MATR Fire-Flight

During the conduct ofthe malfunction ensure SI' utilizes the MATR principle.

M'lintain Aircraft Control- Reduce power and begin descent if able. Attempt to verify aircraft on fire   
by making a shallow turn.

Analyze the Situation- The Fire Light illuminates. Smoke trailing behind aircraft.

Analyze as Fire-Flight

Take Proper Action- Boldface docs not apply.

Reference Checklists as Time and ConditionsPermit-Sf' or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

FIRE-FLIGHT

POWER ON:

I. L'lIld as soon as possible

2. EMER SHUTDOWN after landing

POWER OFF:

I. Autorotatc

2. EMER SHUTDOWN

W ARNINGS/CA UTIONSINOTES   
None.

Note: Take the Stand-up EI'E to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Fire-Ground

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Ai.-craft Control- Maintain controls.

Analyze the Situation- The Fire Light illuminates.

Analyze as Fire-Ground

Take Proper Action- Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

Fire-Ground

I. Emer Shutdown

W ARNINGS/CA UTIONS/NOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Fixed Pitch Increased Power (high torque)

During the conduct of the malfunction ensure SP utilizes the MATR principle.

lVlaintaill AiI'cnlft Control- Maintain level flight.

Analvze the Situation- Indications include the nose of the helicopter will tUI1l left when power is   
reduced.

Analyze as Fixed Pitch Increased Power (high torque)

Take Proper Action- Boldface does not apply.

Reference Checldists as Time and Conditions Pcrmit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

FIXED PITCH SETTINGS   
*Increased power (controllable)*

I Maintain control with power and airspeed between 40 - 70 knots

1. If needed, reduce rpm (not below 6000) to control sideslip
2. Continue powered flight to a suitable landing area where a run-on landing can be accompl ished
3. On final, reduce rpm to 6000 and accomplish a run-on landing

WARNINGS/CAUTIONS/NOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Fixed Pitch Reduced Power (low torque)

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control- If helicopter control cannot be maintained, close the throttle immediately   
and accomplish an autorotationallanding. Ifhelicopter control can be maintained in powered night, the   
best solution is to maintain control with power and accomplish a run-on landing as soon as practicable.

Analyze the Situation- Indications include the nose of the helicopter will turn right when power is   
applied with low torque.

Analyze as Fixed Pitch Reduced Power (low torque)

Take Proper Action- Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

FIXED PITCH SETTINGS   
*Reduced power [controllable)*

I. Maintain control with power and accomplish a run-on landing as soon as practicable

*Reduced power (1II1COI1I rollable)*

I. Close the throttle and accomplish an autorotational landing

W ARNINGS/CA UTIONS/NOTES

None.

Note: Take the' Stand-up ErE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure Sf' is familiar with f'L   
checklist.

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MATR Flight Control/Main Rotor System Malfunction

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Maintain straight and level flight.

Analyze the Situation- Failure of components within the flight control system may be indicated through varying   
degrees of feedback, binding, resistance, or sloppiness. These malfunctions are nonnal1y in isolated controls, i.e.   
cyclic, cyclic/collective, or anti-torque. These conditions should not be mistaken for hydraulic power failure.

Imminent failure of main rotor components may be indicated by a sudden increase in main rotor vibration   
and/or unusual noise. Severe changes in lift characteristics and/or balance condition can occur due to blade strikes,   
skin separation, shift or loss of balance weights or other material. Malfunctions may result in severe main rotor   
flapping. In the event of a main rotor system mal function. proceed as follows.

Analyze as a Flight Control/Main Rotor System Malfunction.

Take Proper Action-Boldface does not apply.

Rcfcl'cnce Checklists as Tillie and ConditionsPermit-Sf or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

FLIGIIT CONTROUMAIN ROTOR SYSTEM MALFUNCTION

1. Land as soon as possible
2. EMER SHUTDOWN aftcr landing

WARN I *NGS/CA* UTIONS/NOTES

WARN I NG - Danger exists that the main rotor system could collapse or separate from the aircraft after landing. A   
decision must be made whether occupant egress occurs before or after the rotor has stopped.

Note: Take the Stand-lip EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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MATR Flight Control Servo Hardover

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Mnintnin AircraftControl-Take immediate action steps to maintain aircraft attitude.

Analyze the Situation-Review aircraft flight indications and cockpit indications to determine the problem. Cyclic   
hardover is caused by a sequencing valve failure within the irreversible valve on either or both cyclic servos. Cyclic   
servo hardover will cause the cyclic to move full right forward, full left rear, full left forward or full right rear.   
Collective hardover is caused by a sequencing valve failure within the irreversible valve on the collective servo.

The col1ective will move to the full up or full down position. A failure of any flight control servo may render the   
helicopter uncontrollable unless the following action is taken.

Analyze as a Flight Control Servo Hardover.

Take Proper Action-Verbalize and perform boldface.

FLIGIIT CONTROL SERVO HAIWOVER

HYD CO NT SWITCH- SELECT OPI'OSITE POSITION

LAND AS SOON AS POSSIilLE with a run-on landing at or above ETL.

Reference Checklists as Time <tnd Conditions Permit-SP or designated crewmember reference checklists for   
boldface or non-boldface procedures. Viii ize the -I 0 as necessary.

WAltNINGS/CAUTIONS/NOTES

WARNING - During actual or simulated hydraulic failure, do not pull or push circuit breakers or move the HYD   
CONT switch during takeoff, nap of the earth flying, approach and landing or while the aircraft is not in level night.   
This prevents any possibility of a surge in hydraulic pressure and the resulting loss of control.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress or the aircraft. Ensure SP is familiar with PL checklist.

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MATH. Fuel Boost Pump failure

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain AircraftControl-Maintain straight and level flight.

Analyze the Situation-Ifonefuel boost pump segment light comes 011 than SP must refer to CAUTION AND   
WARNING LIGHT - INITIAL ACTION checklist. If Left and Right Fuel Boost segment lights are on than SP   
must refer to check list. Both will have corresponding master caution light.

Analyze as a Fuel Boost Pump Failure.

Take Proper Action-Boldface does not apply.

Reference Checklists as Time and ConditionsPermit-Sf" or designated crewrnember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

LEFT OR RIGHT FUEL BOOST Segment light   
3. Land as soon as practicable

!lOTH LEFT AND RIGI-IT FUEL !lOOST Segmenllights   
Ifboth FUEL BOOST pump caution lights illuminate:   
1 Check fuel pressure

Iffuel pressure is zero:

2 Descend to a pressure altitude of 4600 ft or less

3. Land as soon as practicable. *No auempt should he made 10 troubleshoot the system while in flight.*

FUEL FILTER Segment light

1 Land as soon as practicable

WARNINGS/CAUTIONS/NOTES   
None

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent" and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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MATR Hydraulic Power Failure

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Maintainstraight and level tlight.

Analyze the Situation-Review aircraft flight indications and cockpit indications to determine the problem.   
Hydraulic power failure will be evident when the force required for control movement increases; a moderate   
feedback in the controls when moved is felt, and/or the HYD PRESSURE caution light illuminates. Control   
movements will result in normal helicopter response ..

Analyze as a Hydraulic Power Failure.

Take Proper Action-Boldface does not apply.

Reference Checklists as Time and ConditionsPermit-Sf> or designated crewmernber reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

IIYDRAULIC POWER FAILURE

I. Airspeed - Adjust *as necessary to attain the most comfortable level of control movements*2. HYD CONT CB -- OUT

If Hydraulic Power is not restored:

1. IIYD CaNT CB -IN
2. IIYD Cont Switch - OFF
3. Land as soon as practical with run-on landing. *Maintain airspeed of or above effective transtnonat tf   
   nnuttouchdown.*

WARNINGS/CAUTIONS/NOTES

WARNING - During actual or simulated hydraulic failure, do not pull or push circuit breakers or move the I-IYD   
CONT switch during takeoff, nap of the earth flying, approach and landing or while the aircraft is not in level flight.   
This prevents any possibility of a surge in hydraulic pressure and the resulting loss of control.

Note: Take the Stand-up ErE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist

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MATR Inlet Guide Vane Actuator Failure - Closed or Open

During the conduct of the malfunction ensure SP utilizes the MA TR principle.

Maintain Aircmft Control-Immediately reduce collective in order maintain rotor in the normal   
range and within aircraft limits.

Analvze the Situation-Review aircraft flight indications and cockpit indications to determine   
the problem. Indications are exceeding engine limits at approximately 20-25 psi torque with   
rotor droop.

Analyze as an Inlet Guide Vane Actuator Failure - Closed.

Tal,e Proper Action-Boldface does not apply. Should a failure occur, accomplish an approach   
and landing to the ground with torque not exceeding the maximum available. Ifpossible, a   
running landing is recommended.

Reference Checldists as Time and Conditions Permit-SP or designated crewmernber reference   
check I ists for boldface or non-boldface procedures. Uti I ize the -I 0 as necessary.

There are no checklist items so SP or designated crewmember should reference the -10

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is   
familiar with PL checklist.

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MATR Loss of Tail Rotor Components

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control- The severity of this situation is dependent upon the amount of weight lost.   
Any loss of this nature will result in a forward center of gravity shift, requiring aft cyclic.

Analyze the Situation- Indications include varying degrees of right yaw depending a power applied and   
airspeed at time offailure, forward CG shift, and abnormal vibrations.

Analyze as Loss of Tail Rotor Components

Take Proper Action- Boldface does not apply.

Reference Checklists as Time and Conditions Permit-SP or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

LOSS OF TAIL ROTOR COMONENTS

I Enter autorotative descent (power off).

1. Maintain airspeed above minimum rate of descent airspeed.
2. Ifrun-on landing is possible, complete autorotation with a touchdown airspeed as required for   
   directional control.
3. lfnm-on landing is not possible, start to decelerate from about 75 feet altitude, so that forward   
   groundspeed is at a minimum when the helicopter reaches 10-20 feet; execute the termination   
   with a rapid collective pull just prior to touchdown in a level attitude with minimum ground   
   speed.

WARNINGS/CAUTIONS/NOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MATR Loss of Tail Rotor Effectiveness

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control- Maintain stable hover while applying left pedal and reducing power if the   
situation dictates.

Analvze the Situation- The first indication of this condition will be a slow starting right turn of the nose   
of the helicopter which cannot be stopped with full left pedal application. This turn rate will gradually   
increase until it becomes uncontrollable or, depending upon conditions, the aircraft aligns itself with the   
wind.

Analyze as Loss of Tail Rotor Effectiveness

Tal,e Proller Action- Boldface does not apply.

Reference Chccldists as Time and Conditions Pcrmit-SP or designated crewmernber reference   
chccklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

LOSS OF TAIL ROTOR EFFECTIVENESS

I. Lower collective to regain control and as recovery is effected adjust controls for normal flight.

This is a situation involving a loss of effective tail rotor thrust without a break in the drive system. The   
condition is most likely to occur at a hover or low airspeed as a result of one or more of tile following.

1. Out-of-ground effect hover.
2. High pressure altitude/high temperature.
3. Adverse wind conditions.
4. Engine/rotor rpm below 6600/324.
5. Improperly rigged tail rotor.
6. High gross weight.

W ARNINGS/CA UTIONS/NOTES   
None.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach,   
touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL   
checklist.

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MA TR Main Driveshaft

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain AircraftControl-Take immediate action steps to maintain rotor and aircraft attitude.   
Reduce collective in order to increase rotor RPM into the normal range of294-324 Continuous.   
Maintain autorotational attitude of aircraft turning as necessary to an available landing site.

Analvze the Situation-Review aircraft flight indications and cockpit indications to determine   
the problem. Indications are left yaw (due to the loss oftq as indicated), increase in engine RPM   
associated with the increased engine noise, decrease in rotor RPM, illumination of the RPM   
light.

Analyze as a Main Driveshaft Failure.

Take Propcr Action-Verbalize and perform boldface.

MAIN DRIVESHAFT FAILURE   
AUTOROTATE

EMER SHUTDOWN

AUTOROTA TE is defined as adjusting the flight controls as necessary to establish an   
autorotational descent. Steps for are:

1. Collective Adjust
2. Pedals Adjust
3. Throttle Adjust
4. Airspeed Adjust

EMER SHUTDOWN is defined as engine stoppage without delay. Steps are:   
10. Throttle-OFF

II. Fuel Switches-OFF   
12. BAT Switch-OFF

Reference Checklists as Time and Conditions Permit-Sf' or designated crewmember reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is   
familiar with PL checklist.

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MATR Main Driveshaft Landing in Trees

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain AircraftControl-Take immediate action steps to maintain rotor and aircraft attitude.   
Reduce collective in order to increase rotor RPM into the normal range of294-324 Continuous.   
Maintain autorotational attitude of aircraft turning as necessary to an available landing site.

Analyzc the Situation-Review aircraft flight indications and cockpit indications to determine   
the problem. Indications are left yaw (due to the loss of tq as indicated), increase in engine RPM   
associated with the increased engine noise, decrease in rotor RPM, illumination of the RPM   
light.

Analyze as a Main Driveshaft Failure.

Tal<c Proper Action-Verbalize and perform boldface.

MAIN DlllVESHAFT FAILURE   
AUTOROTATE

EMER SHUTDOWN

AUTOROTA TE is defined as adjusting the !light controls as necessary to establish an   
autorotational descent. Steps for are:

1. Collective Adjust
2. Pedals Adjust
3. Throttle Adjust
4. Airspeed Adjust

EMER SHUTDOWN is defined as engine stoppage without delay. Steps are:

1. Throttle-OFF
2. Fuel Switches-OFF
3. BAT Switch-OFF

LANDING IN TREES

A landing in trees should be made when no other landing area is available. Select a landing area   
containing the least number of trees of minimum height. Decelerate to a zero ground speed at   
tree-top level and descend into the trees vertically, applying collective pitch as necessary for   
minimum rate of descent. Prior to the main rotor blades entering the trees, ensure throttle is OFF   
and apply all of the remaining collective pitch.

Reference Checldists as Timc and ConditionsPermit-Sf? or designated crewmernber reference   
checklists for boldface or non-boldface procedures. Utilize the -10 as necessary.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is   
familiar with PL checklist.

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MATR Mast Bumping

During the conduct of the malfunction ensure SP utilizes the MATR principle

Maintain Aircr:lft Control-Reduce severity of maneuver.

Analyze the Situation- During an aggressive low g turn and with excessive blade flapping you feel a bump in the   
rotor system through the cyclic.

Mast bumping may occur with a teetering rotor system when excessive main rotor flapping results from   
low g (load factor below 1.0) or abrupt control input. A low g flight condition can result from a cyclic pushover in   
forward flight. High forward flight speed, turbulence, and excessive sideslip can accentuate the adverse effects of   
these control movements. The excessive flapping results in the rotor hub assembly striking the main rotor mast with   
subsequent rotor system separation from the helicopter.

Analyze as Mast Bumping.

Take Proper Action-BoldFace does not apply.

Reference Checklists as Time and ConditionsPermit-Sf' or designated crewmember reference checklists for   
boldface or non-boldface procedures. Utilize the -10 as necessary.

MAST BUMPING

I Reduce severity of maneuver   
2. Land as soon as possible

WARNINGS/CAUTIONS/NOTES   
None

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and approach, touchdown   
conditions, shutdown procedures and egress of the aircraft. Ensure SP is familiar with PL checklist.

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MATR Overheated Battery and Smoke and Fume Elimination

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Control-Maintain straight and level.

Analyze the Situation-Review aircraft flight indications and cockpit indications to determine   
the problem. An *ACRID* smell is encountered in the cockpit and moisture and vapor apparent on   
the windscreen. A high indication on the Main Loadrneter.

Analyze as a Overheated Battery and Smoke and Fume Elimination.

Tal<e Prope,' Action/Reference Chcc1dists as Time and Conditions Permit-SP or designated   
crewmember reference checklists for boldface or non-boldface procedures. Utilize the -10 as   
necessary.

I r overheated battery is suspected or detected.

I BA T switch - Off

1. Land as soon as possible
2. EMER SHUTDOWN after landing

Smoke and/or toxic fumes entering the cockpit and cabin can be exhausted as follows:

Doors, windows, and vents - Open

In addition consider placing the aircraft out of trim

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is   
familiar with PL checklist.

**MATR Transmission Oil- Hot or Low Pressure**

During the conduct of the malfunction ensure SP utilizes the MATR principle.

Maintain Aircraft Contl·ol-Begin immediate descent to landing.

Analyze the Situation-Review aircraft night indications and cockpit indications to determine   
the problem. Indications are low oil pressure associated with master caution light and XMSN   
OIL PRESS segment light.

Analyze as a Transmission Low Pressure.

Tal{e Proper Action-Boldface does not apply.

Reference Checklists as Time and ConditionsPermit-Sf' or designated crewrnember reference   
checklists for boldface or non-boldface procedures. Utilize the -I 0 as necessary.

Transmission Oil- Hot or Low Pressure   
I. Land as soon as possible

2. EMER SHUTDOWN - After landing

EMER SHUTDOWN is defined as engine stoppage without delay. Steps are:

1. Throttle-OFF
2. Fuel Switches-OFF
3. BAT Switch-OFF

WARNINGS/CAUTIONS/NOTES

WARNING - Do not close throttle during this emergency procedure. Descent and landing must   
be made with normal engine operating RPM.

Note: Take the Stand-up EPE to a logical conclusion discussing the type of descent and   
approach, touchdown conditions, shutdown procedures and egress of the aircraft. Ensure SP is   
familiar with PL checklist.

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