

SECTION 1
EMERGENCY PROCEDURES
TABLE OF CONTENTS

	<u>Section</u>	<u>Page</u>
Emergency Check List	1-0	2
Preface.	1-1	1
Engine Failure or Fire	1-1	2
Engine Failure or Fire - Notes	1-1	3
Causes for Engine Shut-Down.	1-1	3
Failure During Take-off.	1-1	3
Multiple Engine Failure.	1-1	3
Propeller Electrical Failure	1-1	3
Go-Around Procedure, Three Engines Operating	1-1	3
Emergency Descent.	1-1	2
Emergency Descent - Notes.	1-1	3
Fuselage Fire	1-1	4
Fuselage Fire - Notes	1-1	5
Smoke Removal.	1-1	4
Smoke Removal - Notes.	1-1	5
Electrical Fire.	1-1	6
Electrical Fire - Notes.	1-1	7
Hydraulic Failure.	1-1	8
Hydraulic Failure - Notes.	1-1	9
Emergency Brake Operation.	1-1	8
Emergency Brake Operation - Notes.	1-1	9
Emergency Landing Gear Extension	1-1	10
Emergency Landing Gear Extension - Notes	1-1	11
Landing with Unlocked Gear Indication.	1-1	10
Landing with Unlocked Gear Indication - Notes.	1-1	11
Landing with Gear Retracted.	1-1	10
Landing with Gear Retracted - Notes.	1-1	11
Fuel Dumping	1-1	12
Fuel Dumping - Notes	1-1	13
Preparation for Passenger Evacuation - Land or Water	1-1	14
Emergency Passenger Evacuation - Land or Water	1-1	15
Emergency Equipment Location Chart	1-1	16
Emergency Escape Routes.	1-1	17
Life Rafts and Life Vests.	1-1	19
Evacuation Slides.	1-1	21
Landing Flares	1-1	22

EMERGENCY CHECK LIST

1/28/59

ENGINE FAILURE OR FIRE

EMERG. SHUTDN. HNDL. PULL
EXT. AGENT - IF FIRE DISCHG.
GEAR AND FLAPS AS REQD.
MAIN FUEL VALS. AS REQD.
CROSS FEEDS OFF
FUEL PUMPS AS REQD.
FUEL & IGN. SWS. AS REQD.
OIL COOLER PAIRED
WARNING BELL. ON

NOTE: DO NOT RETURN FEATHER BUTTON
TO NEUTRAL. IF FEATHER BUTTON
LIGHT STAYS ON MORE THAN ONE
MINUTE, PULL PROP. FEATHER
PUMP CONTROL C.B.

MULTIPLE ENGINE FAILURE

Monitor Electrical Load and Cabin
Pressurization as Required

HYD. FAIL. #1 SYSTEM

HYD. PUMPS NOS. 1 & 1A. OFF
NOSE STEERING. INOP.
LANDING GEAR. EMERG. EXT.
WINDSHIELD WIPERS INOP.
AUTO-PILOT. INOP. & OFF
BRAKES. ACCUM. OR AIR

If #1 & #2 System Failure Add:

AC HYD. PUMPS ALL OFF
WING FLAPS DISCONNECT
CONTROL BOOSTS DISCONNECT

SMOKE REMOVAL

EMERG. DESCENT. IF NECESS.
OXY. MASKS & FLOW ON & 100%
SEAT BELT-NO SMOK. ON
ALL FAN SWS. OFF
AUX. VENT. KNOB 100%

If Additional Action Required:

AUX. VENT. KNOB. 0%
AIRSPEED 170 MAX.
CAB.-FLT. STA. DOOR. OPEN
OVERWING EMERG. EXIT(S). OPEN
PILOTS WINDOW. FULL OPEN

ELECTRICAL FIRE

If Unable to Isolate Fire Quickly with
CB or Switch

NON-ESS. LOAD SWS. OFF

If Fire Persists
GEN. NO. 1, 2 & 4. OFF
Leave No. 3 On

If Fire Still Persists

GEN. NO. 2. ON
Then No. 3 Off

FUEL DUMPING

MAIN FUEL VALVES. ON
CROSS FEEDS OFF
SEAT BELT-NO SMOK. ON
GEAR & FLAPS. UP
AIRSPEED. 140-200
DUMP VALVES OPEN

After Desired Quantity Has
Been Dumped

DUMP VALVES CLOSE TO DRAIN
DUMP CHUTES RETRACT

NOTE: Dumping Rate Each Chute 675
pounds/min.

AIR START

MAIN FUEL VALVE ON
BOOSTS PUMP ON
EMERG. SHUTDN. HNDL. IN
THROTTLE 1 IN. OPEN FROM. FLIGHT IDLE
FUEL & IGN. SW. PULL
FEATHER BUTTON. PULL
PRIMER. DEPRESS

Release Feather Button at
1000-1400 RPM

EMERGENCY PROCEDURES

PREFACE

IN AN EMERGENCY, NOTIFY THE COMPANY AS SOON AS POSSIBLE. ALSO, WHEN APPROPRIATE, ALERT THE FLIGHT ATTENDANTS: IF AN EMERGENCY LANDING IS PLANNED, DIRECT THE FLIGHT ATTENDANTS TO TAKE THE NECESSARY PREPARATORY ACTION.

PROCEDURES

Where the procedures in this manual differ from those contained in the CAA Approved Flight Manual for this airplane, Eastern Air Lines has determined that equivalent safety is provided by such alternate procedures and assumes full responsibility for this determination.

All procedures presuppose all crew members at their normal stations. If a crew member is absent or incapacitated, the pilot in command will delegate duties at his discretion.

Crew duties have been assigned so that all crew members may become familiar with them in the sequence in which they should normally be performed. It is important that these standardized procedures be followed in training so that maximum efficiency may be obtained in any emergency regardless of crew member pairings. As the Captain is responsible for the safe conduct of a flight, he may reassign duties at his discretion as an emergency unfolds and his judgment dictates.

In procedures outlined for the more serious and quickly developing emergencies, they have been divided into "Immediate Action Items" outlined in red, and "Secondary Action Items". It is expected that all crew members will commit to memory the entire "Immediate Action Items" portion of the procedures. "Secondary Action Items" should be accomplished as soon after completion of "Immediate Action Items" as is practicable under the circumstances, using the appropriate check list AS A WORK LIST as it is not expected that crew members memorize these items.

It is suggested that in a quick developing emergency, the Captain, at his discretion, delegate the physical flying of the plane to the Pilot until he can complete supervision of corrective action. It is expected that the Flight Engineer will read the check list aloud, including the response, as each control is placed in the appropriate position.

Operation of the fire warning bell cut-off switch is not included as a procedural step in the individual emergency procedures. The warning bell should be cut off as soon as practicable, however, to eliminate this source of distraction during such emergencies.

EMERGENCY LANDINGS

Due to the potential fire hazard attending emergency landings, the airplane should be evacuated as rapidly as possible after coming to a complete stop. In extreme emergencies, the Captain should consider the advisability of belly landing the airplane in order to expedite rapid evacuation.

EMERGENCY PROCEDURES

ENGINE FAILURE OR FIRE

CAPTAIN	PILOT	FLIGHT ENGINEER
IMMEDIATE ACTION ITEMS		
EMERGENCY SHUTDOWN ^{1/} HANDLE PULL		MONITOR TACHOMETER AND ADVISE WHEN ROTATION STOPS.
IF FIRE OR FIRE WARNING		
EXTINGUISHING ^{1/} AGENT DISCHARGE		VISUALLY INSPECT ENGINE THROUGH CABIN WINDOW ^{2/}
SECONDARY ACTION ITEMS		
Supervises clean up.	Flies airplane.	Reads Check List: GEAR AND FLAPS AS REQUIRED MAIN FUEL VALVES AS REQUIRED CROSS FEEDS OFF FUEL PUMPS AS REQUIRED FUEL & IGNITION SWITCHES AS REQUIRED OIL COOLER FAIRED WARNING BELL ON

EMERGENCY DESCENT

CAPTAIN	PILOT	FLIGHT ENGINEER
IMMEDIATE ACTION ITEMS		
CLEAN		
THROTTLE FLIGHT IDLE AUTO PILOT OFF DESCENT SPEED LIMIT TO RED MACH NEEDLE ON A.S. INDICATOR		
OR WITH GEAR AND FLAPS EXTENDED		
THROTTLE FLIGHT IDLE AUTO PILOT OFF DESCENT SPEED LIMIT TO 170 K		GEAR AND FLAPS FULL DOWN

EMERGENCY PROCEDURES

ENGINE FAILURE OR FIRE - NOTES

- 1/ Engine shut-down will be done by the Captain.
- 2/ If Flight Engineer reports that fire persists, and it is determined that the first charge has not smothered the fire, it will be necessary to switch the FIRE EXTINGUISHER SELECTOR VALVE to TRANSFER TO ADJACENT ENGINES and again push the Discharge button.

CAUTION: DO NOT RETURN FEATHER BUTTON TO NORMAL POSITION WITH PROPELLER FEATHERED OR RESTORE EMERGENCY SHUT DOWN HANDLE TO RUN POSITION SINCE THESE ITEMS INSURE A POSITIVE BLADE ANGLE; RESTORATION MAY CAUSE THE PROPELLER TO UNFEATHER IF FORWARD ROTATION IS ENCOUNTERED. WHEN MAKING AN ENGINE SHUT DOWN IN FLIGHT, DO NOT RETARD THE THROTTLES BELOW FLIGHT IDLE TO INSURE THAT THE PROPELLER REMAINS IN THE GOVERNING RANGE. IF FEATHER BUTTON LIGHT DOES NOT EXTINGUISH IN APPROXIMATELY ONE MINUTE, PULL PROP FEATHER PUMP CONTROL CIRCUIT BREAKER.

CAUSES FOR ENGINE SHUT DOWN

The engine should be shut down and the propeller feathered if any of the following are observed:

- Abnormal engine vibration
- Excessive or uncontrollable power loss
- Sudden or uncontrollable rise in engine oil temperature or drop in oil pressure
- Uncontrollable rise in Turbine Inlet Temperature
- Uncontrollable increase in engine RPM to 16,000, or exceeding 14,900 for a sustained period.
- Engine RPM drop to 13,400 or less.

NOTE: For engine RPM increases or decreases, if they occur while operating in SYNCH or PHASE SYNCH, turn the Propeller Synchronizer Control to OFF to make sure that action of the synchronizer system circuits is neither concealing a governor defect or causing the variance in RPM.

After engine shut-down for any of the above reasons, it should not be restarted in flight unless a greater emergency arises. Where continued operation of an engine showing any of the above conditions is considered necessary, it is recommended the engine be operating with caution at minimum power consistent with requirements.

Do not restart an engine that has been shut down due to fire or fire warning.

If fire is not under control, land as soon as possible. If fire has been smothered, land as soon as practicable.

FAILURE DURING TAKE-OFF

If failure occurs before reaching V_1 speed, discontinue take-off. If speed is above V_1 , take-off should be carried through; however, the Captain may elect to stop if excess runway is known to exist.

If take-off is continued, hold plane on the ground until V_2 speed is attained and maintain V_2 speed until obstacles are cleared.

MULTIPLE ENGINE FAILURE

The failure of any two engines during flight will result in the loss of the electrical output of their generators and those electrical loads carried by Utility Bus C will be automatically dropped.

Should both failed engines be the inboards, the pressurization system will be lost as the cabin superchargers are driven by these engines.

It will be necessary to monitor electrical load and pressurization in the event of multiple engine failure.

PROPELLER ELECTRICAL FAILURE

Should a complete electrical failure occur to the propeller and it becomes necessary to shut the engine down, pull the affected engine oil shut-down valve circuit breaker before pulling the emergency shut-down handle. The propeller will move toward the feathered position but it will continue to windmill in a low drag condition.

CAUTION: IF ENGINE SHUT-DOWN IS NECESSARY BECAUSE OF FIRE, DO NOT PULL THE OIL SHUT-DOWN VALVE CIRCUIT BREAKER.

GO-AROUND PROCEDURE - THREE ENGINES OPERATING, FLIGHT CONTROL BOOSTERS ON.

- Power TAKE-OFF
- Wing Flaps TAKE-OFF
- Landing Gear UP
(After flaps are at TAKE-OFF position)
- Power USE POWER AS NECESSARY
AFTER GEAR IS UP

EMERGENCY DESCENT - NOTES

Emergency descent from high altitudes should ordinarily be made in the clean configuration. Should there be turbulence or other conditions requiring slower airspeeds, descent may be made with the landing gear down and the flaps fully extended.

With gear and flaps extended, the angle of descent will be greater than when descending in a clean condition, but rate of descent will be slower because of the lower airspeed limit for operating with flaps extended (V_{fe}).

EMERGENCY PROCEDURES

FUSELAGE FIRE

CAPTAIN

PILOT

FLIGHT ENGINEER

IMMEDIATE ACTION ITEMS

EMERGENCY DESCENT... IF NECESS

OXY MASK & FLOW... ON - 100%

PROCEED TO NEAREST ADEQUATE
LANDING AREA, IF NECESSARY.

OXY MASK & FLOW... ON - 100%

RECIRC AND DEFOG FANS... OFF
CABIN PRESSURE
CONTROLLER... FLT. ALT.
AUX VENT CONTROL KNOB
(AT 1" DIFF/PRES)... 30%
WALK AROUND OXY -
IF NECESS... ON-100%
FLT. STA. - CABIN
DOOR... BLOCK OPEN
PORTABLE FIRE
EXTINGUISHER . USE AS NECESS.

SECONDARY ACTION ITEMS IF HYDRAULIC SYSTEM IS INVOLVED

CONTROL BOOSTS... MANUAL

HYDRAULIC PUMP
SWITCHES... OFF

SMOKE REMOVAL

CAPTAIN

PILOT

FLIGHT ENGINEER

IMMEDIATE ACTION ITEMS

EMERGENCY
DESCENT... IF NECESS.

SEAT BELT - NO SMOKING... ON

OXYGEN MASK
AND FLOW... ON & 100%

OXYGEN MASK
AND FLOW... ON & 100%

FAN SWITCHES... OFF
AUX VENT KNOB... 100%
OXYGEN MASK
AND FLOW... ON & 100%

SECONDARY ACTION ITEMS IF ADDITIONAL SMOKE REMOVAL IS NECESSARY

AIRSPEED... REDUCE TO 170

SLIDING SIDE
WINDOW... FULL OPEN
AFTER OVERWING EXITS OPEN

AUX VENT KNOB... 0
CABIN - FLT. STATION
DOOR... OPEN
OVERWING EMERGENCY
EXIT(S)... OPEN

EMERGENCY PROCEDURES

FUSELAGE FIRE - NOTES

PORTABLE FIRE EXTINGUISHERS may gain control of an open fire, should it occur in the cabin of flight station. If smoke or fire should originate beneath the floor, attempt to isolate the cause by shutting off fluids or electrical current that may extenuate the fire. If smoke should become dense, follow the SMOKE REMOVAL procedures.

CAUTION: DO NOT USE WATER FIRE EXTINGUISHERS ON ELECTRICAL FIRES.

FULL FACE OXYGEN MASKS AT 100% FLOW should be worn by flight crew members before releasing CO₂ in the confined fuselage area as this agent will quickly cause unconsciousness if inhaled.

RECIRCULATION FANS must be shut off immediately to minimize smoke accumulation in the above floor area and to reduce the possibility of fanning the fire.

AUX. VENT. CONTROL KNOB in the 30% position dumps the cabin compressors, so their output does not enter the cabin where it might fan the fire, and partially opens the aux. vent. inlet and exit valves to afford moderate ventilation without excessive air circulation.

CARGO COMPARTMENTS are sealed and designed to control a fire by oxygen starvation; as a result no extinguishing agents are provided. The leakage rate of air into the compartment is sufficiently low to confine a fire to the smoldering state provided fresh air is not admitted through one of the hatches in the cabin floor. It is imperative, therefore, that these hatches NOT BE OPENED if fire is suspected or detected.

SMOKE REMOVAL - NOTES

If unable to open an emergency exit, break the window using an axe or heavy object. Passengers and crew members should stay clear of the opening.

WARNING:

NEVER OPEN A VENT IN THE FLIGHT STATION BEFORE THERE IS AN OPENING IN THE CABIN OVER THE WING. NEVER OPEN AN EMERGENCY EXIT FORWARD OF THE PROPELLER PLANE. THE PRESSURE OUTSIDE OF THE FLIGHT STATION IS LOW AND A VENT IN THIS AREA WILL SUCK AIR FORWARD INTO THE FLIGHT STATION. BY FIRST OPENING A VENT OVER THE WING, WHERE THE PRESSURE IS EVEN LOWER, AIR WILL BE SUCKED AFT FROM THE FLIGHT STATION AND OUT OVER THE WING.

EMERGENCY PROCEDURES

ELECTRICAL FIRE

CAPTAIN

PILOT

FLIGHT ENGINEER

IMMEDIATE ACTION ITEMS

Try to identify circuit causing trouble and deactivate it electrically by using proper switch or circuit breaker.

1/ If unable to isolate fire quickly:

2/ NONESSENTIAL LOAD SWITCHES. OFF

SECONDARY ACTION ITEMS TO ISOLATE FAULTY BUS OR CIRCUIT

3/ If Fire Persists

4/ EMERG COMM/PA DC SWITCH. . . .ON

Accomplish following items, checking for fire indication.

5/ GENERATORS NOS. 1, 2, & 4. OFF
Leave No. 3 On

If Fire Still Persists,

6/ GENERATOR NO. 2. ON
7/ Then, No. 3 OFF

GROUND OPER. BUS C.B. OFF
ESS AC & ESS DC CB'S. CHECK

Secure after isolating faulty bus or circuit.

8/ GENERATORS. ON
NONESSENTIAL LOAD SWS. . . . ON
EMER. RADIO DC POWER. . . . OFF
GROUND OPER. BUS FEEDER . . . ON