DOCKET NO. SA-510

EXHIBIT NO. **2F**

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

EXCERPTS FROM:
B-737-300/400
EMERGENCY PROCEDURES CHECKLIST

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FOREWORD

Emergency procedures set up in this manual were included only after repeated testing and investigation. They represent the best known available facts about the subject. Pilots should follow these procedures as long as they fit the emergency; however, if at any time they are not adequate or do not apply, the Captain's best judgment should prevail. Only the flight crew operating the airplane at the time the emergency occurs can evaluate the situation sufficiently to make the proper decision.

The procedures are essentially the same as those contained in the FAA Approved Flight Manual. Certain changes to the manufacturer's recommendations in operating technique have been made. These differences have been found by USAir as a result of experience to be in consonance with and in the best interest of safety and good operating practice; full responsibility is assumed for this determination.

All crewmembers should be thoroughly familiar with emergency procedures and the location and use of emergency equipment. Any flight crewmember should be equipped to handle the emergency duties of any other crewmember.

All crewmembers must realize that the Captain is in complete charge of the airplane, and his/her orders are to be obeyed, even though they may be at variance with written instructions. Any potential or actual emergency situation should be immediately called to the attention of the Captain. Only s/he shall initiate such emergency procedures as engine shutdown, extinguishant discharge, etc. (If the Captain is absent from the cockpit, the First Officer is in command.)

Fires are obviously in the category of most urgent emergencies and require immediate action in the earliest stages for proper control. Any warning of fire must be treated as an actual fire and fire-fighting procedures initiated. Procedures may be terminated if it can be definitely determined that no fire exists.

It will take the best of coordination among crewmembers to efficiently combat a fire, especially in flight. It will take almost perfect coordination among the crew to quickly evacuate the aircraft if it is landed while a fire is in progress. Such cooperation plus knowledge, plus self-discipline and training, all stand the flight crew in good stead if they have the misfortune to experience an in-flight fire.

FOREWORD (cont'd.)

On the following pages are outlined emergency procedures to cover many of the situations which might arise. Amplification of Emergency Checklist items is included, which explains reasons for the emergency items and how they should be accomplished. All emergency procedures could not be included on the cockpit checklist, nor are all emergency situations which could occur covered in this material. In an emergency, intelligent action is better than delay in search of the ideal.

Crewmembers should be aware of the possible need for assessment of damages to the aircraft following any inflight or ground emergency, incident, fire, and/or systems malfunction. An example of this might be the explosion of a tire in the wheel well. The crew must then determine if there was any damage to electrical, fuel, hydraulic, or flight control systems, and if so, the amount of system degradation. Proper assessment of the damage may be required so that the pilot-in-command will be able to make a judgment as to the proper actions to be taken.

Emergency checklists are CHALLENGE-RESPONSE (by the pilot reading the checklist), followed by a RESPONSE from the pilot answering the checklist.

→ The pilot reading the checklist (normally the First Officer) shall read aloud ***both*** the CHALLENGE and the RESPONSE and should await the correct RESPONSE before continuing to the next step. Then there should be no doubt in any flight crewmember's mind as to the correct course of action. The pilot responding has the same responsibility for checking and/or accomplishing the item responding to the Challenge as if it were not being read aloud.

CHECKLIST AMPLIFICATION

Procedures contained herein assume certain actions by the crew:

- System controls are in the normal configuration for the phase of flight prior to the initiation of abnormal procedures.
- Warning aurals are silenced by the flight crew as soon as the cause of such warning(s) is recognized.
- Testing lights may be accomplished at the discretion of the flight crew to verify suspected indication faults.
- While resetting circuit breakers is not generally a requirement in flight, a tripped circuit breaker may be reset, at the Captain's discretion, after a short cooling period (approximately 2 minutes). If the circuit breaker trips again, no further attempt should be made to reset that circuit breaker.
- Oxygen masks and goggles are donned and communications are established when their use is required. This includes, but is not limited to: loss of cabin pressure, use of fire extinguishing agents, contamination (such as smoke), or concentration of fumes or odors, either present or anticipated on the flight deck or in the passenger cabin.
- Emergency oxygen should be utilized when necessary to provide positive pressure in the masks and goggles to prevent the entry of or evacuate contaminants. When positive pressure is not required, but contamination of cockpit air exists, 100% oxygen must be used. If prolonged use is required and the situation permits, oxygen availability should be extended by selecting normal flow. These actions will be accomplished when required, therefore, no specific mention is made concerning oxygen usage in procedures and checklists.
- Obvious corrective action (if any) is taken for Crew Awareness items.
- Landing at nearest suitable airport is accomplished in the event of:
  - Engine failure or fire.
  - Wheel well fire.
  - Cabin smoke or fire which cannot be immediately and positively determined to be eliminated or extinguished.
  - One hydraulic system remaining.
  - One main AC power source remaining (i.e., engine or APU generator).
  - Any other situation determined by the crew to present significant adverse effect on safety if flight continued.

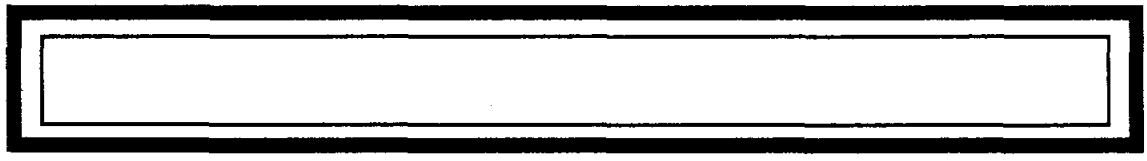
Certain procedures are divided into **Memory Items** and **Secondary Actions. Memory Items** are those actions which must be taken immediately and which are essential to safety. These are presented in boxes on the yellow Emergency Checklist. **Secondary Actions** are those which, although part of the procedure, are not essential to safety and can be left until a more convenient time.

CHECKLIST AMPLIFICATION (cont'd.)

Memory Items on the Emergency Checklist for aircraft are contained in this type box:

Checklist Emergency and Normal titles in the appropriate amplification portions of this manual are contained in this type box:

Checklist Abnormal titles in the appropriate amplification portion of this manual are contained in this type box:



Memory items on the Emergency Checklist are displayed in the amplification portion of this chapter in this type box:

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USAir
EMERGENCY CHECKLIST
B-737-300/400

C/C 173-0003

ENGINE FAILURE / FLAMEOUT

THROTTLE/AUTOTHROTTLE ..... IDLE/DISENGAGE
START LEVER ..... CUTOFF
SECONDARY ACTIONS ..... ACCOMPLISH

ENGINE OVERHEAT

THROTTLE/AUTOTHROTTLE ..... IDLE/DISENGAGE

If ENG OVERHEAT light remains illuminated:

Proceed with ENGINE FIRE/SEVERE DAMAGE/ SEPARATION procedure.

ENGINE FIRE / SEVERE DAMAGE / SEPARATION

THROTTLE/AUTOTHROTTLE ..... IDLE/DISENGAGE
START LEVER ..... CUTOFF
ENGINE FIRE SHUTOFF HANDLE ..... PULL

If FIRE WARN or ENG OVERHEAT light remains ILLUMINATED:

ENGINE FIRE SHUTOFF HANDLE ..... ROTATE L or R

Rotate to the stop and hold for 1 second.

If FIRE WARN or ENG OVERHEAT light remains ILLUMINATED AFTER 30 SECONDS:

ENGINE FIRE SHUTOFF HANDLE ..... ROTATE TO REMAINING BOTTLE

Rotate to the opposite stop and hold for 1 second.

If FIRE WARN or ENG OVERHEAT light remains ILLUMINATED:

NEAREST SUITABLE AIRPORT ..... LAND
ISOLATION VALVE ..... CLOSE
APU BLEED AIR SWITCH ..... OFF

Do not reopen ISOLATION VALVE or APU BLEED VALVE unless fire has been extinguished.

SECONDARY ACTIONS

APU (if available) ..... START & ON BUS
FUEL ..... BALANCE
INFLIGHT START ..... CONSIDER

— *If wing anti-ice is required:*

PACK SWITCH (affected side) ..... OFF

Do not open the ISOLATION VALVE unless the fire has been extinguished.

ISOLATION VALVE ..... AUTO
WING ANTI-ICE ..... ON

SINGLE ENGINE PRELIMINARY LANDING

— Below 10,000 feet when wing anti-ice is no longer required, configure pressurization system for an ENGINE BLEEDS OFF LANDING.

L & R PACK SWITCHES ..... AUTO
ISOLATION VALVE ..... CLOSE
NO. 1 ENGINE BLEED ..... OFF

Do not open the APU bleed valve if the engine FIRE WARN light remains ILLUMINATED.

APU BLEED AIR SWITCH ..... ON
NO. 2 ENGINE BLEED ..... OFF

ALTIMETERS, FLT INSTS ..... ____/CHECKED
LANDING DATA (V_{REF} 15) ..... CHKD & SET
GPWS ..... FLAP INHIBIT
SHOULDER HARNESS ..... ON
APPROACH BRIEFING ..... COMPLETE
AUTOBRAKE ..... ____SET
GO-AROUND PROCEDURE ..... REVIEW
— MAX POWER; press TO/GA switch
— Rotate to Go-Around Attitude
— Flaps 1
— Gear UP/Maintain V_2
— Retract flaps on Flap/Speed Schedule at appropriate altitude.

SINGLE ENGINE LANDING

START SWITCHES ..... CONT
RECALL ..... CHECKED
SPEEDBRAKE ..... ARMED, GREEN LIGHT
GEAR ..... DOWN, 3 GREEN
►
FLAPS ..... 15, GREEN LT, DETENT

INFLIGHT START

INFLIGHT START ENVELOPE ..... CHECK

CAUTION: STARTER ASSIST SHOULD BE USED IF N_2 IS BELOW 15%.

THROTTLE ..... IDLE
START LEVER ..... CUTOFF

— *If starter assist is required:*

PACK SWITCH (Failed Side) ..... OFF
DUCT PRESSURE ..... MINIMUM 30 PSI

If required, advance throttle on operating engine to increase duct pressure.

IGNITION SELECT SWITCH ..... BOTH
START SWITCH ..... GRD
START LEVER ..... IDLE DETENT

If no increase in EGT is observed wthin 30 seconds:

START LEVER ..... CUTOFF
START SWITCH ..... OFF

— *If starter assist is not required:*

START SWITCH ..... FLT
START LEVER ..... IDLE DETENT

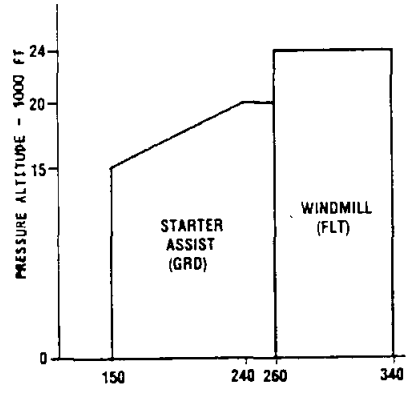
If no increase in EGT is observed within 30 seconds:

START LEVER ..... CUTOFF
START SWITCH ..... OFF

— *After engine start:*

GENERATOR SWITCH ..... ON
PACK SWITCH ..... AUTO
START SWITCH ..... AS REQUIRED
APU ..... AS REQUIRED
FUEL ..... BALANCE

INFLIGHT START ENVELOPE



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USAir
EMERGENCY CHECKLIST
B-737-300/400

C/C 173-0003

LOSS OF THRUST ON BOTH ENGINES

START SWITCHES ..... FLT
START LEVERS ..... CUTOFF

When EGT is decreasing:

START LEVERS ..... IDLE DETENT

If the EGT REACHES 930°C, repeat the above steps.

APU (if available) ..... START & ON BUS

— *If restart is not successful on either engine and N_2 is below 15%:*

WING ANTI-ICE SWITCH ..... OFF
PACK SWITCHES ..... OFF
APU BLEED AIR SWITCH ..... ON
IGNITION SELECT SWITCH ..... BOTH
EITHER START SWITCH ..... GRD

— *When engine parameters have stabilized:*

APU BLEED AIR SWITCH ..... OFF
START SWITCH ..... FLT
THRUST LEVER ..... ADVANCE
GENERATOR SWITCH ..... ON
PACK SWITCH ..... AUTO

— *Accomplish the INFLIGHT START checklist to start the other engine.*

— *If neither IRS attitude display recovers after a generator bus is restored:*

IRS MODE SELECTOR SWITCHES ..... ATT
MAGNETIC HEADING ..... ENTER

SMOKE OR FUMES REMOVAL

OXYGEN MASKS ..... ON, 100%
SMOKE GOGGLES (if required) ..... ON
CREW COMMUNICATIONS ..... ESTABLISH

COCKPIT DOOR ..... CLOSE

— *If PACKS are ON and smoke is confirmed to be in the COCKPIT or MAIN CABIN:*

PRESSURIZATION MODE SELECTOR ..... STBY
CABIN ALT. INDICATOR (Max. 10,000') ... INCREASE
CABIN RATE SELECTOR ..... MAXIMUM INCREASE
L & R PACK SWITCHES ..... HIGH
NO. 1 & NO. 2 BLEED SWITCHES ..... ON
ENGINE THRUST ..... MINIMUM 45% N_1
COCKPIT AIR CONDITIONING & GASPER OUTLETS ..... OPEN

CAUTION: DO NOT OPEN ANY COCKPIT WINDOW. KEEP COCKPIT DOOR CLOSED.

— *If smoke is uncontrollable:*

AIRPLANE ALTITUDE ..... 10,000' or MEA (WHICHEVER IS HIGHER)

— *At 14,000 feet or below:*

PRESSURIZATION MODE SELECTOR ..... MAN AC
OUTFLOW VALVE SWITCH ..... OPEN

— *If PACKS are OFF and smoke source is confirmed to be in the COCKPIT:*

CAUTION: WINDOW SHOULD NOT BE OPENED UNLESS THE SOURCE IS CONFIRMED TO BE IN THE COCKPIT.

NORMAL HOLDING AIRSPEED ..... ESTABLISH
F/O'S SLIDING WINDOW ..... OPEN

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ELECTRICAL SMOKE OR FIRE

OXYGEN MASKS ..... ON, 100%
SMOKE GOGGLES (if required) ..... ON
CREW COMMUNICATIONS ..... ESTABLISH

— *If smoke source CAN BE DETERMINED:*

ELECTRICAL POWER ..... REMOVE

— *If smoke source CANNOT BE DETERMINED:*

BUS TRANSFER SWITCH ..... OFF
GALLEY POWER SWITCH ..... OFF
NEAREST SUITABLE AIRPORT ..... LAND
SMOKE REMOVAL CHECKLIST (if required) ..... ACCOMPLISH

WHEEL WELL FIRE

LANDING GEAR LEVER (270K/.82M max.) ..... DOWN

NEAREST SUITABLE AIRPORT ..... LAND

APU FIRE

APU FIRE SHUTOFF HANDLE ..... PULL/ROTATE

If FIRE WARN light remains ILLUMINATED:

— *INFLIGHT:*

NEAREST SUITABLE AIRPORT ..... LAND

— *ON THE GROUND:*

STANDBY POWER SWITCH ..... BAT
GROUND CONTROL/TOWER ..... NOTIFY
PASSENGER EVACUATION (if necessary) ... INITIATE

RAPID DEPRESSURIZATION

OXYGEN MASKS ..... ON, 100%
CREW COMMUNICATIONS ..... ESTABLISH
PRESSURIZATION MODE SELECTOR ..... MAN
OUTFLOW VALVE SWITCH ..... CLOSE

SEAT BELT/NO SMOKING ..... ON
PASSENGER OXYGEN SWITCH (if required) ..... ON
EMERGENCY DESCENT (if required) ..... INITIATE

EMERGENCY DESCENT

If structural integrity is in doubt, limit airspeed as much as possible and avoid high maneuvering loads.

DESCENT ..... INITIATE
START SWITCHES ..... CONT
AUTOPILOT ..... AS REQUIRED
THROTTLES ..... IDLE
SPEEDBRAKE ..... FLIGHT DETENT
TARGET SPEED ..... M_{MO}/V_{MO}
LEVEL OFF ALTITUDE ..... 10,000' or MEA (WHICHEVER IS HIGHER)
SPEEDBRAKE ..... RETRACT
START SWITCHES ..... AS REQUIRED

PASSENGER EVACUATION

CAPTAIN:

PARKING BRAKE ..... SET
SPEEDBRAKE LEVER ..... DOWN DETENT
START LEVERS ..... CUTOFF
EVACUATION ..... INITIATE
ENGINE & APU FIRE SHUTOFF HANDLES ..... OVERRIDE & PULL
FIRE EXTINGUISHERS (if required) ..... DISCHARGE

FIRST OFFICER:

FLAP LEVER 40
STANDBY POWER SWITCH ..... BAT
OUTFLOW VALVE (if required) ..... OPEN
TOWER ..... NOTIFY