SECTION 4

NORMAL OPERATING PROCEDURES

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EASTERN AIR LINES, INC.

ELECTRA CHECK LIST

Part No. 75-CH-175 Rev. 1-28-59

BEFORE STARTING ENGINES

CIRC. BRKRS. & SWS. . . . . .ON-CE
TD CONTROL SWS. . . . . NORM-P
OXYGEN SYSTEM . . . . .ON & 100%-CPE
*DC HYD. PUMP (TOW SW.). . . . . ON-P
*HYD. COOLING SW. . . . . ON-P
*ELEC. PANEL. . .SWS.-ON,INV.-START-P
*EXT. POWER VOLTS. . . . . 115 & #4-P
PRESSURIZATION PANEL. . . . . .SET-P
CABIN AIR COMPRESSORS PANEL . .CKD-P
AIR COND. (2 PANELS). . CKD & SET-CE
AIRFOIL ICE PANEL . . . .CKD & SET-C
PROP ICE PANEL. . . . . .OFF-C
PITOT HTRS. . . . . .CKD & OFF-C
*SEAT BELT-NO SMOK.. . . . . ON-C
*LANDING LTS.. . . . .RETRACT & OFF-C
*INDICATING LTS. . . . TEST BRIGHT-CE
*EMER. EXIT LTS. . . . .RESET & ARM-C
*POSITION LTS. . . . . .AS REQD-C
*BRAKE PRESS. (NORM. & EMERG.). CKD-C
*PARKING BRAKES. . . . . .RESET-C
EMERG. SHUTDN. HNDLS. . . . . IN-P
*GEAR LEVER. DOWN-3-GREEN-P
*RMDI. . . . . SET-CP
STATIC SELECTORS. . . . . .NORM-CP
*OIL QUANTITY. . . . . GALS-P
*HYD. QUANTITY . . . . . .CKD-P
*FUEL QUANTITY . . . . . .POUNDS-CE
*MAIN FUEL VALVES. . . . . ON-P
*CROSSFEEDS. . . . . .OFF-P
RADAR . . . . . UP & OFF-P
AUTO PILOT. . . . . .OFF-P
*PROP.SYNC. CONTROL. . . . . .OFF-C
*TEMP. TRIM SW.. . . . . CONTROLLED-C
*TRIM TABS . . . . . .SET-C
*OIL COOLERS . . . . . .SET-E
#STATIC AUTO FEATHER . . . . . .CKD-C
*RPM SWS. . . . . .LOW-C
RADIOS & ALTIMS.. . . . .CKD & SET-P
FREON & HEAT. . . . . .OFF-C
(AFTER #4 STARTED CHECK VOLTAGE THEN
EXT. POWER SW. OFF). . . . . -P

BEFORE TAXIING

EXT. POWER SW. . . . . OFF-P
INVERTER . . . . . .EMER-P
STARTER SELECTOR . . . . . OFF-C
BLEED VALVES . . . . . .CLOSED-C
WINDSHIELD HEAT. . . . . LOW-C
AC HYD. PUMPS #1 & #1A . . . .NORMAL-P
DC HYD. PUMP (TOW SW.) . . . . . OFF-P
HYD. PRESS.. . . . . CKD-P
DOOR WARN. LTS.. . . . . OUT-P
#FIRE WARNING. . . . . CKD-E
OIL COOLERS. . . . . SET-E
#GEAR PINS . . . . . CKD-C

TAXIING AND BEFORE TAKE-OFF

FLIGHT INSTS.. . . . . .CKD-CP
FUEL PUMPS . . . . . .ON-E
TRIM TABS. . . . . SET-C
CONTROLS-FULL TRVL.. . . . . CKD-P
ANTI-COLLISION LT. . . . . AS REQD-C
PITOT HTRS.. . . . . AS REQD-C
ENG. & PROP ANTI-ICE . . . . AS REQD-C
AC HYD. PUMP SYS. #2 . .ON-PRESS.CKD-P
WING FLAPS. . . . . .TAKE-OFF-P
V_1-V_2 . . . . . CKD-P
AUTO FEATHER . . . . . ARMED-E
PRESS. & TEMPS.. . . . . .NORMAL-E
OIL COOLERS. . . . . SET-E
RPM SWS. . . . . .HIGH-C

CLIMB

WING FLAPS . . . . . .UP-P
LANDING LTS. . . . . RETRACT & OFF-C
GEAR LEVER . . . . . NEUTRAL-P
AUTO FEATHER . . . . . OFF-E
PROP.SYNC. #2 OR #3 SYNC. THEN PHASE-E
PRESS. & TEMPS.. . . . . CKD-E
AC HYD. PUMPS. . . . . AS REQD-P
SEAT BELT-NO SMOK. . . . . AS REQD-C
ALTIMETERS . . . . . .RESET-CP

CRUISE

CRUISE POWER . . . . . SET-C
PRESS. & TEMPS.. . . . . CKD-E

DESCENT-IN RANGE

IAS (VNO MAX.). . . . . RED NEEDLE-C
PRESSURIZATION. . . . . .AS REQD-E
SEAT BELT . . . . . ON-C
ALTIMETERS. . . . . SET-CP
MAIN FUEL VALS. . . . . ON-E
CROSSFEEDS. . . . . .OFF-E
BRAKE PRESS.(NORMAL & EMERG.) . .CKD-P
RADAR . . . . . UP & OFF-P
ALL AC HYD. PUMPS . .NORMAL OR SPARE-P
LANDING WT. & SPEED . . . . . CKD-EC
AIRFOIL & PROP ICE PANELS . .AS REQD-C
AUTO PILOT . . . . . .AS REQD-C

BEFORE LANDING-FINAL

NO SMOK. . . . . .ON-C
WING FLAPS . . . . . SET-P
GEAR DOWN. 3-GREEN-PRESS-NORM-P

AFTER LANDING

OIL COOLERS. . . . . .OPEN-E
PROP. SYNC.. . . . . OFF-E
RPM SWS. . . . . LOW-C
FLAPS. . . . . .UP-P
FUEL PUMPS . . . . . OFF-E
AC HYD. PUMP SYS. #2 . . . . . OFF-P
PITOT HTRS.. . . . . OFF-C
WINDSHIELD HEAT. . . . . OFF-C
ANTI-COLLISION LT. . . . . OFF-C
##FIRE WARNING . . . . . CKD-E
LANDING LTS. . . . . AS REQD-C
NTS - ON SHUT-DOWN . . . . . .CKD-CE

SECURING

PARK BRAKE. . . . . .SET-C
AC HYD. PUMPS . . . . . .OFF-P
HYD. COOLING SW.. . . . . .OFF-P
POSITION LTS. . . . . .AS REQD-C
RADIO SWS. . . . . .OFF-P
INVERTER. . . . . .OFF-P
EXT. POWER SW.. . . . . ON-P
BATTERY SELECTOR SW.. . . . .AS REQD-P
AIR COND. SWS. . . . . AS REQD-CE

*INTERMEDIATE STATIONS
#ORIGINATING STATIONS
##TERMINAL STATIONS

1/12/59

MINIMUM EQUIPMENT

This sub-section contains extracts from EAL Maintenance Manual, Volume I, which is available at the office of each Station Manager.

MAIN MAINTENANCE BASE

Aircraft may not be dispatched in scheduled operation from the main maintenance base unless all flight equipment is installed and in serviceable condition exclusive of the exceptions listed below: MIA is the main maintenance base.

1. Special equipment installed for test purposes which do not affect the airworthiness of the airplane and are not covered in the Minimum Flight Equipment List.
2. Equipment, such as heaters, deicers, anticers, etc., when such equipment is not required or when it is required but its use will not be necessary for that particular flight.
3. Automatic operation of equipment which is provided with a manual operating alternate.
NOTE: Does not include auto-feathering. This must be operating at all times.
4. Weather radar and autopilot are not required equipment.
5. Electric or hydraulic operated passenger stairs and doors which can be operated manually.

OTHER THAN MAIN MAINTENANCE BASE

Aircraft may not be dispatched in scheduled operation from any station unless all flight equipment is installed and in a serviceable condition with the exception of the items outlined in paragraph 1, and for other unserviceable flight equipment which is included but does not exceed those exceptions contained in the Minimum Flight Equipment List. If this list is not exceeded by unserviceable flight equipment, the airplane may be dispatched or cleared by the shortest practical routing to a point where replacement and/or repairs can be accomplished.

NOTE: If the airplane is dispatched under these conditions, the controlling dispatcher must be notified first for a decision as to whether or not the present clearance is applicable. A new clearance with altered flight plan may be necessary.

When an airplane is dispatched with such equipment inoperative, it is the responsibility of the Chief Mechanic or Station Manager to record the condition in the "NEXT TERMINAL STATION" section of the Aircraft and Engine Performance Report so as to inform that terminal station with the particulars of the condition and also to notify the Director of Maintenance and Engineering, Miami, immediately by teletype. If the long line is used, confirmation must be made by teletype. Copies of the message must also be sent to the dispatcher controlling the flight, the local Operations and the Aircraft Routing Department in Miami and the terminating station.

The Aircraft Routing Department will arrange to route the airplane to a station where repairs or replacement can be made. If the source of the trouble is located but replacement parts are not available, Routing will co-ordinate with Maintenance, Supply and Dispatch to see that the parts are expedited to the station where the corrective action is to be taken.

If the Captain requests replacement and/or repairs before accepting the aircraft, the necessary action will be taken by maintenance personnel in compliance with the request. A notation must be made in the Aircraft and Engine Performance Report of the corrective action taken and that it was by request of the Captain.

Through stations should not attempt repairs on non-essential items, such as broken passenger equipment, when it is likely to result in a delay.

FIRE DETECTING EQUIPMENT POLICY

All CAA required fire detecting equipment must be operating, except:

1. Heater - Fire detecting equipment may be inoperative, provided the heater or heaters affected are made inoperative and the flight crew so notified.
2. One engine fire detector unit each in zone (1) and (3) may be inoperative, provided that such inoperative unit does not interfere with the usefulness of the rest of the units in that zone, and provided that the inoperative unit is not the only one providing protection to any area.

TEMPORARY REPAIRS

A temporary repair is generally understood as one made to maintain the aircraft in a safe, flyable condition until it can be brought into a station where standard replacement or repair can be made. ALL REPLACEMENT PARTS AND REPAIRS MUST EITHER BE THE SAME AS OR EQUIVALENT TO THE PARTS INCLUDED IN THE ORIGINAL DESIGN BEFORE THE AIRCRAFT CAN BE CONSIDERED AIRWORTHY FOR DISPATCH.

The above conditions apply to all temporary repairs.

GEAR-DOWN OPERATION

No aircraft will be operated in schedule service with gear down or gear doors removed. No aircraft will be operated on ferry flights with the gear in the down position or with gear doors removed unless specific approval is first obtained through Miami Maintenance.

EQUIPMENT NOT MENTIONED IN THE MINIMUM FLIGHT EQUIPMENT LISTS.

Equipment or items of equipment which are necessary for the airworthy operation of the aircraft, and which are not mentioned in the lists must be in operating condition before the aircraft is dispatched.

There are many items on the aircraft, however, which do not contribute to the operational safety of the aircraft and which we also have not mentioned here. These items may or may not be in operating condition, depending upon the circumstances. For example, you would not normally hold up an aircraft at flight time to repair a tear in the cabin headliner or a leaky wash water tap, etc., or some other item in the "convenience" rather than the "necessary" class. A broken seat need not hold up a flight so long as no passenger is boarded for that seat and no one is allowed to sit in it.

These examples have been cited to emphasize the fact that not all items are items of "necessity" and can be items of "convenience" in which the fix decision is up to local determination.

MINIMUM EQUIPMENT

MINIMUM FLIGHT EQUIPMENT REQUIRED FOR DISPATCH

No. of Units per Plane	Description of Equipment or Instruments	Domestic Operations			Foreign Operations		
		VFR Day	VFR Night	Instrument or Over the Top	VFR Day	VFR Night	Instrument or Over the Top
2	Airspeed Indicator	1	2	2	1	2	2
3	Altimeter, Sensitive	2	2	2	2	2	2
4	Ammeters (AC) Generator	(a)	(a)	(a)	(a)	(a)	(a)
3	Ammeters (AC) Prop Deicing	(b)	(b)	(b)	(b)	(b)	(b)
2	Clocks, Sweep Second Hand	0	0	1(c)	0	0	1(c)
	COMMUNICATION EQUIPMENT						
2	H.F. Communications Unit	(d)	(d)	(d)	2(mm)	2(mm)	2(mm)
2	V.H.F. Receiver	1(d)	1(d)	1(d)	1	1	1
2	V.H.F. Transmitter	1(d)	1(d)	1(d)	1	1	1
3	Headset	2	2	2	2	2	2
3	Microphone	2	2	2	2	2	2
4	Electronic Fuel Trimming System	(e)	(e)	(e)	(e)	(e)	(e)
3	Fire Extinguisher (Portable) CO_2	2	2	2	3	3	3
2	Flares (Night Flights Only)	0	2	2	0	2	2
4	Fuel Boost Pumps (Main)	3(g)	3(g)	3(g)	3(g)	3(g)	3(g)
4	Fuel Scavenge Pumps	(j)	(j)	(j)	(j)	(j)	(j)
4	Generators	3(m)	3(m)	3(m)	3(m)	3(m)	3(m)
2	Gyro Horizon Indicator	1	1	2	1	1	2
4	Hydraulic Pumps (Electric) AC	3(n)	3(n)	3(n)	3(n)	3(n)	3(n)
2	Landing Lights (Night Flights Only)	0	2(p)	2(p)	0	2(p)	2(p)
	NAVIGATION EQUIPMENT						
2	A.D.F. Equipment:						
	Range System	(q)	(r)(s)	(t)	2	2	2
	A.D.F. System	0	(r)(s)	(t)	2	2	2
2	V.H.F. Navigation Receiver:						
	V.O.R. System	(q)	(r)(s)	(t)	0	0	0
	I.L.S. System	0	0	(u)	(u)	(u)	(u)
	Communication System	(d)	(d)	(d)	0	0	0
2	Course Indicator	0	(s)	(s)(t)(u)	(u)	(u)	(u)
2	Radio Magnetic Indicator	0	(s)	(s)(t)	1	1	1
1	Marker Receiver	0	0	1	1	1	1
1	Compass, Standard Magnetic	(v)	(v)	(v)	(v)	(v)	(v)
2	Compass, Remote Indicating System	(v)	(v)	(v)	(v)	(v)	(v)
6	Navigation Lights (Night Flights Only)	0	(w)	(w)	0	(w)	(w)
1	Navigation Light Flasher Unit	0	(w)	(w)	0	(w)	(w)
2	Navigation Anti-Collision Light	0	(w)	(w)	0	(w)	(w)
2	Oil Quantity Indication (Dual)	0	0	0	0	0	0
	Oxygen - Crew	(x)	(x)	(x)	(x)	(x)	(x)
	Oxygen - Passenger	(y)	(y)	(y)	(y)	(y)	(y)
2	Rate of Climb (Airplane)	1	1	1	1	1	1
2	Cabin Air Compressor Discharge Pressure Indicators	(cc)	(cc)	(cc)	(cc)	(cc)	(cc)
2	Cabin Air Compressor Oil Temperature Warning	(cc)	(cc)	(cc)	(cc)	(cc)	(cc)
2	Cabin Air Compressor Oil Pressure Warning	(cc)	(cc)	(cc)	(cc)	(cc)	(cc)
2	Turn and Bank Indicators	1	1	2	1	1	2
2	Vertical Gyro	1	1	2	1	1	2
2	Windshield Wipers	(ff)	(ff)	(ff)	(ff)	(ff)	(ff)
1	Wing Flap Position Indication	0	0	0	0	0	0
	Safety Belts	(One for each occupant)			(One for each occupant)		

MINIMUM FLIGHT EQUIPMENT REQUIRED FOR DISPATCH--NOTES

(a) One for each generator operating.

(b) Not necessary for that particular flight if icing is not anticipated.

(c) If the Captain or Pilot has a sweep second hand watch, this may be used in lieu of clock.

(d) One VHF receiver and transmitter must be operating at all times. Two-way H.F. communication is required for flights operating over Control 1150 (WPB-Wilmington). For operation other than Control 1150, if the H.F. communication units are inoperative, the flight may be dispatched with only VHF communication equipment operating. In such cases the dispatcher shall specify the minimum altitude necessary to maintain communications with at least one appropriate ground station while enroute and a copy of the dispatch shall be sent to all stations enroute. For flights where none, or only one of the VHF NAV Systems is required for navigation, the other VHF NAV unit may be used as a VHF communications receiver.

(e) May be dispatched with the electronic fuel trimming system inoperative. Flight crew must be notified of inoperative system.

(g) One outboard (1 or 4) tank pump may be inoperative.

(j) No. 1 or 4 scavenge pumps may be inoperative. No. 2 and 3 scavenge pumps must be operating at all times.

(m) May be dispatched with any one generator inoperative except No. 4, provided the inoperative generator is mechanically disconnected and the generator has been visually checked for proper disconnect as evidenced by the disengage indicator.

(n) Must have two pumps in the No. 1 system and one in No. 2 system operating. Pump switches must be placarded when spare pump is connected to the No. 1 system.

(p) The nose taxi lights may be used in lieu of one wing landing light.

(q) In addition to one 2-way Communication system, required under (d) above, one VOR or one ADF Receiver, applicable to the route to be flown, is required to receive meteorological information.

(r) One VOR or one ADF Receiver is required to receive navigational signals applicable to the route to be flown.

(s) Flight predicated on VOR Facilities requires either one Radio Magnetic Direction Indicator or one Course Indicator in operation. Flight predicated on LF Facilities requires one Radio Magnetic Direction Indicator.

(t) A flight predicated solely on VOR Facilities will require two VOR Receivers in operation to provide either Radio Magnetic Direction Indicator or Course Indicator bearing presentation. Flight predicated solely on LF Facilities will require two ADF Receivers with automatic bearing presentation. Over routes that provide both VOR and LF Facilities, a flight may be dispatched with one VOR and one ADF System in operation.

(u) One ILS System and one Course Indicator are required only if flight is dispatched to an expected ILS condition. Refer to Flight Operations or Radio/Electronics Maintenance Manuals to note Test requirements for replaced ILS equipment.

(v) Two compasses must be operating. These may be magnetic compass and one Remote Indicating Compass or both Remote Indicating Compasses.

(w) Navigation Light flasher unit not required at night provided wing lights and white tail light operate on "steady" and rotating beacon is operating. Only 3 navigation lights required at night provided one at each wing tip and one at tail are operating. Anti-collision lights are required at night, except flight may progress with the anti-collision lights inoperative to the next station where repair or replacement can be accomplished, provided one navigation light at each wing tip and one at tail are operating and navigation light flasher unit is operating.

(x) Three oral nasal and three full face type masks required.

(y) The passenger oxygen system is required for flight over 8,000 feet. One mask is required for each ten passengers or fraction thereof for flight over 8,000 feet, including flight attendants. Any time when a full complement of oxygen is not carried, the Captain must be notified.

(cc) Must be operating if cabin air compressor is operating.

MINIMUM EQUIPMENT

MINIMUM FLIGHT EQUIPMENT REQUIRED FOR DISPATCH--NOTES

(ff) Both windshield wipers may be inoperative provided there is no precipitation falling at the time of take-off and a forecast for next point of landing indicates no probability of precipitation at time of arrival.

(mm) On route between NY and YUL, the same requirements as those for Domestic will apply as outlined in item (d). One HF communication unit is required on the route between MSY and MEX, provided the flight is dispatched by the inland route via Houston, Brownsville and Tampico.

The minimum altitude necessary in order to maintain VHF communication with at least one ground station is indicated by the table shown below:

TABLE OF V.H.F. RECEPTION DISTANCES

Altitude Above Nearest Ground Station	Maximum Distance (Statute Miles) to Nearest Ground Station
500'	30
1,000'	50
2,000'	70
3,000'	85
4,000'	95
5,000'	105
6,000'	115
7,000'	125
8,000'	135
9,000'	145
10,000'	155

NORMAL OPERATING PROCEDURES

PREFLIGHT CHECK

At regular EAL stations the company maintenance department is responsible for the airworthiness and mechanical functioning of systems in aircraft set up for specific flights. The aircraft may be entirely airworthy and satisfactory for use on a scheduled flight even though some of the "luxury" systems may be inoperative, or need mechanical servicing that cannot be accomplished at the moment.

So that the flight crew may be aware of possible malfunction or inoperability of any item connected with the airplane, it will be the duty of the Flight Engineer to check the airplane log and confer with the senior maintenance representative at hand or the de-planing Flight Engineer.

Any discrepancies noted will be brought to the attention of the Captain at once.

The Flight Engineer will accomplish the following walk-around preflight inspection before assuming his position in the cockpit for flight duty.

LANDING GEAR AND WHEEL WELL AREA

Tires. . . . . .Inspect for flat spots, cuts and inflation.

Brake Lines and
Gear Struts. . . . . .Check for leaks or damage

Brake Lockouts . . . . . .Check

NACELLES

Excessive Oil Leaks. . . . . .Check

Cowling. . . . . Check security

Propeller Blades . . . . . .Check for nicks

Air Intake Scoops
and Tail Pipes . . . . . Covers removed

WING AND TAIL GROUP

Fuel Tank Undersides. . . . . Check for leaks

Navigation Lights
and Control Surfaces. . . . . .Check for damage

FUSELAGE

Static Ports & Pitot Heads. . . . . Clear

Electrical Load Center Circuit Breakers. .Check

CABIN

Overhead Life Raft
Installation. . . . . Check security of latches

COCKPIT

Circuit Breakers. . . . . Check

Oxygen. . . . . .Pressure Up, Valves On

Static Auto Feather. . At Originating Stations, if log book inspection reveals no autofeather check this calendar date, check as outlined in Sec. 6-3, page 4, and record in log.

FUEL LOADING

Fuel loading must be checked at all stations for conformity with Dispatch Release quantity and fuel distribution requirements.

ORIGINATING STATIONS

At originating stations the Flight Engineer may ascertain the fuel quantity on board either by reference to the fuel quantity indicator readings, or, if accuracy of the indicators is suspect, by measuring quantity in each tank with the dripsticks.

INTERMEDIATE STATIONS

If fueling is required at an intermediate station, notify the refueling crew of the amount to be added and its distribution.

The quantity of fuel aboard may be determined by reference to the fuel quantity indicators, or by adding to the original fuel load less the consumed fuel, the quantity taken on as shown on the fuel tender indicator.