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NATIONAL TRANSPORTATION SAFETY BOARD
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COPY OF B-747-200 SIMULATOR TRAINING GUIDE

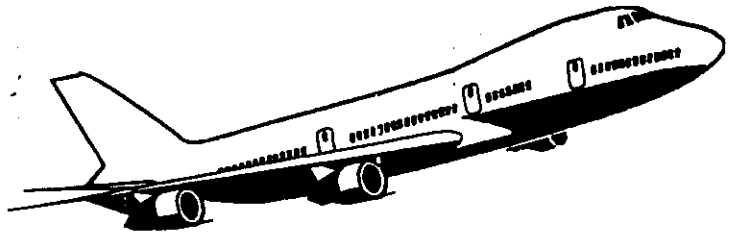
(18 pages)

KOREAN AIR

B747-200

SIMULATOR TRAINING GUIDE

(FOR INSTRUCTOR)



Flight Crew Training Center

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WHEEL WELL FIRE

1. L/D GEAR DOWN (BELOW 270K)

2. ATC CONTACT ---- REQUEST HDG 190 °
   * R/W 14 T/O ONLY
   * DEPEND ON T/O WEIGHT & REMAIN DME
   * ABOVE V/S 1.200'/MIN ----- NO REQUIRE

3. WHEEL WELL FIRE CHECKLIST

4. SET CLIMB THRUST AT 1,500FT

5. AT 3,200FT (R/W 14 T/O)
   1) V/S 500'
   2) F-5 (V2+40) ------ COMM BUG SET 250
   3) F-1 (V2+60)
   4) SET IAS AT 250 K
   5) FLAP : ONE , ONE , GREEN
   6) V/S 500' ------- COMM BUG SET V2+100
   7) F-UP (V2+80)
   8) SET IAS AT V2+100K

6. FIRE WARNING LIGHT OUT --- TIME CHECK

7. ATC CONTACT
   1) CHECK WX BEFORE L/D GEAR UP
   2) LAND AT NEAREST SUITABLE APT (IF WX IS GOOD DO NOT L/D GEAR UP)
   3) FUEL DUMPING -----IF REQUIRE

※ FOR L/D GEAR UP
   1) V/S 2,000' ------ COMM BUG SET 250
   2) F-1 ---------- IF REQUIRE
   3) L/D GEAR UP AT 250K
   4) V/S 500' ------- COMM BUG SET V2+100
   5) F-UP (V2+80)
   6) SET IAS AT V2+100K

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MULTIPLE ENG SHUTDOWN / RESTART (ALL ENG OUT)

1. BATTERY AND STANDBY POWER CHECKED ON . FUEL CROSS FEED VALVS -- OPEN (F/E)

2. MAIN BOOST PUMP SW ------- ON (F/E)

3. THRUST LEVERS TO VERTICAL POSITION

4. STANDBY IGNITION SW ------ IGN 1 OR IGN 2 (ANY)
   * DESCENT SPD ---------- 250K MINIMUM (SUGGEST 270K)
   * DESCENT RATE ABOUT 2,000' / MIN

5. MULTIPLE ENG SHUTDOWN / RESTART CHECKLIST

6. ATC CONTACT
   * KE 002 ALL ENG FLAME OUT DRIFT DOWN FROM FL 330 UNTIL ENG RESTART

7. AFT ENG RESTART
   1) STOP DESCENT & MAINTAIN LEVEL FLT
   2) AFT START CHECKLIST
   3) ATC CONTACT ----- RECLIMB FLT LEVEL

※ OPERATIVE INSTRUMENTS (LOSS OF ALL GEN)

CAPT INST PNL --- A/S , ALT , V/S , ADI , HSI

F/O INST PNL ---- A/S . ALT . V/S

CENTER PNL ------ N1 , EGT

RADIO & NAV ----- NO1 VHF RADIO , NO1 VOR

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EMERGENCY DESCENT (L/D GEAR DOWN)

※ CABIN PRESS ABNORMAL ------ OXYGEN MASK , CREW COMM

※ UNABLE CONTROL ---------- EMRG DEC CALL OUT

1. IGINTION (SYS 1 OR 2)------ FLT START (F/E)

2. AUTO THROTTLE ---------- DISENGAGE

3. THRUST LEVERS ---------- CLOSE

4. SPEED BRAKE ---------- FLT DETENT

5. TRANSPONDER ---------- 7700 (PNF)

6. HEADING ---------- 30 ° TURN
   * RETURN TO ORIGINAL HDG AT 10NM (X-TRK DIST BY INS)

7. COMM BUG SET 270K

8. AT 270K
   1) L/D GEAR ---------- DOWN
   2) LOWER NOSE --------- 8 ° ~ 10 ° BELOW HORIZON
      * CALL ' GEAR DOWN IN GREEN ' (PNF)
   3) LOWER NOSE --------- 15 ° BELOW HORIZON
   4) COMM BUG SET 320
      * ROLL WINGS LEVEL AT HDG ON TOP

9. AT 310K
   1) NOSE UP ---------- 8 ° ~ 10 ° BELOW HORIZON

10. AT 320K
    1) A/P COMMAND & SET IAS

11. NOTIFY TO ATC

12. EMG DEC CHECKLIST

13. ALTITUDE SET 10,000FT (OR MEA)

14. DURING DESCENT
    1) ATC CONTACT ---------- QNH
    2) ASK L , R , C , SPD
    3) A/T SPD MODE --------- SELECT

15. APPROACHING LEVEL OFF ALTITUDE
    1) COMM BUG SET 250
    2) V/S 2,000' BEFORE 2,000 FT
    3) V/S 1,000' BEFORE 1,000 FT
    4) SPEED BRAKE DOWN DETENT
    5) A/T ENGAGE AT 260K

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16. AT 250K ------- L/D GEAR UP

17. AT 10,000 FT (OR MEA) ---- ALTITUDE HOLD

18. OXYGEN MASK OFF (AFT CHECK CABIN ALT)

19. LEVEL OFF CHECKLIST

20. SET L , R , C SPD (OR TGT SPD)

21. ATC CONTACT ----- CHECK WX & DIVERT TO APT

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EMERGENCY DESCENT (L/D GEAR UP)

* CABIN PRESS ABNORMAL ---- OXYGEN MASK , CREW COMM
* UNABLE CONTROL --- EMRG DEC CALL OUT

1. IGNITION (SYS 1 OR 2) -------- FLT START (F/E)

2. AUTOTHROTTLE ---------- DISENGAGE

3. THRUST LEVERS ---------- CLOSE

4. SPEED BRAKE ---------- FLT DETENT

5. TRANSPONDER ---------- 7700 (PNF)

6. HEADING ---------- 30 ° TURN
   * RETURN TO ORIGINAL HDG AT 10NM (X-TRK DIST BY INS)

7. SPEED MODE ---------- V/S MAX DEC

8. COMM BUG SET 380K

9. NOTIFY TO ATC

10. EMG DEC CHECKLIST

11. SET IAS AT 375K ~ 380K

12. ALTITUDE SET 10,000FT (OR MEA)

13. DURING DESCENT
    1) ATC CONTACT ---------- QNH
    2) ASK L, R, C SPD
    3) A/T SPD MODE ---------- SELECT

14. APPROACHING LEVEL OFF ALTITUDE
    1) COMM BUG SET L, R, C (OR TGT SP)
    2) V/S 2,000' BEFORE 2,000 FT
    3) V/S 1,000 ' BEFORE 1,000 FT
    4) SPEED BRAKE DOWN DETENT
    5) A/T ENGAGE

15. AT 10,000FT (OR MEA) ----- ALTITUDE HOLD

16. OXYGEN MASK OFF (AFT CHECK CABIN ALT)

17. LEVEL OFF CHECKLIST

18. ATC CONTACT ----- CHECK WX & DIVERT TO APT

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STEEP TURN (10.000FT)

* FLIGHT DIRECTOR ------- OFF

1. SPEED --------- 280K

2. BANK ---------- 45 °

3. TURN ---------- 180 °

4. ROLL IN SP = ROLL OUT SP (SAME AS NOR TURN)

5. ROLL IN ----- MAINTAIN LEVEL FLT PITCH UNTIL 30 ° BANK
   AFT 30 ° ~ 45 ° ------ PITCH UP 1 ° ~ 1.5 °

6. ROLL OUT ---- MAINTAIN PITCH ----- 45 ° ~ 30 °
   AFT 30 ° ~ 0 ° ---- PITCH DN LEVEL FLT

* PNF : CALL OUT '15 °' (20 ° BEFORE ROLL OUT HDG)

STALL (10,000FT)

* FLIGHT DIRECTOR ON ALTITUDE HOLD

1. COMM BUG SET (WT :560 & VREF : 141)

STALL	BUG	FLAP	BANK	N1
LANDING	146	25	0 °	60 ~ 65
TURNING	151	20	25 °	55 ~ 60
CLEAN	221	UP	0 °	50 ~ 55

2. THRUST CLOSE & THRUST SET (N1 : 50% ~ 65%)
   1) CLEAN STALL ------- AFT COMM BUG PASSED
   2) L/D & TURNING ----- AFT F-5 OR F-10 DOWN
   3) EPR MODE SELECT SW ---GA

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STALL RECOVERY (10,000FT)

* AT BUFFET OR STICK SHAKER

1. APPLY GO AROUND THRUST

2. SMOOTHLY DECREASE PITCH ATTITUDE 5 ° AND MAINTAIN

3. LEVEL WING (TURNING STALL)

4. AT BUG SPD
   1) STOP DESCENT
   2) F-20 (L/D STALL)
   3) POSITIVE CLIMB ---- GEAR UP (L/D STALL)

5. CLIMB ---- VREF +10

6. RETRACT FLAPS ON SCHEDULE
   * F-5 : SET CLIMB THRUST & COMM BUG SET

7. LEVEL OFF 10,000 FT

VOR STATION HOMING AND HOLING

1. HDG TO VOR STATION

2. DESCENT CONTROL (THRUST LEVERS ------ FULL CLOSE)

   V/S RATE ← V/S
   ↑
   ALTITUDE → SEL
   (TM : 3.3)

   V/S TATE ← V/S
   ↓
   ALTITUDE → SEL
   (TM : 3.9)

3. VOR HOMING
   1) SET HOLDING INBD COURSE ON HSI
   2) WATCH VOR NEEDLE

4. VOR HOLDING
   * CALL HOLDING ENTRY TYPE
     1) ADJUST HOLDING SPD ------ 3MIN BEFORE FIX
     2) ENTERING HOLDING -------- REPORT ATC (TIME & ALT)

* RECOMMENDED HOLDING SPD
   1) THROUGH 6,000 FT ---------- VREF + 60 / F-1
   2) THROUGH 14,000 FT ---------- VREF + 80 / F-UP
   3) ABOVE 14.000 FT ---------- VMIN

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VOR / DME APP (R/W 32R)

1. APP TO IAF (CHUNG JA)
   1) VOR/LOC MUST CAPTURE
   2) F-5
   3) 3,500 FT

2. LEAVING IAF (3,500 FT)
   1) F-10
   2) V/S 500'

3. AT 10 DME (3,200FT)
   1) V/S 1,000'

4. AT 7 DME
   1) L/D GEAR DN & F-20

5. PRIOR TO FAF
   1) L/D FLAPS & SET MDA

6. AT FAF (6DME / 2,000FT)
   1) V/S 1,000' ~ 1,200'

7. MDA (720FT)
   1) R/W INSIGHT --- VISUAL APP WITH PAPI
   2) MAP (2,5 DME KIP/VOR)

HYD SYS LEAK OR LOSS

1. HYD SYS LEAK OR LOSS CHECKLIST
   * SINGLE & TWO HYD SYS INOP

2. HYD SYS #1 OR #4 LOSS
   1) SINGLE & TWO HYD SYS INOP
      * HOLDING SP 230K ~ 250K
      * HOLDING TIME ABOUT 10 MIN
   2) ALTERNATE L/D GEAR & T,E FLAP OPERATION
      * BEFORE ENTERING TRAFFIC PATT (OR IAF) ---- L/D GEAR DN & F
      * COMMAND F-DN ----- LITTLE EARLY THAN NORMAL

3. HYD SYS #2 OR #3 LOSS
   1) SYS # 1 ------- A/P C INOP
   2) SYS # 2 ------- A/P B INOP
   3) SYS # 3 ------- A/P A INOP
   4) SYS # 2 & 3 ------- A/P A , B & C INOP
      * A/P MUST CHANGE TO OPERATING ONE BEFORE CHECKLIST
   * REVIEW QRH FOR COORDINATE WITH F/E

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ENG FAILURE AFT V1 (T/O WT : 820)

* CALL 'CONTINUE TAKE OFF'
* DIRECTION CONTROL ---- VR

1. ROTATE AT VR

CONDITION	T/OATT 13 °	CLOSE ALT 35FT
4 ENG - 3 °/ SEC	4SEC	V2+10
3 ENG - 2 °/ SEC	6SCE	V2

2. POSITIVE CLIMB ---- GEAR UP

3. SET IAS AT V2 ~ V2+10

4. ATC CONTACT --- HDG 220 °/6DME (R/W 14 T/O)

5. ALT HOLD AT 1,300FT ---- R/W 14 T/O)
   (ALT HOLD AT 1,000FT ---- R/W 32 T/O)

6. TURN TO HDG 220 ° BANK LIMIT 15 ° (R/W 14 T/O)

7. RETRACT FLAPS ON SCHEDULE
   1) F-5 (V2+40) -------- COMM BUG SET 250
   2) F-1 (V2+60)
   3) SET IAS AT 250K
   4) FLAP : ONE , ONE , GREEN
   5) V/S 500' ---- COMM BUG V2 +100
   6) F-UP (V2+80)

8. SET MCT AFT F-UP

9. CHECKLIST
   1) ENG FAILURE & SHUTDOWN
   2) AFT TAKE OFF

10. ATC CONTACT
    1) CHECK WX FOR DIVERT APT
    2) FUEL DUMPING -------- RADAR VECTOR
    3) ILS APPROACH -------- RADAR VECTOR

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ENG FIRE AFT V1. (T/O WT : 820)

* CALL 'CONTINUE TAKE OFF '
* DIRECTION CONTROL ------ VR

1. ROTATE AT VR

2. POSITIVE CLIMB --------- GEAR UP

3. SET IAS AT V2 ~ V2+10

4. NOR T/O & CLIMB UNTIL 400 FT AGL

5. FIRE FIGHTING AT OR ABOVE 400 FT AGL
   * PF : MUST CLOSE THRUST LEVER

6. ATC CONTACT ---- HDG 220 °/ 6DME (R/W 14 T/O)

7. ALT HOLD AT 1,300 FT (R/W 14 T/O)
   (ALT HOLD AT 1,000 FT ---- R/W 32 T/O)

8. TURN TO HDG 220 ° / BANK LIMIT 15 ° (R/W 14 T/O)

9. RETRACT FLAPS ON SCHEDULE
   * SAME AS ENG FAILURE AFT V1

10. SET MCT AFT F-UP

11. CHECKLIST
    1) ENG FIRE
    2) AFT TAKE OFF

12. ATC CONTACT
    1) CHECK WX FOR DIVERT APT
    2) FUEL DUMPING ------ RADAR VECTOR
    3) ILS APPROACH ------ RADAR VECTOR

RAW DATA ILS APP AND LANDING

1. F/D COMPUTER SW ------- CHANGE

2. F/D COMPUTER C/B ------ CHECK IN

3. RAW DATA APP
   1) PRIMARY IND LOC ----- R/W HDG
   2) PRIMARY IND GS ------ V/S 700' ~ 800'

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TWO ENG INOP ILS APP AND LANDING

* SAME SIDE ENG FAILURE (OR FIRE)

1. ENG FAILURE (OR FIRE) CHECKLIST
   * SEVERE DAMAGE CHECKLIST WILL BE PERFORMED WHEN ENG IS COMPRESSOR STALL
2. TWO ENG INOP CHECKLIST
3. DECLEAR EMERGENCY LANDING
4. F-5 ---- ON INTERCEPT HDG (ON RADAR VECTOR ILS APP)
   (F-5 ---- ON DOWN WIND LEG FOR VISUAL APP)
5. F-10 ---- G/S ONE DOT UP FOR ILS APP
   (F-10 ---- TURNING BASE FOR VISUAL APP)
6. L/D GEAR DOWN ---- G/S INTERCEPT
   * GET L/D CLEARANCE BEFORE L/D GEAR DOWN
7. F-20 ----- AT 500 FT AGL
8. F-25 ----- SHORTLY AFT F-20
9. ZERO RUD TRIM ------ PRIO TO TOUCHDOWN
10. REVERSE THRUST ------- TRANSIT POSITION ONLY

ONE ENG INOP MISS APP OR REJECTED LANDING

* CALL " GO AROUND "

1. GO AROUND THTUST
2. ROTATE TO GO AROUND ATT ---- 12 ° ~ 16 °
3. F-20
4. POSITIVE CLIMB ----------GEAR UP
5. SET IAS AT VREF+10 (OR BUG+10)
   * PNF : SET NAV SW HDG , VOR & HOLDING INBD COURSE
6. ATC CONTACT --------- EXECUTE MISS APP
7. AT 1,000 FT AGL
   1) V/S 1,000
   2) RETRACT FLAPS ON SCHEDULE
      * F-5 ------- SET MCT (OR SET CLIMB THRUST)
8. FOLLOW MISS APP PROFILE
   * DO NOT EXCEED MAX HOLDING SPD

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ENG FIRE BEFORE V1 (R, T, O)

* CALL 'REJECTED TAKE OFF '

1. MAX BRAKING & THRUST LEVERS TO IDLE

2. REVERS THRUST
   1) PULL TO INTERLOCK POS (ALL)
   2) SYMMETRICALY USE IF ACKNOWLEGE
      (USE ALL REVERS IF DON'T ACKNOWLEGE)
      * F/E : CHECK EGT FOR TROUBLE SHOTING
              RELEASE THE BAD ENG REVERS THRUST SYMMETRICALY

3. SPEED BRAKE ---- DEPLOY

4. ATC CONTACT (BELOW TAXI SP)

5. A/C STOP ON THE R/W

6. SET PARKING BRAKE

7. FIRE FIGHTING
   1) THRUST LEVER NO -------- CLOSE
   2) START LEVER NO -------- CUT OFF
   3) ENG FIRE SW NO ---------- PULL
   4) FIRE BOTTLE ---------- DISCHARGE (NO1 FIRST)
   5) PAX ANNOUNCE
   * FIRE LIGHT REMAIN ON AFT 30 SEC

8. CALL 'CONTINUE FIRE' AND ANOTHER BOTTLE DISCHARGE (F/E)

9. INITIATE PAX EVACUATION

PASSENGER EVACUATION

1. PARKING BRAKE ------- SET (CONFIRM)

2. ALL START LEVERS ------- CUT OFF

3. PAX ANNOUNCE TO EVACUATION

4. TOWER ----- NOTIFY (F/O)

5. ALL ENG AND APU FIRE SWITCHES --- PULL (F/E)

6. FIRE BOTTLES (EACH ONE) --------- DISCHARGE (F/E)

7. PAX EVAC CHECKLIST
   * EVAC DUTIES COCKPIT CREW

ONE ENG INOPERATIVE FERRY

INITIAL CONDITIONS FOR TRAINING

1. T/O WT : 560,000LBS (B,O,W : 370, FUEL:190-7HRS)
2. FLAP-10 RECOMMENDED
3. AIR CONDITIONING PACKS ----OFF
4. GOOD NOSE WHEEL TIRES
5. DRY RUNWAY
6. CROSS WIND COMPONENT --- 10K MAX

PROCEDURE - ONE OUTBD ENG INOP

1. A/C ON R/W CENTERLINE
2. OUTBD ENG ------- 1.06 EPR
3. INBD ENG ------- 1,58EPR
4. RELEASE BRAKE & CONTROL COLUMN LIGHT FORWARD PRESS
5. CALL OUT ---- 80, 100, 120 & V1 (EACH 20K) (F/O)
6. SMOOTHLY INCREASE OUTBD THRUST LEVERS FROM 80K
7. T/O EPR SET UNTIL VMCG
   7A ENG ----- 113K
   7Q ENG ----- 131K
   * DIRECTION CONTROL DURING T/O ROLL
8. NORMAL CLIMB PROCEDURE AFT T/O

SAME SIDE ENG FAILURE AFT V1

1. MAINTAIN R/W HDG WITH 5 ° BANK (TO OPERATING ENG)
2. POSITIVE CLIMB ------ GEAR UP
3. CLIMB ----- V/S 200' ~ 500'
   * DO NOT FOLLOW F/D (3ENG ATT)
4. SET IAS AT V2

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APPROACH SPEED CONTROL

STATUS

1. LANDING WEIGHT : 560,0000 LBS

2. VREF : 141

3. WIND : BELOW 10KTS

1. NOR AND ONE ENG INOP (BUG : 141)

FLAP SET	PROFILE SP MINIMUM	PROFILE SP ADD	WIND CORR	COMMAND AIR SP BUG
F - UP	80	10	NO CORR	231
F - 1	60	10		211
F - 5	40	10		191
F - 10	20	10		171
F - 20	10			151
F - 30			5	146

2. NOR AND ONE ENG INOP (BUG : 146)

FLAP SET	PROFILE SP MINIMUM	PROFILE SP ADD	WIND CORR	COMMAND AIR SP BUG
F - UP	80	10	NO CORR	236
F - 1	60	10		216
F - 5	40	10		196
F - 10	20	10		176
F - 20	10			156
F - 25			5	151

3. TWO ENG INOP (BUG : 146)

FLAP SET	PROFILE SP MINIMUM	PROFILE SP ADD	WIND CORR	COMMAND AIR SP BUG
F - UP	80	NO ADD	NO CORR	226
F - 1	60			206
F - 5	40			186
F - 10	20			166
F - 20	10		5	161
F - 25			5	151

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4. TWO HYD SYS INOP (BUG : 161)

FLAP SET	PROFILE SP MINIMUM	PROFILE SP ADD	WIND CORR	COMMAND AIR SP BUG
F - UP	80	NO ADD	NO CORR	241
F - 1	60			221
F - 5	40			201
F - 10	20			181
F - 20	10			171
F - 25			5	166

5. SPLIT OR ASYM T, E, FLAP (BUG : 166)

FLAP SET	PROFILE SP MINIMUM	PROFILE SP ADD	WIND CORR	COMMAND AIR SP BUG
F - UP	80	NO ADD	NO CORR	246
F - 1	60			226
F - 5	40			206
F - 10	20			186
F - 20	10			176
F - 25			5	171