Docket No. SA-532

Exhibit No. 2-K

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Operations/Human Performance Group Chairmen
US Airways QRH – ENG DUAL FAILURE

(3 Pages)

Attachment 10

to Operations / Human Performance Group Factual Report

DCA09MA026

US AIRWAYS QRH
ENG DUAL FAILURE

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1. **If no fuel remaining:**

   a. THR LEVERS ..... Confirm ..... IDLE
   b. EMER ELEC PWR (if EMER GEN not on-line) ..... MAN ON
   c. FAC 1 ..... OFF then ON

   [Resetting FAC 1 enables the recovery of characteristic speeds displayed on the PFD, and enables rudder trim recovery, even if no indication is available. Once hydraulic power is lost, the right aileron is lost, and is in the up float position. Rudder trim may be used to compensate for this up floating aileron.]

   d. Optimum speed ..... Green Dot

   or

   e. Landing Strategy ..... Determine

   [Determine most appropriate place for forced landing/ditching.]

   f. ATC (VHF1, HF1, ATC1) ..... Notify
      (1) If unable to contact ATC on assigned frequency:
         (a) ATC Code A7700
         (b) Distress Message ..... Transmit

         [Use one of the following frequencies: VHF 121.5 MHz, HF 2182 KHz or 8364 KHz]

   g. Oxygen Masks (above 10,000') ..... Verify ..... ON
   h. Go to step 2.

2. **If fuel remaining:**

   a. ENG MODE Selector ..... IGN
   b. THR LEVERS ..... Confirm ..... IDLE
   c. Airspeed ..... Optimum relight speed 300 kts(CFM)/280 kts(IAE)

      (1) If A319 or A320:

      [*For airspeed indication failure (volcanic ash) the pitch attitude for optimum relight speed is 4.5°(CFM)/ 2.5°(IAE) nose down. Add 1° nose up for each 22,000 lbs. above 110,000 lbs.*

      or

      CFM: At 300 kts, the aircraft can fly approximately 2.0 nautical miles per 1000 feet (no wind)

      IAE: At 280 kts, the aircraft can fly approximately 2.2 nautical miles per 1000 feet (no wind)]

      If A321:

      [For airspeed indication failure (volcanic ash) the pitch attitude for optimum relight speed is 4.5° nose down.Add 1° nose up for each 22,000 lbs. above 132,000 lbs.

      At 300 kts, the aircraft can fly approximately 2.0 nautical miles per 1000 feet (no wind)]

   d. Landing Strategy ..... Determine

   [Determine most appropriate place for forced landing/ditching.]

   e. EMER ELEC PWR (if EMER GEN not on-line) ..... MAN ON
   f. ATC (VHF1, HF1, ATC1) ..... Notify
      (1) If unable to contact ATC on assigned frequency:
         (a) ATC Code A7700
         (b) Distress Message ..... Transmit

         [Use one of the following frequencies: VHF 121.5 MHz, HF 2182 KHz or 8364 KHz]

Cont'd

g. FAC 1 ..... OFF then ON

[Resetting FAC 1 enables recovery of characteristic speeds displayed on the PFD and permits recovery of rudder trim even if no indication is available.]

If no relight after 30 seconds:

h. ENG MASTER 1 and 2 ..... Confirm ..... OFF

Wait 30 seconds:

i. ENG MASTER 1 and 2 ..... ON

Note: Unassisted start attempts can be repeated until successful or until APU Bleed is available.

If unsuccessful:

j. CREW OXYGEN MASKS (Above 10,000')Verify ..... ON

When below FL250:

k. APU ..... START

l. WING ANTI ICE ..... OFF

When below FL200:

m. APU BLEED ..... ON

Note: If APU Bleed is available, APU Bleed assisted starts may be accomplished at Green Dot Speed.

n. ENG MASTER 1 and 2 ..... Confirm ..... OFF

Wait 30 seconds:

o. ENG MASTER 1 and 2 (one at a time) ..... ON

2. ▶ **If engine restart is successful:**

a. Proceed to nearest suitable airport for landing.

b. Engine Dual Failure Checklist complete and

or

- ☛ Clear non-applicable ECAM actions and review SYS Status page(s).
- ☛ Establish and communicate a plan.

▶ **If engine restart is considered impossible:**

a. Airspeed ..... Optimum speed Green Dot

[Green dot is displayed on Captain's PFD. It represents best L/D. At Green dot speed the aircraft can fly up to approximately 2.5 nautical miles per 1000 feet with no wind. Average rate of descent is 1600 feet per minute.]

b. Early in approach:

(1) Cabin Secure ..... Order

(2) CABIN SIGNS ..... ON

(3) GALY & CAB (GALLEY) ..... OFF

(4) COMMERCIAL pb (if installed) ..... OFF

(5) Use rudder with care.

[Avoid large or rapid rudder deflection, as only blue hydraulic power is available from the RAT.]

(6) For landing ..... Use FLAPS 3

[Only slats will extend and operating time is noticeably increased, as only blue hydraulic power is available from the RAT.]

Cont'd

Below 15000':

c. RAM AIR ..... ON

d. BARO ..... Set

Below 10000':

e. CREW OXYGEN MASKS ..... OFF

f. OXYGEN CREW SUPPLY ..... OFF

g. V_{APP} ..... Determine

Note: A319/320 V_{REF} + 25/150 kts minimum

A321 V_{REF} + 30/160 kts minimum

3. ▶ **If Forced Landing is anticipated:**

Prior to 3000' AGL:

a. FLAPS ..... Configure for Landing

Note: Final Descent slope when configured (CONF 3 and Gear Down) will be approximately 800-900 feet per minute with no wind.

When in CONF 3 and at V_{APP}:

b. GRAVITY GEAR EXTEN ..... PULL & TURN

Note: Disregard "USE MAN PITCH TRIM" on the PFD. The stabilizer is frozen due to insufficient hydraulic power.

When L/G downlocked:

c. L/G Lever ..... DOWN

or

d. GND SPOILER ..... ARM

e. Max Brake Press ..... 1000 psi

[Brakes on Accumulator only]

At 500'AGL:

f. Brace Signal ..... Command

At touchdown:

g. ENG MASTER 1 and 2 ..... OFF

h. APU MASTER SW ..... OFF

i. ENG DUAL FAILURE Checklist complete, and

☛ If required, go to "Evacuation" Checklist, on page i.

▶ **If Ditching is anticipated:**

Prior to 3000' AGL:

a. FLAPS ..... Configure for Landing

b. L/G Lever ..... Check Up

At 2000' AGL:

c. Ditching pb ..... ON

Note: In case of strong crosswind, ditch facing into the wind. In the absence of strong crosswind, ditch parallel to the swell. Touchdown with approximately 11 degrees of pitch and minimum vertical speed.

At 500'AGL:

d. Brace Signal ..... Command

At touchdown:

e. ENG MASTER 1 and 2 ..... OFF

f. APU MASTER SW ..... OFF

g. ENG DUAL FAILURE Checklist complete, and

☛ If required, go to "Evacuation" Checklist, on page i.