

**AMENDMENT SHALL BE STUDIED IMMEDIATELY UPON RECEIPT AND BE INSERTED
AT FIRST OPPORTUNITY**

Date : 10 SEP 2015

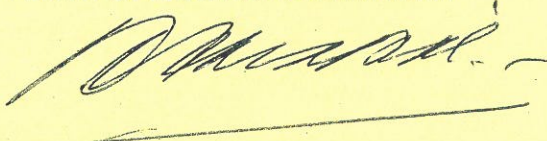
**Amendment Issue No. TI 61A to Garuda Indonesia B747-400 AIRCRAFT OPERATION
MANUAL Vol II**

- This TEMPORARY INSTRUCTION is supplementary instruction to AOM Vol II Amendment Issue No.61
- This TEMPORARY INSTRUCTION will be replaced by DDG Amendment Issue No. 62
- Please find attached the following amendments to your copy of the above mention AOM. Please insert this Temporary Instruction in front of your B747-400 AOM Vol II
- Check that you have received the previous revision.
- Any question with respect to this manual or information contained herein shall be directed to :
 - For Technical or Procedural contents to: CGKOFSGA (Chief Pilot B747-400),
Phone + 62 21 2560 1761-2, 2560 1547
 - For Printing and Distribution to: CGKOSPGA , Phone 5501771 ext. 2315/2316.

- **Effective date : SEP 15th, 2015**

Chapter	Page	Issue		Notes
		Out	In	
2.0.3	1	5	6	- Add amendment No.61
2.5.7				- New section

FLIGHT OPERATION DEPARTMENT



Capt. Achmadi Rijanto
Deputy Technical B747-400

The main hazards of a sandy or dusty environment are erosion (especially of engine fan blades), accumulation of sand or dust on critical surfaces, and blockage. The effects of sand ingestion occur predominantly during takeoff, landing and taxi operations. The adverse effects, however, can occur if the airplane's flight path was through a cloud of visible sand or dust, or the airplane was parked during a sand or dust storm. Premature engine deterioration can result from sand or dust ingestion, causing increased fuel burn and reduced EGT margins.

CAUTION: After a sandstorm, if all taxiways and runways are not carefully inspected and swept for debris before flight ops are conducted, the risk of engine damage and wear is increased.

Exterior Inspection

Although removal of sand and dust contaminants is primarily maintenance function, during the exterior inspection, the captain or first officer should carefully inspect areas where accumulation of sand or dust could change or affect normal system operations.

Do the normal Exterior Inspection with the following additional steps:

Windshield Check
Verify that the windshield has been cleaned.

Note: Do not use windshield wipers for sand or dust removal.

Surfaces Check
Verify that the upper surfaces of the wings and other control surfaces are free of sand.

CAUTION: Particular care should be taken to ensure that the fuselage and all surfaces are clean after a sand storm that occurs with a rain storm.

Probes, sensors, ports, vents,
and drains (as applicable) Check
Verify that all are free of sand and dust.

Pack inlets Check
Verify that the pack inlets are free of sand and dust.

Outflow valves Check
Verify that the outflow valves are free of sand and dust.

Positive and negative pressure relief doors Check
Verify that all doors are free of sand and dust.

Leading edge flaps Check
Verify that all leading edges are undamaged

Engine inlets Check
Verify that the inlet cowling is free of sand and dust.
Verify that the fan is free to rotate and fan blades are undamaged.

Fuel tank vents Check
Verify that all vents are free of sand and dust.

Landing gear Check
Verify that gear struts and doors are free of sand and dust build-up.

Vertical and horizontal stabilizers Check
Verify that all leading edges are undamaged.

APU air inlet Check
Ensure that the APU inlet door is free of sand and dust before APU start

Preflight Procedure

Do the normal Preflight Procedures with the following modifications:

Note: Minimize the use of airconditioning, other than from a ground air conditioner, as much as possible. If the APU must be used for airconditioning, maintain a temperature as high as possible while still providing a tolerable flight deck and cabin environment.

If APU bleed air will be used and the APU is not operating:

APU bleed air switch OFF

APU START

Note : Run the APU for one full minute before using it as a bleed air source.

APU bleed air switch ON

Engine Start Procedure

Do the normal Engine Start Procedure with the following modifications:

Note: Use a filtered ground cart for pneumatic air for engine start, if available.

AUTOSTART SWITCH OFF

Engine Start switch PULL

Verify that the N2 RPM increases.

Allow maximum motoring for 2 minutes to help remove contaminants.

FUEL CONTROL switch RUN

After engine start :

AUTOSTART switch ON

Before Taxi Procedure

Do the normal Before Taxi Procedure with special emphasis on the following steps :

Conditions permitting, use the APU-to-Pack or Packs Off Takeoff procedure.

If the APU-to-Pack Takeoff procedure will be used :

Limit APU bleed air use as much as possible to reduce sand and dust ingestion.

If the APU is not running :

APU bleed air switch OFF

APU START

Note: Run the APU for one full minute before using it as a bleed air source.

APU bleed air switch ON

Flight controls Check

Verify that there is no increase in control forces due to sand or dust contaminant

Taxi Out

Do the following, conditions permitting, to minimize sand and dust ingestion by the engines and to improve visibility during taxi :

- Use all engines during taxi and taxi at low speed . Limit ground speed to 10 knots and maintain thrust below 40% N1 whenever possible to avoid creating a vortex during ground operations.
- Maintain a greater than normal separation from other aircraft while taxiing and avoid the ingestion of another engine's wake.
- Avoid engine overhang of unprepared surfaces.
- Minimize thrust on the outboard side of the turn during 180° turns.
- In the event of a crosswind during 180° turns, turn away from the wind if possible to minimize sand and dust ingestion.
- Whenever possible, avoid situations that would require the airplane to be brought to a complete stop.
- Avoid excessive braking. The presence of sand or dust will increase brake wear.

Take off

Do the following to minimize sand and dust ingestion by the engines during takeoff :

- Use the maximum fixed derate and/or assumed temperature thrust reduction that meets performance requirements.
- Prior to takeoff, allow sand and dust to settle.
- Do not take off into a sand or dust cloud.
- Use a rolling take off. Whenever possible avoid setting high thrust at low speed.
- When visible sand and dust exist, consider delaying flap retraction until above the dust cloud, if operation permit.
- Use maximum climb power to minimize time spent in dusty conditions.

Landing

Do the following to minimize sand and dust ingestion by the engines during landing:

- Use autobrakes on landing to help minimize the need for reverse thrust
- Performance permitting, minimize the use of reverse thrust to prevent ingestion of dust and sand and to prevent reduction of visibility. Reverse thrust is most effective at high speed.

After Landing Procedure

Do the normal After Landing Procedure with the following modifications:

Note: Use the external power and ground air carts as much as possible.

Start the APU only if it is needed to provide electrical power or bleed air after engine shutdown.

If the APU must be started:

APU bleed air switch	OFF
APU	START

Note : Run the APU for one full minute before using it as bleed air source.

APU bleed air switch	ON
----------------------------	----

Taxi-In

Do the following , conditions permitting, to minimize sand and dust ingestion by the engines and to improve visibility during the taxi-in :

- Use all engines and taxi at low speed. Limit ground speed to 10 knots and maintain thrust below 40% N1 whenever possible.
- Maintain a greater than normal separation from other aircraft while taxiing and avoid the ingestion of another engine's wake.
- Avoid engine overhang of unprepared surfaces.
- Minimize engine thrust on the outboard side of the turn during 180° turns.
- In the event of a crosswind during 180° turns, turn away from the wind if possible to minimize sand and dust ingestion.
- Whenever possible, avoid situations that would require the airplane to be brought to a complete stop.
- Avoid excessive braking. The presence of sand or dust will increase brake wear.

Shutdown Procedures

Do the normal Shutdown Procedure with the following modifications:

Note : If the APU must be used for airconditioning, maintain a temperature as high as possible while still providing a tolerable flight deck and cabin environment.

Secure Procedure

Do the normal Secure Procedure with the following modifications :

Outflow valve manual switches	ON
Outflow valve manual control	CLOSE

Position the outflow valves fully closed to inhibit the intake of sand and dust.

Additional procedures for securing the airplane during sandy or dusty conditions may be needed. These procedures are normally done by maintenance personnel, and include, but are not limited to :

- Verify that engine covers, if applicable, are in place while the airplane is parked.
- Verify the airplane doors are closed.
- Verify that all openings are plugged or covered while the airplane is parked. Streamers should be used to remind personnel to remove before flight.
- Ensure all compartments are closed.

END 2.5.7