NDT in aircraft maintenance

Bert Wensink

November 2012
Intro maintenance

- Aircraft maintenance is based on
  - Time, Flying hours and landings
  - Inspections planned routine (P, H, FA, FC,) and/or unplanned (non routine).
  - Modifications and Alterations (some AD related)
  - “ARBO” and Environment.

- Planning is done by
  - Time table (flash) for flying aircraft
  - OVG (Overzicht Vliegtuigen aan de Grond)
### Time Table (Flash) Wide Body

| Day       | 00:00 | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Wed, 10/10/12 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Thu, 11/10/12   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Fri, 12/10/12   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Sat, 13/10/12   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Sun, 14/10/12   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Mon, 15/10/12   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Tue, 16/10/12   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
# Time table (flash) Narrow Body

<table>
<thead>
<tr>
<th>Day</th>
<th>Flight Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thu</td>
<td>11:00, 13:30, 16:00, 18:30, 20:00</td>
</tr>
<tr>
<td>Fri</td>
<td>09:00, 11:30, 14:00, 16:30, 19:00</td>
</tr>
<tr>
<td>Sat</td>
<td>08:00, 10:00, 12:30, 15:00, 17:30</td>
</tr>
<tr>
<td>Sun</td>
<td>07:00, 09:30, 12:00, 14:30, 17:00</td>
</tr>
<tr>
<td>Mon</td>
<td>06:00, 08:30, 11:00, 13:30, 16:00</td>
</tr>
<tr>
<td>Tue</td>
<td>05:00, 07:30, 10:00, 12:30, 15:00</td>
</tr>
<tr>
<td>Wed</td>
<td>04:00, 06:30, 09:00, 11:30, 14:00</td>
</tr>
</tbody>
</table>

*Note: Times are in 24-hour format.*
# OVG (Overzicht Vliegtuigen a.d. Grond)

## KLM Engineering and Maintenance, Long Term Technical Maintenance Schedule (OVG)

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Notes

- **OVG** (Overzicht Vliegtuigen a.d. Grond) is the long-term technical maintenance schedule for KLM Engineering and Maintenance.
- The schedule outlines the maintenance tasks required for aircraft during the designated months.
- Each row and column represents a specific date, task, or aircraft type.
- The schedule includes details on tasks such as inspections, maintenance, and repairs.

## Additional Information

- **KLM Royal Dutch Airlines**: Confidential.
- **Date**: 15/10/13.
- **Version**: 1.01.
- **Date of Creation**: dd-mm-2008.

---

**Contact Information**

- **KLM Engineering & Maintenance**: Confidential.

---

NDT in aircraft maintenance

• Operational issues;
  – Weather
  – Technical
    – Complaint
    – Parts & Equipment
    – Hangar space
    – Manpower
  – Damage
  – Crew, Cabin crew
  – Catering
  – Cargo and
  – Passengers
  – ..........

- >> a lot of reason’s to disturb the Maintenance planning
NDT in aircraft Maintenance
737 spoiler

• Situation:
  – B737-900 aircraft involved.
  – 6 planes have got repaired spoilers installed
  – Complex repair on panels
  – Spare set of spoiler was bought.
  – Replacement during C check
  – Inspection interval elke FA (+/-600 uur) >> +/-2 month’s
  – Summertime: FA during night time
  – Working time to perform inspection 8-10 hours
  – Arrival time hangar : +/- 19.00 hour
  – Working time rules

  >> Lack of capacity during 2 days.
NDT in aircraft maintenance

Resulting in:
- Meeting with fleet manager and fleet planner.
- On Wednesday there was a slot during day time.
- Used slot for this inspection.

- Causing: B737-900 changing into a -800: -15 pax
- Reservation system to be adjusted for the Wednesday

During daytime it was possible to increase the inspection capacity so aircraft was earlier available.
NDT in aircraft maintenance 747

• C inspection
• S41 modification
• MOI equipment (2x)

A lot of working hours a day before redelivery of the aircraft, both MOI gave failures.

Inspection due in 2014 postponed to interior modification block.
NDT in Aircraft Maintenance MD11

- C check in H12
- Röntgen inspections to be performed in fuel tanks
- Only possible during night time.
- Working time regulations.
- >> 3 man working during two nights.
NDT in Aircraft Maintenance 737

- Equipment made damage at Schiphol Centrum.
- Very small capacity that day due to consineering and Rontgen during the night.
- Security at Schiphol is on a high level.
- At that time no inspector was available with a valid pass for Schiphol Centrum.
- Return to flight time 1.5 hours: too short.....>
  Discussed options with DMM
- Other plane took over>
  now 4 hours groundtime.
- Plane was moved to Schiphol East by tow truck.
NDT in aircraft maintenance

• Performed inspection>> no findings>> aircraft returned to Schiphol Centrum
• Aircraft performed next flight in time!

• Questions?