Aeromexico 787 “C” Checks
A Maintenance Insourcing Case

Background

- AeroMexico began operation of the B787 in September 2013.
- Current fleet is 17 (9 B787-8 and 8 B787-9).

- First 5 “C” checks performed by Boeing Shanghai in 2016 & 2017, including installation of wifi and an extensive pax seat reconfiguration.

- **Not many MRO shops with B787 capabilities and experience existed in the global MRO market**

Background

From our on site observations, we concluded it was feasible to perform the checks in-house, with several advantages:

- Elimination of ferry flights and associated logistics.
- Opportunity for savings on relevant costs and aircraft out of service time reductions.
- Opportunity to develop a great sense of pride and growth among the AM technical staff.

Challenges

Several challenges were identified:

- For more than 10 years AM had not performed Heavy Checks and did not have a dedicated organization (staffing, production control).
- AM did not have all of the required tooling and support equipment.
- The check would have to be done with a competitive TAT and Cost.
- The Quality would have to be “World Class”, to be measured by the airplane’s performance after the check.

Project Planning

An extensive project evaluation was performed, including the following:

- Confirmation of availability of experienced MRO technicians (in-house).
- Definition of additional human resources required to release the in-house technicians from their line maintenance duties during the check, including recruitment and training plans.
- Set up of HM production control processes that would ensure real time control and reaction.
- Detailed task plan (ATA, zone, skill)
- Definition of required materials, tooling and equipment.
- Hangar slot availability.
- Ensuring the CAA Authorities (DGAC & FAA) would grant the required approvals.
- Main risks and containment plans.

Risks

- Inspection of vertical stabilizer attach bolts
  - ✓ Complex replacement procedure
  - ✓ Special tooling
  - ✓ Parts
- Composite structure
  - ✓ Materials
  - ✓ Trained technicians
- Complex service bulletins
  - ✓ Parts availability
  - ✓ Engineering & Boeing support
- Availability of parts
  - ✓ Considered usage from previous checks
  - ✓ Close coordination between maintenance and supply chain
  - ✓ Component support program

Financial Evaluation

The financial evaluation compared the in-house vs outsourcing alternatives including concepts such as:

- Manpower and training
- Materials and parts (including logistics and mark ups)
- Aircraft Ground time
- Required tooling and equipment (including buying vs leasing)
- Ferry flights and associated costs (ie; crew cost and on site team travel expenses)

The project was approved by the Finance Committee, with estimated savings of around 49% per airplane (11 aircraft business case).

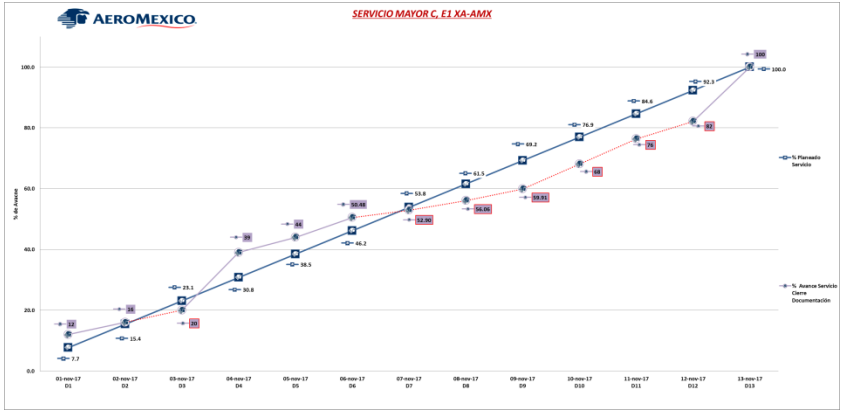
Performance

A few numbers…

- 3 checks
- TAT: 12 days
- 6,500 direct manhours
- 2 12 hours shifts, aprox 23 heads in each
- 2 full time engineers
- 5 inspectors
- 2 full time production controllers
- 318 routine cards (4,729 manhours)
- 77 NRC’s generated (1,771 manhours)
- 40 OEM reliability improvement S/B’s incorporated (1,781 manhours)

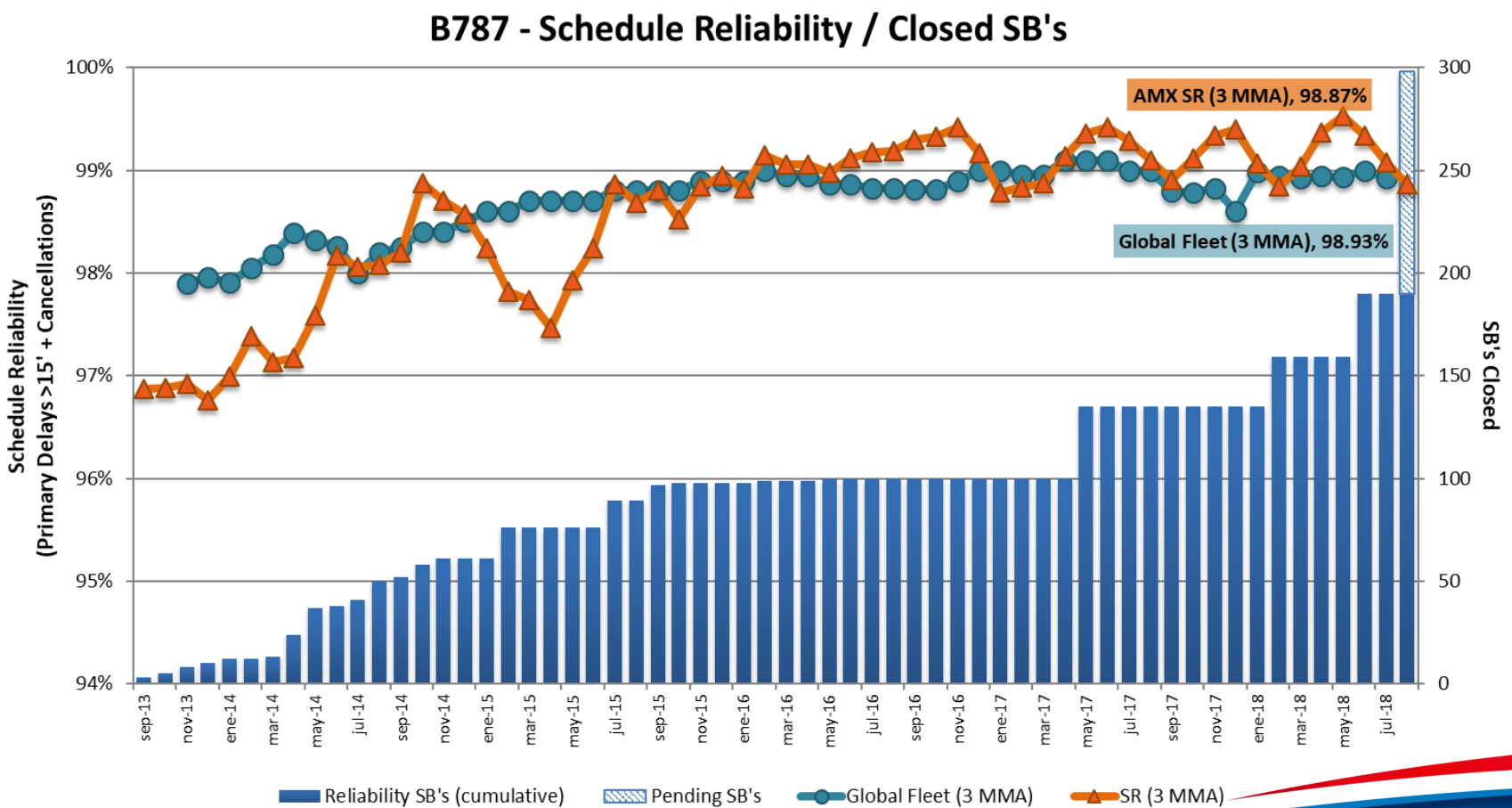
Results

- **Committed TAT and cost objectives were complied.**
- Quality in terms of post check reliability is world class (Zero tech delays 2 months after check).



- **Technical staff highly motivated.**
- Developed manpower also being applied to other requirements such as redelivery preparation.

Results


B787 - Schedule Reliability / Closed SB's
Schedule Reliability
(Primary Delays >15' + Cancellations)
SB's Closed
100%
99%
98%
97%
96%
95%
94%
300
250
200
150
100
50
0
AMX SR (3 MMA), 98.87%
Global Fleet (3 MMA), 98.93%
sep-13
nov-13
ene-14
mar-14
may-14
jul-14
sep-14
nov-14
ene-15
mar-15
may-15
jul-15
sep-15
nov-15
ene-16
mar-16
may-16
jul-16
sep-16
nov-16
ene-17
mar-17
may-17
jul-17
sep-17
nov-17
ene-18
mar-18
may-18
jul-18
Reliability SB's (cumulative)
Pending SB's
Global Fleet (3 MMA)
SR (3 MMA)

Conclusions

- A B787 C check can be done by an airline, but requires detailed planning and infrastructure.
- B787's new technology is performing well (no major surprises).
- **Operational line maintenance experience is very helpful (perhaps crucial)**
- Avoided ferry flight costs were important. However, removing them from benefits still provided a positive return.

Next steps:

- 2 checks in 4Q 2018
- 7 checks in 2019, including first 2C's

Q&A

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