Learning From Experience #2

TORCH LEFT IN NOSE WHEEL STEERING CABLE RUN

Maintenance errors, as we know, can take various forms from panels being miss-installed to inadequate surveillance inspections. This incident relates to the consequences of not accounting for all tooling used after a task has been completed.

During taxi-out to the runway for a return sector from Europe, the flight crew of a Boeing 737 found the aircraft difficult to control through the rudder pedals. The steering tiller would not return to the neutral (self centre) making rudder nose wheel steering “impossible”. Inspection of the nose wheel steering mechanism found a torch stuck in the cable run, causing damage to the cable guide wheel bracket and a pulley.

Investigation identified that the nose wheel spin brake pads had been replaced the night before but why had the Engineers involved failed to remove the torch?

An Engineer and two Technicians were tasked to work the B737 but prior to starting their assigned work for the night, they were involved in clearing late evening departure snags.

The Engineer busied himself with researching a hydraulic leak on an Airbus whilst the technicians started the spin pad replacement on the B737 at approx. 3:30am. In addition to the spin pad replacement, the B737 also had a toilet leak requiring the toilet dump valve to be replaced, so the technicians split the tasks.

The technician arrived at the aircraft, which was parked remotely, in the mobile workshop and assessed the job. His original plan was to use separate lighting from the mobile workshop but when he opened the rear doors of the workshop there was a torch lying on the floor. He placed the torch on top of the nose leg and positioned it as best he could to illuminate the task in hand. During completion of the task, the technician inadvertently kicked over a bag of spanners and only after completing the replacement of the spin pads did he pick them up. In doing so, he was momentarily dazzled by the headlamps of the mobile workshop, which was enough to distract from the fact that the torch had not been removed. The technician then assisted his colleague in changing the toilet dump valve as past experience had told him it was a tricky job.

After both technicians had completed their work on the B737, they proceeded to the Airbus and began work on a Hydraulic Pump change. They did not complete this job in the time available and eventually handed it over to the day shift.

The Engineer never visited the B737 as he considered the technicians to be proficient and the assigned tasks relatively straightforward.

The main contributory factors identified during the investigation were:

- Time pressure; The technician was aware that work was still outstanding on the Airbus and he needed to give his colleague a hand with changing the toilet dump valve.
- Tool control; There was inadequate control to ensure all tooling was accounted for.

- Inspection; The Engineer failed to inspect the replacement of the spin pads prior to signing for the task in the Technical Log.

It is worth noting that the ‘safety nets’ of an engineering pre-service check and two flight crew walk-round inspections failed to identify the torch, primarily due to the restricted visibility of the nose wheel area, with doors closed, on the B737. A fundamentally mundane task could have led to a far more serious incident.