Thirteen Things Item #11 – Case Studies

"Incorporate both FOD Protection and a clean as you go approach to FOD"

Example #1

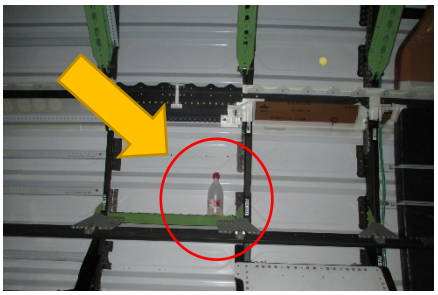
Hex driver found in seat

A customer discovered a hex driver below a seat cushion while the aircraft was in service. The item was returned to Boeing and a full investigation was requested.

Corrective Action & Process Improvement

Upon notification, the supplier immediately conducted a tool shadow board inspection on all seats under production, to ensure that all tools were accounted for. The supplier held "Toolbox Talks" with all assemblers, highlighting the need to make sure all tools are accounted for before and after manufacture. An 8D RCCA investigation was launched to identify weaknesses in the supplier's production system.

Example #2



MEK bottle found in 787 lower 46 section

Upon delivery to FAD, a bottle of MEK cleaning fluid was discovered in the lower lobe of the 46 section.

Corrective Action & Process Improvement

An Emergent Process Document (EPD) was raised on the originating supplier requesting a RCCA plan. This plan included a full investigation into the occurrence, with follow-up status reported at the weekly Quality meetings. The supplier held FOD Awareness sessions with all of its employees and recorded attendance. Training included this example which was easily avoidable.

Example #3

Inclusions during composite lay-up

During the composite lay-up production process, the requirement is to remove the protective plastic cover from the composite plies, which should be removed in one piece. Due to the thin nature of this protective material, it can easily tear and there is a risk that pieces could remain on the composite surface, causing FOD by inclusion.

Corrective Action & Process Improvement

Internal FOD practices were updated to include this potential risk and operators have been trained to look for this situation, and on Best Practices for removing the protective cover in one piece. In addition, all protective plastic is visually inspected to make sure it is a single piece and no material has been left behind on the composite surface. This is recorded to verify it has been done.

Lessons Learned

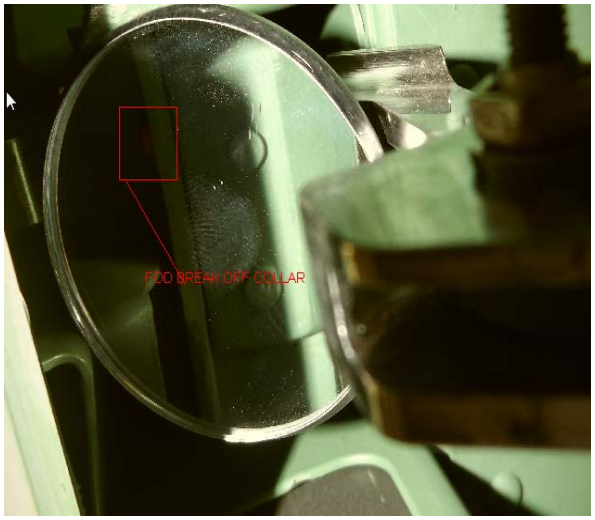
A robust FOD prevention program starts with the planning of the manufacturing process through to the delivery of the product. Identify potential risks and mitigate these through the provision of protection, count in-count out methods and clean as you go. Planning and executing FOD Walks is a great way of identifying risks and ensuring existing practices are being applied effectively.

Example #4

FOD Found on Fuselage

While inspecting the flat section of the step compartment as a result of rework performed, the DCMA found a nut on the fuselage. The fuselage was assembled by a Boeing supplier.

Upon finding FOD in the boarding ladder door, the Customer reviewed two additional ships that were onsite and found the same single nut FOD in the boarding ladder area on a total of three ships. Boeing created non-conformance tags for each event and removed the FOD.



Corrective Action

All aircraft in flow at the supplier were checked and do not expect further FOD findings in this area. The supplier created a “clean as you go” program and trained all employees.

Lessons Learned

Ensure “clean as you go” and other practices are in place to mitigate FOD.

FOD found should always be shared with creators so that future actions can be put in place to eliminate future reoccurrences.

FOD is part of the manufacturing environment regardless of the product size. If everyone takes responsibility for ensuring “FOD Free Zones”, follows their processes and uses good shop practices, FOD can be controlled and or eliminated.

Summary

- FOD prevention is everyone's responsibility.
- The requirement to have an effective FOD Prevention Program is contained in:
  - PO Note 29 X31764 (BCA)
  - Clause Q186 (BDS)
- Training materials can be developed with the aid of the IAQG Supply Chain Management Handbook section 3.4.
- This material is obtainable through the IAQG website and is free: http://www.sae.org/iaqg/handbook/scmhtermsofuse.htm

In addition, your Supplier Quality Representative can guide you through the Boeing requirements contained in D6-85622.

What Would You Do?

After reading the examples, consider the following discussion questions. They can be used in a team setting to generate dialogue around the **"13 Things"** or to help individual employees think about the situation from different perspectives.

1. How can we implement a rigorous "clean as you go" culture?
2. Why is it important to conduct a risk analysis where FOD is possible and put mitigation plans in place? (i.e. for caps, protective materials, and vacuum rather than blow debris etc.)
3. When was the last time we were cognizant of and trained ourselves on the Boeing requirements stated in D6-85622?
4. Do we conduct regular FOD walks? If not, how can we implement a plan to conduct FOD walks and check its effectiveness?