**Plans and Action Items from mtg about Ultrasound test of AL shells**

**(August 1, 2024)**

**Findings:**

1. The maximum allowable crack size for the test performed by the AL-shell vendor (ASTM B594-19 class AA) appears to be 1.2 mm according to the ASTM B594-19.
2. The K1 used in the MQXFA Structural Design Criteria (doc-909) was computed using a weight function. The K1 computed using ANSYS and assuming cracks in the worst location (based on several ANSYS cases) is lower than the previous one.
3. Either finding #1 or #2 is enough to have Load Factor > 1.2 (i.e. > 20% margin) and avoid the need for additional ultrasound testing of MQXFA12b and MQXFA18 shells.
4. ANSYS analysis has shown that subsurface cracks are less critical than surface cracks.
5. The AL-shell vendor performed dye penetrant examination on 100% of all surfaces using Type 1 / Method A / Level 3 sensitivity as per drawings. It is not clear what is the maximum allowable flow with this method/sensitivity.

**Plans and Action Items – responsible person:**

1. Giorgio V. is going to talk with Eric to understand why in the MQXFA Structural Design Criteria the maximum acceptable flow for AA inspection is reported as 1.77 mm – Giorgio Vallone.
2. Dan is going to look for references explaining the dye penetrant examination called for in the shell drawings – Dan.
3. Plan and perform dye penetrant examination along the weld-strip cut-out in order to be able to detect any flow larger than 1.2 mm – Dan and Giorgio Vallone.