



**STRUCTURAL
MONITORING
SYSTEMS** plc

ASX Announcement

ASX: SMN

12 October 2023

An update from the Executive Chairman

Structural Monitoring Systems Plc (“SMS” or “the Company”) (ASX:SMN) provides the following update to shareholders regarding the APB certification process.

SMS Executive Chairman Ross Love commented:

“Understandably, many shareholders have asked me in recent weeks if I am able to provide any more information on the progress of the certification of our CVM™ Smart Sensors for the Aft Pressure Bulkhead inspection – Boeing Service Bulletin 737-53A1248.

I don't feel I need to tell you again that it is a necessarily complicated and time-consuming process, but I wanted to take this opportunity to share more of the details regarding the technical procedures we are required to follow, so that you might make your own assessment of our continuing confidence in a positive outcome.

As I have previously reported, we are currently going through the final approval process within Boeing, before Boeing can then submit our alternative testing solution to the Federal Aviation Administration (FAA) for certification.

The Boeing certification engineer, who must make the final internal recommendation within Boeing, and who is appropriately independent of the Boeing engineering team we work with to develop, test and seek certification for this application, has identified three specific technical issues on which he needs to be satisfied before submission.

The first, was in relation to the effect the CIC coating - which is applied to the sensors on installation, and the faying surface sealant between the APB web and Y chord - and the potential impact this might have on the sensors' ability to detect cracks. As a result of his questions, we repeated the tests on this specific issue and believe he is now satisfied. Noting here that this is our understanding based on extensive conversations with our colleagues at Boeing, our commercial partners at Delta Tech Ops and with the certification engineer. We are not in a position to represent the Boeing certification engineer's final recommendation, or on the outcome of the final approval processes within Boeing.

The other part of this issue was in relation to the very unlikely possibility that the sensors could be coated with another sealant during work on any adjacent components after they have been installed, and whether that sealant could prevent detection of a pre-existing crack. Although the installation procedure includes an immediate test for any pre-existing cracks, the certification engineer was concerned from a human factor perspective, that this small risk may exist. This issue has been resolved by adding a requirement to apply a stencil adjacent to the sensors, warning maintenance crews that they not be over sprayed. A bit like the transfers we all see on aircraft wings highlighting those parts of the wing structure that cannot be walked on. So, a fairly simple remedy.



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The second issue proved to be a bit trickier to resolve. The certification engineer wanted to be assured that our sensors could detect cracks that had been generated at the structural load equating to, or lower than, those that meet the limit of validity for those relevant components. The challenge for Boeing, and therefore for us, is that there is no reliable data on what that lowest equivalent load on the test specimens actually is. Establishing a statistically reliable answer has required us to test at a range of different loads.

The good news is that our first five tested specimens show that we have now done that, and once again to the certification engineer's satisfaction at 20 kpi – although noting as above we are not in a position to speak for him.

We are now well underway on testing a statistically valid number of coupons (which are the agreed testing samples) with cracks originating at this load.

The first five have been completed and have passed our tests. As previously advised, these first five coupons now need to be “compression” tested in the Boeing lab in Seattle. They were ready for the previously mentioned 10 October deadline agreed with Boeing, but we were advised last week that Boeing has rescheduled those final tests for later this month (October). A timing issue which is unfortunately beyond our control. In the meantime, we will complete the final testing of the next 5 -15 coupons that are required to complete the statistically valid sample set. On the basis of the results from the first five coupons, we believe only five more will be required to be tested, but it is still possible we might need to test 15 more coupons depending on the statistical variance of the data compared to the previous POD data set.

The third issue is freezing condensation, including high and low temperature extended envelopes. The temperature and humidity requirements are in question because the APB location is an interface between the cabin, skin and rear tail sections, so there is high complexity to the thermal analysis model of the thermal transients occurring from the time an aircraft lands to the time of inspection. We have opted to test at the extremes of inflight temperature to eliminate the need for a complicated analysis or thermocouple reading at the sensor location. If the response of the sensor isn't in line with the standard operating performance at these extremes, we will need to opt for a more complex method - either thermal analysis or monitoring prior to inspection with an in-situ thermocouple.

It is important to note that at no stage during any of these tests have our sensors failed to perform as expected and required – it's just a matter of generating enough data under the newly specified, and rather exceptional, conditions to satisfy the additional requirements of the certification engineer.

Our testing capacity is – at the moment - constrained to one full set of coupon tests every four days – although we have been working 24/7 to accelerate this. Boeing advised us at the beginning of this final round of testing that they would only authorise data generated from our testing lab - which has meant we have been unable to source additional capacity outside our own lab in the short term, even though it is available to us. All of this is a valuable reminder that we will need to increase our testing capacity and capability, as we move towards multiple parallel certifications in the future.

For all of the reasons outlined above, and having perhaps been overly optimistic, as it has turned out, in accepting advice on timing in the past, I am reluctant to put any particular timetable on this process towards conclusion. However, I would like to reassure you that we remain confident and are proceeding with formal commercial proposals to the next set of potential customers in anticipation of final certification.

Assuming the remaining tests produce the results we are expecting, compilation of the data package has to be completed by Boeing and circulated for approval within Boeing that follows from the certification engineer's routing for approval.

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We are advised that this process includes presentation to, and approval by, three internal Boeing Committees. Although we are being assured that everything that can be done within Boeing to expedite this process is being done, the sequence and timing of these meetings is well beyond our influence.

Once that recommendation has been obtained, our system is then formally submitted to the FAA for their approval. While we cannot predict how long that will take, the good news is that the relevant FAA officials have been closely involved in all of the testing up to date, as well as being represented at a recent Delta installation as we have previously advised. At this point the value of our initial WiFi application approval becomes a very important reference point.

I want to thank all of you as SMS shareholders for your patience on this issue, including with reading this long note! I also want to assure you that the team here in Kelowna is working around the clock (literally for the last several weeks) and we are enjoying strong support from colleagues at Boeing and Delta Tech Ops throughout the process for which we are extremely grateful.

I also want to remind you that we are seeing some tremendous growth in our other major product line – avionics for the special mission fleet sector – and I look forward to updating you further on that in the coming months as well.

Thank you again for your patience and I look forward to providing you with further updates in the coming weeks and months.”

Ross Love
Executive Chairman

This ASX release has been approved for release by Executive Chairman Ross Love on behalf of the Board of Directors.

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