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AgustaWestland Products

# INFORMATION LETTER

DATE: **March 18th, 2021**

No.: **AW139-21-113**
**AW169-21-025**
**AW189-21-031**

To: All Owners/Operators/Service Centres

**SUBJECT:** **HUMS TVM thresholds refinement**

Helicopters Affected: All AW139/AW169/AW189 with HUMS systems installed

Dear Customer / Operator,

Leonardo Helicopters (LH) is pleased to inform you that a global review of the AW139/AW169/AW189 Transmission Vibration Monitoring (TVM) thresholds has been completed.

The thresholds review process is a key part of the Health and Usage Monitoring System (HUMS) / Monitoring and Diagnostic System (MDS) enhancement performed during the Controlled Service Introduction, in order to achieve a reduction of the rate of Alerts potentially resulting in unnecessary maintenance activities on the Helicopter.

A new set of thresholds has been identified and released in Heliwise to further enhance the diagnostic capabilities for all LH products equipped with HUMS. The main purpose of the new set of thresholds is to reduce the number of false alerts and false positive cases, improving consequently the system accuracy; this result was obtained through multiple system improvements like:

- Thresholds introduction/removal: new thresholds have been added for the monitoring of Health Indexes (HI) which proved their effectiveness in detecting components degradation. In the same way, selected secondary HIs have had their thresholds removed.
- Threshold Type update: based on the results of fleet analyses, the thresholds of certain HIs have been modified between Permanent and Temporary (the latter applies exclusively to auto-learning thresholds family). This change improves the monitoring of the components that have not shown a consistent vibrational pattern across the entire fleet.
- Threshold Level: the distribution of the aggregated data recorded was used to update the set value of each threshold. The threshold level influences the monitoring sensitivity and the false alerts rate.

The continuous collaboration between Customers and LH Support Team has allowed to establish a fundamental feedback network. The tuning of the system sensitivity has been possible thanks to the capability of relating the analyzed HUMS data with the realistic classification of the occurrences in service.

The result of this activity has been achieved using HUMS data, constantly shared within Heliwise online platform, from more than one thousand helicopters.

More than 300 thousand thresholds have been evaluated and half of these have undergone a re-calibration process.

Following the definition of the new baseline set of thresholds, the “In-service threshold monitoring” activity was started: advanced calculation algorithms evaluate and suggest every week the optimal threshold levels which will be updated directly by LH Support Team for all Customers who are covered by the “Full Support Service”. For the remaining support options, the modification or reset of the thresholds, taking benefit of the “In-service threshold monitoring” assessments, is carried out upon Customer request: the threshold modification on-demand request is available in the usual formula through the appropriate submission of a Threshold Change Request (TCR) Heliwise query.

On a weekly basis, the in-service threshold monitoring task analyzes back the aforementioned 300 thousand thresholds that are validated by using more than 250 million data points. We are currently working on a dedicated reporting for all Customers covered by the various support contract options, to provide visibility on the results of this continuous analysis and evaluation.

In order to take the full benefit of the thresholds refinement, no actions are required on the Customer side: the new thresholds are already embedded in Heliwise and will be used for the arising computation of all the new datasets downloaded into the Ground Station, regardless of the support coverage option selected by the Customer. LHD will monitor the new set of thresholds for the next 6 months to confirm their effectiveness and implement any additional improvement which may be identified, based on the data collected during such period.

The already available feature to manage Heliwise Queries (DARF/TCR) will be managed in this framework, and the feedback will be further used to refine the thresholds in Heliwise.

Should you need any additional information, please do not hesitate to contact LH HUMS Support Team at hums.mbx.aw@leonardocompany.com mailbox.

Yours Sincerely,

Giovanni Cecchelli
Leonardo Helicopters
Vice President
Customer Support & Services