

 EASA European Aviation Safety Agency	COMMENT RESPONSE DOCUMENT
	Proposed Equivalent Safety Finding to CS 23.1305, 23.1311, 23.1321 and 23.1549 - Powerplant instruments

Comment

During the public consultation phase of this Proposed Equivalent Safety Finding, the applicant asked for an extension of this ESF. The extension was proposed based on Garmin's suggestion to display the powerplant indication of OIL TEMPERATURE and OIL PRESSURE in a digital reading alphanumeric-only format on the Primary Garmin 3000 display.

Safety Equivalency Demonstration proposal

With regard to powerplant indication of OIL TEMPERATURE and OIL PRESSURE in a digital reading alphanumeric-only format precautionary ranges enable adequate awareness for timely reaction from the crew.

The following ranges are assumed to be "precautionary ranges":

Drop of temperature: from + 20 °C to - 20 °C

Rise of temperature: from + 85 °C to + 95 °C

Drop of pressure: from 0.170 MPa to 0.120 MPa

Rise of pressure: from 0.271 MPa to 0.350 MPa

The precautionary ranges are adjacent to minimum/maximum values indicated by red colours. In the precautionary ranges the indications are yellow, which attracts the increased pilot's attention. Thus the maximum/minimum values are not indicated immediately, but after a certain time of the yellow indication, which enables an adequate awareness for timely reaction from the crew.

Explanation of how features provide equivalent safety

OIL TEMPERATURE and OIL PRESSURE do not explicitly require to be constantly monitored during normal operations (except engine start-up) and, contrary to TQ and ITT, they are not supposed to change rapidly. Therefore it is not essential to assess a dynamic trend, but it is necessary to be aware of the proximity of a limit value.

The OIL TEMPERATURE and OIL PRESSURE analog readings are still accessible on the Engine page of the MFD. They are efficient to assess a margin to the limit value marked by the red line.

The efficient alerting feature on the Primary display is the digital read-out accompanied by the change of colour from green to yellow , or from yellow to red, respectively.

It is valid for both OIL TEMPERATURE and OIL PRESSURE.

OIL TEMPERATURE indication colour changes:

Change of colour from green to yellow - drop of temperature below + 20 °C or
- rise of temperature above + 85 °C.

Change of colour from yellow to red - drop of temperature below the minimum value
of - 20 °C or
- rise of temperature above the maximum
value of + 95 °C.

OIL PRESSURE indication colour changes:

Change of colour from green to yellow - drop of pressure below 0.170 MPa or
- rise of pressure above 0.271 MPa.

Change of colour from yellow to red - drop of pressure below the minimum value of 0.120 MPa or
- rise of pressure above the maximum value of 0.350 MPa.

The drop of pressure is accompanied by the CAS message **LH/RH OIL PRESS LOW** and by the Master Warning.

EASA Position

EASA agrees. This ELOS is extended to display OIL TEMPERATURE and OIL PRESSURE in a digital reading alphanumeric-only format on the Primary Garmin 3000 display.