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Your file # 10 - 020

April 17, 2012

Federal Aviation Administration
New York Aircraft Certification Office
1600 Stewart Avenue, 4th Floor, Suite 410
Westbury, NY 11590

Our file #
5010-0-10-0398

Attention: Mr. Anthony Socias
Subject: Technical Standard Order Design Approval (TSODA) minor changes

Reference: Technical Standard Order Design Approval (TSODA) letter dated October 15, 2010

Dear Mr. Socias,

Insight Instrument Corporation (IIC) the holder of TSODA for their single-engine graphic engine monitor GEM 610C is adding two new GEM 610C variants through the FAA TSO minor change process as per FAR §21.619(a).

IIC developed stripped-down derivatives of their approved Graphic Engine Monitor GEM 610C. These derivatives, designated as G1 and G2 variants, will replace IIC's earlier instruments – GEM 602 and 610.

G1 and G2 use exactly the same housing, bezel, circuit boards, connectors, display and electronic components as the already approved model G3. The G1 and G2 are manufactured by selectively populating the components needed for their feature list and configuring the software to match. Only a few components are omitted from the G1 and G2 assemblies (compared to G3) as needed for the functionality of particular variant (see table below).

G1/G2/G3 Comparison Table

Function	Model		
	G3	G2	G1
EGT	X	X	X
CHT	X	X	X
TIT	X	X	X
Fuel Flow	X	X	
OAT	X	X	
Buss Voltage	X	X	
Tachometer	X		
Manifold Pressure	X		
Oil Temperature	X		
Oil Pressure	X		
Accelerometer(s)	X		
Carburettor Temperature	X	X	X
Instrument Vacuum	X		
Auxiliary Temperature(s)	X		
RS-232 Interface(s)	X		
Vibration	X		

The G3 full-functionality operating software (DO-178B level C) has been modified to disable certain functions for derivatives G1, G2, as required. The modified software has been fully re-verified.

The environmental qualification was limited to a subset of DO-160 tests, as the variants could be qualified by similarity.

The G3 is TSO-C43c–approved for temperature indications and the G1, G2 temperature functions (EGT/CHT/TIT) are not affected by the changes.

The instruments are identified as G1, G2 and G3 variants of the same model on their bezels, and by their unique serial numbers. IIC has allocated blocks of serial numbers for every variant, for the configuration control purposes.

Model	**Variant**	**Part Number**	**Description**	**Design Assurance**
GEM 610C	G1	610C-001	Graphic Engine Monitor	DO-178B Level C
	G2			
	G3			

TCCA hereby confirm that the G1 and G2 variants meet the TSO-C43c MOPS and inform the FAA NYACO about this minor TSO change, and addition of variants G1, G2 to the GEM 610C TSODA for TSO-C43c temperature instruments.

If there are any questions, please feel free to have your staff contact the undersigned by phone: 416-952-0331 or by e-mail: Vladan.Vujosevic@tc.gc.ca

Sincerely

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