Huhn Michael

From: [redacted]
Sent: Thursday, August 20, 2015 6:21 AM
To: Huhn Michael
Subject: RE: C-120/C85 mixture in climb? (WPR14FA132) N76856
Attachments: [Untitled].pdf; A-768.pdf

Hello Michael,

Here are the maintenance logs N76856.

It's always the aircraft manufacturer guidance and not the engine manufacturer guidance. The engines are made for multiple aircraft applications. See Aircraft Specifications NO. A-768 for CE-120, paragraph II, Required Equipment (Landplane) Note #403,
403. CAA Approved Airplane Flight Manual (optional nomenclature:
"Approved Operating Limitations") and pertinent revisions applicable to the particular model and serial number. Tentatively approved Airplane Flight Manuals in use up to and including the 1947 version aircraft are acceptable without replacement.

and "not the engine manual".

Lee

Lee A. Oscar
Principal Avionics Inspector
Flight Standards District Office
[redacted]
Reno NV, 89511

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From: Huhn Michael [mailto[redacted]
Sent: Wednesday, August 19, 2015 3:17 PM
To: Soderlund, Henry; [redacted] Oscar, Lee A (FAA)
Subject: C-120/C85 mixture in climb? (WPR14FA132)

Hi Guys
In looking through all the applicable guidance I can find it seems theres an inherent conflict between the Cessna and Continental guidance when it comes to engine leaning during climb. Hopefully one or more of you can set me straight

Heres what i found so far

- The Cessna OM did not contain any references to engine mixture during climb. The "Cruising" subsection of the "Operating Check List" section stated "above 5000 ft. lean mixture as required to obtain maximum r.p.m." The "Mixture Control" subsection of the "Operating Details" section stated that the mixture control was to always be set at full rich "for starting and take-off purposes." It also stated that "The mixture control should be used cautiously to lean mixtures to give maximum engine r.p.m. when flying above 5000 feet pressure altitude." The manual did not

contain any additional information regarding which flight phases (climb, cruise, and descent) the leaning guidance was applicable to, or whether the engine should not be leaned in certain flight phases.

- In apparent conflict with the Cessna OM, Continental Motors Operator's Manual for the C-85 engine, which was not contained in the wreckage, stated that "Climb must be done at "FULL RICH" mixture setting."

- The Continental OM also contains the following caveat on the frontispiece
- THE ENGINE(S) DESCRIBED IN THIS MANUAL MUST BE OPERATED IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED HEREIN. FAILURE TO SO COMPLY WI LL BE DEEMED AS ENGINE MISUSE, THUS RELIEVING THE ENGINE MANUFACTURER OF ANY RESPONSIBILITY.

- Neither manual contains any supersedure/precedence information (eg "in the event of conflict, the ABC manual guidance takes priority over the XYZ manual guidance")

So my question to you is what should a pilot do re mixture in a climb above 5000 feet?

Michael Huhn
Air Safety Investigator
NTSB Western Pacific Region
M: [redacted]

Huhn Michael

From: [redacted]
Sent: Thursday, August 20, 2015 2:15 PM
To: Huhn Michael
Subject: RE: C-120/C85 mixture in climb? (WPR14FA132) N76856

Yes and Yes.

Lee

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From: Huhn Michael [mailto:[redacted]
Sent: Thursday, August 20, 2015 2:04 PM
To: Oscar, Lee A (FAA)
Subject: FW: C-120/C85 mixture in climb? (WPR14FA132) N76856

Hi Lee
Attached is the AFM from Cessna. As you can see its quite thin, and does not address mixture setting in flight.

Therefore to me it now seems that your rationale re how the Cessna guidance takes precedence, because the Continental manual is not in the equipment list, ends up being irrelevant to engine leaning procedures.

a) Would you agree?
b) In that case I suspect that you would still be of the opinion that the airframer's documentation should prevail, because the engine is installed in multiple airframes- is that correct?

Thanks again

Michael Huhn
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