

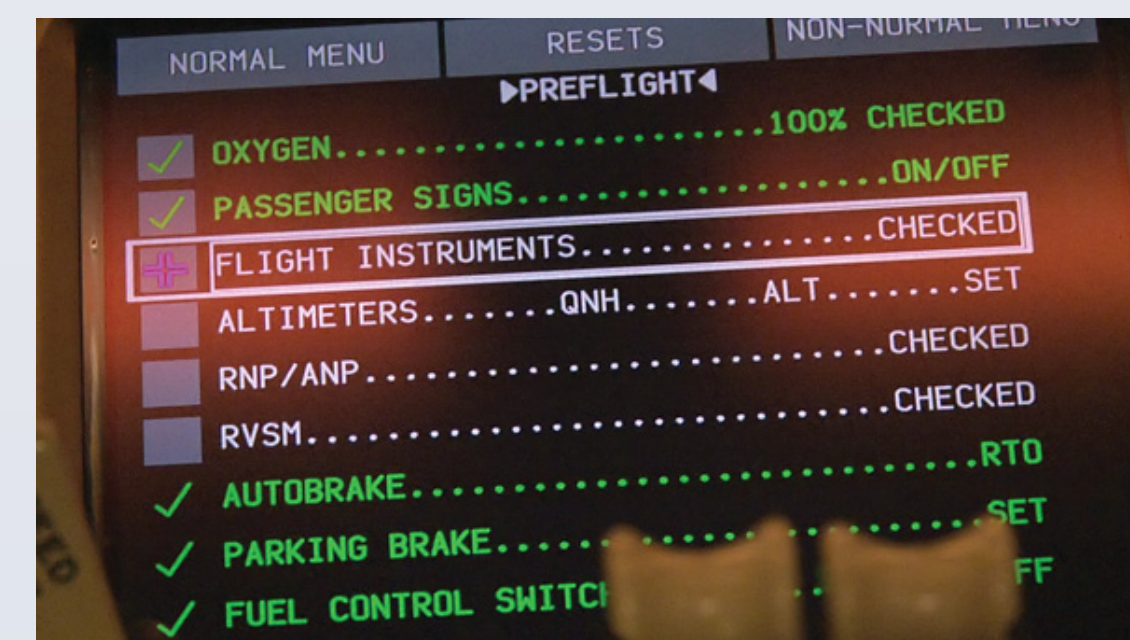
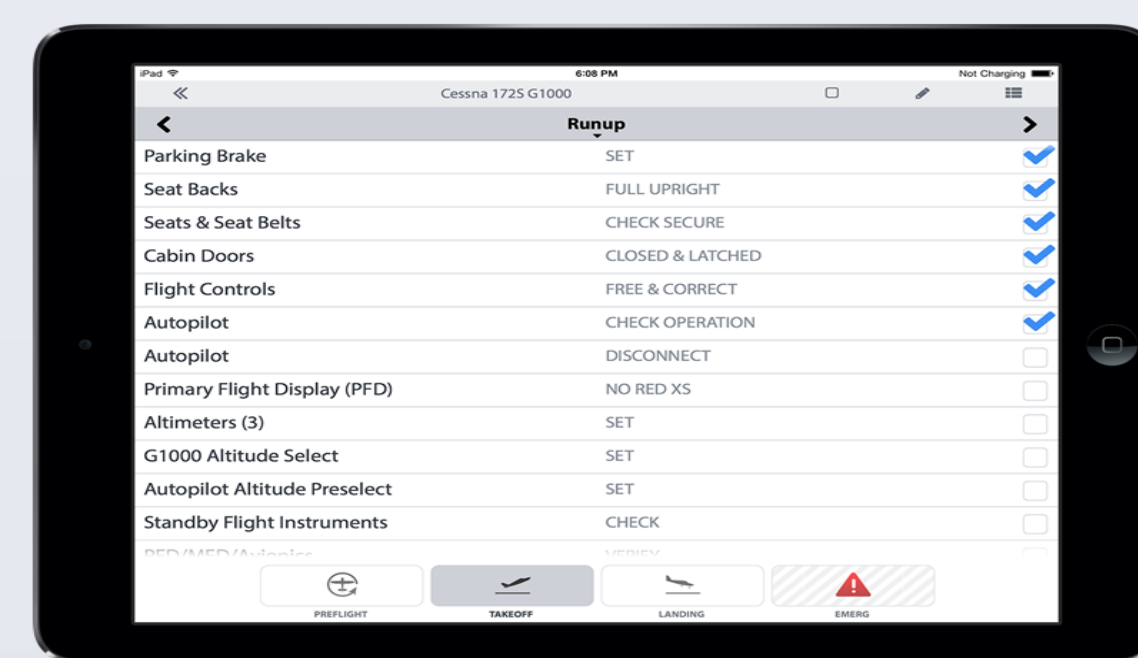
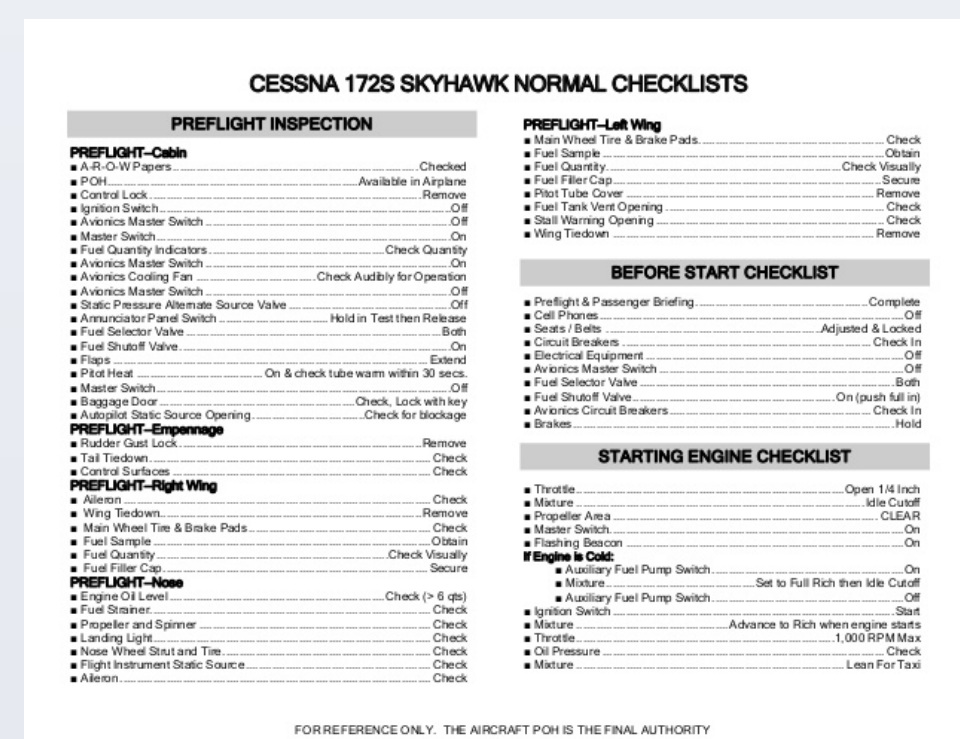
Electronic Checklist Implementation: Transition Training and General Aviation (GA) Usage

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INTRODUCTION

- Checklists are a staple in all types of flight operations
- Checklists are based on a few key components:
 - Title
 - Line items
 - Task to Perform
- Checklists lack significantly when the pilot is:
 - Distracted
 - Overwhelmed
 - Complacent
 - Poorly trained
- Electronic checklists have been incorporated into commercial operations but have not been properly addressed in the GA world



METHODS

- Anecdotal evidence suggests more pilots are utilizing electronic checklists as opposed to traditional, paper checklists
- The authors research focuses on published texts to assess the state of the industry
- Authors focus on approaching the subject from a human factors perspective
- The authors evaluate current electronic checklist usage primarily in the GA world and compare it to transport operations
- Based on the results, authors propose revisions to the electronic checklist transition and usage processes and identify safety-critical next steps

RESULTS

- Checklists have been a staple in aviation human factors since 1937 (Schamel, 2012)
- Omission of checklists, either partially or completely, account for approximately 70% of all approach and landing accidents (“Normal Checklists and Crew Coordination”)
- As technology advanced, checklists were put into electronic formats
- This helped increase redundancy in transport category aircraft as the system would confirm that the action was performed by the pilots, thus eliminating the human “weak link”
- General aviation aircraft have not reached the level of redundancy that newer transport category aircraft have achieved
- This can be contributed to the fact that most GA aircraft operators use electronic checklists on their iPad or other mobile computing device
- Some checklists will require you to check off an item, however, the mobile computing device has no way to confirm with the aircraft if the action was successfully performed (“Checklist Apps for your iPad,” 2014)



DISCUSSION

- As GA aircraft become more advanced, electronic checklists should be incorporated into integrated avionics systems
- At some point, it is likely that all aircraft produced will have integrated avionics (Degani, 1990)
- Adding a checklist component to the integrated avionics system should not require significant overhaul, it should be a software upgrade
 - This way, different models of the same aircraft can have new checklists, as approved by the Federal Aviation Administration, uploaded periodically
- Alternatively, a plug in with a connection to an iPad application is possible
 - This could likely be more expensive and generally unrealistic unless it becomes an industry standard
 - This will, however, increase the necessity for iPads in the cockpit but it will also enable pilots to fly multiple aircraft types and not worry about if they need a paper checklist

Testing of the electronic checklists in GA aircraft from a human factors should prove effectiveness similar to that of transport category aircraft, effectively reducing the likelihood of checklist related accidents and incidents in the GA community.

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