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## RESULTS FROM THE FIRST FAA INDUSTRY TRAINING STANDARDS (FITS) COMMERCIAL PILOT TRAINING COURSE – A STUDENT’S PERSPECTIVE

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In January 2008, students in the Professional Pilot program at Middle Tennessee State University (MTSU) began training using an FAA Industry Training Standards (FITS) Commercial Pilot curriculum. The course was accepted as a scenario-based and competency-based curriculum by the FAA as a “Special Curricula.” Students entered the FITS Commercial Pilot course having completed their Private Pilot Certificate and Instrument Rating. Some of the students had completed a FITS accepted and FAA approved combined Private/Instrument course, while others had completed separate Private Pilot and Instrument courses. The first thirty-three students completed the course with lower total flight times than students have historically experienced in conventional training paradigms. Although the students completed the course with less flight time, they nevertheless met FAA standards and passed the FAA Commercial Pilot Practical Exam on their first attempt 88% of the time. This paper presents an analysis of student impressions of this new training methodology.

### *Continuing Research*

In 2004, the Federal Aviation Administration (FAA) implemented the FAA-Industry Training Standards (FITS) program (Federal Aviation Administration, 2004; Glista, 2003), based on recommendations from the 1998 FAA “SAFER SKIES” initiative. Flight training curricula developed using the FITS tenets place major emphasis on: aeronautical decision making skills, risk management, situational awareness, and single pilot resource management using real-time flight scenarios (Ayers, 2006; Glista, 2003). Since 2004, Middle Tennessee State University (MTSU) has been involved in the implementation and testing of FITS-approved Private and Instrument curricula (Craig, et al, 2005a, 2005b; Dornan, et al, 2007b, 2007, 2006; Beckman, et al, 2008). The next step in the development of a completely scenario-based flight training program at MTSU was the creation, approval, and implementation of the first-ever FITS-approved Commercial Pilot Training Course (FAA, 2007). In January of 2008, the first cohort of MTSU students were enrolled in this Training Course. This paper documents an evaluation of the course by the first students to complete training using the FITS-approved Commercial Pilot course.

### *Commercial Course Requirements*

Traditional training for obtaining a Commercial Pilot Certificate is conducted in one of two ways. It is either done in compliance with the laws of the Code of Federal Regulations Part 61 or Part 141. Part 61.129 requires that a Commercial Pilot applicant must have logged at least 250 hours of flight time. Appendix D of Part 141 outlines the requirements for a Commercial Pilot applicant at an FAA Approved School. Appendix D first requires the applicant to have logged at least 35 hours of flight time toward the Private Pilot Certificate, plus at least 35 hours toward the Instrument Rating, plus an additional 120 hours toward the Commercial Pilot Certificate – a total of at least 190 hours. The FITS Commercial Pilot course that was approved at MTSU does not have a minimum flight time requirement. Students progress through the course and ultimately complete the course when they meet the flight proficiency standards, regardless of how many or how few flight hours they accumulate while in the course. This competency-based system is a departure from the traditional flight hour based system and is made possible by the Special Curricula rule of Part 141.57. That law states that schools that were previously FAA approved can, “conduct a special course of airman training for which a curriculum is not prescribed in the appendixes of this part, if the applicant shows that the training course contains features that could achieve a level of pilot proficiency equivalent to that achieved by a training course prescribed in the appendixes of this part or the requirements of part 61 of this chapter.” MTSU sought this approval and was granted permission to conduct the FITS-approved Commercial Pilot course. One of the features of the course was the replacement of an hours-based requirement with a proficiency-based requirement.

## *Methodology*

On January 18, 2008, the authors received approval to collect data pertaining to the new Commercial Pilot course from the MTSU Institutional Review Board (IRB #08-151). The project, titled "Evaluation of the FAA/Industry Training Standards (FITS) Commercial Pilot Curriculum Implementation at the MTSU Flight School," authorized the authors to examine student records and collect survey data from the students who complete the FITS Commercial Pilot Course. The survey instrument used in the study was first validated by Graduate Faculty of the MTSU Aerospace Department and the MTSU Office of Research and Sponsored Programs. The survey had two parts. The first was a series of Likert-scale type questions; the second, a series of open-ended questions. The surveys were sent to the students, via email attachment, after they completed the FITS Commercial Pilot course and had passed the Commercial Pilot Practical Test which was administered by an FAA Designated Pilot Examiner. The students were asked to return the completed survey via email attachment. In the early fall of 2008, thirty-three survey requests were made, and twenty surveys were returned. When the surveys were returned they were immediately coded with a number and the name removed. No link is now possible between the students and their survey responses.

## *Results*

A survey question asked of the students was, "How many flight hours did you have on the day you passed the Commercial Pilot Practical Test?" Seventeen students responded to that question. For those seventeen students, the average flight time logged when they became Commercial Pilots was 182.7 hours. The students were also asked about their flight training prior to beginning the FITS Commercial Pilot course. Ten students had started the FITS Commercial Pilot course immediately following the completion of the FITS combination Private and Instrument course that was taught at MTSU. For students who moved directly from one FITS approved course (Private/Instrument) to the next (Commercial), the average flight time logged when they became Commercial Pilots was 155.2 hours. Another ten students had not completed any FITS training before beginning the FITS Commercial Pilot course. For the students who had no prior FITS training experience before beginning the FITS Commercial Pilot course, the average flight time when they became Commercial Pilots was 217.4 hours.

Students were next asked about their use of flight training devices (FTD) during their Commercial Pilot training. The average FTD time among the students who completed the FITS Commercial Pilot course was 13.5 hours, although the course does not specifically require any FTD time. Any FTD time that was logged was for student proficiency and was considered an extra, outside the course. The range was wide, with one student logging 24.7 FTD hours while two students logged no FTD time at all. The variance was mainly attributed to the fact that instructors utilized the FTDs based on their own preference and FTD availability.

While we were naturally interested in the flight time of students completing the curriculum, the primary goal of the curriculum was to produce a pilot well prepared for the challenges they will face after they become Commercial Pilots and operate in the actual flight environment. Several of the Likert-scale type questions were aimed at this evaluating how well the curriculum performed in this area. To the statement, "I have a high confidence level that the FAA Industry Training Standards (FITS) Commercial Pilot course has prepared me well for the next steps in my professional career" ninety-five percent of the students responded with either "agree" or "strongly agree." Only 5% (one student) entered the response of "disagree." To the statement, "I feel that I am now ready for a Professional Pilot job" 80% responded "agree" or "strongly agree." To the statement, "After the FITS Commercial Pilot course, I am now more confident in my aeronautical decision making skills," 95% of the students entered that they either "agree" or "strongly agree."

One of the unique features of the FITS Commercial Course is that it incorporates instrument training and instrument flights, including a solo instrument flight. Traditional Commercial courses have little or no instrument training and as a result, many practical test applicants are no longer instrument proficient on the day they become Commercial Pilots. The authors saw this as a negative effect and attempted to remedy this problem through the design of the FITS Commercial Pilot course. When students were asked to respond to the statement, "I feel that using the FITS Commercial Pilot course helped me maintain my IFR proficiency as opposed to training with VFR maneuvers alone" 100% responded that they "agree" or "strongly agree."

Another goal of the authors was to assess the satisfaction level that the students had with the course. The curriculum design specifically targeted areas that traditionally are problems for students in training, such as lesson

cancellations due to weather or equipment availability, and repetitious lessons. Several survey items attempted to determine if the curriculum was effective in targeting these problem areas. To the statement, “The FITS Commercial Pilot course went smoothly and was relatively easy,” 80% responded that they “agree” or “strongly agree.” Twenty percent made the response that they were “neutral.” The students were asked to respond to the statement, “Compared to other training I have had, the FITS Commercial course was enjoyable.” Ninety-five percent of the students indicated “agree” or “strongly agree.” Five percent (one student) said they were neutral on that statement.

A unique feature of the FITS Commercial Pilot course is its flexibility. The lessons throughout the course can “shuffle.” The course has four “strands” – VFR, Commercial Maneuvers, IFR and Complex, but students and instructors can switch back and forth between the strands to meet the needs of the training environment. If a VFR flight is planned, but IFR conditions are present, the instructor can switch and conduct a lesson from the IFR strand. This greatly reduced training delays and helped the students maintain proficiency. Traditional maneuvers-based, time-based syllabi require the student to complete all of one stage before moving on to the next set of lessons. This practice, however, tends to increase lesson cancellations and training delays. When students were asked to comment on the statement, “The ability to “shuffle” lessons between strands was beneficial,” 100% said either agreed or strongly agreed with the statement.

With less average flight time needed to complete the course, less money is needed to become a Commercial Pilot. Since the average logged flight time was less than what otherwise would have been required, the area of cost savings was also an interest to the authors. When the students were asked to respond to the statement, “The cost for me to get the Commercial Pilot Certificate was less because I used the FITS Commercial Pilot course,” 79% responded “agree” or “strongly agree.” Three students responded “neutral,” one student responded “strongly disagree” and one student did not respond to that statement. One student, who had first completed the FITS combination Private and Instrument course, immediately followed by the FITS Commercial course, had logged 133 total flight hours by the day he passed the Commercial Pilot Practical Test. He reported to one of the researchers that, “The FITS Commercial saved me \$6,000.”

#### *Open Ended Questions*

The survey instrument also had a series of open-ended questions that allowed the students to further and more freely express their opinions. The researchers believed that students who had just completed the FITS Commercial Pilot Syllabus were in the best position to offer suggestions for improvement. The researchers also felt that having the students respond via email would produce more complete responses because students are so familiar with communicating by computer rather than pen and paper. The students did not hold back with their opinions on the open-ended questions. The following tables include representative responses to the open-ended questions.

Table 1: *Student Responses to “What did you enjoy most about the FITS Commercial Pilot course?”*

<p><b>Question:</b> What did you enjoy most about the FITS Commercial Pilot course?</p> <p><b>Representative Responses:</b></p> <ul style="list-style-type: none"> <li>&gt; “I enjoyed the fact that I could jump around between lessons and not have to wait for a strand check to be completed before moving on. While waiting for a strand check I could begin another strand.”</li> <li>&gt;”The ability to shuffle around lessons was not only beneficial, it kept me cautious about what I was supposed to be doing. In some cases I had only a couple minutes to plan and file a flight, followed by thirty minutes for preflight inspection.”</li> <li>&gt; “I really enjoyed how quick the process went. Allowing me to move at a faster pace, and transition to other lessons without the stage checks right off the top really allowed me to finish my commercial license a lot quicker, and was more enjoyable.”</li> <li>&gt; ”The scenarios, while sometimes very corny, were also more fun than the basic Commercial Syllabi that are available. I happened to also have a copy of the (traditional) Commercial and flights in the FITS Commercial seemed much more enjoyable then the comparable Part 61 lessons. Also I believe the solo IFR lessons are an excellent building block.”</li> <li>&gt;”It was a bit more laid back and not as demanding as the private/instrument combined. Some of the scenarios were also pretty interesting, and going solo IFR was a big confidence booster.”</li> <li>&gt; ”The real-life scenarios which were presented throughout each lesson allowed the application of regulations and piloting skills which were being taught, giving me a better understanding of the material. I especially enjoyed the flexibility with which I was able to complete the course.”</li> <li>&gt; “I liked how the scenarios were based on realistic situations and simulated real world pressure.”</li> </ul>
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- > “The opportunity to fly IMC frequently and fly IMC solo.”
- > “I enjoyed the dual flights where it was just flying without learning maneuvers. It seemed more like I was flying for hire than learning.”
- > “The scenario based lessons, and the solo IFR flights and the 500 nm cross country.”
- > “The ‘missions’ made FITS a little more down to earth and gave a good sense of things that commercial pilots may actually do.”
- > “I enjoyed the scenario based lessons, as they helped me to realize what I could do with my commercial license, as well as the responsibilities I would assume as a commercial pilot.”
- > “The solo IFR flight.”
- > “My favorite part was the ability to choose which ‘string’ to work on. I also thought that the different scenarios were highly enjoyable. Instead of just flying and doing maneuvers, you actually got a taste of what real-world flying will be like. Flying the IFR cross country was also fun.”

Table 2: *Student Responses to, “What did you enjoy the least about the FITS Commercial Pilot course?”*

<p><b>Question:</b> What did you enjoy the least about the FITS Commercial Pilot course?</p>
<p><b>Representative Responses:</b></p> <ul style="list-style-type: none"> <li>&gt; “I did not like the switching between the PA-28 and DA-40. These are two aircraft that handle completely differently. After I got proper landings in the PA-28, I had to transfer my skills back to the DA-40 to pass the VFR strand check. This is greatly due to the shuffling of the lessons. Flying both the PA-28 and DA-40 on a daily basis did help my piloting skill; however, it was a pain at the time.”</li> <li>&gt; “I don’t have any negative remarks about the FITS Commercial Pilot course.”</li> <li>&gt; “It seemed that the first couple of dual missions in the VFR strand dragged on. I understand their purpose in teaching the Commercial exceptions in Part 119 but I believe that in most cases with almost all students that the lessons could be combined or a few of them taken out and perhaps replaced with more solo or cross country flights.”</li> <li>&gt; “Some lessons I felt were pointless, and while the jumping back and forth saved time, I thought it made the strand checks somewhat more difficult.”</li> <li>&gt; “The complex aircraft strand and commercial maneuvers strand should be required to be at the end of the course so the student doesn’t have to re-fly the same flights to regain proficiency for the checkride.”</li> <li>&gt; “The maneuvers were repetitive.”</li> <li>&gt; “I do not think there are enough solo flights built into the syllabus.”</li> <li>&gt; “VFR navigation planning for the 500nm XC.”</li> <li>&gt; “The time restraints placed on students during flight planning. I understand why they were used and it helped me with my ability to quickly and accurately plan a cross country but it was tough at times.”</li> <li>&gt; “I enjoyed all of it.”</li> <li>&gt; “Nothing, everything went great!”</li> </ul>

Table 3: *Student Responses to, “Do you have any other comments about the FITS Commercial Pilot course that were not covered in previous questions?”*

<p><b>Question:</b> Do you have any other comments about the FITS Commercial Pilot course that were not covered in previous questions?</p>
<p><b>Representative Responses:</b></p> <ul style="list-style-type: none"> <li>&gt; “Overall, Commercial FITS is a great program. Much like Private/Instrument FITS, however, there are still a few bugs to work out. I feel more cross-countries should be added to the syllabus. Also, I feel there was not enough time in the Piper Arrow (Complex Airplane). The student is in the aircraft just long enough to learn maneuvers and move on to the checkride. Perhaps making the Arrow a mandatory aircraft on a cross-country or two will not only allow the pilot to become more familiar with the aircraft but also allow the student to become used to flying more than just a DA-40 more than 20 miles from the airport.”</li> <li>&gt; “I believed the FITS syllabus was very well put together (both commercial and private/instrument). I am grateful that I received most of my pilot training in just under two years with thousands of dollars saved. I do not feel incompetent as a pilot, nor do I feel that I was “cheated” that I did not accumulate many flight hours during</li> </ul>

my training. I feel that I have a good firm grasp on the aerospace industry and my place within it.”

- > “I really enjoyed the realism in the scenarios. I believe to become a successful and safe professional pilot, us as students need to be in stressful situations when we have certain deadlines to meet.”
- > “The FITS Commercial course is a rather enjoyable experience. As I stated before some of the scenarios are a bit of a stretch but altogether the syllabus has great potential for experience and it is definitely a plus being able to pocket the money that would otherwise go towards a cross country lab. Finding out you got your Commercial in the same amount of time as someone got their Private is also pretty cool.”
- > “The course was well organized, easy to follow, and easy on the budget. I would recommend this course to anyone.”
- > “I really did enjoy it a lot more than the fits private instrument combined.”
- > “I enjoyed my training very much, and with the right instructor, I believe this syllabus is excellent.”
- > “I believe that motivated individuals will be able to successfully and efficiently complete this course while saving valuable time and money. Great Job to all those involved in its implementation.”
- > “The scenarios were good real life applications. The maneuvers seemed pointless. Maybe if you incorporated scenarios in which you would need them in real life pilots would understand why to get them down (besides obviously needing to pass the checkride).
- > “The staff at MTSU did a great job on providing students a cheaper route to obtain pilot ratings and certificates.”
- > “You are doing a great job.”

### *Discussion and Recommendations*

The average reported flight time of 182.7 hours at obtainment of their Commercial Certificate for students completing the FITS Commercial curriculum compares favorable with the 250 hours required by Part 61 and the 190 hours required by Part 141. Obviously, the reduction in cost to students by the lowering of average flight time required is a benefit. However, it should be noted that a reduction in total flight hours for the Commercial Pilot training was not the primary goal of the curriculum writers and researchers of this project. The primary goal was to more effectively train Commercial Pilots for actual flight operations with the use of scenario-based methods – any reduction in total flight time is an additional advantage of the project. It should also be noted here that no attempt is being made to claim that the difference between the Commercial flight time averages of students with previous FITS training (155.2 hours) and students that had not experienced FITS training previous to the Commercial Curriculum (217.4 hours) is due to the FITS training method alone. Many students who had not previously been trained using FITS curricula had “built time” before enrolling at MTSU. This inflated their total time and accounts for much of the higher flight time average for those students.

As previously indicated, the primary teaching methodology of the FITS Commercial Pilot course is the use of scenarios in training. At the conclusion of this course, the students took the standard FAA Commercial Pilot Practical Test. This Practical Test, during the time these students completed the course, was predominantly a maneuvers-based test. This created somewhat of a disconnect between the teaching method and the testing method. At the time of this writing, the Commercial Pilot Practical Test Standards are under revision. The FAA has indicated that future tests will utilize the scenario method, but the students and instructors in this project did indicate some frustrations about the differences between training and testing. Regardless of the disconnect issue, 29 of the first 33 students to complete the syllabus, passed the FAA Commercial Pilot Practical Test on the first attempt. The remaining four students passed on their second attempt. This means that 87.8% of the students passed on their first try. This percentage is comparable to the pass rate experienced by students who trained at MTSU in previous years using the traditional training methods.

The authors believe that both the students’ survey responses and comments are sending an important message. Overall the responses from the students about the FITS Commercial Pilot course was positive. The students expressed enjoying the FITS Commercial Pilot syllabus, commenting specifically on the flexible scheduling that the shuffle feature allows, the realism of the scenarios, and the time and cost savings. Many students indicated that even though the IFR portion was not part of the Commercial Pilot Practical Exam, that they nevertheless saw the value in gaining IFR experience and built confidence with IFR flights, especially the solo IFR flights. There were also areas for improvement that were identified by the students. Some students commented on the Commercial Maneuvers portion of the course. A few students believed that there should be more lessons and

practice in a complex airplane, and that the complex airplane lessons should be held to the last because the Commercial Practical test must be accomplished in a complex airplane. Students also indicated that more solo flights, especially solo cross country flights, were needed. Several students commented on their flight instructors and the need for instructors to be completely prepared to teach using the scenario-based methods. Study of the implementation of this training course will continue, and researchers and curriculum writers will take these comments and recommendations into account when revising the syllabus for future use.

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