The purpose of this study was to understand the relationship between new flight procedure and the pilots in terms of pilot performance, workload and stress. Three flight factors (e.g. flight experience, glide slope angle, and approach area) were examined for the pilot performance, workload, and stress at the Final Approach to L/D™ phase using the flight simulator. Five students and five instructor pilots participated and they flew under four different simulation tasks of glide slope angle and approach area. Their Heart Rate Variability (HRV) and NASA-Task Load Index (TLX) were measured to determine their stress level and subjective workload, respectively. In addition, Landing Performance (LP) data (e.g. landing distance, landing speed) and Above Glide Path Tracking Performance (AGPTP) were also collected to evaluate pilot performance.

The results show that flying in a Populated™ area and with 4.5 degree glide slope angle increases workload and stress level of the pilots. In addition, when the pilots were flying over Populated™ area at the Final Approach to L/D™ phase, they showed lower performance on tracking glide path. Based on the results, stresses and workload can have a significant impact on flight performance. Therefore, in order to reduce the workload and stress that can cause human errors, it is highly recommended to carefully examine the impact of new procedures on pilot workload and stress before they are implemented.

Major: Industrial Engineering

Educational Career:
Bachelor's of B.A., BS, 1993, Korea Airforce Academy
Master's of M.S., MS, 2006, Chungbuk National University

Committee in Charge:
Dr. Gene Lee, Chair, Industrial Engineering and Management Systems
Dr. Ahmad Elshennawy, Industrial Engineering and Management Systems
Dr. Pamela McCauley-Bush, Industrial Engineering and Management Systems
Dr. Jongwook Kim, Psychology

Approved for distribution by Dr. Gene Lee, Committee Chair, on October 4, 2010.

The public is welcome to attend.