

Aviation Maintenance

Title: Human Factors Maintenance Considerations of Unmanned Aircraft

Description of Requirements:

to investigate what human factors maintenance unmanned aircraft issues need be addressed so that the Federal Aviation Administration can begin to “develop policies, procedures, and approval processes to enable operation of unmanned aerial vehicles” (Federal Aviation Administration’s Flight Plan 2004-2008, objective two: reduce the number of fatal accidents in general aviation, strategy: establish standard procedures and guidelines for general aviation operators).

Background:

Unmanned Aerial Vehicles (UAV) or a more appropriate term Unmanned Aircraft (UA) is an aircraft without an onboard pilot. The military has used unmanned aircraft for several decades with various levels of success and more recently there has been an increase in demand for non-military unmanned aircraft operations. Within the last couple years, commercial unmanned aircraft operations have concentrated on surveillance and advertisement, but several companies have expressed an interest in using unmanned aircraft for commercial operations. Aviation analysts state that unmanned aircraft operations will transform the aviation industry and the recent proliferation of requests to use unmanned aircraft in the national air space is not a fad. Although, unmanned aircraft refers to pilot-out-of-the-aircraft operation, the human operator is still a critical element in the success of an unmanned aircraft operation. Not surprisingly, the largest contributing factor for unmanned aircraft mishaps is human error (Draper, Calhoun, Ruff, Fontejon, and Guilfoos (July 16, 2003), Multi-sensory interface concepts and advanced visualization techniques for UAV systems, presented at Association for Unmanned Vehicle Systems International Conference, Baltimore, MD). The unmanned aircraft will not have a pilot onboard, but there may or may not be an operator monitoring the flight through airspace a technician maintaining the aircraft and remote station, and the interaction of the unmanned aircraft with manned aircraft. In order enable operation of unmanned aerial vehicles (Federal Aviation Administration’s Flight Plan 2004-2008), the Federal Aviation Administration must understand the human factors issues of unmanned aircraft to ensure that safe operations occur in the national air space.

Output:

A report that compares and contrasts current general aviation maintenance facilities and operations to the proposed unmanned aircraft maintenance facilities operations. The report will emphasize human factors issues such as maintenance technician qualifications and training requirements for various types of unmanned aircraft, compare and contrast maintenance technicians on the job requirements to perform a maintenance task between an aircraft and unmanned aircraft systems, identify types of knowledge and skills required by a maintenance technician to certify that an unmanned aircraft system is safe to operate, identify unmanned aircraft maintenance tasks that are unique to aircraft maintenance, compare and contrast type of resources required by aircraft maintenance facilities and unmanned aircraft systems maintenance facilities, identify who would be a typical unmanned aircraft systems maintenance facility and what type of human factors training would be required to maintain unmanned aircraft systems.

Regulatory Link:

Part 43, 61, 63, 65, 91, 93, 147; Federal Aviation Administration's Flight Plan 2004-2008