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Energy and Power Production Fuels

**An Assessment of the Impact of Fuel Jettisoning Events Using Simulation and Impact Models**

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**Abstract:** Work has been accomplished to determine the impact of jettisoned fuel when it reaches the surface. While previous work indicates that jettisoning JP-4 jet fuel results in a negligible ground fall impact, the impact of jettisoning lower volatile JP-8 jet fuel has not been thoroughly characterized. Several efforts have been made to mathematically model the evaporation, advection, and dispersion of the plume of fuel as it travels to the surface. The AFIT Fuel Jettisoning Model, the Fuel Jettisoning Simulation Model, and Fuel-Dumping Impact Assessment Model were evaluated and compared to assess the impact of jettisoned JP-8 jet fuel. Additionally, the AFIT Model has been modified to include surface evaporation to evaluate the time required to evaporate JP-8 jet fuel after it reaches the surface. While JP-8 jet fuel does impact the surface more than JP-4 jet fuel, the mass of JP-8 jet fuel remaining from releases at altitudes greater than 6000 meters and at surface temperatures greater than 0 deg C can evaporate within hours. We conclude that the recommended jettison release altitude for large body aircraft of 6000 meters is adequate.

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