

*IASH 2007, the 10<sup>th</sup> International Conference on  
Stability, Handling and Use of Liquid Fuels  
Tucson, Arizona  
October 7-11, 2007*

**AVIATION GASOLINE: HISTORY AND FUTURE**

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Aviation gasoline represents a high performance fuel developed specifically for spark ignition aircraft piston engines. The product has over eighty years of history where successive engineers and scientists have sought to provide a fuel which will deliver maximum power and range for flight, and be capable of operating in a wide range of climatic conditions from sea level to high altitude. Currently, aviation gasoline Grade 100LL dominates this market, offering a combustion performance and quality far in excess of automotive fuels. However, to achieve this level of performance requires the use of the octane enhancement additive tetraethyl lead, making 100LL one of the last remaining leaded fuels available in the modern world. The Aviation Industry is seeking an unleaded fuel to replace 100LL and take piston engine development into the future. Given the high standard of product required this represents a challenging program. Within this paper a review of current research into unleaded aviation gasoline is provided, reaching back into history to key stages in development to illustrate how quality, performance and engine design have influenced the present fuel, and will in turn, influence the future.