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Aviation Fuels Technology

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M
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**'...aviation fuel is a small factor in a field
of large and powerful forces. Its future is
at the mercy of various developments:
political, sociological, economic and
technical.'**

**Charles L. Blake
Federal Aviation Administration
U.S.A.
1982**

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Preface

The pace of development in the technology of aviation fuels is characterised by continual striving towards distant targets, set initially for improved power, latterly for greater economy, and constantly for reliability and safety. Following the passage of a full decade since shock waves were generated by the first oil crisis, it is now timely to review the role of fuel in the aviation sphere, and to make some assessment of the future.

As in all branches of technology, the pressures of economics and policies are dominant, and many a product of undoubted ingenuity has foundered through lack of financial support or market matching. Nevertheless, from a scientific standpoint, these factors are ephemeral, and can change drastically almost overnight. These present studies, therefore, comment only marginally on prices, and are concerned largely with such durable features as the properties of fuels, together with the constantly growing quantity of data on fuel combustion performance and handling characteristics. The implications of the degradation in crude oil quality, which is already reflected in product quality, and the inevitable demise of petroleum resources some few decades ahead, are noted in various places throughout the book, together with a limited range of potential alternatives. In summary, with continuation of research, development and good fuel house-keeping and management practices, a cautious optimism appears to be justified for sustained international aviation based on liquid fuels.

The aviation fuel picture presented here is largely from a British viewpoint, with some reference to differences in the United States and elsewhere, and is supported by brief indications of the historical roots, and of subsequent routes to present and possible future practices.

The background knowledge for this enterprise has been gained by one of us (R.A.V.) from a full career within the oil industry as a chemist engaged in aviation fuels technology in the refinery, the distribution system and the research laboratory, with service on governmental committees involving many investigations into user problems, and field experience with airline operators and engine and component manufacturers. The other one of us (E.M.G.) embarked on aeronautical engineering before embracing fuel technology, and has been involved for a similar period of time on the more academic side of research and teaching in fuel property-performance relationships, with emphasis latterly on the

potential of alternative fuels. We jointly express our gratitude to our parent organisations for their assistance in our studies, and to the many reference authors, colleagues and students who have helped us in numerous ways.

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Eric Goodger
Cranfield
1985

Ray Vere
Barton on Sea