REPORT ON THE RISK OF STATIC IGNITION DURING VEHICLE REFUELLING:

A STUDY OF THE AVAILABLE RELEVANT RESEARCH

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FOREWORD

The petroleum industry in the UK became aware that there had been a significant number of fires at petrol filling stations in other countries which could be attributed to ignition of hydrocarbon vapour by electrostatic discharges. Although there had been one or two fires in the UK which might have been started by sparks generated by the build-up of electrostatic charge, this was not seen as a major threat to operational safety.

However, it was decided to discuss the matter with the automotive industry with a view to confirming that there was currently no significant threat of such incidents in the UK and to ensuring that vehicles and station facilities continued to be constructed in such a way as to minimise the risk. To achieve these aims the Society of Motor Manufacturers and Traders, the United Kingdom Petroleum Industry Association and the Institute of Petroleum agreed to commission this report from Electrostatic Solutions Limited. Based on a worldwide literature research and analysis of ignition risks the report identifies key strategies for securing safety during refuelling and specific safeguards to reduce electrostatic ignition risks.

The sponsors of this report wish to record their gratitude to Dr Jeremy Smallwood of Electrostatic Solutions Limited[1)] for his thorough and wide ranging approach to this work.

1) Electrostatic Solutions Ltd., 13 Redhill Crescent, Southampton SO16 7BQ. http://www.static-sol.com

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OBJECTIVES AND SCOPE

This report addresses the subject area 'A study of the available relevant research' outlined in the *Specification to tender: report on the risk of static ignition during vehicle refuelling* supplied to Electrostatic Solutions Ltd., by the UK Petroleum Industry Association, the Society of Motor Manufacturers and Traders Ltd. and the Institute of Petroleum.

The scope of this work was to obtain and review information on current and recent research on the subject of static ignition of petrol/air vapours occurring in petroleum forecourt vehicle refuelling.

The objectives of this project were:

— To obtain and review available literature in the public domain, as well as available unpublished research.

— To inform any future research proposal on the likely impact of trends in vehicle construction, tyre technology, and forecourt construction (including Stage 2 vapour recovery systems) and petrol specifications.