

PROCEDURES FOR OVERWING FUELLING TO ENSURE
DELIVERY OF THE CORRECT FUEL GRADE TO AN AIRCRAFT

API/IP RECOMMENDED PRACTICE 1597

First edition
December 2006



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CONTENTS

	Page
Foreword	vii
Acknowledgements	viii
1 General	1
1.1 Purpose	1
1.2 Reasons for a misfuelling prevention program	1
2 Procedures and equipment	3
2.1 Summary	3
2.2 Grade confirmation	3
2.3 Wing decals	4
2.4 Fuel order forms	4
2.5 Selective nozzle spouts (overwing fuelling)	4
2.6 Control of unattended fuellings	5
2.7 Control of standing orders	5
2.8 Grade decals for refuelling equipment	6
2.9 Quality control of site fuel supply and selectivity	6
2.10 Fuelling procedures/training	7
Annex A - Overwing fuel grade decals	9
Annex B - Example fuel order form	11
Annex C - Task breakdown sheet	13
Annex D - References	21

FOREWORD

This Recommended Practice has been prepared jointly by the API Aviation Technical Services Sub-committee and EI Aviation Committee, and is intended to provide guidance on the prevention of aircraft misfuelling.

This publication is intended to provide recommendations for safe practice, rather than rigid guidelines. Users of this publication shall be aware that due consideration shall be given to the effect of any unusual or abnormal circumstance, on which it is not possible to generalize within the scope of this publication. Specialist advice shall be sought in these cases.

The guidance contained in this publication is primarily intended for overwing fuelling operations of civil aircraft.

In addition, in some areas local or national statutory regulations also apply. This publication is intended to be complementary to these established controls and practices.

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This publication is intended to assist those involved in overwing fuelling of civil aircraft to ensure the correct fuel grade is delivered. Every effort has been made by the American Petroleum Institute and the Energy Institute to assure the accuracy and reliability of the data contained in this publication; however, API make no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaim any liability or responsibility for loss or damage resulting from its use or for the violation of any local or regional laws or regulations with which this publication may conflict.

Suggested revisions are invited and shall be submitted to the director of standards, API, 1220 L Street, N.W., Washington, D.C. 20005 or The Energy Institute, 61 New Cavendish Street, London, W1G 7AR.

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1

GENERAL

1.1 PURPOSE

This publication is intended to provide a system for use by aircraft fuelling ground staff to assist with the delivery of the correct fuel grade to an aircraft during overwing fuelling. This system consists of procedures as well as specific equipment that shall be used to comply with this recommended practice.

1.2 REASONS FOR A MISFUELLING PREVENTION PROGRAM

Delivering the incorrect grade of fuel into an aircraft is termed a misfuelling. The risk of delivering the wrong grade of fuel exists because most General Aviation (GA) aircraft and some airline type aircraft are overwing fuelled and can therefore be potentially fuelled with avgas or jet fuel fuelling equipment.

The serious consequences of misfuelling include:

- Total engine failure due to knock damage if jet fuel is delivered into a spark ignition piston engine powered aircraft that requires avgas.
- Ignition failure if avgas is delivered into a compression ignition (diesel) piston engine powered aircraft that requires jet fuel.
- Vapour lock and engine failure due to fuel starvation if avgas is delivered into a turbine engine powered aircraft that requires jet fuel. Many turbine engines are capable of operating on avgas, but such operation is strictly controlled as described in the Pilot Operating Handbook.

There are many documented cases of misfuelling and a variety of causes have been identified. In the majority of these incidents there was a lack of grade confirmation, meaning that the fuelling staff did not confirm with the customer the grade of fuel required. There are many similar looking aircraft in operation internationally. Examples include – Piper Mirage (avgas) and Piper Meridian (jet fuel), Cessna 404 Titan (avgas) and 441 Conquest (jet fuel) – where visual appearance alone cannot be relied on to identify which grade of fuel the aircraft requires.

Greater numbers of diesel powered aircraft are now being manufactured and in some cases existing aircraft with spark ignition piston engines are being converted to diesel engines. Aircraft fitted with diesel engines are very similar in appearance to aircraft fitted with spark ignition piston engines making visual identification very difficult. In addition, the filling ports on modified aircraft may not have been replaced with the larger diameter airframe fuelling port associated with aircraft requiring jet fuel. The consequences of fuelling these aircraft with avgas can be catastrophic.

In some cases, grade confirmation did occur and wing decals were fitted on the aircraft, but the refuelling vehicle/dispenser cabinet used contained the wrong grade of fuel.

Clearly there is a need for a comprehensive set of procedures to address the many possible causes of misfuelling.

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