



ESDU SPF-M3-1

Pipe and annulus flow tests

Unamended
Issued 01 Jun 2007

© Imperial College London

Page 1

Imperial College
London

EPSRC RESEARCH PROJECT “FOULING IN HEAT EXCHANGERS OF CRUDE DISTILLATION UNITS”

SUB-PROJECT F ANNULUS FLOW TESTS

G.F.HEWITT, D.R.DUGWELL
Imperial College London
Dept of Chemical Engineering,

D.I.WILSON
University of Cambridge
Dept of Chemical Engineering

OBJECTIVES OF SUB-PROJECT F

GENERAL:

TO STUDY THE EFFECTS OF FOULING ON HEAT TRANSFER
AND PRESSURE DROP IN AN ANNULUS TEST SECTION
SIMULATING FLOW IN A SHELL-AND-TUBE HEAT EXCHANGER

SPECIFIC:

CONTINUOUS MONITORING OF HEAT TRANSFER RATE
BETWEEN HEATED SURFACE AND FLOWING CRUDE OIL --
HENCE RATE OF BUILD-UP OF FOULING RESISTANCE

CONTINUOUS MEASUREMENT OF PRESSURE DROP

CONTINUOUS IN-SITU MEASUREMENT OF FOULING LAYER
THICKNESS BY NOVEL DYNAMIC GAUGING TECHNIQUE *