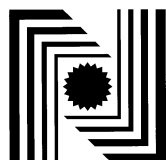
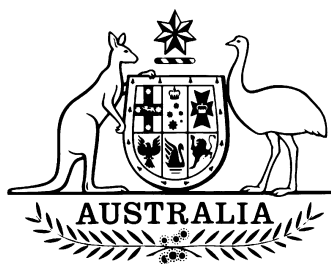


5/6B/94
16 November 2001



National Standards Commission

12 Lyonpark Road, North Ryde NSW

Cancellation Instrument Certificate of Approval

No 5/6B/94

Issued under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that the approval for use for trade granted in respect of the

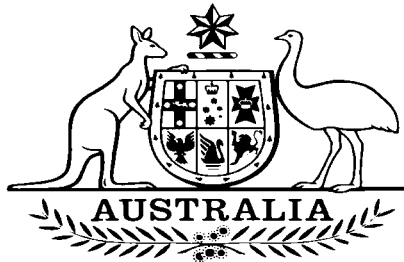
Shell Refining Model Gasoline Blending Bulk Flowmetering System

submitted by Shell Refining (Australia) Pty Ltd
 Geelong Refinery
 Refinery Road
 Corio VIC 3214

has been cancelled in respect of new instruments as from 1 December 2001.

Signed by a person authorised under Regulation 60
of the National Measurement Regulations 1999 to
exercise the powers and functions of the Commission
under this Regulation.

National Standards Commission



Instrument Certificate of Approval No 5/6B/94

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations

This is to certify that an approval for use for trade has been granted in respect of the

Shell Refining Model Gasoline Blending Bulk Flowmetering System

submitted by Shell Refining (Australia) Pty Ltd
 Geelong Refinery
 Refinery Road
 Corio VIC 3214.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 October 2001, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 5/6B/94 and only by persons authorised by the submittor.

It is the submitter's responsibility to ensure that the instrument marked with this approval number is constructed as described in the documentation lodged with the Commission and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with the Commission's Document 106.

The Commission reserves the right to examine the instrument or component of the instrument purporting to comply with this approval.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0/A.

Special:

This approval is for one (1) instrument only located at the Shell Refinery, Refinery Road, Corio Victoria.

DESCRIPTIVE ADVICE

Pattern: approved 12 September 1996

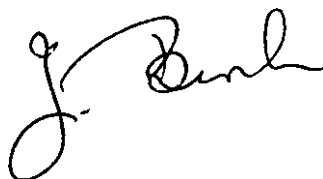
- A Shell Refining model Gasoline Blending bulk flowmetering system.
- Technical Schedule No 5/6B/94 describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 5/6B/94 dated 14 October 1997
Technical Schedule No 5/6B/94 dated 14 October 1997 (incl. Test
Procedure)
Figures 1 to 5 dated 14 October 1997

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.



TECHNICAL SCHEDULE No 5/6B/94

Pattern: Shell Refining Model Gasoline Blending Facility Bulk Flowmetering System.

Submittor: Shell Refining Australia Pty Ltd
Geelong Refinery
Refinery Road
Corio VIC 3214.

1. Description of Pattern

A Shell Refining model Gasoline Blending bulk flowmetering system which is approved for use with three turbine flowmeters for metering blends of petrol.

1.1 Pipeline Flowmetering System (Figure 1)

(i) Tanks and Pumps

A number of supply tanks with centrifugal pumps which supply the required portions of gasoline, alkylate, butane and other fractions to a common manifold. The tanks incorporate an alarm system for low-liquid level condition. The product from the supply tanks is then injected with various additives, and flows through a static mixer to produce the desired blend of petrol. Each pump can be utilised as required while the liquid level in the supply tank is maintained higher than the inlet of the pump.

(ii) Meters

Three Brooks model Parity 150 mm turbine flowmeters (Figure 2) installed in parallel with appropriate isolating valves.

The system is designed such that each flowmeter can operate at a minimum flow rate of 100 m³/hr and a maximum flow rate of 500 m³/hr. The 2nd and 3rd flowmeters are manually switched on before the flow rate exceeds 500 m³/hr and 1000 m³/hr, respectively.

(iii) System Controller (Figure 3)

A Honeywell model TDC 3000 Distributed Control System (DCS) controls all activities required for blending, including the opening/closing of valves, the starting/stopping of pumps, and the maintenance of the blender pressure. It also receives measurement signals from the turbine flowmeters, the density measuring system, and the temperature and pressure transmitters, and executes programs associated with the blending process including the conversion of the measured volume to reference conditions.

Volume Conversion Facility

The volume conversion facility is used to convert the measured volume to volume at 15°C and at 101.325 kPa, of generalised petroleum products of density between 700 and 770 kg/m³ at liquid temperatures between 0°C and 50°C. Volume conversion is based on Table 54B (generalised products) of the ASTM-IP *Petroleum Measurement Tables*. Pressure conversion is based on Chapter 11.2.1M of the ASTM-IP-API *Manual of Petroleum Measurements Standards*.

The volume conversion facility uses the following components for measurement information:

- A Schlumberger density measuring system (Figure 4), comprising a model 7830 density transducer and a model 7546 signal convertor, provides the measurement and conversion of the density to 15°C for the blended product.
- A Moore Industries model RLX temperature transmitter, with a 100Ω resistance probe located upstream of the flowmeter, is used for the measurement of product temperature.
- A Yokogawa model EJA430-DAS4B pressure transmitter, located upstream of the flowmeter, is used for measurement of product pressure.

(iv) Indicating and Reporting System

A Micro-VAX model 3400 mainframe computer (Figure 5) communicates with the Honeywell DCS controller to gather blend information for control of the component ratios during blending and provides the necessary measurement data for the blended product.

(v) Provision for Proving Device (Figure 1)

Provision is made downstream of the flowmeters for connection of a proving device for the calibration and verification/certification of the system.

(vi) Transfer Device

A transfer device in the form of a manually-operated control valve located downstream of the meters with no intermediate outlet.

(vii) Back Pressure Control Valve (Figure 1)

The back pressure control valve is controlled by the Honeywell DCS.

1.2 Sealing Provision

Access to the calibration adjustments is by means of restricted keys, with K-factor values and their date of change automatically logged by the system.

1.3 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

1.4 Markings

The instrument is marked with the following:

Manufacturer's mark, or name written in full	
Meter model	
Serial number of the instrument	
Pattern approval mark for the instrument	NSC No 5/6B/94
Maximum flow rate m ³ /hr
Minimum flow rate m ³ /hr
Minimum quantity m ³
Maximum operating pressure kPa
Viscosity range or type of liquid for which the system is verified	

TEST PROCEDURE

The instrument should be tested in accordance with any relevant tests specified in the Inspector's Handbook.

Maximum Permissible Errors

The maximum permissible errors applicable at verification/certification and reverification are:

<u>One Stage Verification</u>	
of complete system:	±0.5%
<u>Two Stage Verification</u>	
of meter at metering conditions:	±0.3%
of conversion device:	±0.2%

Reference conditions for petroleum liquids are specified in AS 2649-1983, *Petroleum Liquids and Gases - Measurement - Standard Reference Conditions*.

1. The meters should be tested against a proving device for unconverted volume
2. Check conversion using Table 54B (generalised products) of the ASTM-IP *Petroleum Measurement* Tables for temperature conversion, and Chapter 11.2.1M of the ASTM-IP-API *Manual of Petroleum Measurements Standards* for pressure conversion.

FIGURE 5/6B/94 - 1

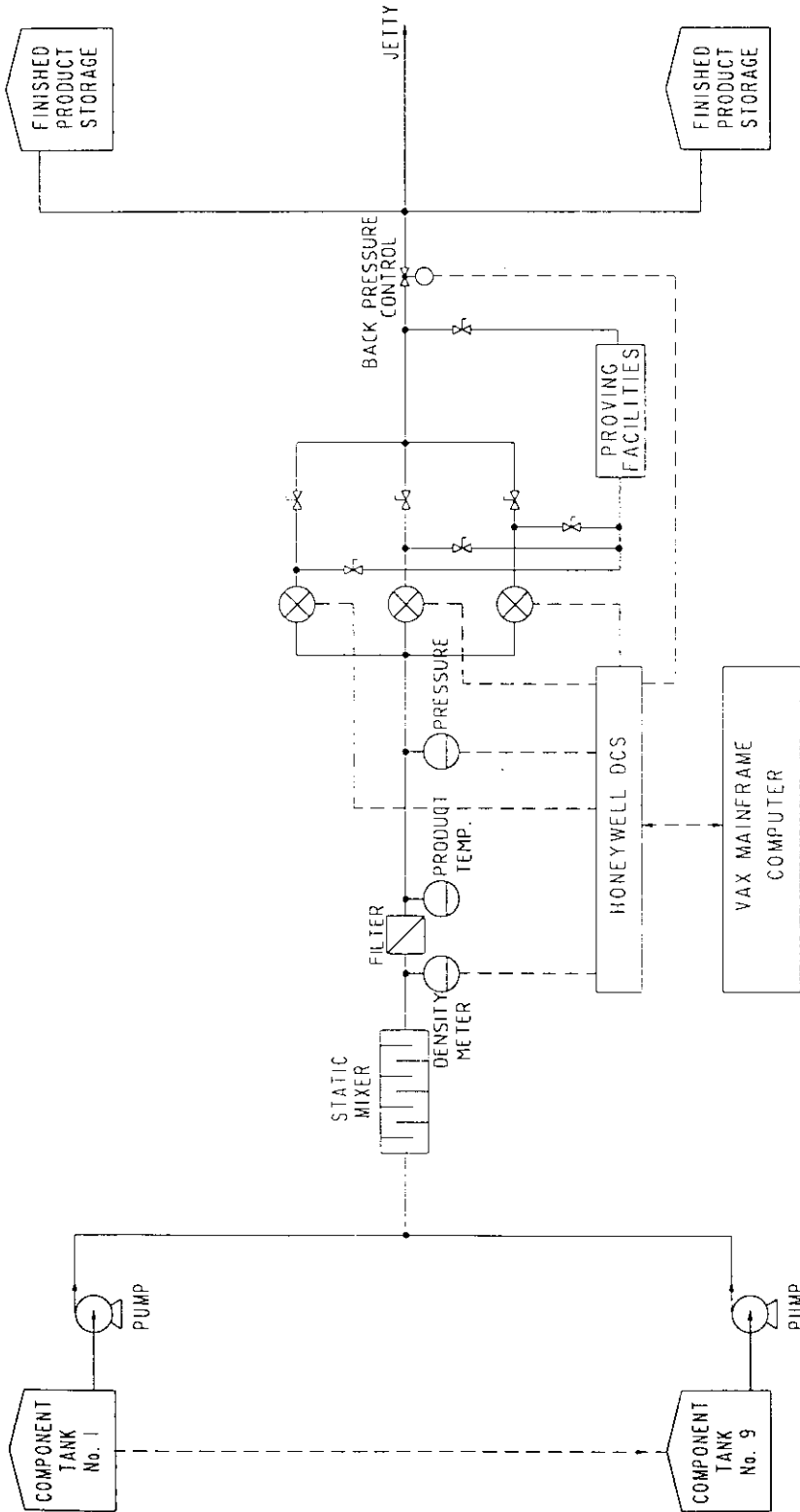
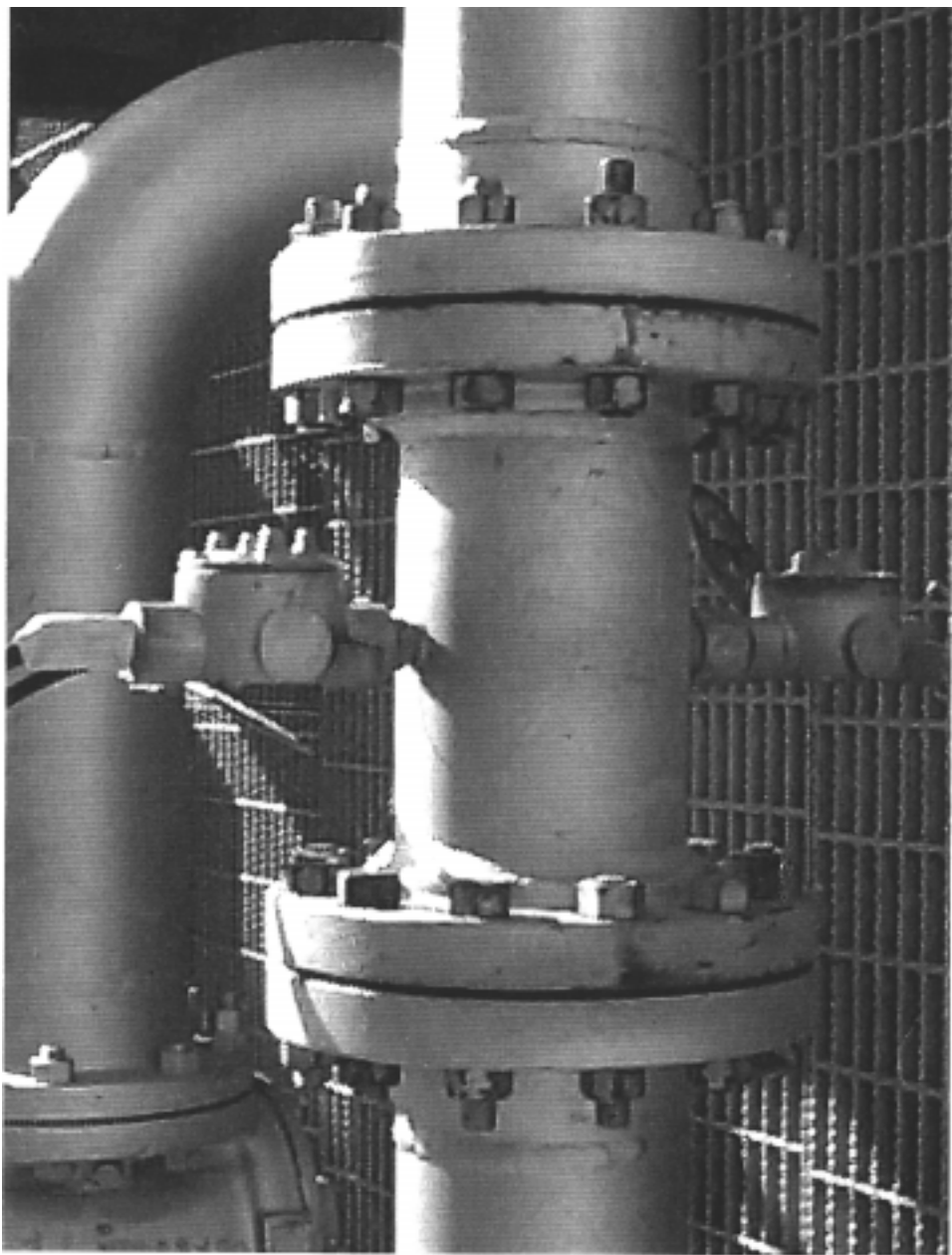


FIGURE 5/6B/94 - 2



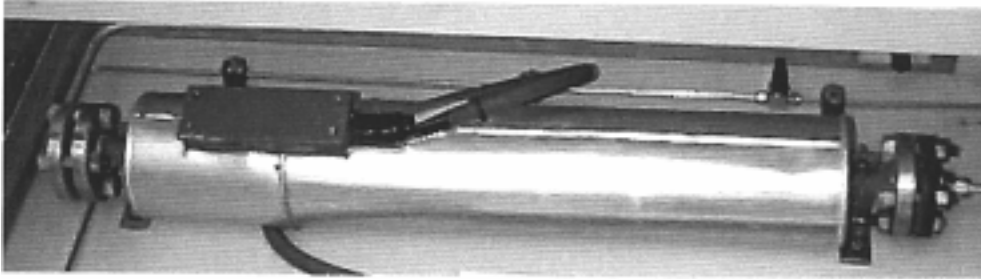
Brooks Model Parity Turbine Flowmeter

FIGURE 5/6B/94 - 3



Honeywell Model TDC 3000 Distribution Control System

FIGURE 5/6B/94 - 4



Schlumberger Density Transducer and Signal Converter

FIGURE 5/6B/94 - 5



Micro-VAX Model 3400 Computer