



ASSESSMENT OF ERROR DUE TO ORIFICE DIAMETER MIS-MEASUREMENT AT WARBURTON

A Report for

**National Grid
Brick Kiln Street
HINCKLEY
Leicestershire
LE10 0NA**

PROJECT NO: NGR010

REPORT NO: 2010/240

DATE: 28 JUNE 2010



This report is issued as part of the contract under which the work has been carried out for the client.

NOTES

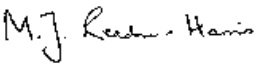
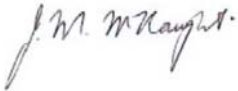
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Assessment of Error Due to Orifice Diameter Mis-Measurement at Warburton

A Report for

National Grid
Brick Kiln Street
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LE10 0NA

| | |
|--|---|
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for
Michael Valente
Managing Director

Date: 28 June 2010

EXECUTIVE SUMMARY

Owing to a mis-measurement of orifice diameters flows have been mis-measured at affected offtakes connected to the National Transmission System. This project has been undertaken to resolve these errors.

At Warburton a correction factor of 1.001962 should be applied during the period of mis-measurement.

Over the period 09/07/2007 to 02/10/2008 inclusive the flow was 1314.77410 mscm and the corrected flow should be 1317.51103 mscm.

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1 INTRODUCTION

Owing to a mis-measurement of orifice diameters flows have been mis-measured at affected offtakes connected to the National Transmission System. This project has been undertaken to resolve these errors. This report covers the flows through Warburton in the period of the error. The Joint Office Error Code is NW007.

2 ORIFICE DIAMETERS

The calibrations of the orifice plates in question gave the measured diameters shown in Table 1. The diameters at 20 °C have been calculated.

TABLE 1
ORIFICE DIAMETERS

| Calibration Reference | Plate serial no | Declared certificate date | Orifice bore (mm) | Temperature | Value at 20 °C Orifice bore (mm) |
|-----------------------|-----------------|---------------------------|-------------------|-------------|----------------------------------|
| OP4186 | 100454 | 13/12/2004 | 368.9870 | 21 | 368.9811 |
| OP50207 | WAR7114 | 15/09/2005 | 368.9865 | 21 | 368.9806 |
| OP50240 | 100454 | 29/06/2006 | 369.3145 | 21 | 369.3086 |
| OP60180 | WAR7114 | 05/12/2006 | 368.6295 | 21 | 368.6236 |
| OP80014 | 100454 | 15/09/2008 | 369.3235 | 20 | 369.3235 |
| OP90009 | WAR7114-1 | 08/05/2009 | 368.9555 | 20.3 | 368.9537 |
| OP90029 | 100454 | 11/08/2009 | 369.3215 | 20.4 | 369.3191 |

Figure 1 shows the data from Table 1 for the orifice bores at 20°C. OP4186 precedes the mis-measurement with which this project is concerned and has no effect on the results. For WAR7114 the figure shows that there is a reduction in measured diameter. The deduction from this graph is that a plate was mis-measured. From the experience of other sets of measurements it is the low measurement that is in error.

The calibration certificates for the orifice plates are given as Appendix A.

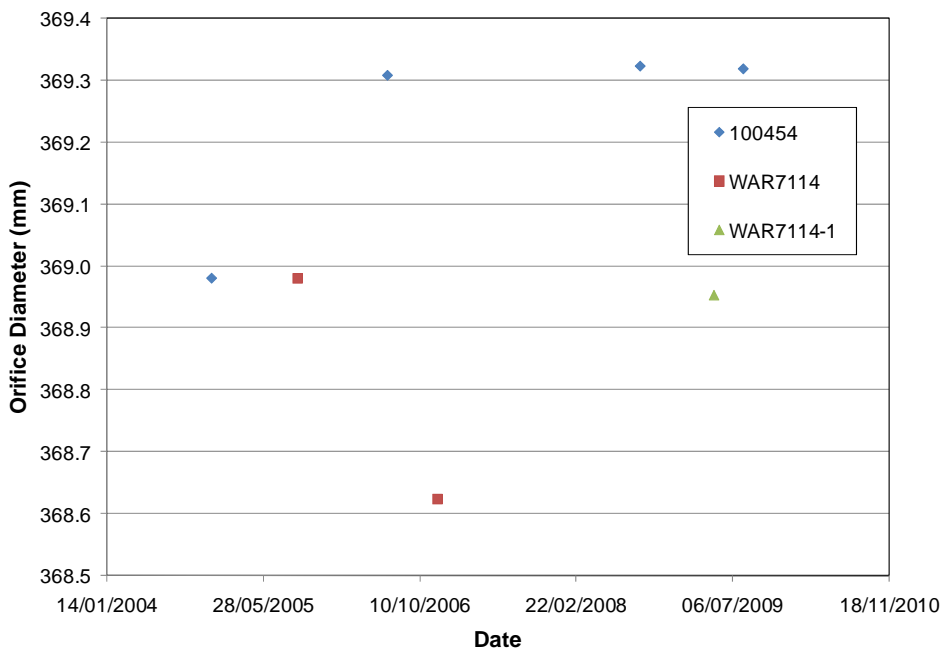


Figure 1 Orifice Diameters at 20 °C

The plates actually used in the meter tube are given in Table 2.

TABLE 2
PLATES USED IN EACH LINE AS CONFIGURED BY THE FLOW COMPUTER

| Configuration | omnL1102.cfg | omnM0709.cfg | omnN0715.cfg | omnN1002.cfg |
|--|---------------------|---------------------|---------------------|---------------------|
| | 03/11/2006 00:01 | 09/07/2007 23:01 | 15/07/2008 23:01 | 02/10/2008 23:01 |
| Orifice plate bore diameter (mm) | 369.3145 | 368.6295 | 368.6295 | 369.3235 |
| Expansion coefficient of the plate (°C) | 0.000016 | 0.000016 | 0.000016 | 0.000016 |
| Orifice plate calibration temperature | 21 | 21 | 21 | 20 |
| Meter tube diameter (mm) | 732.8884 | 732.8884 | 732.8884 | 732.8884 |
| Expansion coefficient of the meter tube (°C) | 0.000011 | 0.000011 | 0.000011 | 0.000011 |
| Meter tube calibration temperature | 20 | 20 | 20 | 20 |
| Isentropic Exponent | 1.3464 | 1.3473 | 1.3503 | 1.3503 |
| Dynamic Viscosity (Pa.s) | 0.0000124 | 0.0000122 | 0.0000123 | 0.0000123 |
| Orifice plate certificate number | OP50240 | OP60180 | OP60180 | OP80014 |
| Orifice plate serial number | 100454 | WAR7114 | WAR7114 | 100454 |
| Error in orifice diameter? | No | Yes | Yes | No |

3 CORRECTING THE FLOWRATE

To correct the measured flowrate by replacing an incorrect diameter with the correct diameter might appear to be fairly straightforward. However, the data supplied only give time to the nearest minute and at four-minute intervals. This is inadequate for very accurate calculation. It is possible to calculate the flow over each time interval and to add the values over a day; this method can be used to check that the calculations are being done correctly, but the differences between the summed figures and the ones already given in the spreadsheet are too large to enable the correction to be calculated in this way. An alternative method has therefore been used.

The mass flowrate q_m is given by

$$q_m = \frac{\pi d^2 C \varepsilon \sqrt{2 \rho \Delta p}}{4 \sqrt{1 - \beta^4}}$$

where d is the orifice diameter, C is the discharge coefficient, ε is the expansibility, ρ is the density, Δp is the differential pressure, and β is the diameter ratio.

If the corrected and original data are described with subscripts c and o , then the following correction factor is obtained:

$$\frac{q_{m,c}}{q_{m,o}} = \left(\frac{d_c}{d_o} \right)^2 \frac{C_c \varepsilon_c \sqrt{1 - \beta_o^4}}{C_o \varepsilon_o \sqrt{1 - \beta_c^4}}$$

The correct effective diameter is taken as the average of the measurements shown in Table 1 for that plate excluding the erroneous measurement. It is then necessary to calculate C and ε in each case, and they were determined from the equations in ISO 5167-1:1991. C is a function of β and Re_D ; so there is a change in C due to β , but the change varies with Reynolds number. Throughout the calculations the upstream pressure p_1 is taken as 61 bar a; the change in $q_{m,c}/q_{m,o}$ due to changing the static pressure by 10 bar is around 0.00001% at maximum.

Over the period from 09/07/2007 to 15/07/2008 the correction can be calculated as in Table 3; throughout this calculation the meter tube diameter is 732.8884 mm, the isentropic exponent is 1.3473 and the dynamic viscosity 0.0000122 Pa s.

TABLE 3
THE CORRECTION FROM 09/07/2007 TO 15/07/2008

| | <i>d</i> mm | β | ε | Re_D | <i>C</i> | $\frac{q_{m,c}}{q_{m,o}}$ |
|----------------------------------|----------------|----------|---------------|----------|----------|---------------------------|
| Original: $\Delta p=10$ mbar | 368.6236 | 0.502974 | 0.999947 | 3124324 | 0.602801 | |
| Corrected $\Delta p=10$ mbar | 368.9806 | 0.503461 | 0.999947 | 3130845 | 0.602811 | 1.0020870 |
| Original $\Delta p=500$ mbar | 368.6236 | 0.502974 | 0.997369 | 22029126 | 0.602631 | |
| Corrected $\Delta p=500$ mbar | 368.9806 | 0.503461 | 0.997369 | 22075084 | 0.602641 | 1.0020862 |

So $q_{m,c}/q_{m,o}$ is 1.002087.

Over the period from 15/07/2008 to 02/10/2008 the correction can be calculated as in Table 4; throughout this calculation the meter tube diameter is 732.8884 mm, the isentropic exponent is 1.3503 and the dynamic viscosity 0.0000123 Pa s.

TABLE 4
THE CORRECTION FROM 15/07/2008 TO 02/10/2008

| | <i>d</i> mm | β | ε | Re_D | <i>C</i> | $\frac{q_{m,c}}{q_{m,o}}$ |
|----------------------------------|----------------|----------|---------------|----------|----------|---------------------------|
| Original: $\Delta p=10$ mbar | 368.6236 | 0.502974 | 0.999948 | 3098931 | 0.602803 | |
| Corrected $\Delta p=10$ mbar | 368.9806 | 0.503461 | 0.999947 | 3105398 | 0.602812 | 1.0020870 |
| Original $\Delta p=500$ mbar | 368.6236 | 0.502974 | 0.997375 | 21850167 | 0.602631 | |
| Corrected $\Delta p=500$ mbar | 368.9806 | 0.503461 | 0.997375 | 21895752 | 0.602641 | 1.0020862 |

So $q_{m,c}/q_{m,o}$ is 1.002087.

4 CORRECTIONS ON A DAILY BASIS

The volume flows for each day from 09/07/2007 to 02/10/2008 are given in Table B.1 of Appendix B together with the corrected values. It has been assumed that the plates were changed at 10:30 therefore 30.1% of the flow for 09/07/2007 has to be corrected and 20.8% for 02/10/2008 based on the flow before and after 10:30. Summing the data gives the figures in Table 5.

TABLE 5**THE FLOW OVER THE PERIOD 09/07/2007 TO 02/10/2008 INCLUSIVE**

| | |
|-----------------------|------------|
| Flow (mscm) | 1314.77410 |
| Correction (mscm) | 2.73693 |
| Corrected flow (mscm) | 1317.51103 |
| % change | 0.2082 |

5 CONCLUSIONS

A correction factor of 1.002087 should be applied during the period of mis-measurement.

**APPENDIX A
ORIFICE PLATE CALIBRATION CERTIFICATES**

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 13-12-04
REF NO: OP4186
TEMPERATURE: 21 degsC

MEASURED ORIFICE BORE: 368.987mm

PLATE DETAILS

PLATE SERIAL: 100454 PLATE O.D: 761.477mm
 MANUFACTURER: PIPE I.D: mm SITE: WARBURTON
 MATERIAL CERT.No. DESIGN BORE: mm FLOW: M³/DAY

TEST EQUIPMENT

MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, UKAS TRACEABLE CERT:- 7325. NEXT CAL DUE:- 02-OCTOBER-2010

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS:- | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|
| FLATNESS % | 0.075 | 0.130 | 0.057 | 0.041 | 0.081 | 0.794 | 0.934 | 0.018 |
| 'E' mm | 11.765 | 11.966 | 11.784 | 11.866 | 12.135 | 12.045 | 11.821 | 11.694 |
| mm | | | | | | | | |
| EDGE SHARPNESS mm | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |
| BEVEL ANGLE: | DEGS | | | | | | | |
| CONCENTRICITY | 0.193mm | | | | | | | |
| SURFACE FINISH (Ra) | 1.2 microns | | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION | PASS | | | | | | | |
| ROUNDNESS : | 0.009mm | TAPER: | | 0 degs | | | | |

DRAINHOLE PRESENT ? (YES/NO): No

COMMENTS

INSPECTED BY G Wardle

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 15-09-05
 REF NO: OP50207
 TEMPERATURE: 21 degsC
 MEASURED ORIFICE BORE: 368.9865mm

PLATE DETAILS

PLATE SERIAL. WAR7114 PLATE O.D 781.518mm
 MANUFACTURER: PIPE I.D: 732.993mm SITE: WARBURTON
 MATERIAL CERT.No DESIGN BORE 369.005mm FLOW: 13.5X10E06 M³/DA1

TEST EQUIPMENT

MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, CERT:- 4820 NEXT CAL DUE:- 15/10/05

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS:- | 1 | 2 | 3 | 4 | 5 | 6 | | |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|
| FLATNESS μ | 0.117 | 0.441 | 0.093 | 0.054 | 0.310 | 0.389 | 0.055 | 0.045 |
| | 11.731 | 11.903 | 11.802 | 11.908 | 12.120 | 12.005 | 11.799 | 11.665 |
| | mm | | | | | | | |
| EDGE SHARPNESS mm | 0.0125 | 0.0125 | 0.025 | 0.0125 | 0.025 | 0.025 | 0.0125 | 0.0125 |
| BEVEL ANGLE | DEGS | | | | | | | |
| CONCENTRICITY | 0.321mm | | | | | | | |
| SURFACE FINISH (Ra) | 1.2 microns | | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION :- PASS | | | | | | | | |
| ROUNDNESS | 0.007mm | TAPER: | | 0 degs | | | | |

COMMENTS

INSPECTED BY.  P. KENNERSON

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 29-06-06
REF NO: OP50240
TEMPERATURE: 21 degsC

MEASURED ORIFICE BORE: 369.3145mm

PLATE DETAILS

PLATE SERIAL. 100454 PLATE O.D 780.931mm
 MANUFACTURER: PIPE I.D: mm SITE: WARBURTON
 MATERIAL CERT.No. DESIGN BORE: mm FLOW:

TEST EQUIPMENT


MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, CERT:- 4820 NEXT CAL DUE:- 14/10/06

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS | 1 | 2 | 3 | 4 | 5 | 7 | 8 |
|--|-------------|---------------|--------|--------|--------|--------|--------|
| FLATNESS % | 0.251 | 0.276 | 0.230 | 0.182 | 0.303 | 0.398 | 0.270 |
| | 12.966 | 12.981 | 12.968 | 12.962 | 12.955 | 12.958 | 12.973 |
| | 12.962 | 12.962 | 12.962 | 12.962 | 12.955 | 12.958 | 12.962 |
| EDGE SHARPNESS mm | 0.0125 | 0.0250 | 0.0125 | 0.0125 | 0.0125 | 0.0125 | 0.0125 |
| BEVEL ANGLE | DEGS | | | | | | |
| CONCENTRICITY | 0.443mm | | | | | | |
| SURFACE FINISH (Ra) | 0.8 microns | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION :- PASS | | | | | | | |
| ROUNDNESS | 0.036mm | TAPER: 0 degs | | | | | |

COMMENTS:

INSPECTED BY.

 P. KENNERSON / J. CHAUHAN

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 05-12-06
REF NO: OP60180
TEMPERATURE: 21 degsC

MEASURED ORIFICE BORE: 368.6295mm

PLATE DETAILS

| | | | | | |
|-------------------|---------|-----------|-----------|-------------|--------------------------------|
| PLATE SERIAL. | WAR7114 | PLATE O.D | 780.923mm | SITE: | WARBURTON |
| MANUFACTURER: | | PIPE I.D: | 732.993mm | DESIGN BORE | 369.005mm |
| MATERIAL CERT.No. | | | | FLOW: | 13.5X10E06 M ³ /DAY |

TEST EQUIPMENT

MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, CERT:- 4820 NEXT CAL DUE:- 13/10/07

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS:- | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|
| FLATNESS % | 0.011 | 0.211 | 0.141 | 0.001 | 0.049 | 0.455 | 0.150 | 0.015 |
| E' mm | 11.721 | 11.965 | 11.864 | 11.798 | 12.053 | 12.146 | 11.922 | 11.682 |
| 'e' mm | | | | | | | | |
| EDGE SHARPNESS mm | 0.025 | 0.0125 | 0.0125 | 0.0125 | 0.025 | 0.025 | 0.025 | 0.025 |
| BEVEL ANGLE: | | | | | | | | |
| CONCENTRICITY | 0.006mm | | | | | | | |
| SURFACE FINISH (Ra) | 2.2 microns | | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION :- PASS | | | | | | | | |
| ROUNDNESS | 0.350mm | TAPER: | 0 degs | | | | | |

COMMENTS:

INSPECTED BY:



P. KENNERSON

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 15-SEPT-2008

REF NO: OP80014

TEMPERATURE: 20 degsC

MEASURED ORIFICE BORE: 369.3235mm

PLATE DETAILS

| | | | | | |
|-------------------|--------|------------|------------|--------------|---------------------|
| PLATE SERIAL: | 100454 | PLATE O.D: | 780.933mm | SITE: | WARBURTON |
| MANUFACTURER: | DANIEL | PIPE I.D: | 732.8884mm | DESIGN BORE: | mm |
| MATERIAL CERT.No: | M72877 | | | FLOW: | M ³ /DAY |

TEST EQUIPMENT

MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, UKAS CERT:- 6292. NEXT CAL DUE:- 05-OCTOBER-2008

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS:- | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|
| FLATNESS % | 0.163 | 0.171 | 0.161 | 0.176 | 0.176 | 0.164 | 0.177 | 0.163 |
| 'E' mm | 12.967 | 12.961 | 12.963 | 12.971 | 12.972 | 12.956 | 12.971 | 12.961 |
| 'e' | | | | | | | | |
| EDGE SHARPNESS mm | 0.0125 | 0.025 | 0.025 | 0.025 | 0.0125 | 0.0125 | 0.025 | 0.025 |
| BEVEL ANGLE: | DEGS | | | | | | | |
| CONCENTRICITY | 0.440 mm | | | | | | | |
| SURFACE FINISH (Ra) | 0.4 microns | | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION :- PASS | | | | | | | | |
| ROUNDNESS | 0.008mm | TAPER: | 0 degs | | | | | |

DRAINHOLE PRESENT ? (YES/NO): No

COMMENTS: Flatness re-instated ANT Industries

INSPECTED BY:  M Livingstone

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 08-MAY-2009
REF NO: OP90009
TEMPERATURE: 20.3 degsC
MEASURED ORIFICE BORE: 368.9555mm

PLATE DETAILS

PLATE SERIAL: WAR7114-1 PLATE O.D: 781.985mm
 MANUFACTURER: DANIEL PIPE I.D: NKmm SITE: WARBURTON
 MATERIAL CERT.No: HT154311 DESIGN BORE: 369.0112mm FLOW: M³/DAY

TEST EQUIPMENT

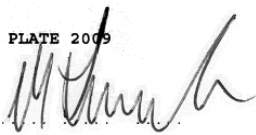
MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, UKAS CERT:- 6822. NEXT CAL DUE:- 03-OCTOBER-2009

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS:- | 1 | 2 | 3 | 4 | 5 | 6 | | |
|--|--------------|--------|--------|--------|--------|--------|--------|--------|
| FLATNESS % | 0.021 | 0.010 | 0.027 | 0.043 | 0.038 | 0.095 | 0.046 | 0.023 |
| 'E' mm | 12.368 | 12.358 | 12.357 | 12.362 | 12.342 | 12.349 | 12.320 | 12.355 |
| 'e' mm | | | | | | | | |
| EDGE SHARPNESS mm | SQUARE | SQUARE | SQUARE | 0.0125 | 0.0125 | 0.0125 | 0.0125 | 0.0125 |
| BEVEL ANGLE: | DEGS | | | | | | | |
| CONCENTRICITY | 0.184mm | | | | | | | |
| SURFACE FINISH (Ra) | 0.85 microns | | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION :- PASS | | | | | | | | |
| ROUNDNESS | 0.007mm | TAPER: | 0 degs | | | | | |

DRAINHOLE PRESENT ? (YES/NO) No

COMMENTS: NEW PLATE 2009

INSPECTED BY:  M Livingstone

NATIONAL GRID ORIFICE PLATE CALIBRATION

DATE: 11-AUG-2009

REF NO: OP90029

TEMPERATURE: 20.4 degsC

MEASURED ORIFICE BORE: 369.3215mm

PLATE DETAILS

| | | | | | |
|------------------|----------|--------------|------------|-------|---------------------|
| PLATE SERIAL. | 100454 | PLATE O.D | 780.909mm | | |
| MANUFACTURER: | DANIEL | PIPE I.D: | 732.8884mm | SITE: | WARBURTON |
| MATERIAL CERT.No | HT821497 | DESIGN BORE: | mm | FLOW: | M ³ /DAY |

TEST EQUIPMENT

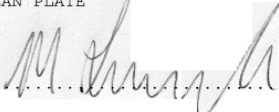
MANUFACTURER & TYPE: KEMCO 700 MANUAL 3-DIMENSIONAL MEASURING MACHINE -ASSET NO OP-A02
 CALIBRATED BY: QUALITY CONTROL TECHNOLOGY, UKAS CERT:- 6822. NEXT CAL DUE:- 03-OCTOBER-2009

UPSTREAM FACE INSPECTION RESULTS (ISO 5167)

| STATIONS:- | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|--|
| FLATNESS % | 0.158 | 0.173 | 0.163 | 0.186 | 0.183 | 0.168 | 0.182 | 0.174 | |
| | 12.960 | 12.958 | 12.961 | 12.974 | 12.969 | 12.953 | 12.961 | 12.943 | |
| mm | | | | | | | | | |
| EDGE SHARPNESS mm | 0.025 | 0.025 | 0.025 | 0.0125 | 0.025 | 0.0375 | 0.0375 | 0.025 | |
| BEVEL ANGLE | DEGS | | | | | | | | |
| CONCENTRICITY | 0.411mm | | | | | | | | |
| SURFACE FINISH (Ra) | 0.6 microns | | | | | | | | |
| DOWNSTREAM FACE/EDGE VISUAL INSPECTION | PASS | | | | | | | | |
| ROUNDNESS | 0.007mm | TAPER | 0 degs | | | | | | |

DRAINHOLE PRESENT ? (YES/NO): No

COMMENTS: CLEAN PLATE

INSPECTED BY: 

M Livingstone

APPENDIX B CORRECTED DAILY VOLUME FLOWS

TABLE B.1

FLOWS AT WARBURTON DURING THE PERIOD OF THE MIS-MEASUREMENT

| | Original Values (total) | Corrected values (total) | % increase |
|-----------|----------------------------|-----------------------------|------------------|
| Date | Volume (mscm) | Volume (mscm) | Volume (mscm) |
| 09-Jul-07 | 0.17096 | 0.17107 | 0.0628 |
| 10-Jul-07 | 0.14099 | 0.14128 | 0.2087 |
| 11-Jul-07 | 0.13807 | 0.13836 | 0.2087 |
| 12-Jul-07 | 0.13397 | 0.13425 | 0.2087 |
| 13-Jul-07 | 0.15196 | 0.15228 | 0.2087 |
| 14-Jul-07 | 0.00000 | 0.00000 | 0 |
| 15-Jul-07 | 0.00000 | 0.00000 | 0 |
| 16-Jul-07 | 0.00000 | 0.00000 | 0 |
| 17-Jul-07 | 0.00000 | 0.00000 | 0 |
| 18-Jul-07 | 3.91205 | 3.92021 | 0.2087 |
| 19-Jul-07 | 2.70801 | 2.71366 | 0.2087 |
| 20-Jul-07 | 4.36200 | 4.37110 | 0.2087 |
| 21-Jul-07 | 2.57397 | 2.57934 | 0.2087 |
| 22-Jul-07 | 2.77002 | 2.77580 | 0.2087 |
| 23-Jul-07 | 0.00000 | 0.00000 | 0 |
| 24-Jul-07 | 0.00000 | 0.00000 | 0 |
| 25-Jul-07 | 0.00000 | 0.00000 | 0 |
| 26-Jul-07 | 3.23499 | 3.24174 | 0.2087 |
| 27-Jul-07 | 4.04901 | 4.05746 | 0.2087 |
| 28-Jul-07 | 3.41998 | 3.42712 | 0.2087 |
| 29-Jul-07 | 6.03400 | 6.04659 | 0.2087 |
| 30-Jul-07 | 3.86102 | 3.86908 | 0.2087 |
| 31-Jul-07 | 3.73199 | 3.73978 | 0.2087 |
| 01-Aug-07 | 3.75500 | 3.76284 | 0.2087 |
| 02-Aug-07 | 3.84796 | 3.85599 | 0.2087 |
| 03-Aug-07 | 3.52704 | 3.53440 | 0.2087 |
| 04-Aug-07 | 0.00098 | 0.00098 | 0.2087 |
| 05-Aug-07 | 0.00000 | 0.00000 | 0 |
| 06-Aug-07 | 0.06598 | 0.06612 | 0.2087 |
| 07-Aug-07 | 3.68604 | 3.69373 | 0.2087 |
| 08-Aug-07 | 3.47700 | 3.48426 | 0.2087 |
| 09-Aug-07 | 3.61300 | 3.62054 | 0.2087 |
| 10-Aug-07 | 3.46500 | 3.47223 | 0.2087 |
| 11-Aug-07 | 4.83600 | 4.84609 | 0.2087 |
| 12-Aug-07 | 2.98800 | 2.99424 | 0.2087 |
| 13-Aug-07 | 0.00000 | 0.00000 | 0 |
| 14-Aug-07 | 4.22100 | 4.22981 | 0.2087 |
| 15-Aug-07 | 4.24900 | 4.25787 | 0.2087 |
| 16-Aug-07 | 5.25500 | 5.26597 | 0.2087 |

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| 17-Aug-07 | 4.78200 | 4.79198 | 0.2087 |
| 18-Aug-07 | 4.38200 | 4.39115 | 0.2087 |
| 19-Aug-07 | 3.69400 | 3.70171 | 0.2087 |
| 20-Aug-07 | 0.13500 | 0.13528 | 0.2087 |
| 21-Aug-07 | 0.00000 | 0.00000 | 0 |
| 22-Aug-07 | 0.00000 | 0.00000 | 0 |
| 23-Aug-07 | 0.00000 | 0.00000 | 0 |
| 24-Aug-07 | 0.00000 | 0.00000 | 0 |
| 25-Aug-07 | 0.00000 | 0.00000 | 0 |
| 26-Aug-07 | 0.00800 | 0.00802 | 0.2087 |
| 27-Aug-07 | 5.50800 | 5.51950 | 0.2087 |
| 28-Aug-07 | 1.02900 | 1.03115 | 0.2087 |
| 29-Aug-07 | 4.77300 | 4.78296 | 0.2087 |
| 30-Aug-07 | 4.99300 | 5.00342 | 0.2087 |
| 31-Aug-07 | 4.82899 | 4.83907 | 0.2087 |
| 01-Sep-07 | 0.30801 | 0.30865 | 0.2087 |
| 02-Sep-07 | 0.00000 | 0.00000 | 0 |
| 03-Sep-07 | 0.00000 | 0.00000 | 0 |
| 04-Sep-07 | 0.11200 | 0.11223 | 0.2087 |
| 05-Sep-07 | 0.00000 | 0.00000 | 0 |
| 06-Sep-07 | 0.00000 | 0.00000 | 0 |
| 07-Sep-07 | 0.00000 | 0.00000 | 0 |
| 08-Sep-07 | 3.16199 | 3.16859 | 0.2087 |
| 09-Sep-07 | 0.01300 | 0.01303 | 0.2087 |
| 10-Sep-07 | 3.01200 | 3.01829 | 0.2087 |
| 11-Sep-07 | 0.30600 | 0.30664 | 0.2087 |
| 12-Sep-07 | 0.00000 | 0.00000 | 0 |
| 13-Sep-07 | 0.16300 | 0.16334 | 0.2087 |
| 14-Sep-07 | 0.05800 | 0.05812 | 0.2087 |
| 15-Sep-07 | 0.27700 | 0.27758 | 0.2087 |
| 16-Sep-07 | 3.43501 | 3.44218 | 0.2087 |
| 17-Sep-07 | 2.82800 | 2.83390 | 0.2087 |
| 18-Sep-07 | 0.00500 | 0.00501 | 0.2087 |
| 19-Sep-07 | 4.06699 | 4.07548 | 0.2087 |
| 20-Sep-07 | 0.48901 | 0.49003 | 0.2087 |
| 21-Sep-07 | 0.00000 | 0.00000 | 0 |
| 22-Sep-07 | 0.00000 | 0.00000 | 0 |
| 23-Sep-07 | 0.00000 | 0.00000 | 0 |
| 24-Sep-07 | 0.00000 | 0.00000 | 0 |
| 25-Sep-07 | 0.00000 | 0.00000 | 0 |
| 26-Sep-07 | 0.08400 | 0.08418 | 0.2087 |
| 27-Sep-07 | 0.00000 | 0.00000 | 0 |
| 28-Sep-07 | 0.00000 | 0.00000 | 0 |
| 29-Sep-07 | 0.00000 | 0.00000 | 0 |
| 30-Sep-07 | 0.00000 | 0.00000 | 0 |
| 01-Oct-07 | 0.01700 | 0.01704 | 0.2087 |
| 02-Oct-07 | 0.03700 | 0.03708 | 0.2087 |
| 03-Oct-07 | 0.00000 | 0.00000 | 0 |

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| 04-Oct-07 | 0.00000 | 0.00000 | 0 |
| 05-Oct-07 | 0.00000 | 0.00000 | 0 |
| 06-Oct-07 | 0.00000 | 0.00000 | 0 |
| 07-Oct-07 | 0.00000 | 0.00000 | 0 |
| 08-Oct-07 | 0.00000 | 0.00000 | 0 |
| 09-Oct-07 | 0.00000 | 0.00000 | 0 |
| 10-Oct-07 | 0.00000 | 0.00000 | 0 |
| 11-Oct-07 | 7.31900 | 7.33427 | 0.2087 |
| 12-Oct-07 | 0.10799 | 0.10822 | 0.2087 |
| 13-Oct-07 | 4.37100 | 4.38012 | 0.2087 |
| 14-Oct-07 | 4.15400 | 4.16267 | 0.2087 |
| 15-Oct-07 | 3.00400 | 3.01027 | 0.2087 |
| 16-Oct-07 | 3.16300 | 3.16960 | 0.2087 |
| 17-Oct-07 | 0.26000 | 0.26054 | 0.2087 |
| 18-Oct-07 | 3.29300 | 3.29987 | 0.2087 |
| 19-Oct-07 | 2.94000 | 2.94614 | 0.2087 |
| 20-Oct-07 | 2.98199 | 2.98821 | 0.2087 |
| 21-Oct-07 | 5.24001 | 5.25095 | 0.2087 |
| 22-Oct-07 | 3.25800 | 3.26480 | 0.2087 |
| 23-Oct-07 | 3.53400 | 3.54138 | 0.2087 |
| 24-Oct-07 | 4.81200 | 4.82204 | 0.2087 |
| 25-Oct-07 | 4.21100 | 4.21979 | 0.2087 |
| 26-Oct-07 | 0.00000 | 0.00000 | 0 |
| 27-Oct-07 | 2.26900 | 2.27374 | 0.2087 |
| 28-Oct-07 | 2.94400 | 2.95014 | 0.2087 |
| 29-Oct-07 | 0.00000 | 0.00000 | 0 |
| 30-Oct-07 | 0.72101 | 0.72251 | 0.2087 |
| 31-Oct-07 | 0.02400 | 0.02405 | 0.2087 |
| 01-Nov-07 | 0.19000 | 0.19040 | 0.2087 |
| 02-Nov-07 | 3.92900 | 3.93720 | 0.2087 |
| 03-Nov-07 | 3.16899 | 3.17560 | 0.2087 |
| 04-Nov-07 | 2.10400 | 2.10839 | 0.2087 |
| 05-Nov-07 | 0.00000 | 0.00000 | 0 |
| 06-Nov-07 | 0.12801 | 0.12828 | 0.2087 |
| 07-Nov-07 | 0.00000 | 0.00000 | 0 |
| 08-Nov-07 | 0.00000 | 0.00000 | 0 |
| 09-Nov-07 | 0.00000 | 0.00000 | 0 |
| 10-Nov-07 | 5.59200 | 5.60367 | 0.2087 |
| 11-Nov-07 | 3.94000 | 3.94822 | 0.2087 |
| 12-Nov-07 | 7.20200 | 7.21703 | 0.2087 |
| 13-Nov-07 | 4.33000 | 4.33904 | 0.2087 |
| 14-Nov-07 | 4.40601 | 4.41521 | 0.2087 |
| 15-Nov-07 | 5.03600 | 5.04651 | 0.2087 |
| 16-Nov-07 | 7.12100 | 7.13586 | 0.2087 |
| 17-Nov-07 | 5.03900 | 5.04952 | 0.2087 |
| 18-Nov-07 | 5.06599 | 5.07656 | 0.2087 |
| 19-Nov-07 | 7.10001 | 7.11483 | 0.2087 |
| 20-Nov-07 | 7.38400 | 7.39941 | 0.2087 |

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| 21-Nov-07 | 7.19400 | 7.20901 | 0.2087 |
| 22-Nov-07 | 7.46399 | 7.47957 | 0.2087 |
| 23-Nov-07 | 7.79601 | 7.81228 | 0.2087 |
| 24-Nov-07 | 7.06900 | 7.08375 | 0.2087 |
| 25-Nov-07 | 6.51300 | 6.52659 | 0.2087 |
| 26-Nov-07 | 7.20001 | 7.21504 | 0.2087 |
| 27-Nov-07 | 6.64798 | 6.66185 | 0.2087 |
| 28-Nov-07 | 6.41400 | 6.42739 | 0.2087 |
| 29-Nov-07 | 6.36801 | 6.38130 | 0.2087 |
| 30-Nov-07 | 6.35901 | 6.37228 | 0.2087 |
| 01-Dec-07 | 4.91199 | 4.92224 | 0.2087 |
| 02-Dec-07 | 4.97400 | 4.98438 | 0.2087 |
| 03-Dec-07 | 5.98801 | 6.00051 | 0.2087 |
| 04-Dec-07 | 3.86398 | 3.87204 | 0.2087 |
| 05-Dec-07 | 7.86600 | 7.88242 | 0.2087 |
| 06-Dec-07 | 4.00601 | 4.01437 | 0.2087 |
| 07-Dec-07 | 5.83401 | 5.84619 | 0.2087 |
| 08-Dec-07 | 5.65298 | 5.66478 | 0.2087 |
| 09-Dec-07 | 5.68802 | 5.69989 | 0.2087 |
| 10-Dec-07 | 5.90097 | 5.91329 | 0.2087 |
| 11-Dec-07 | 6.55902 | 6.57271 | 0.2087 |
| 12-Dec-07 | 6.88699 | 6.90136 | 0.2087 |
| 13-Dec-07 | 6.90601 | 6.92042 | 0.2087 |
| 14-Dec-07 | 7.20801 | 7.22305 | 0.2087 |
| 15-Dec-07 | 5.86200 | 5.87423 | 0.2087 |
| 16-Dec-07 | 7.17798 | 7.19296 | 0.2087 |
| 17-Dec-07 | 5.79202 | 5.80411 | 0.2087 |
| 18-Dec-07 | 5.68900 | 5.70087 | 0.2087 |
| 19-Dec-07 | 6.60400 | 6.61778 | 0.2087 |
| 20-Dec-07 | 6.69498 | 6.70895 | 0.2087 |
| 21-Dec-07 | 6.74902 | 6.76311 | 0.2087 |
| 22-Dec-07 | 5.37500 | 5.38622 | 0.2087 |
| 23-Dec-07 | 5.29700 | 5.30805 | 0.2087 |
| 24-Dec-07 | 3.05701 | 3.06339 | 0.2087 |
| 25-Dec-07 | 1.43900 | 1.44200 | 0.2087 |
| 26-Dec-07 | 5.78900 | 5.80108 | 0.2087 |
| 27-Dec-07 | 3.98700 | 3.99532 | 0.2087 |
| 28-Dec-07 | 3.97400 | 3.98229 | 0.2087 |
| 29-Dec-07 | 3.94800 | 3.95624 | 0.2087 |
| 30-Dec-07 | 3.90399 | 3.91214 | 0.2087 |
| 31-Dec-07 | 0.03101 | 0.03107 | 0.2087 |
| 01-Jan-08 | 2.72900 | 2.73470 | 0.2087 |
| 02-Jan-08 | 4.85699 | 4.86713 | 0.2087 |
| 03-Jan-08 | 6.90601 | 6.92042 | 0.2087 |
| 04-Jan-08 | 6.39200 | 6.40534 | 0.2087 |
| 05-Jan-08 | 5.75000 | 5.76200 | 0.2087 |
| 06-Jan-08 | 6.25400 | 6.26705 | 0.2087 |
| 07-Jan-08 | 4.99399 | 5.00441 | 0.2087 |

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| 08-Jan-08 | 4.94000 | 4.95031 | 0.2087 |
| 09-Jan-08 | 5.09201 | 5.10264 | 0.2087 |
| 10-Jan-08 | 6.54599 | 6.55965 | 0.2087 |
| 11-Jan-08 | 4.98602 | 4.99643 | 0.2087 |
| 12-Jan-08 | 7.18997 | 7.20498 | 0.2087 |
| 13-Jan-08 | 3.98901 | 3.99734 | 0.2087 |
| 14-Jan-08 | 4.88800 | 4.89820 | 0.2087 |
| 15-Jan-08 | 4.60498 | 4.61459 | 0.2087 |
| 16-Jan-08 | 4.70703 | 4.71685 | 0.2087 |
| 17-Jan-08 | 4.47900 | 4.48835 | 0.2087 |
| 18-Jan-08 | 3.96399 | 3.97226 | 0.2087 |
| 19-Jan-08 | 3.96698 | 3.97526 | 0.2087 |
| 20-Jan-08 | 3.92902 | 3.93722 | 0.2087 |
| 21-Jan-08 | 7.72803 | 7.74416 | 0.2087 |
| 22-Jan-08 | 4.70898 | 4.71881 | 0.2087 |
| 23-Jan-08 | 3.99597 | 4.00431 | 0.2087 |
| 24-Jan-08 | 4.04102 | 4.04945 | 0.2087 |
| 25-Jan-08 | 3.93799 | 3.94621 | 0.2087 |
| 26-Jan-08 | 0.00000 | 0.00000 | 0 |
| 27-Jan-08 | 0.00000 | 0.00000 | 0 |
| 28-Jan-08 | 3.96399 | 3.97226 | 0.2087 |
| 29-Jan-08 | 3.16302 | 3.16962 | 0.2087 |
| 30-Jan-08 | 0.00000 | 0.00000 | 0 |
| 31-Jan-08 | 5.32501 | 5.33612 | 0.2087 |
| 01-Feb-08 | 5.33899 | 5.35013 | 0.2087 |
| 02-Feb-08 | 6.04401 | 6.05662 | 0.2087 |
| 03-Feb-08 | 5.86902 | 5.88127 | 0.2087 |
| 04-Feb-08 | 6.40497 | 6.41834 | 0.2087 |
| 05-Feb-08 | 3.89301 | 3.90113 | 0.2087 |
| 06-Feb-08 | 4.87000 | 4.88016 | 0.2087 |
| 07-Feb-08 | 3.29401 | 3.30088 | 0.2087 |
| 08-Feb-08 | 4.91602 | 4.92628 | 0.2087 |
| 09-Feb-08 | 0.38300 | 0.38380 | 0.2087 |
| 10-Feb-08 | 5.86597 | 5.87821 | 0.2087 |
| 11-Feb-08 | 4.14301 | 4.15166 | 0.2087 |
| 12-Feb-08 | 4.26404 | 4.27294 | 0.2087 |
| 13-Feb-08 | 4.04498 | 4.05342 | 0.2087 |
| 14-Feb-08 | 4.93201 | 4.94230 | 0.2087 |
| 15-Feb-08 | 5.95801 | 5.97044 | 0.2087 |
| 16-Feb-08 | 5.77301 | 5.78506 | 0.2087 |
| 17-Feb-08 | 5.63599 | 5.64775 | 0.2087 |
| 18-Feb-08 | 6.21802 | 6.23100 | 0.2087 |
| 19-Feb-08 | 5.98798 | 6.00048 | 0.2087 |
| 20-Feb-08 | 6.40302 | 6.41638 | 0.2087 |
| 21-Feb-08 | 3.86096 | 3.86902 | 0.2087 |
| 22-Feb-08 | 3.98505 | 3.99337 | 0.2087 |
| 23-Feb-08 | 3.91895 | 3.92713 | 0.2087 |
| 24-Feb-08 | 3.86200 | 3.87006 | 0.2087 |

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| 25-Feb-08 | 4.83002 | 4.84010 | 0.2087 |
| 26-Feb-08 | 4.45898 | 4.46829 | 0.2087 |
| 27-Feb-08 | 4.63702 | 4.64670 | 0.2087 |
| 28-Feb-08 | 4.83698 | 4.84707 | 0.2087 |
| 29-Feb-08 | 4.67902 | 4.68879 | 0.2087 |
| 01-Mar-08 | 5.61304 | 5.62475 | 0.2087 |
| 02-Mar-08 | 5.16699 | 5.17777 | 0.2087 |
| 03-Mar-08 | 4.95898 | 4.96933 | 0.2087 |
| 04-Mar-08 | 5.39502 | 5.40628 | 0.2087 |
| 05-Mar-08 | 7.46399 | 7.47957 | 0.2087 |
| 06-Mar-08 | 5.72198 | 5.73392 | 0.2087 |
| 07-Mar-08 | 5.04700 | 5.05753 | 0.2087 |
| 08-Mar-08 | 4.43500 | 4.44426 | 0.2087 |
| 09-Mar-08 | 6.14301 | 6.15583 | 0.2087 |
| 10-Mar-08 | 4.13702 | 4.14565 | 0.2087 |
| 11-Mar-08 | 6.05200 | 6.06463 | 0.2087 |
| 12-Mar-08 | 6.34900 | 6.36225 | 0.2087 |
| 13-Mar-08 | 6.03400 | 6.04659 | 0.2087 |
| 14-Mar-08 | 4.88898 | 4.89918 | 0.2087 |
| 15-Mar-08 | 6.87201 | 6.88635 | 0.2087 |
| 16-Mar-08 | 6.12097 | 6.13374 | 0.2087 |
| 17-Mar-08 | 5.97900 | 5.99148 | 0.2087 |
| 18-Mar-08 | 5.32202 | 5.33313 | 0.2087 |
| 19-Mar-08 | 5.14801 | 5.15875 | 0.2087 |
| 20-Mar-08 | 5.17596 | 5.18676 | 0.2087 |
| 21-Mar-08 | 6.05103 | 6.06366 | 0.2087 |
| 22-Mar-08 | 5.76703 | 5.77907 | 0.2087 |
| 23-Mar-08 | 5.21497 | 5.22585 | 0.2087 |
| 24-Mar-08 | 6.14099 | 6.15381 | 0.2087 |
| 25-Mar-08 | 6.12701 | 6.13980 | 0.2087 |
| 26-Mar-08 | 6.77899 | 6.79314 | 0.2087 |
| 27-Mar-08 | 6.42902 | 6.44244 | 0.2087 |
| 28-Mar-08 | 5.03003 | 5.04053 | 0.2087 |
| 29-Mar-08 | 4.18396 | 4.19269 | 0.2087 |
| 30-Mar-08 | 3.81799 | 3.82596 | 0.2087 |
| 31-Mar-08 | 4.26501 | 4.27391 | 0.2087 |
| 01-Apr-08 | 3.99200 | 4.00033 | 0.2087 |
| 02-Apr-08 | 3.77301 | 3.78088 | 0.2087 |
| 03-Apr-08 | 5.01196 | 5.02242 | 0.2087 |
| 04-Apr-08 | 4.41901 | 4.42823 | 0.2087 |
| 05-Apr-08 | 4.35602 | 4.36511 | 0.2087 |
| 06-Apr-08 | 3.97803 | 3.98633 | 0.2087 |
| 07-Apr-08 | 4.81995 | 4.83001 | 0.2087 |
| 08-Apr-08 | 5.04706 | 5.05759 | 0.2087 |
| 09-Apr-08 | 5.90295 | 5.91527 | 0.2087 |
| 10-Apr-08 | 6.04901 | 6.06163 | 0.2087 |
| 11-Apr-08 | 4.73102 | 4.74089 | 0.2087 |
| 12-Apr-08 | 4.23297 | 4.24180 | 0.2087 |

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| 13-Apr-08 | 4.03003 | 4.03844 | 0.2087 |
| 14-Apr-08 | 4.76001 | 4.76994 | 0.2087 |
| 15-Apr-08 | 4.46997 | 4.47930 | 0.2087 |
| 16-Apr-08 | 4.93701 | 4.94731 | 0.2087 |
| 17-Apr-08 | 4.86298 | 4.87313 | 0.2087 |
| 18-Apr-08 | 5.30603 | 5.31710 | 0.2087 |
| 19-Apr-08 | 4.12897 | 4.13759 | 0.2087 |
| 20-Apr-08 | 4.05304 | 4.06150 | 0.2087 |
| 21-Apr-08 | 5.20697 | 5.21784 | 0.2087 |
| 22-Apr-08 | 3.34503 | 3.35201 | 0.2087 |
| 23-Apr-08 | 4.05100 | 4.05945 | 0.2087 |
| 24-Apr-08 | 4.03600 | 4.04442 | 0.2087 |
| 25-Apr-08 | 6.19800 | 6.21094 | 0.2087 |
| 26-Apr-08 | 2.84600 | 2.85194 | 0.2087 |
| 27-Apr-08 | 2.81400 | 2.81987 | 0.2087 |
| 28-Apr-08 | 4.33500 | 4.34405 | 0.2087 |
| 29-Apr-08 | 5.10800 | 5.11866 | 0.2087 |
| 30-Apr-08 | 5.99500 | 6.00751 | 0.2087 |
| 01-May-08 | 5.51500 | 5.52651 | 0.2087 |
| 02-May-08 | 4.01600 | 4.02438 | 0.2087 |
| 03-May-08 | 4.02800 | 4.03641 | 0.2087 |
| 04-May-08 | 4.52400 | 4.53344 | 0.2087 |
| 05-May-08 | 4.32200 | 4.33102 | 0.2087 |
| 06-May-08 | 1.56700 | 1.57027 | 0.2087 |
| 07-May-08 | 0.00000 | 0.00000 | 0 |
| 08-May-08 | 0.00000 | 0.00000 | 0 |
| 09-May-08 | 0.00000 | 0.00000 | 0 |
| 10-May-08 | 0.00000 | 0.00000 | 0 |
| 11-May-08 | 0.00000 | 0.00000 | 0 |
| 12-May-08 | 4.79200 | 4.80200 | 0.2087 |
| 13-May-08 | 6.69200 | 6.70597 | 0.2087 |
| 14-May-08 | 5.21600 | 5.22689 | 0.2087 |
| 15-May-08 | 5.51700 | 5.52851 | 0.2087 |
| 16-May-08 | 5.21301 | 5.22389 | 0.2087 |
| 17-May-08 | 3.05399 | 3.06036 | 0.2087 |
| 18-May-08 | 0.61201 | 0.61329 | 0.2087 |
| 19-May-08 | 0.00000 | 0.00000 | 0 |
| 20-May-08 | 0.00000 | 0.00000 | 0 |
| 21-May-08 | 0.00000 | 0.00000 | 0 |
| 22-May-08 | 4.22800 | 4.23682 | 0.2087 |
| 23-May-08 | 0.00000 | 0.00000 | 0 |
| 24-May-08 | 0.00000 | 0.00000 | 0 |
| 25-May-08 | 0.00000 | 0.00000 | 0 |
| 26-May-08 | 0.00000 | 0.00000 | 0 |
| 27-May-08 | 0.00000 | 0.00000 | 0 |
| 28-May-08 | 0.22300 | 0.22347 | 0.2087 |
| 29-May-08 | 2.55700 | 2.56234 | 0.2087 |
| 30-May-08 | 0.36700 | 0.36777 | 0.2087 |

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| 31-May-08 | 6.25200 | 6.26505 | 0.2087 |
| 01-Jun-08 | 5.25700 | 5.26797 | 0.2087 |
| 02-Jun-08 | 0.00000 | 0.00000 | 0 |
| 03-Jun-08 | 0.00000 | 0.00000 | 0 |
| 04-Jun-08 | 0.00000 | 0.00000 | 0 |
| 05-Jun-08 | 0.00000 | 0.00000 | 0 |
| 06-Jun-08 | 0.00000 | 0.00000 | 0 |
| 07-Jun-08 | 6.56800 | 6.58171 | 0.2087 |
| 08-Jun-08 | 4.22200 | 4.23081 | 0.2087 |
| 09-Jun-08 | 4.35500 | 4.36409 | 0.2087 |
| 10-Jun-08 | 4.97601 | 4.98639 | 0.2087 |
| 11-Jun-08 | 4.42799 | 4.43723 | 0.2087 |
| 12-Jun-08 | 1.20100 | 1.20351 | 0.2087 |
| 13-Jun-08 | 0.00000 | 0.00000 | 0 |
| 14-Jun-08 | 0.95400 | 0.95599 | 0.2087 |
| 15-Jun-08 | 3.04601 | 3.05237 | 0.2087 |
| 16-Jun-08 | 0.01799 | 0.01803 | 0.2087 |
| 17-Jun-08 | 0.00000 | 0.00000 | 0 |
| 18-Jun-08 | 0.00000 | 0.00000 | 0 |
| 19-Jun-08 | 0.00000 | 0.00000 | 0 |
| 20-Jun-08 | 0.00000 | 0.00000 | 0 |
| 21-Jun-08 | 6.99400 | 7.00860 | 0.2087 |
| 22-Jun-08 | 0.41800 | 0.41887 | 0.2087 |
| 23-Jun-08 | 0.00000 | 0.00000 | 0 |
| 24-Jun-08 | 0.00000 | 0.00000 | 0 |
| 25-Jun-08 | 0.00000 | 0.00000 | 0 |
| 26-Jun-08 | 0.00000 | 0.00000 | 0 |
| 27-Jun-08 | 0.00000 | 0.00000 | 0 |
| 28-Jun-08 | 0.10800 | 0.10823 | 0.2087 |
| 29-Jun-08 | 5.47400 | 5.48542 | 0.2087 |
| 30-Jun-08 | 0.00000 | 0.00000 | 0 |
| 01-Jul-08 | 0.00000 | 0.00000 | 0 |
| 02-Jul-08 | 0.00000 | 0.00000 | 0 |
| 03-Jul-08 | 0.00000 | 0.00000 | 0 |
| 04-Jul-08 | 0.02100 | 0.02104 | 0.2087 |
| 05-Jul-08 | 3.75500 | 3.76284 | 0.2087 |
| 06-Jul-08 | 0.01900 | 0.01904 | 0.2087 |
| 07-Jul-08 | 0.00000 | 0.00000 | 0 |
| 08-Jul-08 | 0.00000 | 0.00000 | 0 |
| 09-Jul-08 | 0.00000 | 0.00000 | 0 |
| 10-Jul-08 | 0.00000 | 0.00000 | 0 |
| 11-Jul-08 | 0.51800 | 0.51908 | 0.2087 |
| 12-Jul-08 | 6.22900 | 6.24200 | 0.2087 |
| 13-Jul-08 | 3.66299 | 3.67063 | 0.2087 |
| 14-Jul-08 | 3.69301 | 3.70072 | 0.2087 |
| 15-Jul-08 | 2.78099 | 2.78679 | 0.2087 |
| 16-Jul-08 | 0.07599 | 0.07615 | 0.2087 |
| 17-Jul-08 | 4.99300 | 5.00342 | 0.2087 |

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|-----------|---------|----------------|--------|
| 18-Jul-08 | 4.60001 | 4.60961 | 0.2087 |
| 19-Jul-08 | 4.27200 | 4.28092 | 0.2087 |
| 20-Jul-08 | 6.60100 | 6.61478 | 0.2087 |
| 21-Jul-08 | 0.19299 | 0.19339 | 0.2087 |
| 22-Jul-08 | 0.00000 | 0.00000 | 0 |
| 23-Jul-08 | 0.00000 | 0.00000 | 0 |
| 24-Jul-08 | 0.00000 | 0.00000 | 0 |
| 25-Jul-08 | 0.00000 | 0.00000 | 0 |
| 26-Jul-08 | 0.26001 | 0.26055 | 0.2087 |
| 27-Jul-08 | 2.85600 | 2.86196 | 0.2087 |
| 28-Jul-08 | 0.00000 | 0.00000 | 0 |
| 29-Jul-08 | 0.00000 | 0.00000 | 0 |
| 30-Jul-08 | 0.50499 | 0.50604 | 0.2087 |
| 31-Jul-08 | 0.37500 | 0.37578 | 0.2087 |
| 01-Aug-08 | 0.00000 | 0.00000 | 0 |
| 02-Aug-08 | 0.15800 | 0.15833 | 0.2087 |
| 03-Aug-08 | 0.00000 | 0.00000 | 0 |
| 04-Aug-08 | 0.00000 | 0.00000 | 0 |
| 05-Aug-08 | 1.12000 | 1.12234 | 0.2087 |
| 06-Aug-08 | 0.29401 | 0.29462 | 0.2087 |
| 07-Aug-08 | 0.00000 | 0.00000 | 0 |
| 08-Aug-08 | 0.07900 | 0.07916 | 0.2087 |
| 09-Aug-08 | 5.11000 | 5.12066 | 0.2087 |
| 10-Aug-08 | 0.33501 | 0.33571 | 0.2087 |
| 11-Aug-08 | 1.00900 | 1.01111 | 0.2087 |
| 12-Aug-08 | 3.72699 | 3.73477 | 0.2087 |
| 13-Aug-08 | 0.46301 | 0.46398 | 0.2087 |
| 14-Aug-08 | 0.00000 | 0.00000 | 0 |
| 15-Aug-08 | 0.00000 | 0.00000 | 0 |
| 16-Aug-08 | 0.04300 | 0.04309 | 0.2087 |
| 17-Aug-08 | 5.24899 | 5.25994 | 0.2087 |
| 18-Aug-08 | 0.00000 | 0.00000 | 0 |
| 19-Aug-08 | 0.11700 | 0.11724 | 0.2087 |
| 20-Aug-08 | 0.53900 | 0.54012 | 0.2087 |
| 21-Aug-08 | 0.00000 | 0.00000 | 0 |
| 22-Aug-08 | 0.00000 | 0.00000 | 0 |
| 23-Aug-08 | 0.09900 | 0.09921 | 0.2087 |
| 24-Aug-08 | 4.64799 | 4.65769 | 0.2087 |
| 25-Aug-08 | 0.00000 | 0.00000 | 0 |
| 26-Aug-08 | 0.00000 | 0.00000 | 0 |
| 27-Aug-08 | 0.00000 | 0.00000 | 0 |
| 28-Aug-08 | 0.01100 | 0.01102 | 0.2087 |
| 29-Aug-08 | 0.12500 | 0.12526 | 0.2087 |
| 30-Aug-08 | 0.00000 | 0.00000 | 0 |
| 31-Aug-08 | 4.88499 | 4.89518 | 0.2087 |
| 01-Sep-08 | 0.09601 | 0.09621 | 0.2087 |
| 02-Sep-08 | 2.94899 | 2.95514 | 0.2087 |
| 03-Sep-08 | 3.62001 | 3.62756 | 0.2087 |

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| 04-Sep-08 | 4.61700 | 4.62664 | 0.2087 |
| 05-Sep-08 | 4.48900 | 4.49837 | 0.2087 |
| 06-Sep-08 | 0.00000 | 0.00000 | 0 |
| 07-Sep-08 | 0.00000 | 0.00000 | 0 |
| 08-Sep-08 | 0.00000 | 0.00000 | 0 |
| 09-Sep-08 | 0.00000 | 0.00000 | 0 |
| 10-Sep-08 | 0.00000 | 0.00000 | 0 |
| 11-Sep-08 | 0.00000 | 0.00000 | 0 |
| 12-Sep-08 | 0.00000 | 0.00000 | 0 |
| 13-Sep-08 | 0.00000 | 0.00000 | 0 |
| 14-Sep-08 | 6.06200 | 6.07465 | 0.2087 |
| 15-Sep-08 | 4.07800 | 4.08651 | 0.2087 |
| 16-Sep-08 | 0.01999 | 0.02003 | 0.2087 |
| 17-Sep-08 | 0.00000 | 0.00000 | 0 |
| 18-Sep-08 | 0.02701 | 0.02707 | 0.2087 |
| 19-Sep-08 | 0.00000 | 0.00000 | 0 |
| 20-Sep-08 | 0.00000 | 0.00000 | 0 |
| 21-Sep-08 | 0.00000 | 0.00000 | 0 |
| 22-Sep-08 | 0.29600 | 0.29662 | 0.2087 |
| 23-Sep-08 | 0.00000 | 0.00000 | 0 |
| 24-Sep-08 | 0.00000 | 0.00000 | 0 |
| 25-Sep-08 | 0.00000 | 0.00000 | 0 |
| 26-Sep-08 | 0.00000 | 0.00000 | 0 |
| 27-Sep-08 | 0.00000 | 0.00000 | 0 |
| 28-Sep-08 | 0.00000 | 0.00000 | 0 |
| 29-Sep-08 | 0.00000 | 0.00000 | 0 |
| 30-Sep-08 | 0.00499 | 0.00500 | 0.2087 |
| 01-Oct-08 | 4.46100 | 4.47031 | 0.2087 |
| 02-Oct-08 | 4.08701 | 4.08879 | 0.0435 |