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Chapter 4.6 "Proving Systems—Pulse Interpolation" Second Edition, May 1999

ERRATA

Page 3, *the equation at the bottom of the first column should read:*

$$= 3600 \times 0.81225/3000$$

$$T_2 \quad = 0.9747$$

Page 3, *the equation in the second paragraph in the second column should read:*

$$= 833.33333 \times 0.9747$$

$$N_1 \quad = 812.2491$$

Page 5, A.2.1 EXAMPLE 1—INTERPOLATED PULSE CALCULATION

Remove the punctuation at the end of each line, it should read as follows:

The following data are given:

F_c = clock frequency used to measure the time intervals, in hertz > $(20{,}000/N_1)F_m$

F_m = flowmeter pulse output frequency (the maxi-mum value for analysis), in hertz
= 520

N_m = total number of whole flowmeter pulses
= 200 (CTR-N_m)

N_1 = number of interpolated flowmeter pulses
= $(T_2/T_1)N_m$

T_1 = time interval counted for the whole flowmeter pulses (N) in seconds
= 2.43914 (CTR-T_1)

T_2 = time interval between the first and second volume detector signals (that is, the displaced prover volume), in seconds
= 2.43917 (*CTR-T_2*)

If the required pulse-interpolation uncertainty is better than ± 0.01%. then

100,000 > (20,000/200 pulses)(520 hertz)
  > (100)(520)
  > 52,000

Note: The period of the clock is the reciprocal of the frequency, $T = {}^1/_F$. The period of 1 clock pulse is therefore ${}^1/_{100{,}000}$ hertz, or 0.00001 second. The discrimination of the clock is ${}^{0.00001}/_{2.43914}$, or 0.0004%. The requirement for the value of F_c and the discrimination requirement in 4.6.2 are therefore satisfied.

To calculate the interpolated pulses

N_1 = (2.43917 / 2.43914)(200)

  = (1.00001)(200)

  = 200.002

Page 5, **A.2.2 EXAMPLE 2—CERTIFICATION CALCULATION**

Remove the punctuation at the end of each line, it should read as follows:

Using equipment as shown in Figure A-2, the following data applies:

Simulated data:

F'_m = pulse frequency of generator number one simulating meter pulses, in hertz
= 233.000

T'_2 = pulse period of generator number two simulating detector signals, in seconds
= 1.666667

Observed data at prover computer being tested:

N_m = number of whole flowmeter pulses
= 388

T_1 = number of clock pulses accumulated during whole flowmeter counts N_m
= 166,523

T_2 = number of clock pulses accumulated during simulated prove volume
= 166,666

Note that both timers T_1 and T_2 accumulated > 20,000 clock pulses, satisfying the discrimination requirement detailed in 4.6.2.

Comparison of results:

N'_1 = calculated interpolated pulses based on certified pulse generators,

= $F'_m \times T'_2$

= 233×1.666667

= 388.33341

N_1 = calculated interpolated pulses based on prover computer observations,

= $N_m (T_2/T_1)$

= $388 \times 166666/166523$

= 388.33319