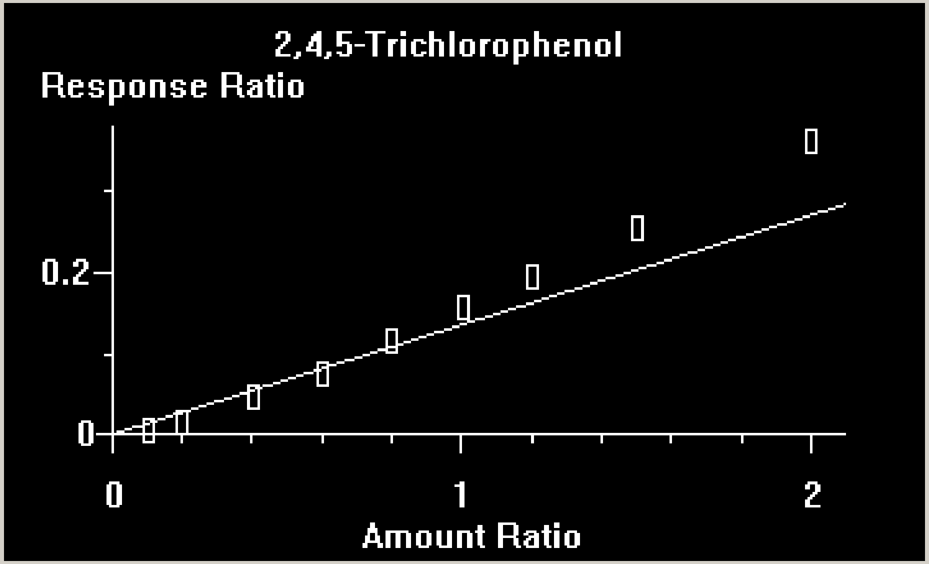
The
Calibration Model Used By
The Lab
Does Not Properly Reflect
The Data

Calculate the standard deviation (RSD) from each mean: RSD = 100 (SD/M). If the RSD of any analyte or surrogate mean RF exceeds 30%, either analyze additional aliquots of appropriate CAL solutions to obtain an acceptable RSD or RFs over the entire concentration range, or take action to improve GC/MS performance.

Ref: EPA Method 525.2, section 10.2.6.1

t Calibration Curve

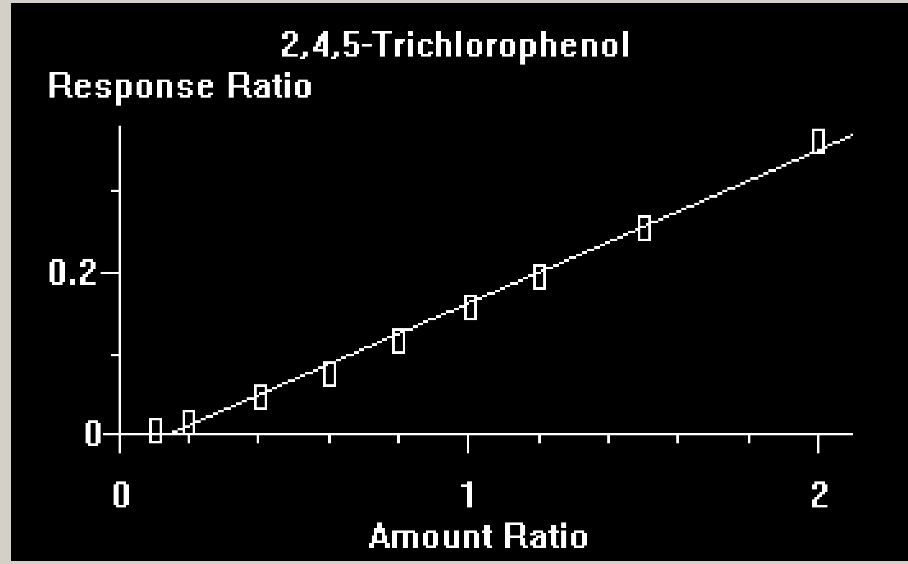


Amount Ratio	Response Ratio
0.10000000	0.00662178
0.20000000	0.01620113
0.40000000	0.04819515
0.60000000	0.07665049
0.80000000	0.11479820
1.00000000	0.15723467
1.20000000	0.19495495

Resp Ratio = 1.34e-001 * Amt

RF Rel Std Dev = 29.3% Curve Fit: Avg RF

t Calibration Curve



Amount Ratio	Response Ratio
0.10000000	0.00662178
0.20000000	0.01620113
0.40000000	0.04819515
0.60000000	0.07665049
0.80000000	0.11479820
1.00000000	0.15723467
1.20000000	0.19495495

Resp Ratio = 1.87e-001 * Amt - 2.57e-002

Coef of Det (r^2) = 0.995 Curve Fit: Linear

<u>NOTE</u>: Method 8000 specifies a linearity criterion of 20% RSD. That criterion pertains to GC and HPLC methods other than GC/MS. Method 8260 requires 15% RSD as evidence of sufficient linearity to employ an average response factor.

Ref: EPA Method 8260B, section 7.3.8.2

In addition to the acceptance criteria found for each of the calibration models, it is recommended that each calibration model be inspected to ensure that the data are representative of the model chosen. This inspection is described in Sec. 11.5.5.1.

Ref: SW-846, Method 8000C, Section 11.5

11.5.5.1 Re-fitting the calibration data back to the model or calculating the % difference is determined by using the following equation:

$$\% \text{ Difference} = \frac{C_c - C_e}{C_e} \times 100$$

where:

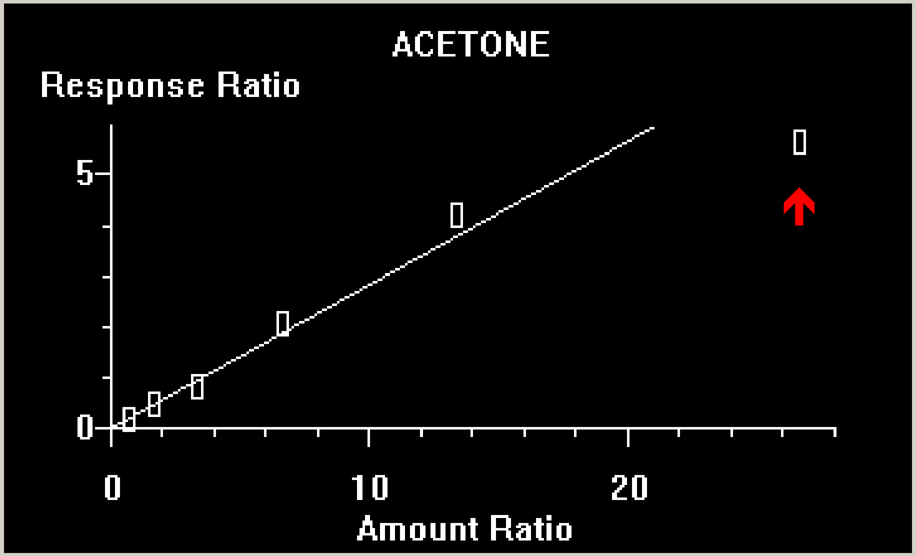
C_c = Calculated amount of standard, in mass or concentration units.

C_e = Expected amount of standard, in mass or concentration units.

The absolute value of the percent difference between these two amounts for every calibration level should be less than or equal to 20%.

Ref: SW-846, Method 8000C, Section 11.5.5.1

t Calibration Curve

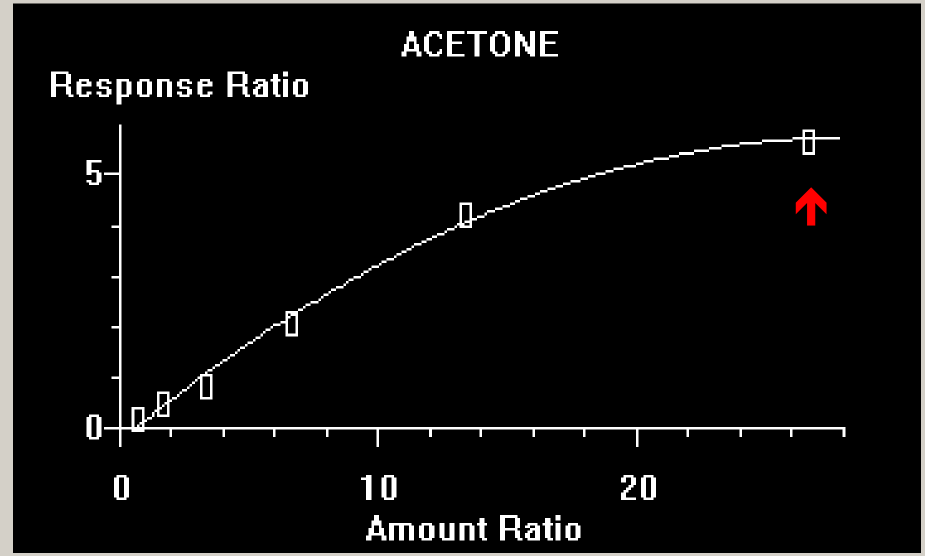


Amount Ratio	Response Ratio
1.66666667	0.50078389
3.33333333	0.82426608
6.66666667	2.06536167
13.33333333	4.21427645
26.66666667	5.65280451
0.66666667	0.20453820

Resp Ratio = 2.82e-001 * Amt

RF Rel Std Dev = 15.0%   Curve Fit: Avg RF

t Calibration Curve



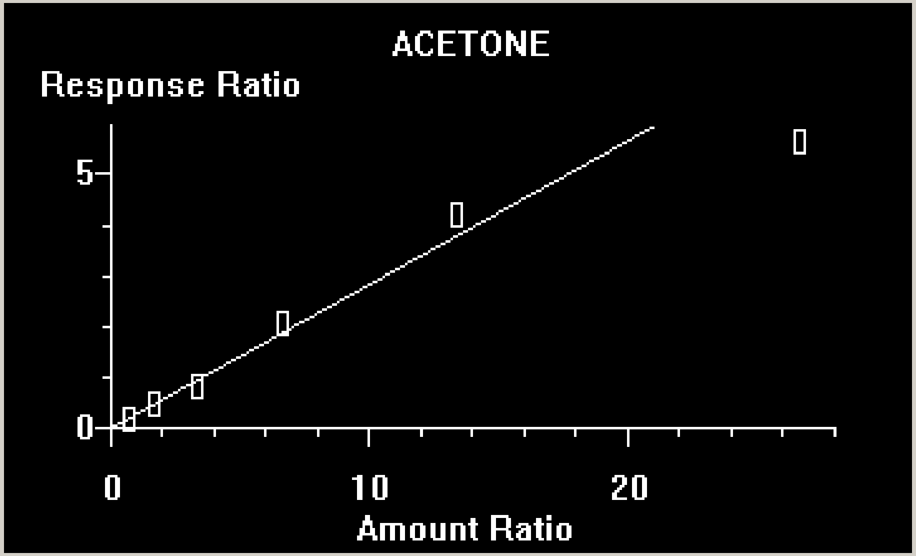
Amount Ratio	Response Ratio
1.66666667	0.50078389
3.33333333	0.82426608
6.66666667	2.06536167
13.33333333	4.21427645
26.66666667	5.65280451
0.66666667	0.20453820

R = -7.34e-003 A*A + 4.18e-001 A - 2.45e-001

Coef of Det (r^2) = 0.994   Curve Fit: Quadratic

Both Pass 8260B Criteria However Problems With High Standard

t Calibration Curve

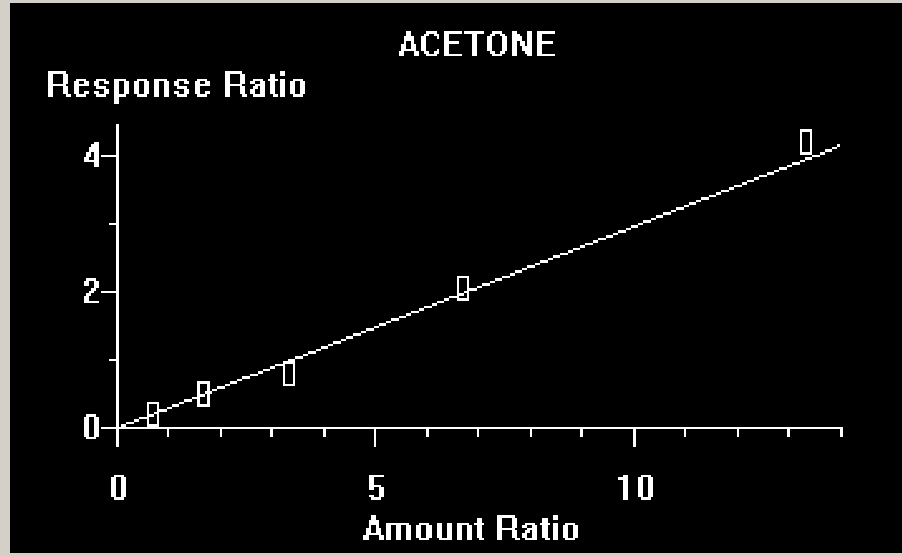


Amount Ratio	Response Ratio
1.66666667	0.50078389
3.33333333	0.82426608
6.66666667	2.06536167
13.33333333	4.21427645
26.66666667	5.65280451
0.66666667	0.20453820

Resp Ratio = 2.82e-001 * Amt

RF Rel Std Dev = 15.0%   Curve Fit: Avg RF

t Calibration Curve



Amount Ratio	Response Ratio
1.66666667	0.50078389
3.33333333	0.82426608
6.66666667	2.06536167
13.33333333	4.21427645
0.66666667	0.20453820

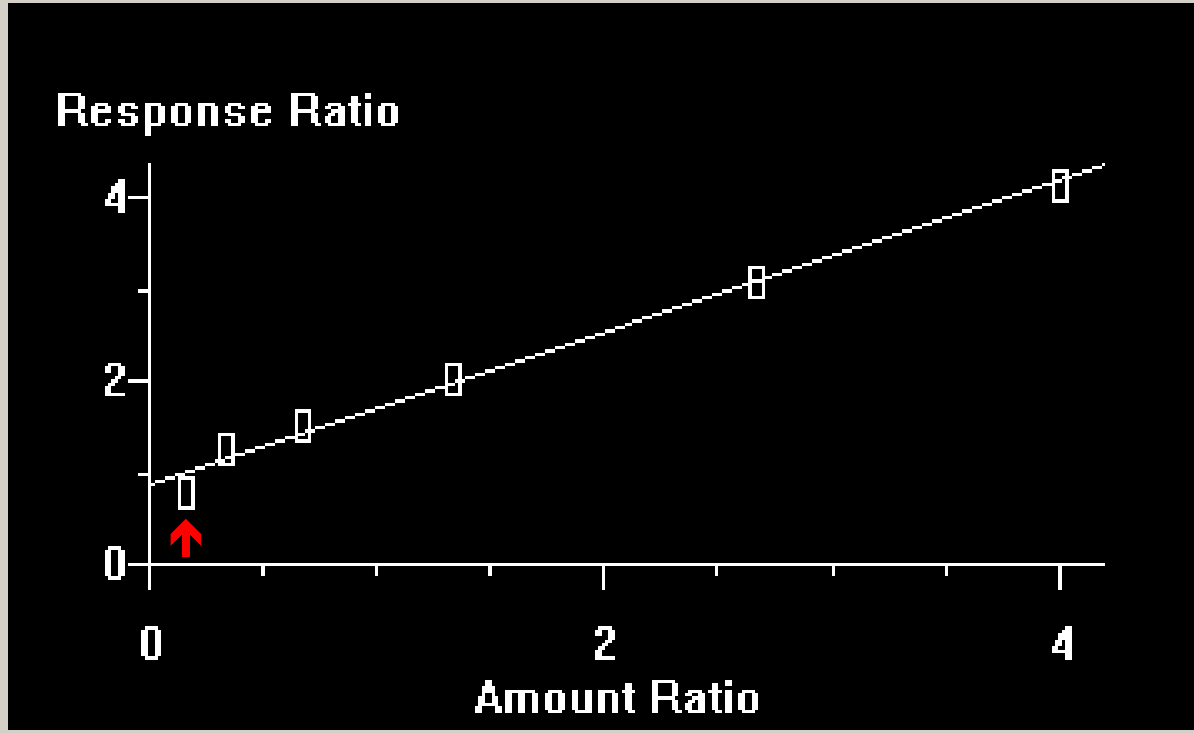
Resp Ratio = 2.96e-001 * Amt

RF Rel Std Dev = 9.4%   Curve Fit: Avg RF

Dropping The High Standard

Possible Bias On Lower Calibration Points From A Linear Regression Curve Model

t Calibration Curve

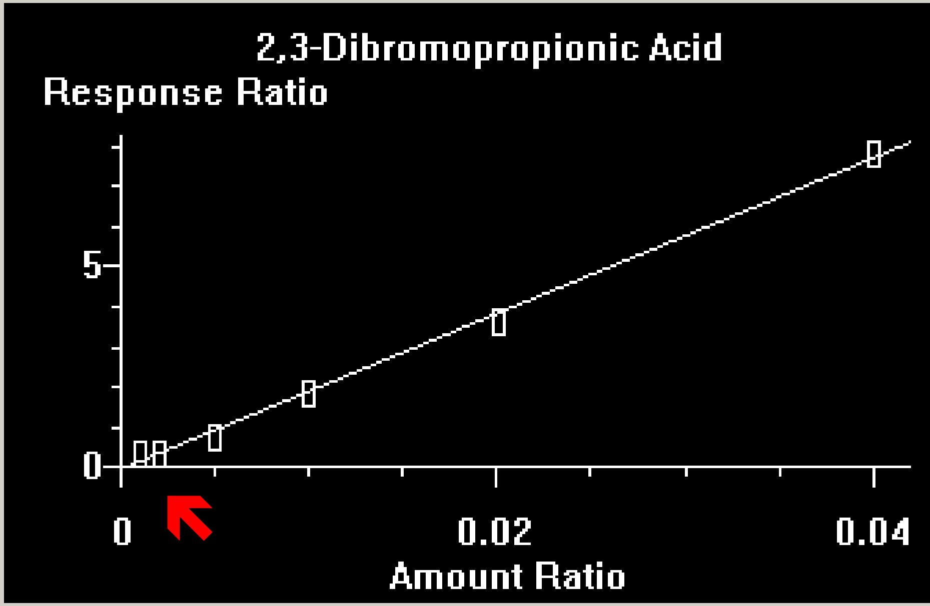


Amount Ratio	Response Ratio
0.16666667	0.80000000
0.33333333	1.26666667
0.66666667	1.53333333
1.33333333	2.03333333
2.66666667	3.06666667
4.00000000	4.13333333

Resp Ratio = 8.19e-001 * Amt + 8.87e-001

Coef of Det (r^2) = 0.990 Curve Fit: Linear

t Calibration Curve

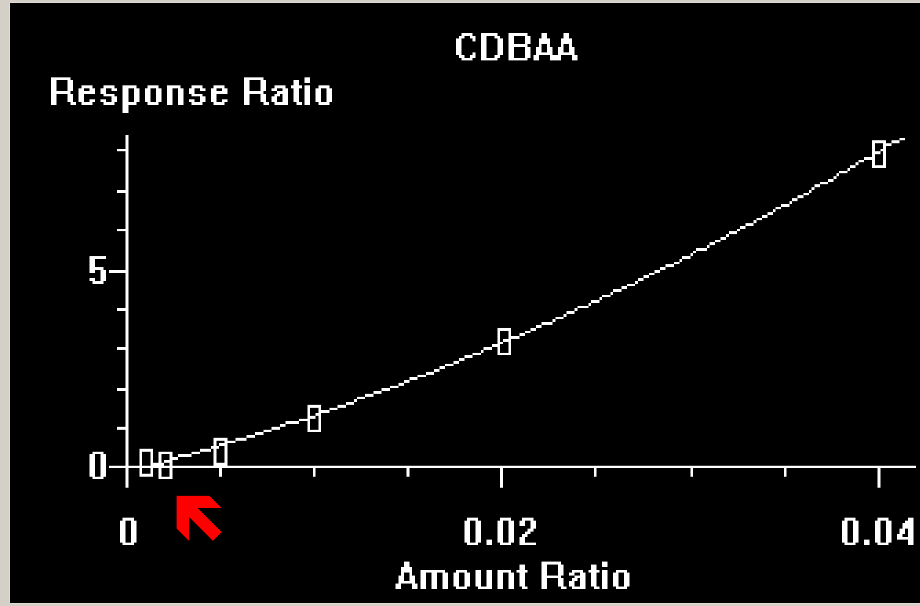


Amount Ratio	Response Ratio
0.00100000	0.37574992
0.00200000	0.34124722
0.00500000	0.78283251
0.01000000	1.85402583
0.02000000	3.62955801
0.04000000	7.82171699

Resp Ratio = 1.94e+002 * Amt - 5.45e-002

Coef of Det (r^2) = 0.997 Curve Fit: Linear

Calibration Curve

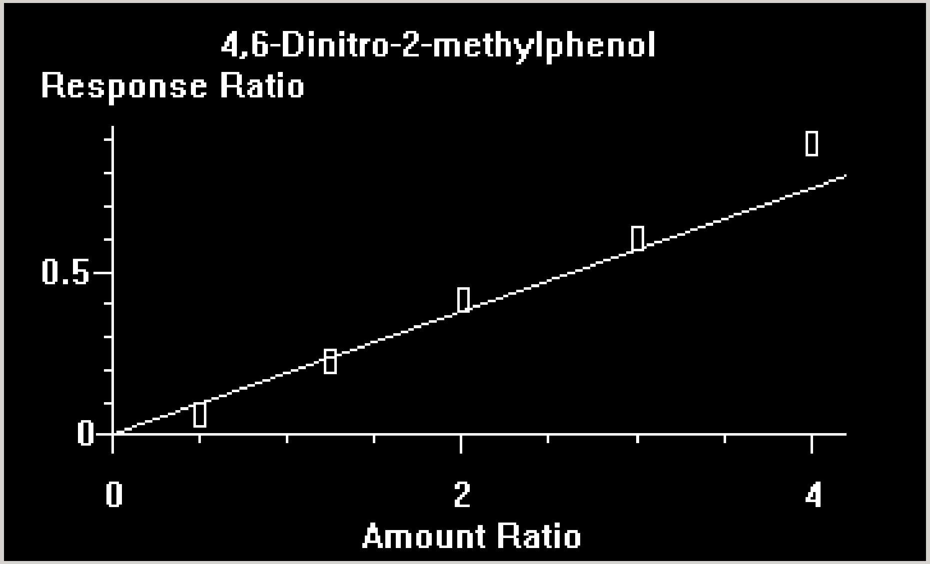


Amount Ratio	Response Ratio
0.00100000	0.12703862
0.00200000	0.09135492
0.00500000	0.41457116
0.01000000	1.24084806
0.02000000	3.22677675
0.04000000	7.94040903

R = 1.94e+003 A*A + 1.25e+002 A - 1.37e-001

Coef of Det (r^2) = 0.999 Curve Fit: Quadratic

Calibration Curve



Amount Ratio	Response Ratio
2.00000000	0.41394609
4.00000000	0.89421901
0.50000000	0.06071812
3.00000000	0.59957913
1.25000000	0.22991571

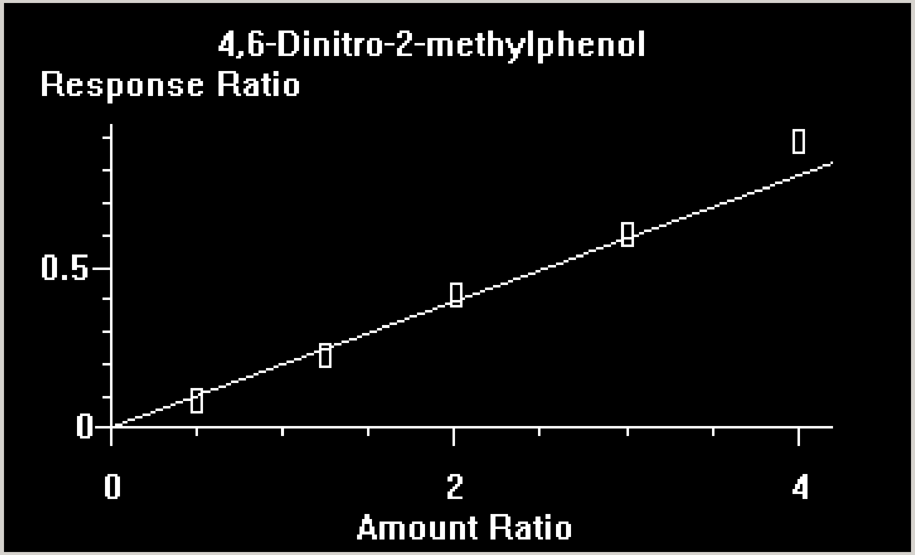
Resp Ratio = 1.87e-001 * Amt

RF Rel Std Dev = 21.1% Curve Fit: Avg RF

OK Print

Failing w/ Computer Integrations Using Average RF

t Calibration Curve



Amount Ratio	Response Ratio
2.00000000	0.41394609
4.00000000	0.89421901
0.50000000	0.08264594
3.00000000	0.59957913
1.25000000	0.22991571

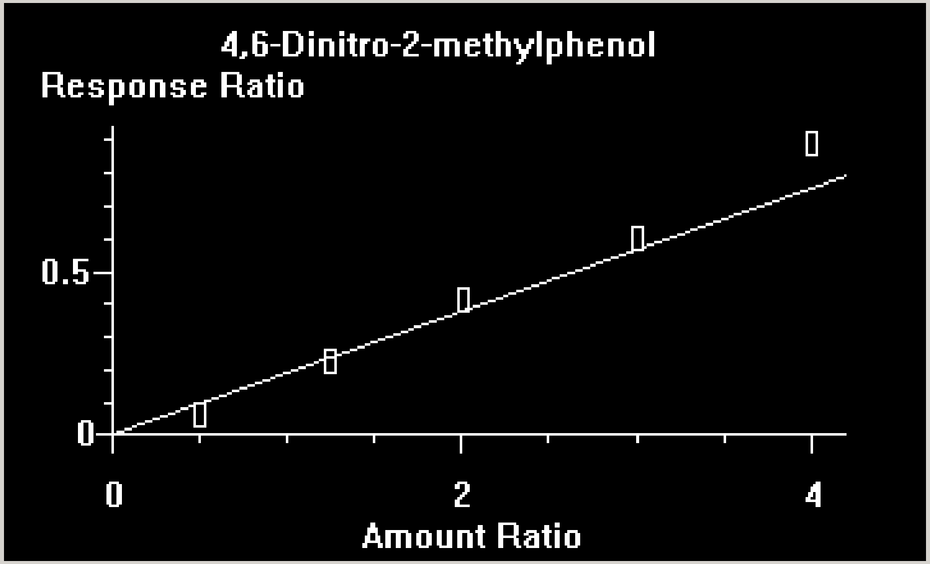
Resp Ratio = 1.96e-001 * Amt

RF Rel Std Dev = 11.4% Curve Fit: Avg RF

OK Print

Passing w/ Inappropriate "m" Integrations Using Average RF

Calibration Curve



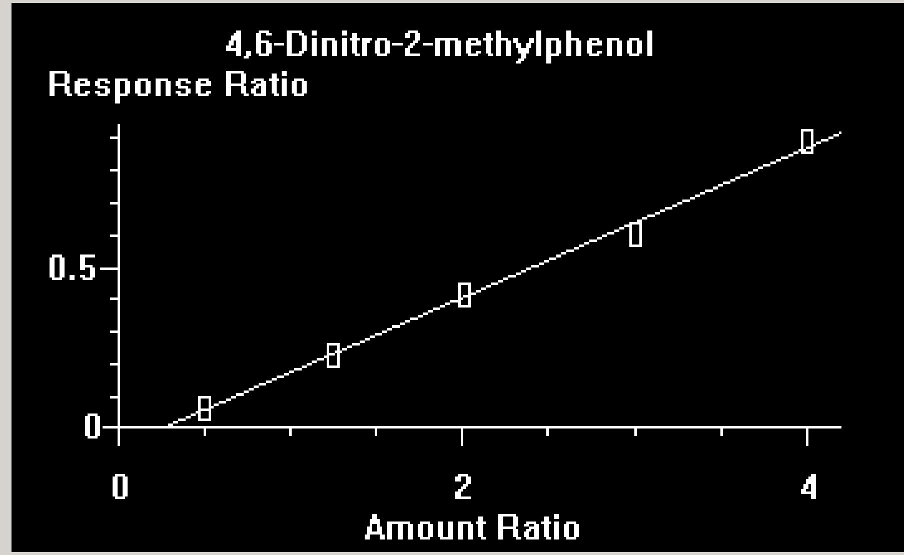
Amount Ratio	Response Ratio
2.00000000	0.41394609
4.00000000	0.89421901
0.50000000	0.06071812
3.00000000	0.59957913
1.25000000	0.22991571

Resp Ratio = 1.87e-001 * Amt

RF Rel Std Dev = 21.1% Curve Fit Avg RF

OK Print

t Calibration Curve



Amount Ratio	Response Ratio
2.00000000	0.41394609
4.00000000	0.89421901
0.50000000	0.06071812
3.00000000	0.59957913
1.25000000	0.22991571

Resp Ratio = 2.33e-001 * Amt - 6.15e-002

Coef of Det (r^2) = 0.995 Curve Fit: Linear

OK Print

Failing w/ Computer Integrations Using Average RF

Passing w/ Computer Integrations Using Linear Fit