14. Tables (referenced in Motion to Vacate)

Table 1a : July 2007 Training Exercises
S = July 2007 Mock Executions (n=5)
A = Failed Exercises
B = Successful Exercises
Sets
S={1,2,3,4,5}
A={2,3}
B={1,4,5}
Calculations
Probability of A occurring:
P(A)= 2/5 = .40 or 40%
Expected Value of x over n times where n=20 and p=.40
Expected number of failed exercises (x) for 20 mock executions (n=20) with a probability of .40 for a failure (p(x)=.40)
P(x)=np(x)=(20)(.40)=8
Thus we can expect 8 failed exercises out of 20 mock executions.
Expected Value of x over n times where n=40 and p=.40
P(x)=np(x)=(40)(.40)=16
Thus we can expect 16 failed exercises out of 40 mock executions.

Table 1b : August 2007 Training Exercises
S = August 2007 Mock Executions (n=7)
A = Failed Exercises
B = Successful Exercises
Sets
S={6,7,8,9,10,11,12}
A={8,10}
B={6,7,9,11,12}
Calculations
Probability of A occurring:
P(A)= 2/7 = .29 or 29%
Expected Value of x over n times where n=20 and p=.29
Expected number of failed exercises (x) for 20 mock executions (n=20) with a probability of .29 for a failure (p(x)=.29)
P(x)=np(x)=(20)(.29)=6
Thus we can expect 6 failed exercises out of 20 mock executions.
Expected Value of x over n times where n=40 and p=.29
P(x)=np(x)=(40)(.29)=12
Thus we can expect 12 failed exercises out of 40 mock executions.

Table 1c : July and August 2007 Training Exercises
S = July and August 2007 Mock Executions (n=12)
A = Failed Exercises
B = Successful Exercises
Sets
S={1,2,3,4,5,6,7,8,9,10,11,12}
A={2,3,8,10}
B={1,4,5,6,7,9,11,12}
Calculations
Probability of A occurring:
P(A)= 4/12 = .33 or 33%
Expected Value of x over n times where n=20 and p=.33
Expected number of failed exercises (x) for 20 mock executions (n=20) with a probability of .33 for a failure (p(x)=.33)
P(x)=np(x)=(20)(.33)=7
Thus we can expect 7 failed exercises out of 20 mock executions.
Expected Value of x over n times where n=40 and p=.33
P(x)=np(x)=(40)(.33)=13
Thus we can expect 13 failed exercises out of 40 mock executions.

Table 2: Florida Technical Anomalies
S = Prior Lethal Injection Executions (n=17)
A = Medical Examiner Reports with Technical Anomalies
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,20}
A = {2,3,4,7,10,20}
Calculations
Probability of A occurring
P(A) = 6/17 = .35 or 35%
Expected Value of x over n times where n=40 and p=.35
Expected number of technical anomalies (x) for 40 executions (n=40) with a probability of .35 for a failure (p(x)=.35)
P(x)=np(x)=(40)(.35)=14
Thus we can expect 14 technical anomalies out of 40 executions

Table 3a: Florida Historical Lethal Injection Execution Times
S = Prior Lethal Injection Executions (n=19)
A = Dr. Dershwitz Execution Time
B = A with +/- 1
C = S Event Greater than B
Sets
S={6,7,8,9,9,11,12,12,12,13,13,13,14,14,17,18,19,21,34}
A={11}
B={10,11,12}
C={13,13,13,14,14,17,18,19,21,34}
Calculations
***Probability of C occurring*:**
P(C) = 10/19 = .53 or 53%
Expected Value of x over n times where n=40 and p=.53
Expected number of executions over the (+/- 1) calculated execution time (x) for 40 executions (n=40) with a probability of .53 for a failure (p(x)=.53)
P(x)=np(x)=(40)(.53)= 21.2 or 21 events over B
Thus we can expect 21 executions to involve a lingering death out of 40 executions
Mean of event S
Σ(S)/size(S)= 262/19 = 13.8
Note: Based on a hypothesis test comparing the mean length of execution in the above sample with the 11 minute duration taken from Dr. Dershwitz's testimony and using an *alpha* of .10, there is evidence that the difference is statistically significant. The difference is also practical according to Cohen's *d*.

Table 3b: Florida Historical Lethal Injection Execution Times *t* Test

H_0: $\mu=11$
H_a: $\mu>11$

Data set: {6,7,8,9,9,11,12,12,12,13,13,13,14,14,17,18,19,21,34}
$\bar{X}$ = 13.79 s=6.33
t=(13.79-11)/(6.33/√19)=1.92
Based on the above t-test, there is sufficient evidence to conclude that the mean of the population is statistically significantly higher than the claim of 11 minutes made by Dr. Derschwitz (t=1.92, p=.035).
Skew=3($\bar{X}$ -median)/s=13.79-13)/6.33=0.37
Based on the above skew formula, the population distribution from which this sample was taken is normally distributed with a mean of 13.79 and standard deviation of 6.33. As shown on the chart below, the probability that the time will be greater than 11 minutes is .83. This means that it is reasonable to predict that 83% of future events will take longer than 11 minutes. 34% will take between 13.79 and 20.12 minutes and 16% will take more than 20.12 minutes.
(top 25% take more than 17 minutes)

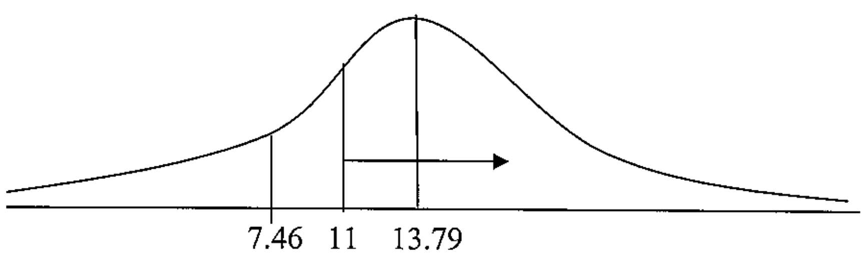

Table 4: Florida Myoclonic or Other Observable Movements
S = All Lethal Injection Executions in Florida (n=20)
A = Lethal Injection Executions with Observable Myoclonic Events or Movements During the Sequence
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20}
A = {2,4,6,7,9,19,20}
Calculations
***Probability of A occurring*:**
P(A) = 7/20 = .35 or 35%
Expected Value of x over n times where n=40 and p=.35
Expected number of executions with myoclonic events (x) for 40 executions (n=40) with a probability of .35 for a failure (p(x)=.35)
P(x)=np(x)=(40)(.35)= 14
Thus we can expect 14 executions with observable myoclonic events during the injection sequence out of 40 executions

Table 5: Florida Executions with the Presence of Two or More Anomalies
S = All Lethal Injection Executions in Florida (n=20)
A = Executions with Two Anomalies
B = Executions with Three Anomalies
C = A U B
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20}
A = {2,3,4,9,10,19}
B = {7,20}
C = {2,3,4,7,9,10,19,20}
Calculations
***Probability of C occurring*:**
P(C) = 8/20 = .40 or 40%

Table 6: Ohio Technical Anomalies
S = Prior Lethal Injection Executions (n=25)
A = Logs & Reports with Technical Anomalies
Sets
S = {1,2,3,4,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26}
A = {1,6,7,10,12,14,17,18,21,22,25,26}
Calculations
Probability of A occurring
P(A) = 12/25 = .48 or 48%
Expected Value of x over n times where n=50 and p=.48
Expected number of technical anomalies (x) for 50 executions (n=50) with a probability of .48 for a failure (p(x)=.48)
P(x)=np(x)=(50)(.48)=24
Thus we can expect 24 technical anomalies out of 50 executions.

Table 7a: Ohio Historical Lethal Injection Execution Times (1999-May 2006)
S = Prior Lethal Injection Executions (n=20)
A = Dr. Dershwitz Execution Time
B = A with +/- 1
C = S Event Greater than B
Sets
S={4,4,5,5,5,6,6,6,6,6,7,7,7,7,7,7,7,8,8,53}
A={5}
B={4,5,6}
C={7,7,7,7,7,7,7,8,8,53}
Calculations
Probability of C occurring:
P(C) = 10/20 = .50 or 50%
Expected Value of x over n times where n=50 and p=.50
Expected number of executions over the (+/- 1) calculated execution time (x) for 50 executions (n=50) with a probability of .50 for a failure (p(x)=.50)
P(x)=np(x)=(50)(.50)= 25 or 25 events over B
Thus we can expect 25 executions to involve a lingering death out of 50 executions.
Mean of event S
Σ(S)/size(S)= 171/20 = 8.6
Note: Based on a hypothesis test comparing the mean length of execution in the above sample with the 5 minute duration taken from Dr. Dershwitz's testimony and using an *alpha* of .10, there is evidence that the difference is statistically significant. The difference is also practical according to Cohen's *d*.

Table 7b: Ohio Historical Lethal Injection Execution Times (July 2006-2007)
S = Prior Lethal Injection Executions (n=5)
A = Dr. Dershwitz Execution Time with Flush Assessment Replacement
B = A with +/- 1
C = S Event Greater than B
Sets
S={8,9,9,10,16}
A={7}
B={6,7,8}
C={9,9,10,16}
Calculations
Probability of C occurring:
P(C) = 4/5 = .80 or 80%
Mean of event S
Σ(S)/size(S)= 52/5 = 10.4

Table 8: Ohio Myoclonic or Other Observable Movements
S = All Lethal Injection Executions in Ohio (n=26)
A = Lethal Injection Executions with Observable Myoclonic Events or Movements During the Sequence
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26}
A = {6,17,21,26}
Calculations
Probability of A occurring:
P(A) = 4/26 = .15 or 15%
Expected Value of x over n times where n=50 and p=.15
Expected number of executions with myoclonic events (x) for 50 executions (n=50) with a probability of .15 for a failure (p(x)=.15)
P(x)=np(x)=(50)(.15)= 7.5
Thus we can expect 8 executions with observable myoclonic events during the injection sequence out of 50 executions.

Table 9: Ohio Executions with the Presence of Two or More Anomalies
S = Lethal Injection Executions in Ohio (n=25)
A = Executions with Two Anomalies
B = Executions with Three Anomalies
C = A U B
Sets
S = {1,2,3,4,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26}
A = {10,12,14,17,18,22,25}
B = {6,21,26}
C = {6,10,12,14,17,18,21,22,25,26}
Calculations
Probability of C occurring:
P(C) = 10/25 = .40 or 40%

Table 10: Georgia Technical Anomalies
S = Prior Lethal Injection Executions (n=17)
A = Logs & Reports with Technical Anomalies
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17}
A = {1,2,3,4,6,7,10,11,12,13,14,15,17}
Calculations
Probability of A occurring
P(A) = 13/17 = .76 or 76%
Expected Value of x over n times where n=40 and p=.76
Expected number of technical anomalies (x) for 40 executions (n=40) with a probability of .76 for a failure (p(x)=.76)
P(x)=np(x)=(40)(.76)=30.4
Thus we can expect 30 technical anomalies out of 40 executions.

Table 11: Georgia Historical Lethal Injection Execution Times
S = Prior Lethal Injection Executions (n=15)
A = Dr. Dershwitz Execution Time
B = A with +/- 1
C = S Event Greater than B
Sets
S={7,7,8,9,10,10,10,10,10,10,11,12,12,12,16}
A={9}
B={8,9,10}
C={11,12,12,12,16}
Calculations
Probability of C occurring:
P(C) = 5/15 = .33 or 33%
Expected Value of x over n times where n=40 and p=.33
Expected number of executions over the (+/- 1) calculated execution time (x) for 40 executions (n=40) with a probability of .33 for a failure (p(x)=.33)
P(x)=np(x)=(40)(.33)= 13 or 13 events over B
Thus we can expect 25 executions to involve a lingering death out of 50 executions.
Mean of event S
Σ(S)/size(S)= 154/15 = 10.3

Table 12: Georgia Myoclonic or Other Observable Movements
S = All Lethal Injection Executions in Ohio (n=17)
A = Lethal Injection Executions with Observable Myoclonic Events or Movements During the Sequence
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17}
A = {2,10,11,17}
Calculations
Probability of A occurring:
P(A) = 4/17 = .24 or 24%
Expected Value of x over n times where n=40 and p=.24
Expected number of executions with myoclonic events (x) for 40 executions (n=40) with a probability of .24 for a failure (p(x)=.24)
P(x)=np(x)=(40)(.24)= 9.6
Thus we can expect 10 executions with observable myoclonic events during the injection sequence out of 40 executions.

Table 13: Georgia Executions with the Presence of Two or More Anomalies
S = Lethal Injection Executions in Ohio (n=17)
A = Executions with Two Anomalies
B = Executions with Three Anomalies
C = A U B
Sets
S = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17}
A = {6,10,11,13}
B = {2,17}
C = {2,6,10,11,13,17}
Calculations
Probability of C occurring:
P(C) = 6/17 = .35 or 35%