ATTACHMENT E

AVERAGE CEA DROP TIME CONCEPT

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by

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1.0 INTRODUCTION

The analysis method for increasing the time between the measured CEA* drop time and the CEA drop time Technical Specification value is to credit the measured spatial distribution of CEA's about an average position as opposed to the present safety analysis assumption that all CEA's are at the same axial height as the slowest CEA. The present safety analyses assume that all CEA's drop into the core during a scram at the same time and at the same rate. The drop time is assumed to be that of the slowest CEA. However, the worth of a CEA is a function of the power or neutron flux environment surrounding the CEA. Therefore, the negative reactivity insertion for a distribution of CEA's is more directly correlated to, and can be represented by, the average CEA insertion rather than by the slowest CEA.

The proposed method is based on the use of the average CEA position. A set of 3D HERMITE space-time calculations were performed to confirm that the same negative reactivity will be inserted for the case of the CEA's distributed about an average CEA position (the "distributed" case) as the "window shade" case for which all CEA's are assumed to be positioned at the same average CEA position. These 3D HERMITE cases were chosen to cover the range of operating conditions and the limits of the as-measured CEA distributions. From the results of these cases, it is concluded that the "distributed" case will provide the same amount of negative reactivity insertion as the "window shade" case. Therefore, the Technical Specification can be changed from the maximum drop time of all CEA's to the average drop time of all the CEA's. To ensure that the safety analyses remain valid for an average CEA drop time Technical Specification, a limit is placed on the distribution of the CEA's. This limit is expressed as a maximum drop time for the slowest CEA in the revised Technical Specification to restrict the CEA drop time distribution to that covered by these analyses.

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* The present and proposed CEA drop time Technical Specification addresses only full length CEA's. Part length CEA's are not included in the safety analyses and thus are not included in the drop time test.

2.0 PRESENT SAFETY ANALYSIS

Figure 2.1 shows the logic diagram of the pertinent safety analysis data used to support the revision of the CEA drop time Technical Specification from 3.0 to 3.2 seconds discussed in Reference 1 and approved by the NRC in Reference 2. The same methods are used in the safety analyses needed to support the proposed three average CEA drop times of 3.0, 3.2 and 3.4 seconds, presented in Attachment . Of interest are the three "icons" of Figure 2.1 representing the space-time scram curves, the CEA drop time curve and the time dependent space-time reactivity insertion data. Figure 2.2 illustrates a typical space-time scram curve generated using FIESTA or 1D HERMITE, References 3 and 4 respectively. A family of scram curves was generated parametric in initial axial shape index (ASI), total scram worth and time in cycle to bound the range of operating conditions. A CEA position versus time curve, Figure 2.3, was generated based on measured data from the August, 1988 CEA drop time testing. The Technical Specification basis is that the safety analysis curve bounds all CEA drop times at 90% insertion. Any individual CEA drop time greater than 3.2 seconds is not considered acceptable. The scram curves and the CEA drop time curve are combined to provide the time dependent normalized space-time reactivity insertion during the transient of interest, Figure 2.4. This curve is combined with the total static scram worth (All Rods In (ARI) minus Worst Rod Stuck Out (WSO)) as calculated by ROCS, Reference 5. Inherent in the SONGS-2/3 safety analyses is the assumption that the time dependent negative reactivity insertion is governed by the slowest CEA. Hence, the Technical Specification requirement that <u>all</u> CEA's fall within the 3.2 second drop time at 90% insertion. This assumption will be modified to expand the margin between the measured and safety analysis CEA drop time.

3.0 MEASURED DATA

Figure 3.1 shows the (arithmetic) average position of all the CEA's as well as the maximum and minimum envelopes based upon the detailed SONGS-3 Cycle 4 CEA drop time testing data from the August, 1988 test provided in Appendix A. The envelopes are <u>not</u> derived from the slowest and fastest

CEA, but rather the maximum and minimum position of all the CEA's at each time point. Individual CEA drop times relative to the average drop time of all the CEA's are presented in Figure 3.2 at several average CEA positions: 1%, 25%, 50%, 75% and 90% inserted.

4.0 AVERAGE DROP TIME METHOD

The present safety analyses assume that all CEA's drop into the core during a scram at the same time and at the same rate. The drop time is assumed to be governed by the slowest CEA. However, the worth of a CEA is a direct function of the power or neutron flux environment surrounding the CEA. Consequently, the worth of all the CEA's at any time during the scram depends on the average flux level seen by all the CEA's. During the critical part of the scram the lead or faster CEA's will be in higher axial flux regions and will make a greater relative contribution to the net negative reactivity scram worth inserted than the slower or lagging CEA's. Therefore, the negative reactivity insertion for any reasonable distribution of CEA's is more directly correlated to, and can be represented by, the average CEA insertion rather than by the slowest. Based on the measured data the CEA's do not scram at the same time and at the same rate but have a spatial distribution about the average.

The proposed method uses the average CEA drop time. The appropriateness of the use of the average drop time was confirmed by performing a set of 3D HERMITE space-time calculations. These show that the same negative reactivity will be inserted for the case of the CEA's distributed about an average CEA position (the "distributed case") as for the case for which all CEA's are assumed to be positioned at the average CEA position (the "window shade case").

Typically 1D analysis methods are used to calculate the CEA reactivity insertion during a scram. This is an acceptable simplification for "window shade" modeling of the CEA insertion. However, 3D methods are needed to model the CEA spatial distributions of the "distributed" case.

These calculations are performed using 3D HERMITE space time methods, as opposed to static methods using ROCS, because the 1D scram curves used in the present analyses are based on space-time calculations. The differences between static and space-time calculations are illustrated in Figures 4.1 and 4.2. Figure 4.1 shows the prompt axial neutron distribution calculated by space-time methods during a scram. This is the same shape and response as a static calculation which assumes that the neutrons have reached equilibrium for each time point. The delayed neutron distribution is presented in Figure 4.2. The delayed neutron flux does not shift towards the bottom of the core in response to the CEA insertion as rapidly as the prompt component. In addition the magnitude does not drop off as quickly. It is the time dependent representation of the delayed neutron shape during a scram that results in a faster power reduction in the space-time calculations.

These 3D HERMITE cases are a one time analysis to demonstrate that the use of the average CEA drop time is conservative with respect to the use of the measured CEA drop time distribution, and thus to support the redefinition of the CEA drop time Technical Specification to that based on the average CEA drop time.

The 3D HERMITE analyses do not affect the safety analyses of Figure 2.1 and Attachment which will continue to use the 1D space-time scram curves (assumes "window shade" distribution), the static ARI-WRSO scram worth (assumes a "window shade" distribution), and the same CEA insertion versus time curve. However, the definition of the CEA insertion curve and what the CEA drop test measures will change from "maximum" to "average".

5.0 HERMITE CODE

The HERMITE code was developed at Combustion Engineering for the analysis of design and off-design transients in large PWR's by means of a finite element numerical solution to the multi-dimension, few-group time dependent (space-time) neutron diffusion equation including CEA motion and the feedback effects of fuel temperature, moderator temperature, moderator

density and xenon. A topical report (Reference 4) describing the code, its input and verification was submitted to the Nuclear Regulatory Commission (NRC) in March 1976. Submittal was made at the same time as a separate C-E topical report on the CEA ejection accident (Reference 6). NRC approval for both topical reports was obtained in July, 1976.

Since the HERMITE Topical Report was approved, the code has undergone a number of incremental improvements and has been applied to a variety of analyses. Key improvements include the addition of the Nodal Expansion Method (NEM) neutronics (Reference 5) and the inclusion of the TORC Thermal-Hydraulic calculation (Reference 7). NEM was used for this analysis but the TORC calculation was not.

HERMITE (including NEM and TORC) has been applied over the years in a variety of specific licensing analyses on specific dockets. The major applications have included one-dimensional space-time calculations for the loss of flow accident (SONGS-2/3, Waterford-3 and Palo Verde-1/2/3), three-dimensional calculations for the steam line break accident (SONGS-2/3, Waterford-3, Calvert Cliffs-1/2 and St. Lucie-2), and two-dimensional analysis of asymmetric steam generator events (SONGS-2/3, Waterford-3, Palo Verde-1/2/3).

6.0 CASE SELECTION

Three sets of cases were chosen to demonstrate, for the range of operating conditions, that the "distributed" case provides essentially the same time dependent reactivity insertion as the "window shade" case.

The first set of demonstration cases ("window shade" case and "distributed" case) was performed at nominal operating conditions; beginning of cycle (BOC), hot full power (HFP), equilibrium thermal hydraulic and xenon conditions and BOC neutron kinetic parameters. The HERMITE cases are run as a quarter core model. The CEA position versus time data for the quarter core model were derived from the full core CEA drop time testing data. As illustrated in Figure 6.1 each quarter core CEA location in HERMITE used

the average of the four full core symmetric CEA drop time test times*. The HERMITE CEA position data is shown in Figure 6.2 which is comparable in form and scale to Figure 3.2.

The second set of cases was run to show the sensitivity of the results to a change in neutron kinetic parameters. The consistent set of BOC neutron kinetic parameters, delayed neutron generation half lives (λ) and the delayed neutron yield fractions (β), were used in the first case. This second set of cases maintains the same CEA position versus time data (Figure 6.2) and the BOC conditions as the first case except EOC β's and λ's were used.

A third set of cases was run to show the sensitivity of the distributed case to the spatial distribution of the CEA's about the average. Narrowing the scatter of the distribution will only force the "distributed" case to look more like the "window shade" case. Therefore, the distribution was expanded to increase the time between the fastest and slowest CEA. Again the as-measured CEA drop time data was used as a basis for expanding the distribution. The expanded distribution is presented in Figure 6.3 using a form and scale comparable with Figures 6.2 and 3.2. The third set of cases used the same initial conditions as the second set of cases.

7.0 HERMITE RESULTS

The results from all three sets of cases discussed in the previous section are presented in Figures 7.1, 7.2, and 7.3, respectively. In each set, the "distributed" case provides the same time dependent reactivity insertion as the "window shade" case to within the input modeling and code uncertainties. The results are presented as core power versus time instead of the usual reactivity versus time because the core power reduction is the effect of greatest interest in the safety analyses.

From the results of the three sets of cases, it is concluded that, for the family of CEA drop time distributions, that bound the SONGS-2/3 as-measured

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* The center CEA in HERMITE used the actual full core center CEA measured data and the HERMITE CEA location 52 used the average of the two diagonally opposed full core CEA's 91 and 127.

distribution, Figure 3.2, the "distributed" case will provide the same core power reduction (negative reactivity insertion) as the "window shade" case.

8.0 BASIS FOR AVERAGE CEA DROP TIME

Figure 8.1 presents the basis for the average CEA drop time Technical Specification. The safety analysis CEA drop time curve used in Attachment (for 3.2 seconds at 90% inserted) is shown as the solid line. However, it is now the average drop time of all the CEA's rather than a curve that bounds the drop time of all the CEA's. The 3D HERMITE space-time analyses presented in this report show that the "distributed" case provides the same time dependent reactivity insertion as the "window shade" case. This is true for any family of CEA distributions similar to those measured at SONGS-2/3. However, if the distance between the fastest and slowest CEA's becomes too large or the distribution of CEA's deviates significantly from that modeled in this study, then the average CEA position (window shade) may not be representative of the time dependent reactivity insertion. To ensure that the safety analyses remain valid for an average CEA drop time Technical Specification, a limit is placed on the CEA drop time distribution. This will be expressed as a maximum drop time limit on the slowest CEA in the revised Technical Specification. The dashed line in Figure 8.1 is the "maximum" drop time curve and is based on the maximum envelope presented in Figure 3.1. For comparison purposes the as-measured average CEA drop time curve is also shown in Figure 8.1.

9.0 FUTURE SAFETY ANALYSES

For future reload analyses (including the analyses presented in Attachment), the safety analysis methodology will be unchanged from the present methods as discussed in Section 2.0 of this attachment except that the CEA drop time will be characterized by the average, consistent with the revised Technical Specification. As discussed in Attachment , any adjustments to CPC or COLSS addressable constants will still be determined consistent with the methodology presented in Reference 1.

As shown in Figure 9.1, what will change for future reloads is the criteria for the CEA drop time test. Instead of the present maximum CEA drop time of 3.2 seconds at 90% inserted, the new criteria will have three maximum drop times of 3.2, 3.4 and 3.6 seconds at 90% inserted and corresponding average drop times of 3.0, 3.2 and 3.4 seconds at 90% inserted. The new average CEA drop time criteria are shown in Figure 9.2.

The 3D HERMITE methods were used to verify the average CEA drop time concept. That is, the time dependent reactivity insertion of a "window shade" scram at the average CEA drop time will provide the same reactivity insertion as the more realistic "distributed" case about the same average. Cycle specific reverification is not required as long as the fuel management and CEA drop time characteristics are not significantly changed. Any fuel management change that significantly affects the core-wide axial or radial power profiles, such as axial blankets or ultra-low leakage fuel management, may necessitate reverification of the average CEA drop time analysis. Changes that would significantly affect the CEA drop time distribution, such as changes to the CEDM circuits, large increases in the core flow pressure drop, changes in the total drop weight of the CEA's or changes in the location of the CEA's, may also require reverification. Barring these type of changes or failure to meet the new Technical Specification limits, reverification of the average drop time analysis will not be required on a cycle-by-cycle basis.

10.0 REFERENCES

1. Proposed Change Number (PCN) 263, SCE letter of June 14, 1988, as supplemented by letters dated July 13 and July 25, 1988.

2. Donald E. Hickman (NRC) to Kenneth P. Baskin (SCE), "Issuance of Amendent NO. 65 to Facility Operating License NPF-10 and Amendent NO. 54 to Facility Operating License NPF-15 San Onofre Nuclear Generating Station, Units 2 and 3 (TACS 68425 and 68426)," August 10, 1988

3. "FIESTA A One Dimensional, Two Group Space-Time Kinetics Code For Calculating PWR Scram Reactivities, "CEN-122(F), November, 1979.

4. "HERMITE A Multi-Dimensional Space-Time Kinetics Code for PWR Transients," CENPD-188-P-A, July 1976.

5. "The ROCS & DIT Computer Codes For Nuclear Design," CENPD-266-P-A, April 1983.

6. "CEA Ejection Analysis," CENPD-190-P-A, July, 1976.

7. "TORC Code A Computer Code for Determining the Thermal Margin of a Reactor Core," CENPD-161-P, July 1975.

SAFETY ANALYSIS FLOW CHART
FOR CURRENT CEA DROP TIME ANALYSIS

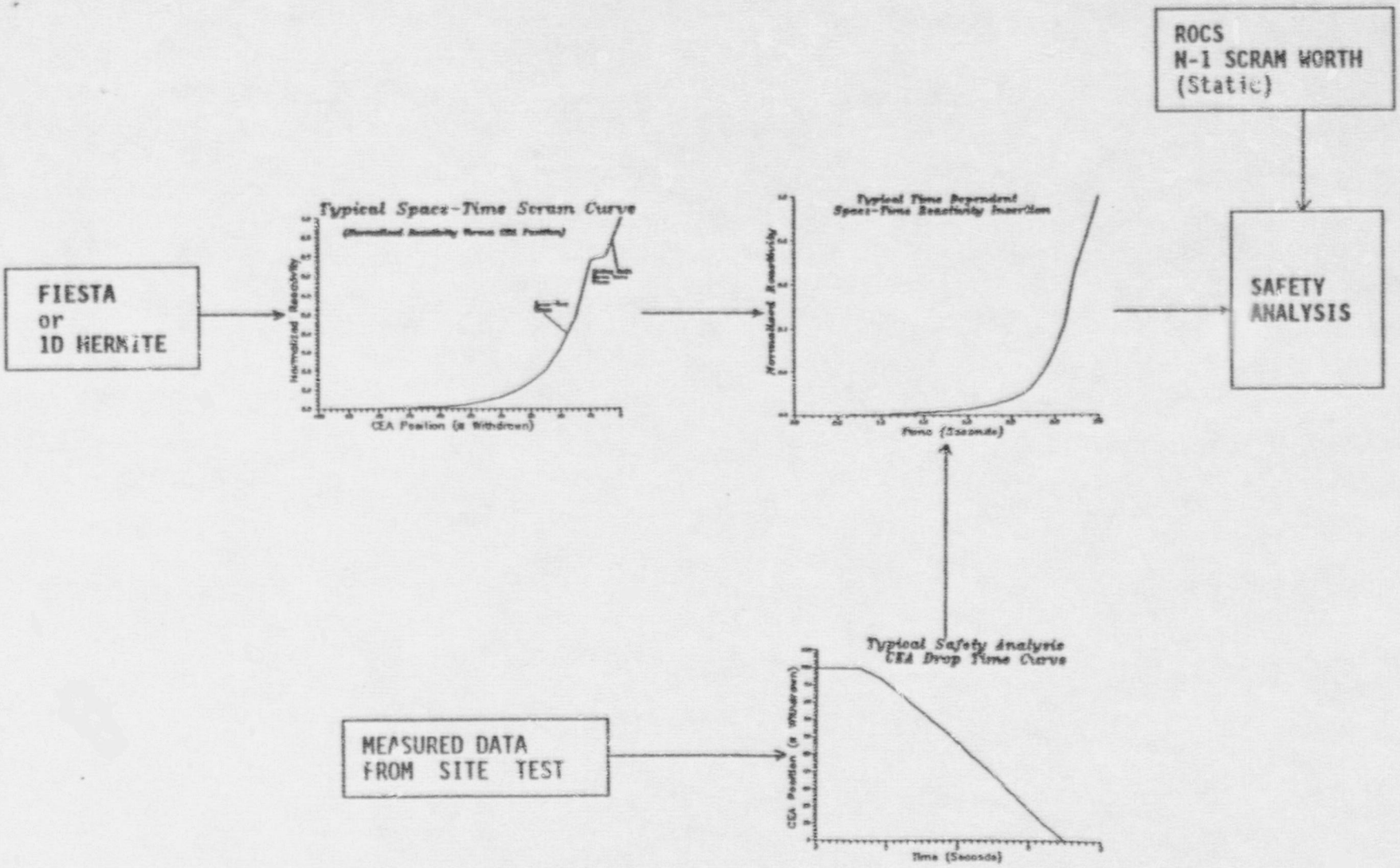


FIGURE 2.1

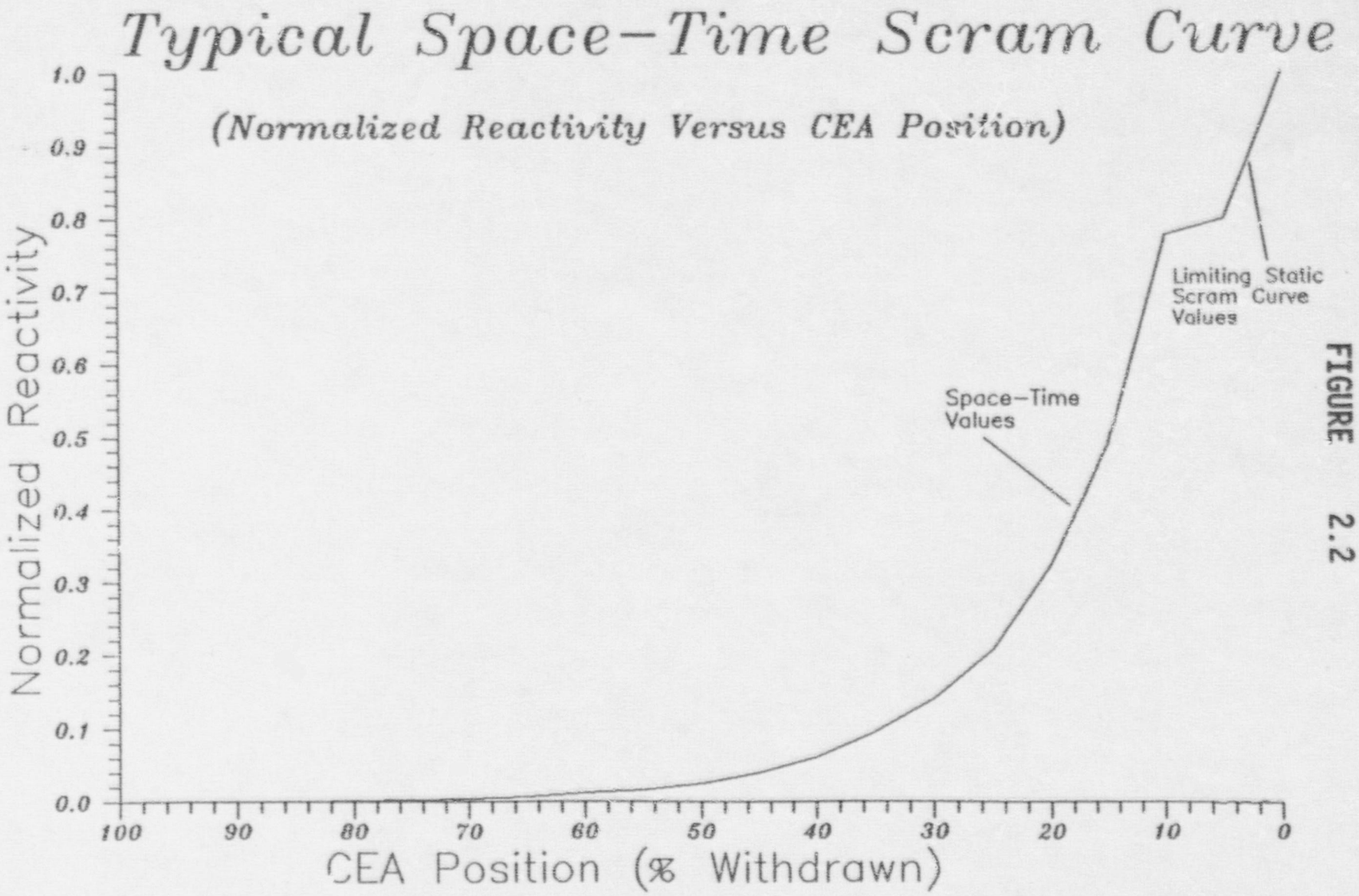

Typical Space-Time Scram Curve
(Normalized Reactivity Versus CEA Position)
Normalized Reactivity
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
100
90
80
70
60
50
40
30
20
10
0
CEA Position (% Withdrawn)
Space-Time Values
Limiting Static Scram Curve Values

FIGURE 2.2

FIGURE 2.3

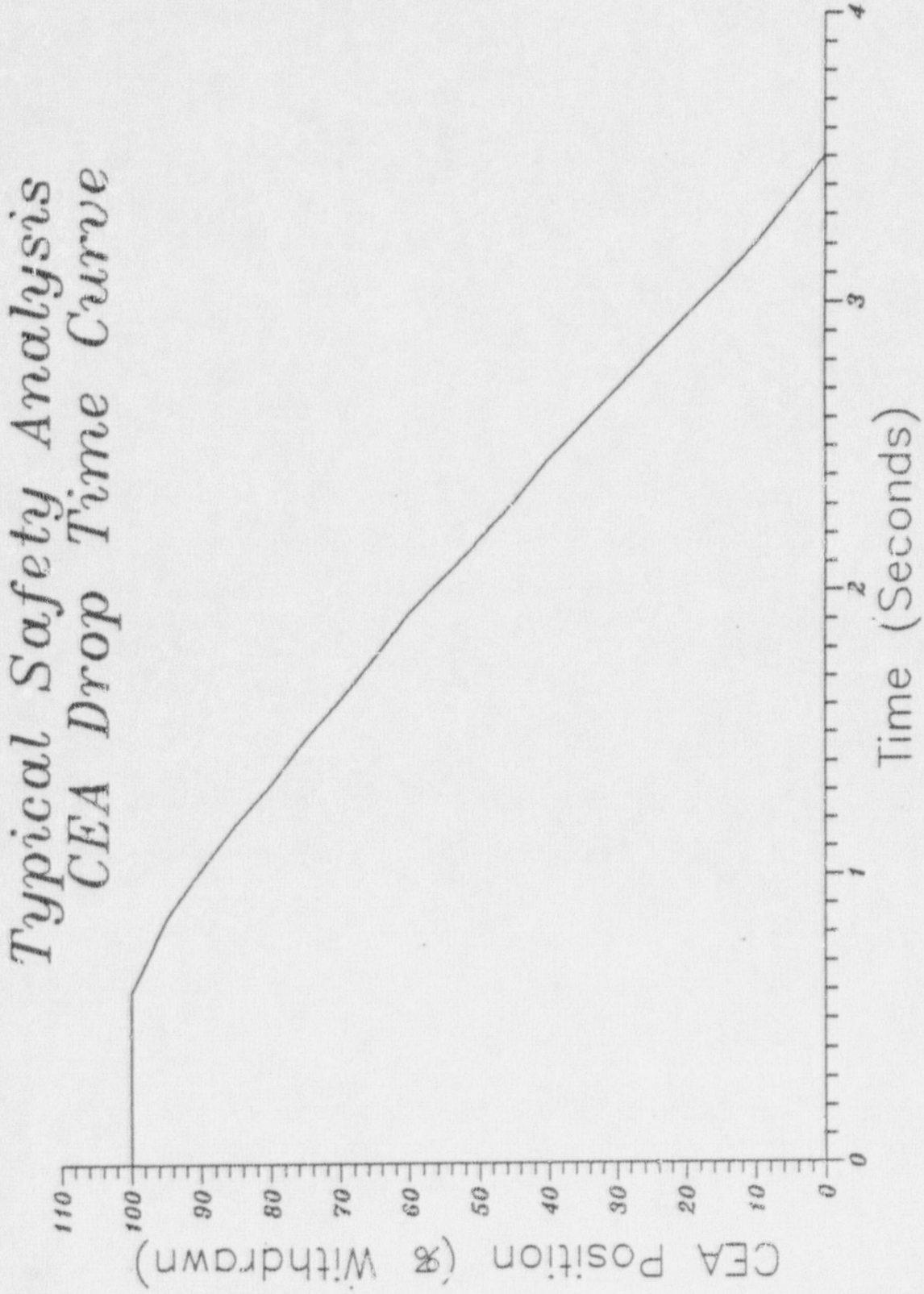

Typical Safety Analysis
CEA Drop Time Curve
CEA Position (% Withdrawn)
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
Time (Seconds)

FIGURE 2.4

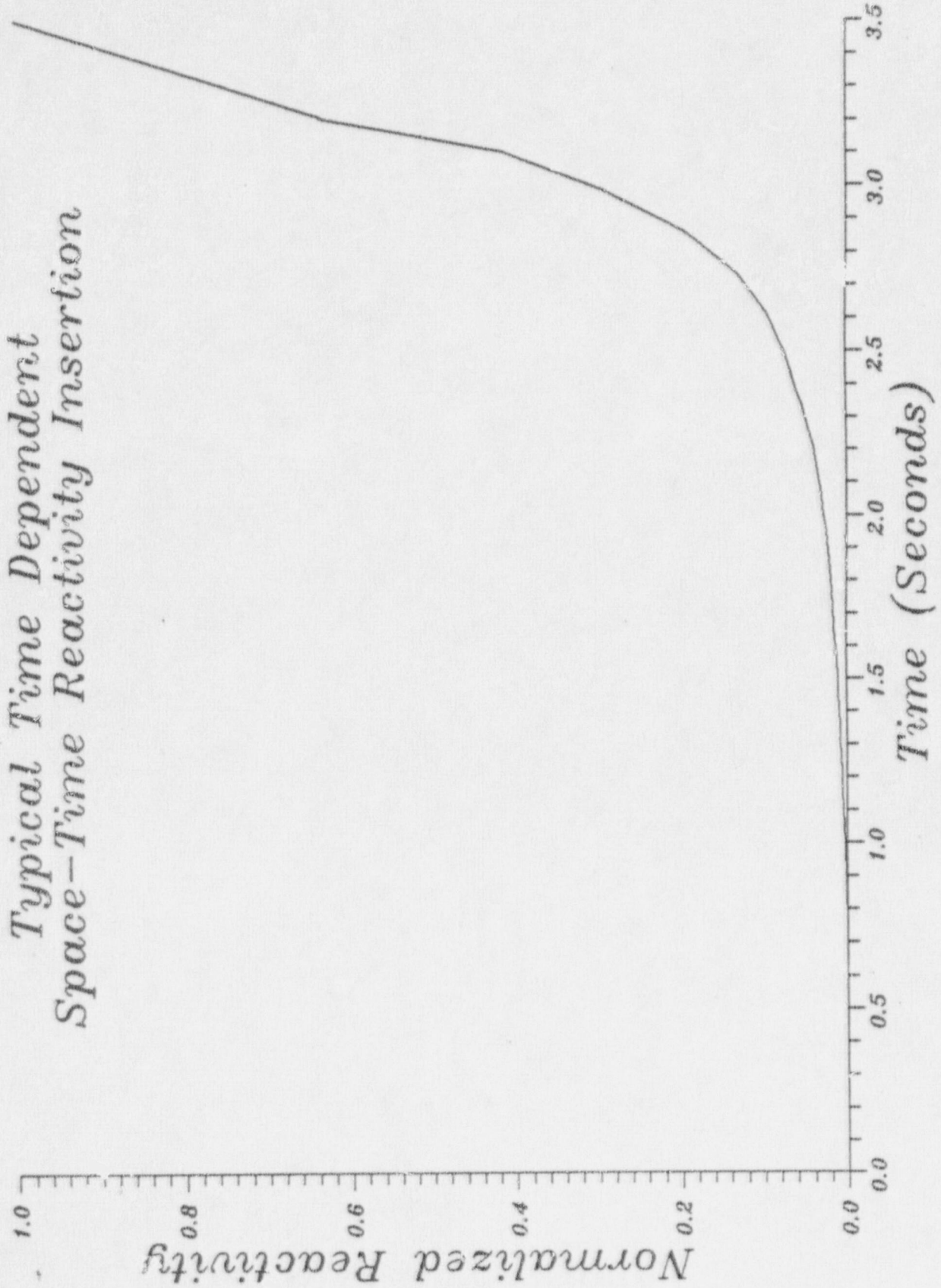

Typical Time Dependent
Space–Time Reactivity Insertion
Normalized Reactivity
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Time (Seconds)

FIGURE 3.1

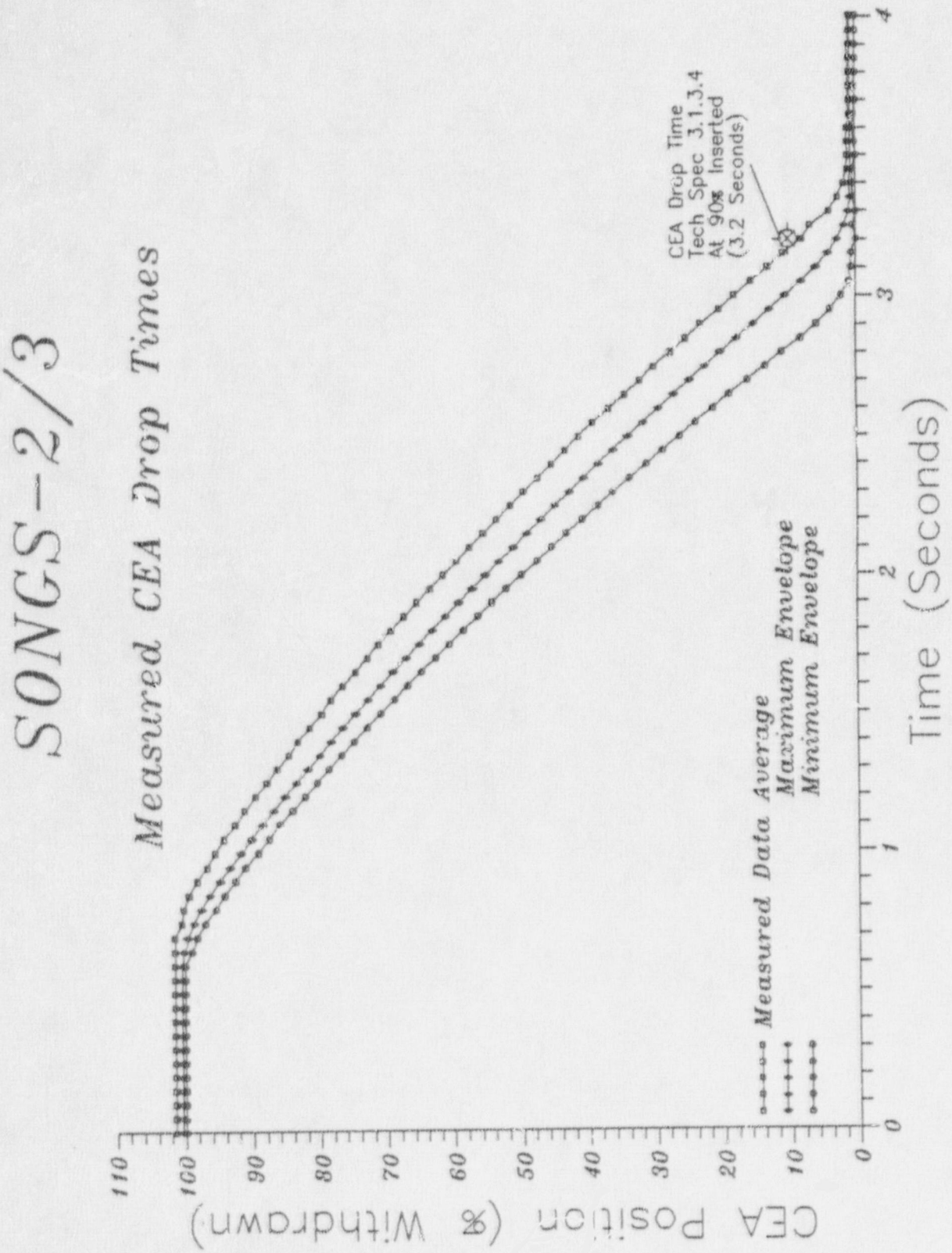
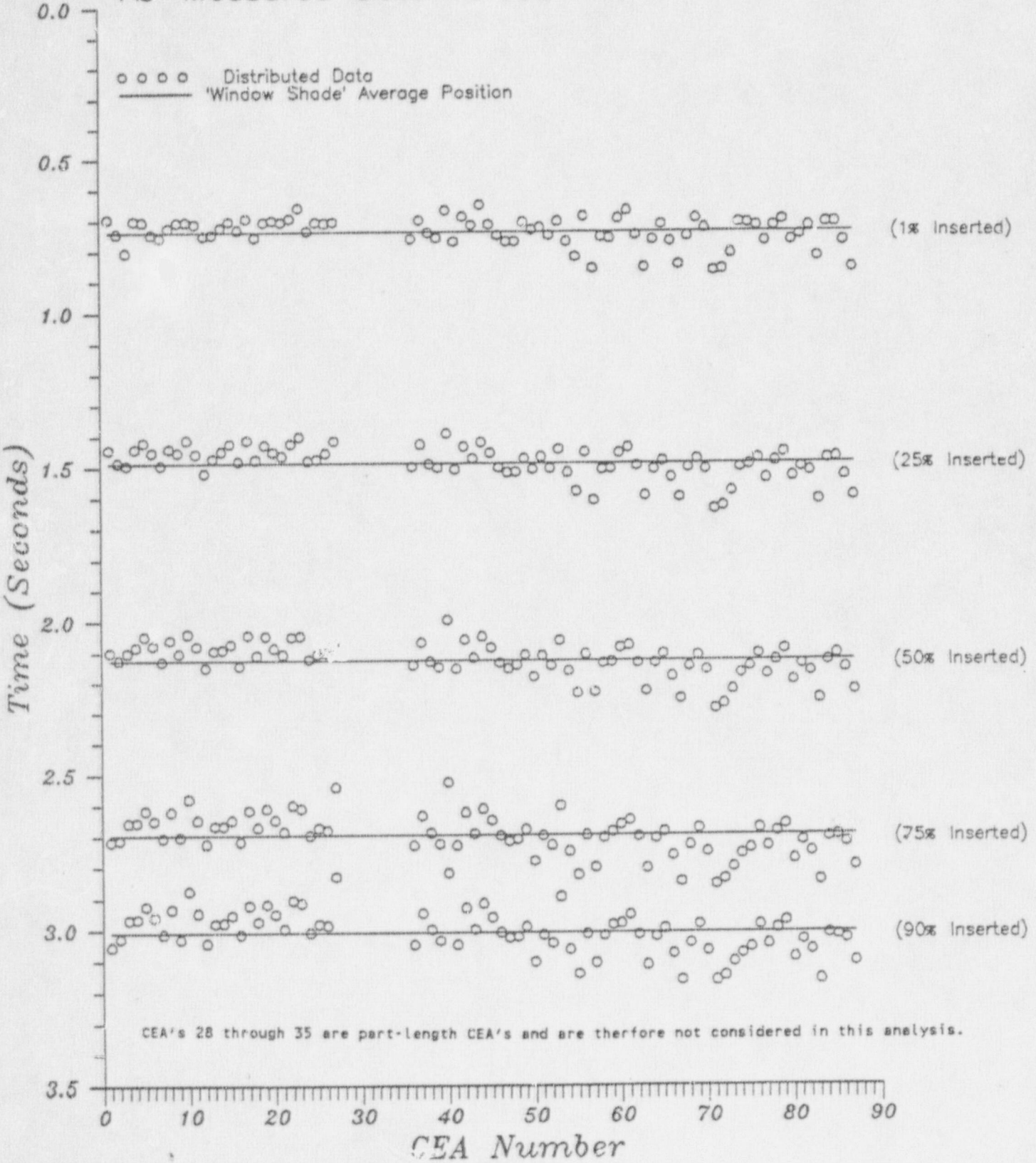

SONGS-2/3
Measured CEA Drop Times
CEA Position (% Withdrawn)
Time (Seconds)
CEA Drop Time
Tech Spec 3.1.3.4
At 90% Inserted
(3.2 Seconds)
Measured Data Average
Maximum Envelope
Minimum Envelope
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4

FIGURE 3.2

SONGS-2/3

CEA Drop Time Data

As-Measured Data Versus Window Shade Assumption



Space-Time Results

Average CEA Drop Time
Relative Normalized Prompt Neutron Distribution During Scram

(Window Shade Case at BOC, Equil Xe, HFP Conditions)

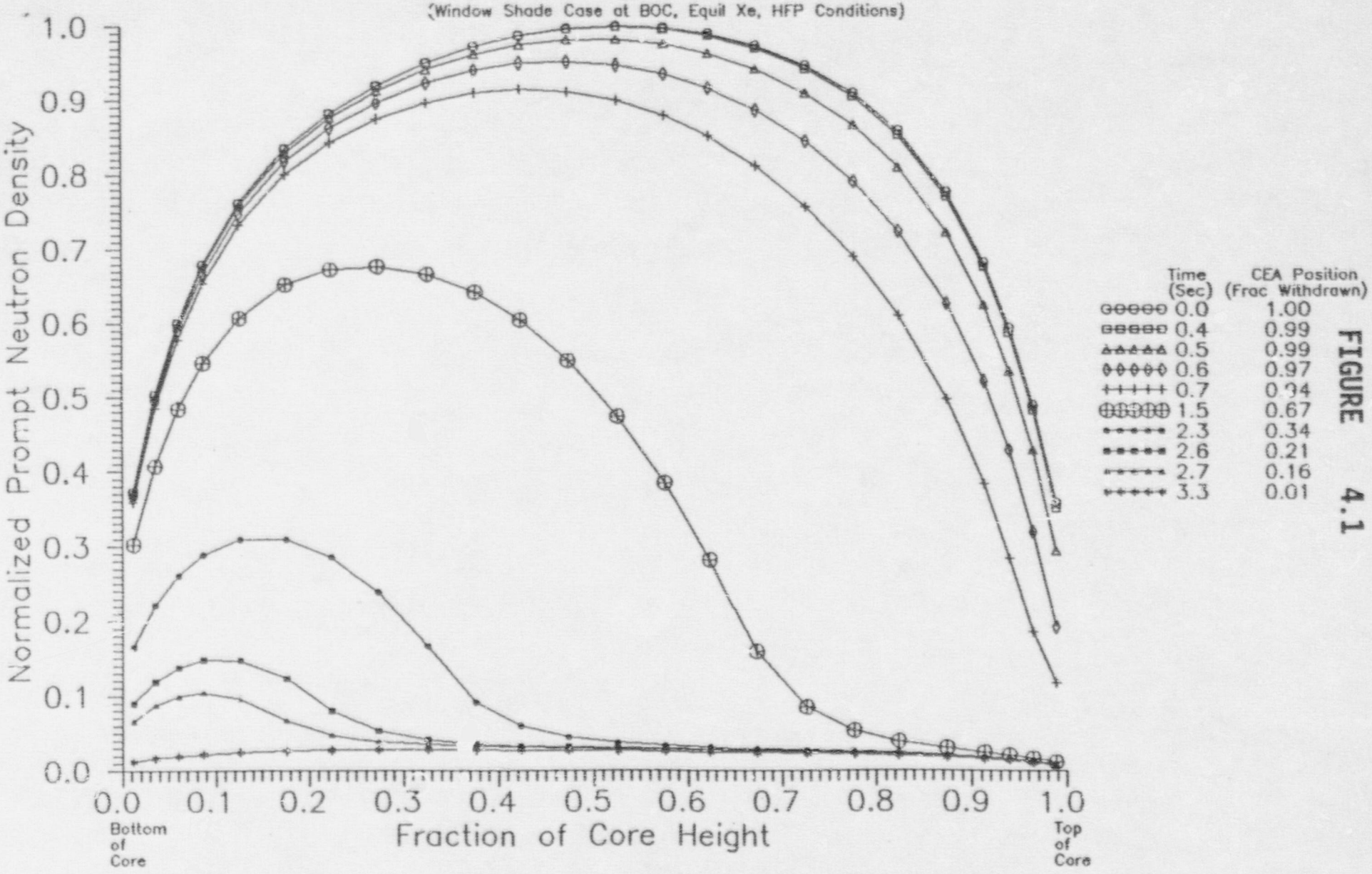


FIGURE 4.1

Space-Time Results

Average CEA Drop Time
Relative Normalized Axial Delayed Neutron Distribution During Scram

(Window Shade Case at BOC, Equil Xe, HFP Conditions)

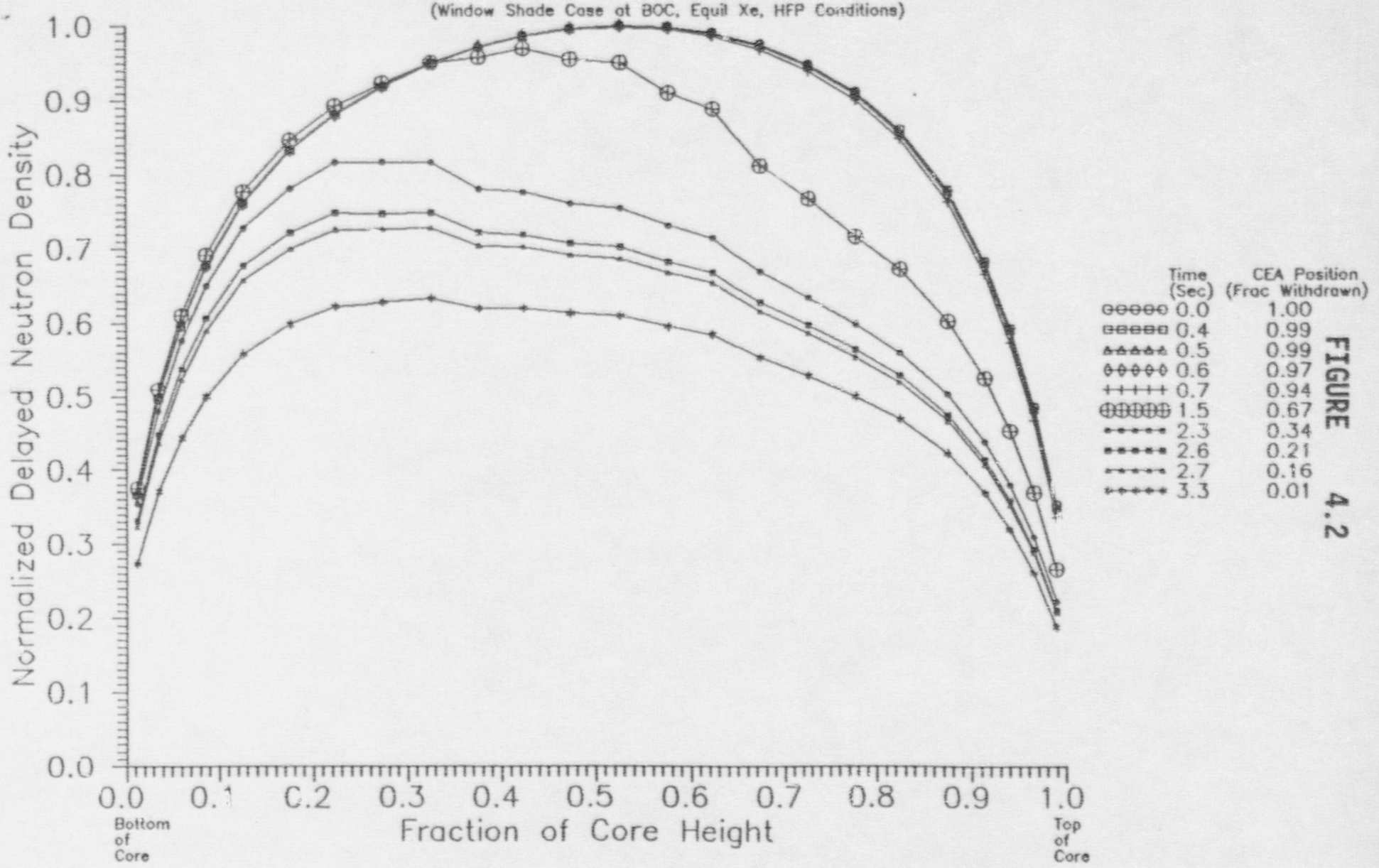
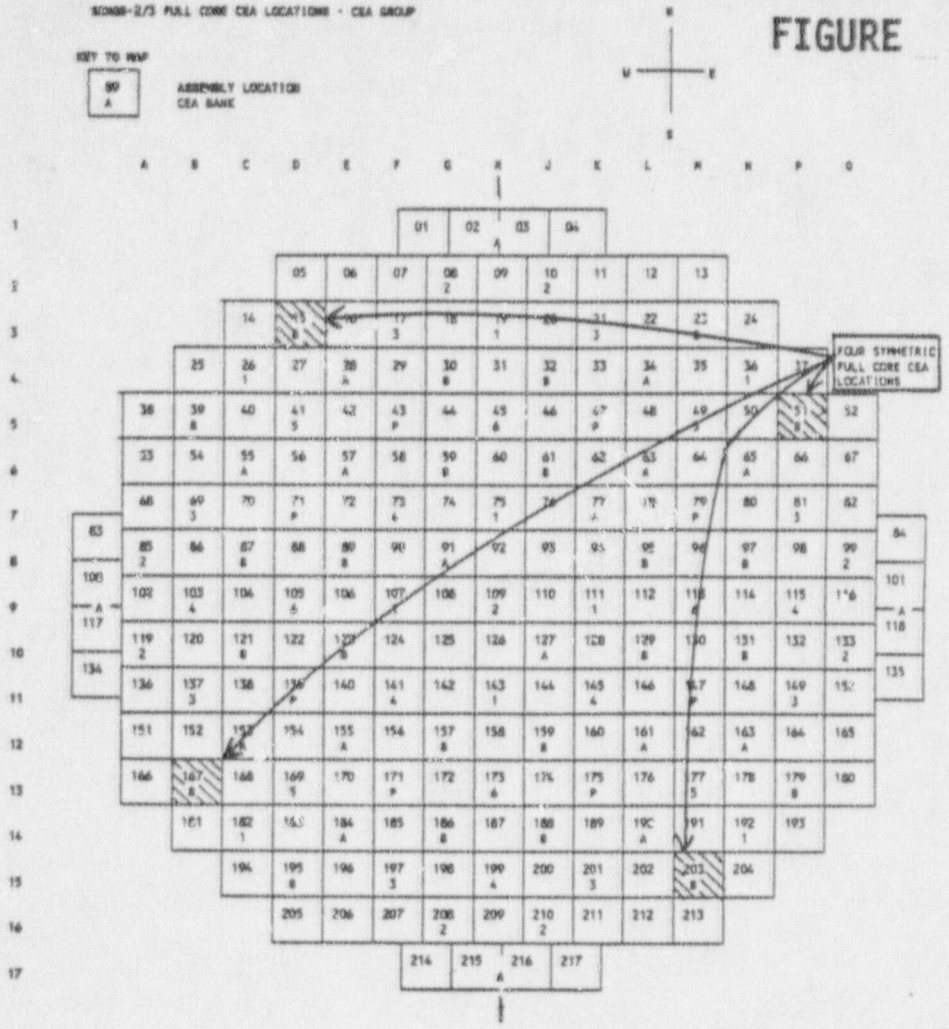
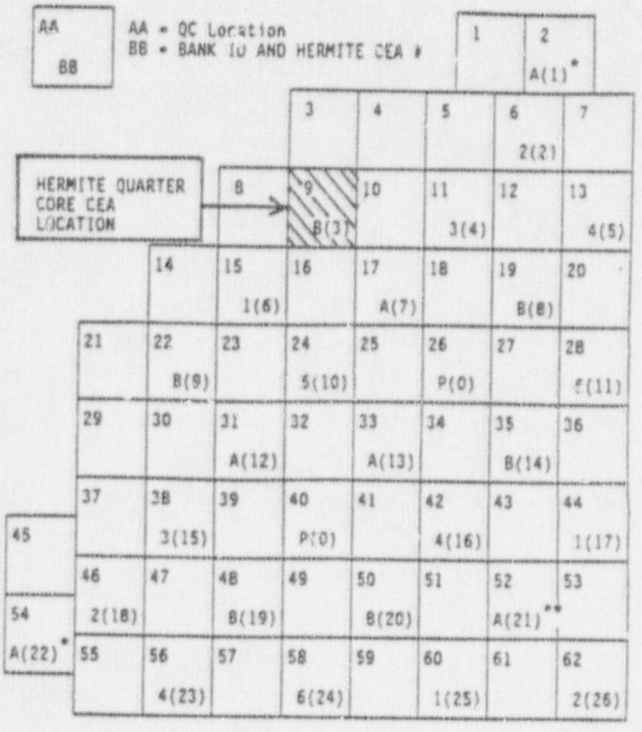


FIGURE 4.2

FIGURE 6.1



SONGS - 2/3 QUARTER CORE BANK NUMBERS AND HERMITE CEA ID'S



SONGS-2/3
FULL CORE TO QUARTER CORE
CEA LOCATION CORRESPONDENCE

FIGURE 6.2

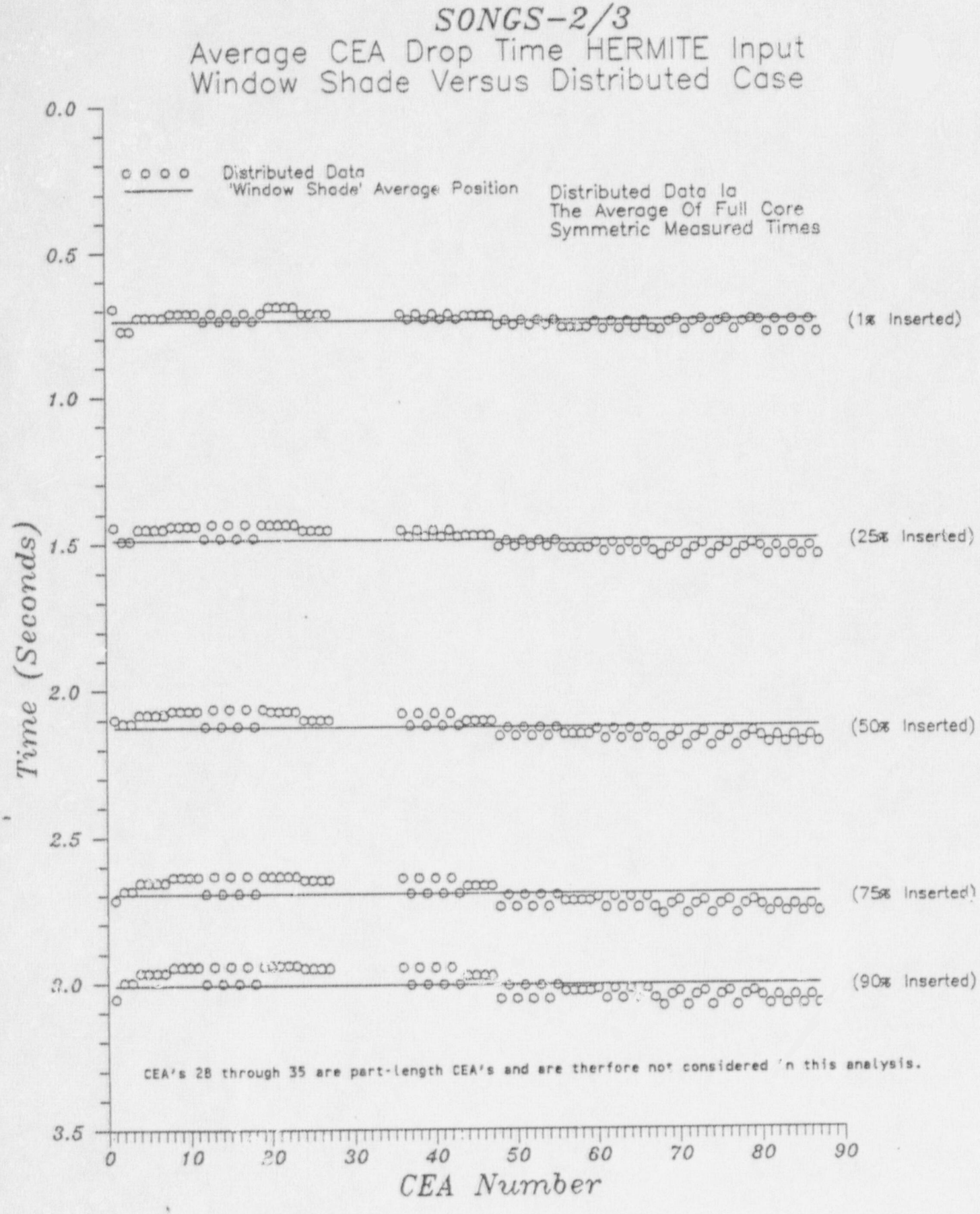
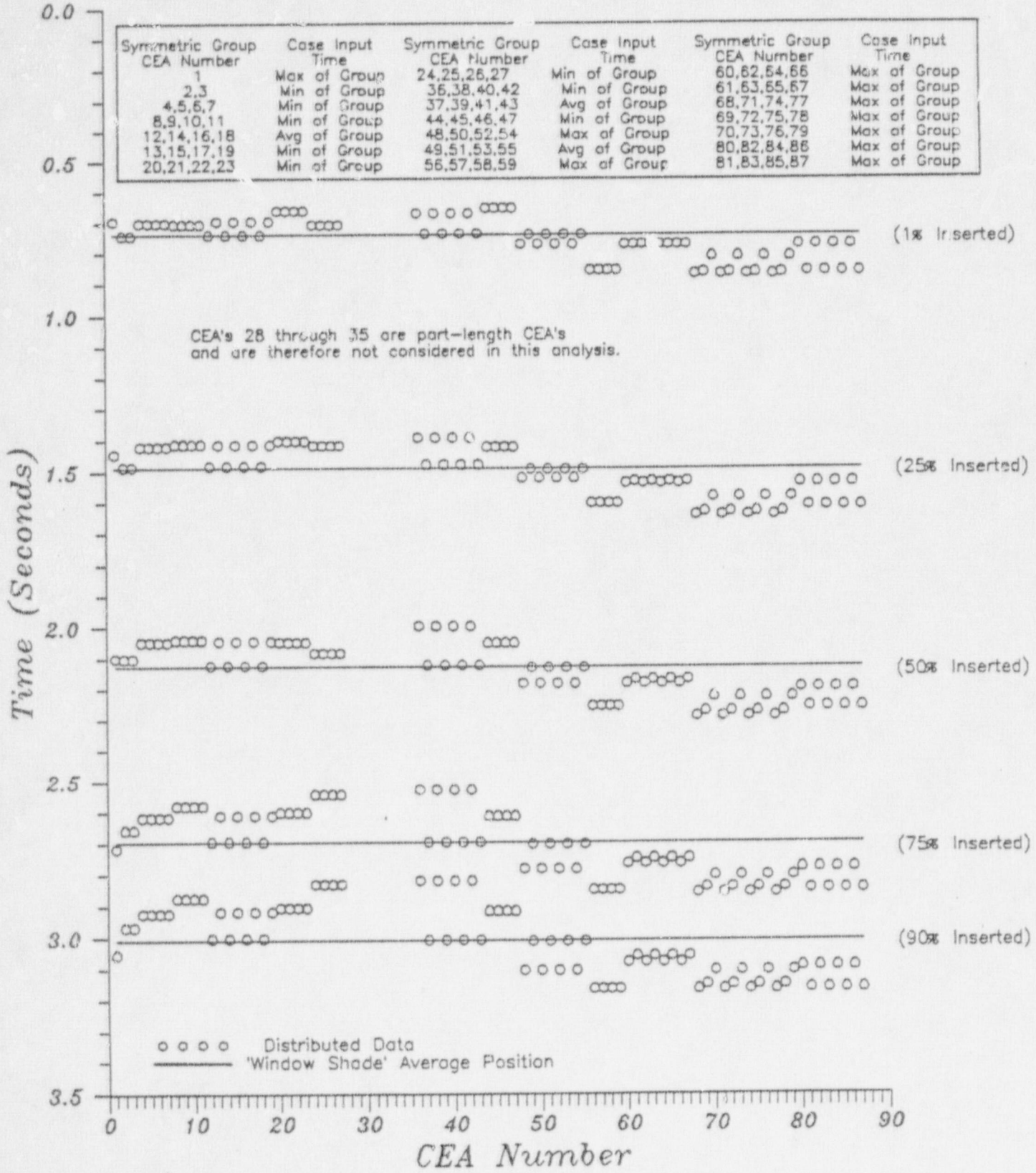

SONGS-2/3
Average CEA Drop Time HERMITE Input
Window Shade Versus Distributed Case
Distributed Data
'Window Shade' Average Position
Distributed Data Is
The Average Of Full Core
Symmetric Measured Times
(1% Inserted)
(25% Inserted)
(50% Inserted)
(75% Inserted)
(90% Inserted)
CEA's 28 through 35 are part-length CEA's and are therfore not considered in this analysis.
Time (Seconds)
CEA Number
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
10
20
30
40
50
60
70
80
90

FIGURE 6.3

SONGS-2/3

Average CEA Drop Time HERMITE Input Window Shade Versus *EXPANDED* Distributed Case

Symmetric Group CEA Number	Case Input Time	Symmetric Group CEA Number	Case Input Time	Symmetric Group CEA Number	Case Input Time
1	Max of Group	24,25,26,27	Min of Group	60,62,64,66	Max of Group
2,3	Min of Group	36,38,40,42	Min of Group	61,63,65,67	Max of Group
4,5,6,7	Min of Group	37,39,41,43	Avg of Group	68,71,74,77	Max of Group
8,9,10,11	Min of Group	44,45,46,47	Min of Group	69,72,75,78	Max of Group
12,14,16,18	Avg of Group	48,50,52,54	Max of Group	70,73,76,79	Max of Group
13,15,17,19	Min of Group	49,51,53,55	Avg of Group	80,82,84,86	Max of Group
20,21,22,23	Min of Group	56,57,58,59	Max of Group	81,83,85,87	Max of Group



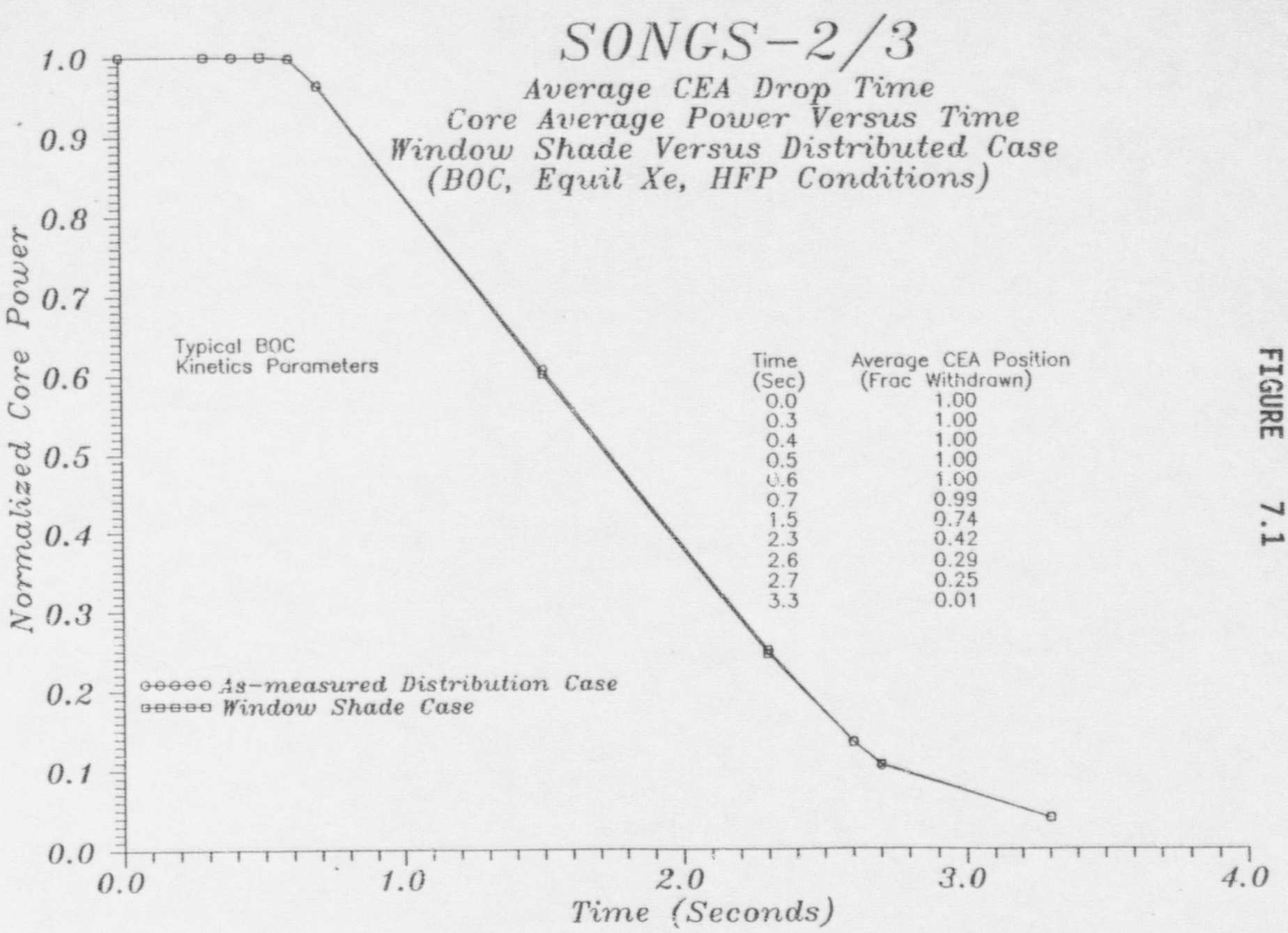
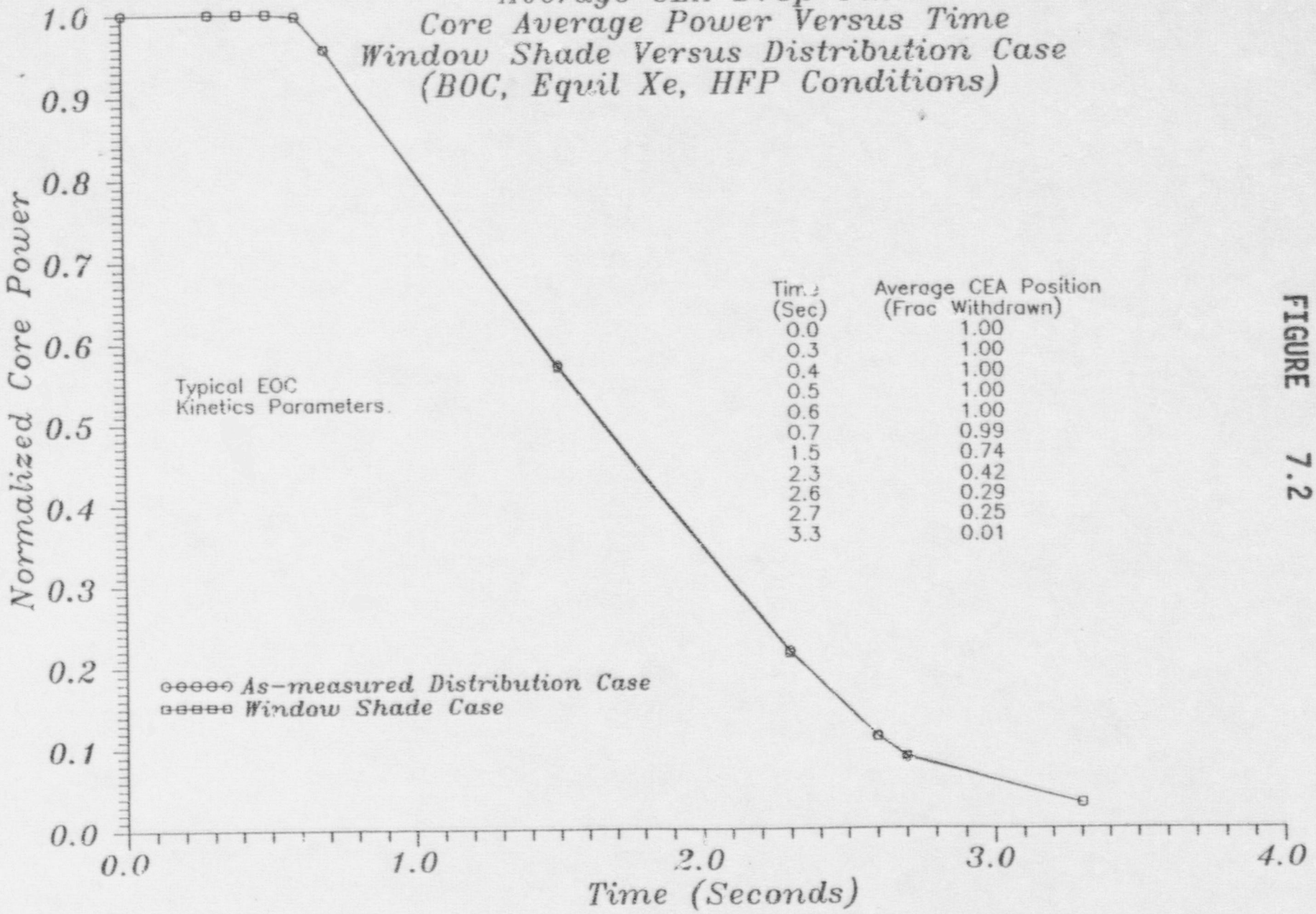

SONGS-2/3
Average CEA Drop Time
Core Average Power Versus Time
Window Shade Versus Distributed Case
(BOC, Equil Xe, HFP Conditions)
Normalized Core Power
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
1.0
2.0
3.0
4.0
Time (Seconds)
Typical BOC
Kinetics Parameters
Time (Sec) | Average CEA Position (Frac Withdrawn)
0.0 1.00
0.3 1.00
0.4 1.00
0.5 1.00
0.6 1.00
0.7 0.99
1.5 0.74
2.3 0.42
2.6 0.29
2.7 0.25
3.3 0.01
As-measured Distribution Case
Window Shade Case

FIGURE 7.1

SONGS-2/3

Average CEA Drop Time
Core Average Power Versus Time
Window Shade Versus Distribution Case
(BOC, Equil Xe, HFP Conditions)

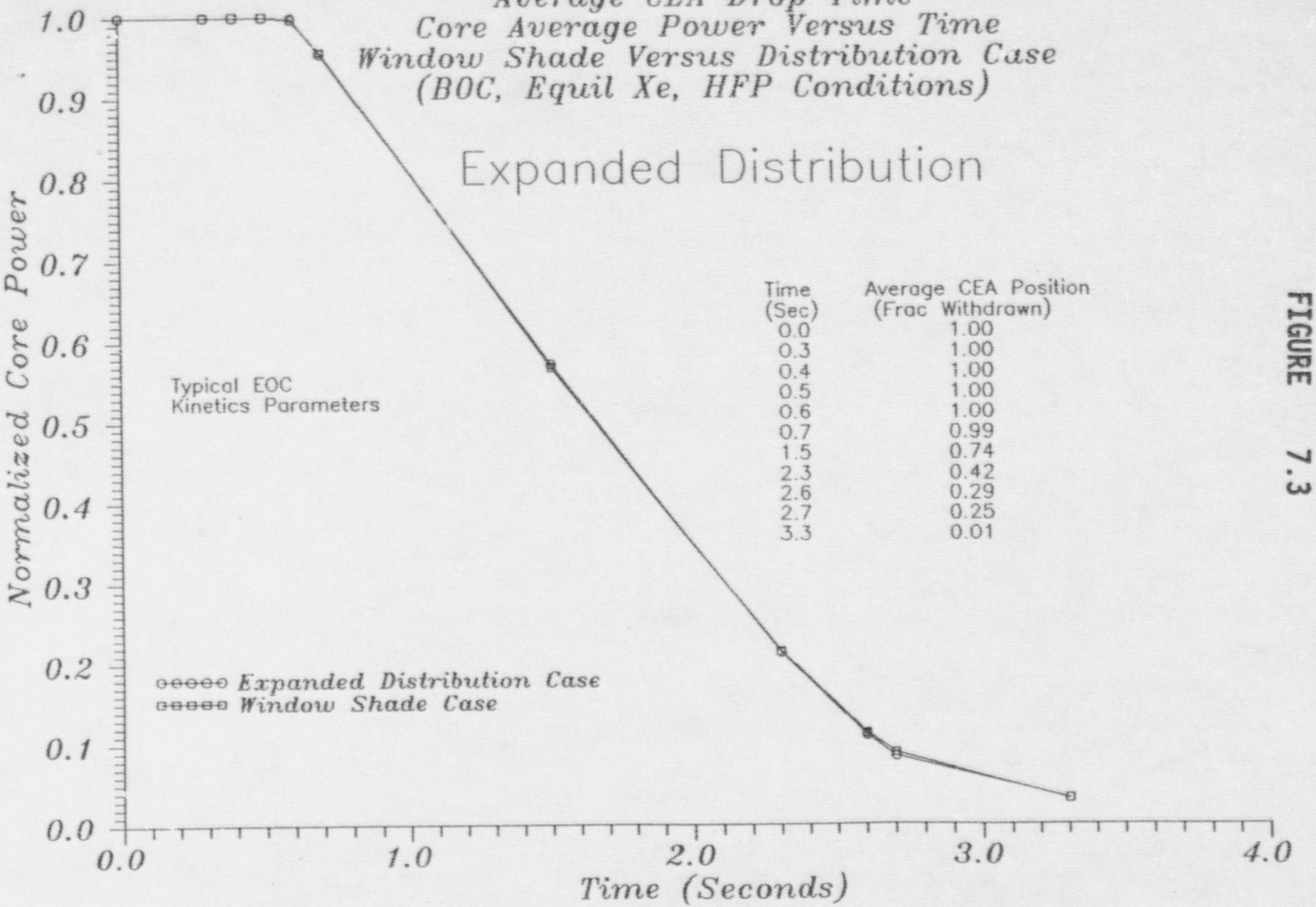


Time (Sec)	Average CEA Position (Frac Withdrawn)
0.0	1.00
0.3	1.00
0.4	1.00
0.5	1.00
0.6	1.00
0.7	0.99
1.5	0.74
2.3	0.42
2.6	0.29
2.7	0.25
3.3	0.01

FIGURE 7.2

SONGS-2/3

Average CEA Drop Time
Core Average Power Versus Time
Window Shade Versus Distribution Case
(BOC, Equil Xe, HFP Conditions)



Time (Sec)	Average CEA Position (Frac Withdrawn)
0.0	1.00
0.3	1.00
0.4	1.00
0.5	1.00
0.6	1.00
0.7	0.99
1.5	0.74
2.3	0.42
2.6	0.29
2.7	0.25
3.3	0.01

FIGURE 7.3

FIGURE 8.1

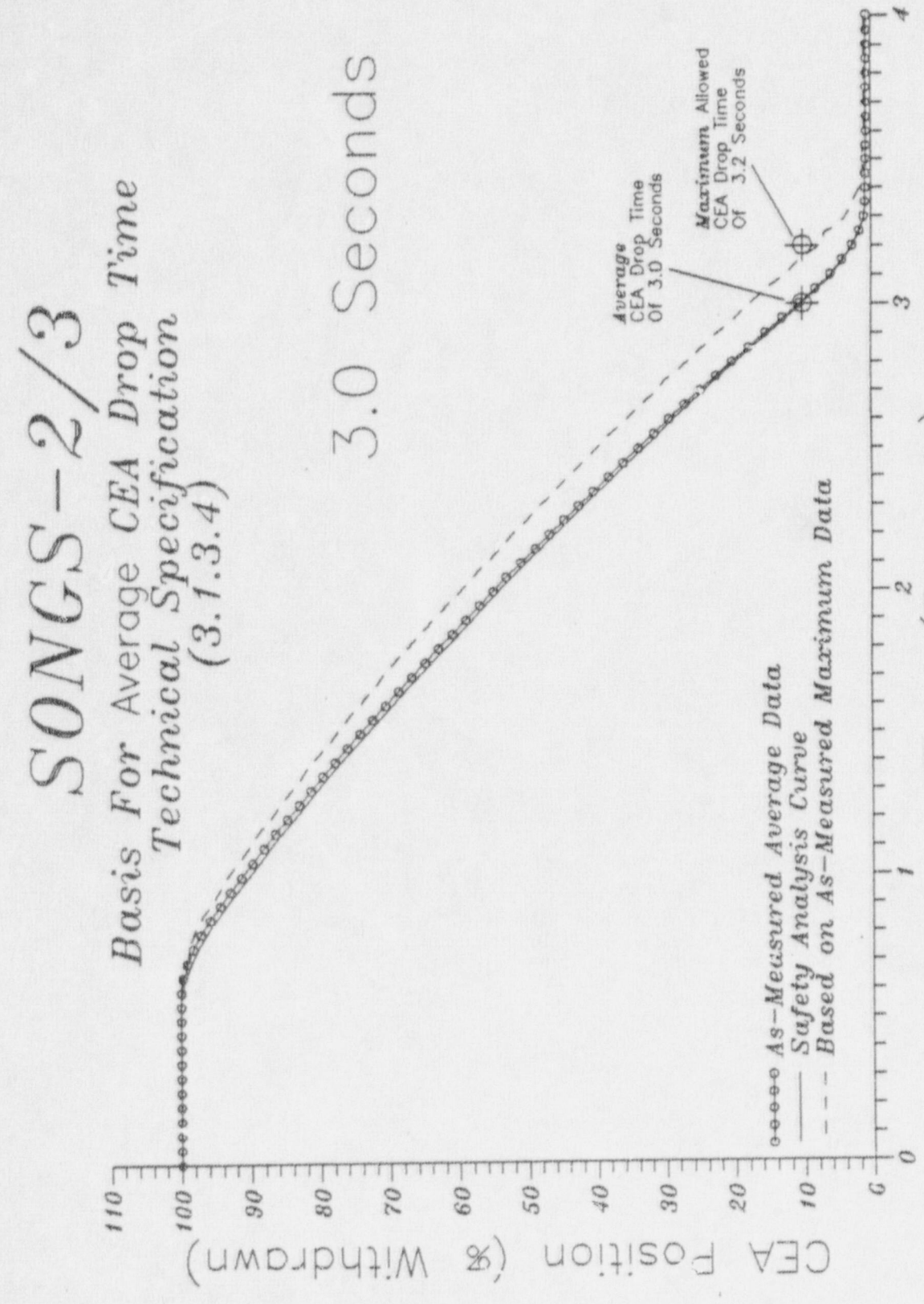

SONGS-2/3
Basis For Average CEA Drop Time
Technical Specification
(3.1.3.4)
3.0 Seconds
Average
CEA Drop Time
Of 3.0 Seconds
Maximum Allowed
CEA Drop Time
Of 3.2 Seconds
As-Measured Average Data
Safety Analysis Curve
Based on As-Measured Maximum Data
CEA Position (% Withdrawn)
Time (Seconds)
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4

FIGURE 8.2

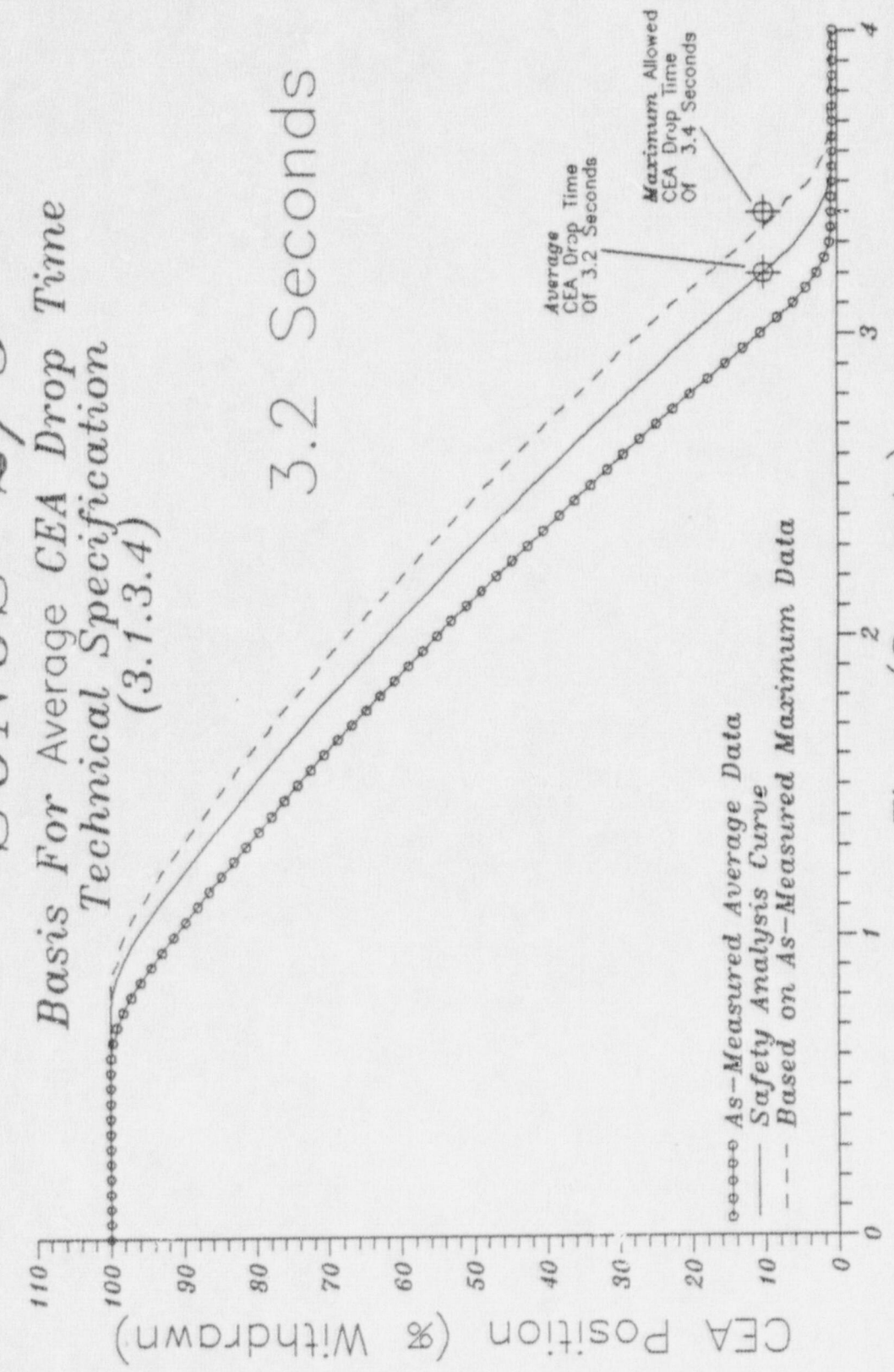
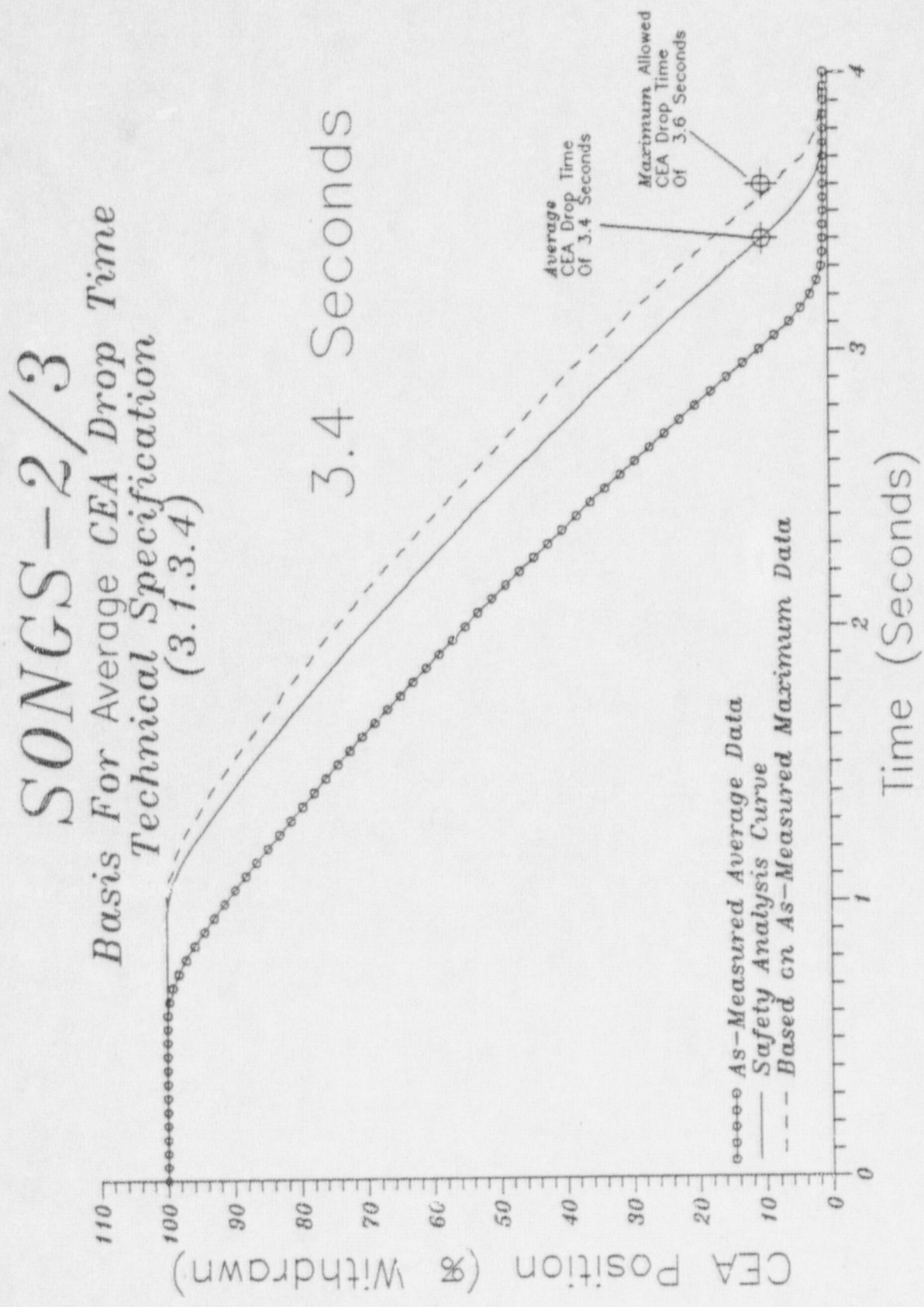

SONGS-2/3
Basis For Average CEA Drop Time
Technical Specification
(3.1.3.4)
3.2 Seconds
Average
CEA Drop Time
Of 3.2 Seconds
Maximum Allowed
CEA Drop Time
Of 3.4 Seconds
As-Measured Average Data
Safety Analysis Curve
Based on As-Measured Maximum Data
CEA Position (% Withdrawn)
Time (Seconds)
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4

FIGURE 8.3


SONGS-2/3
Basis For Average CEA Drop Time
Technical Specification
(3.1.3.4)
3.4 Seconds
Average
CEA Drop Time
Of 3.4 Seconds
Maximum Allowed
CEA Drop Time
Of 3.6 Seconds
As-Measured Average Data
Safety Analysis Curve
Based on As-Measured Maximum Data
CEA Position (% Withdrawn)
Time (Seconds)
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4

SAFETY ANALYSIS FLOW CHART
FUTURE AVERAGE CEA DROP TIME ANALYSIS

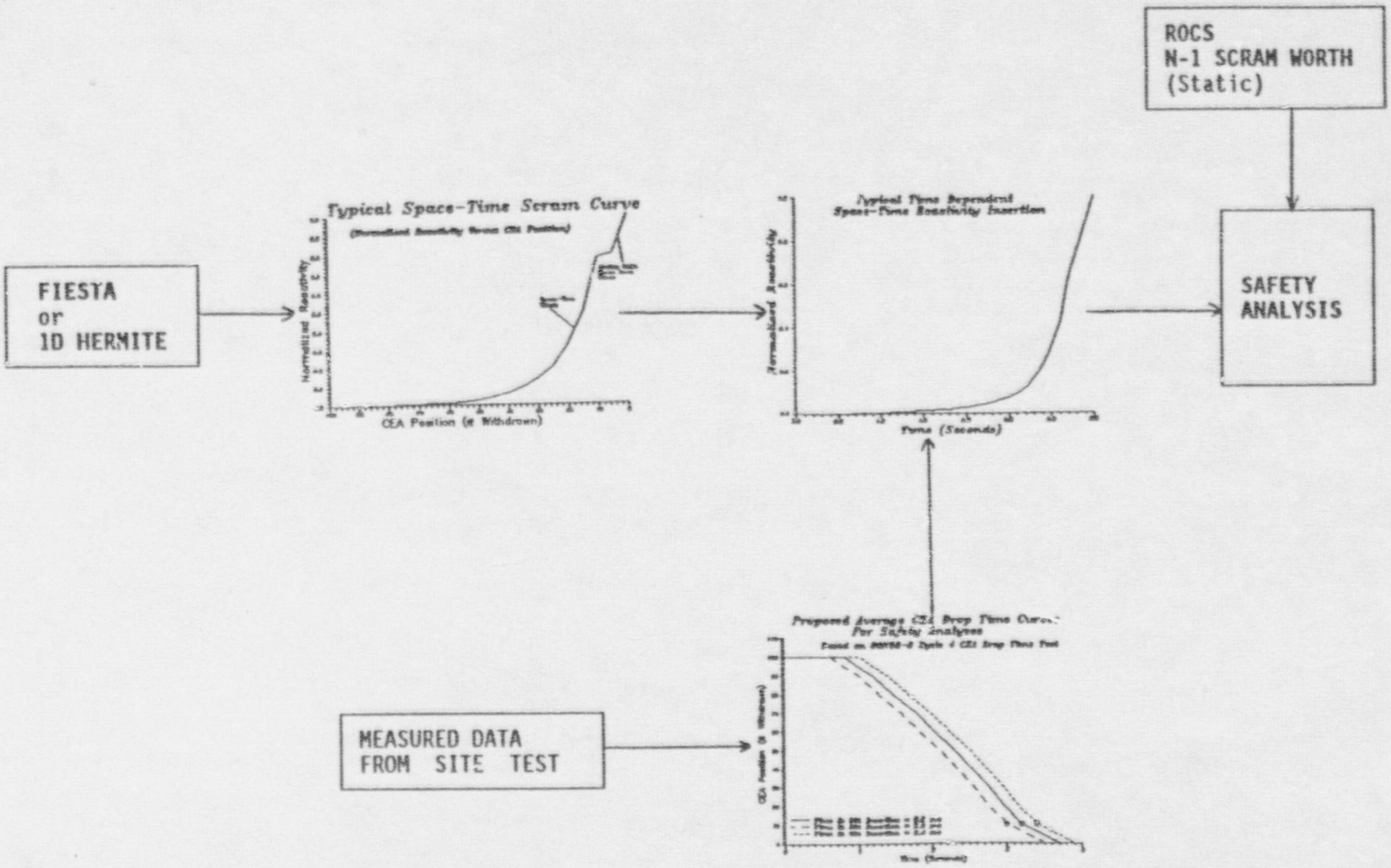
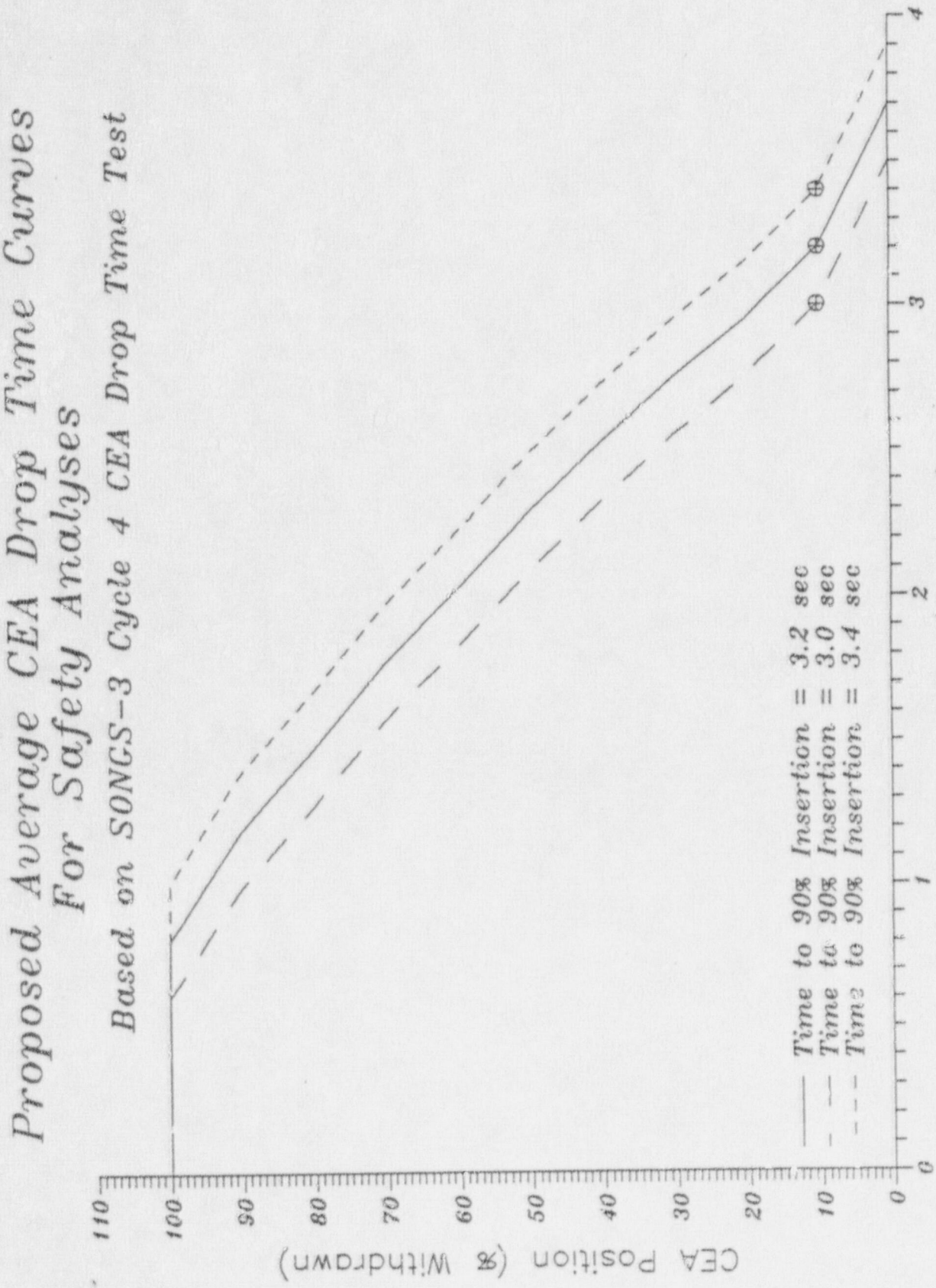


FIGURE 9.1

FIGURE 9.2


Proposed Average CEA Drop Time Curves
For Safety Analyses
Based on SONGS-3 Cycle 4 CEA Drop Time Test
CEA Position (% Withdrawn)
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
Time (Seconds)
Time to 90% Insertion = 3.2 sec
Time to 90% Insertion = 3.0 sec
Time to 90% Insertion = 3.4 sec

APPENDIX A

SONGS-3 Cycle 4 Measured CEA Drop Time Test Data

August, 1988

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds vvvvvvvv	CEA No. 1 (% Withdrawn)	CEA No. 2 (% Withdrawn)	CEA No. 3 (% Withdrawn)	CEA No. 4 (% Withdrawn)	CEA No. 5 (% Withdrawn)	CEA No. 6 (% Withdrawn)	CEA No. 7 (% Withdrawn)	CEA No. 8 (% Withdrawn)	CEA No. 9 (% Withdrawn)	CEA No. 10 (% Withdrawn)	CEA No. 11 (% Withdrawn)	CEA No. 12 (% Withdrawn)	CEA No. 13 (% Withdrawn)	CEA No. 14 (% Withdrawn)	CEA No. 15 (% Withdrawn)
0	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
50	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
100	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
150	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
200	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
250	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
300	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
350	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
400	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
450	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
500	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
550	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
600	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
650	100.8	101.1	100.8	100.2	100.0	101.1	100.0	100.2	100.0	100.1	100.1	100.2	100.1	100.8	100.0
700	99.9	100.1	100.8	100.1	100.0	100.3	100.0	100.2	100.0	100.0	100.1	100.2	100.1	100.0	99.8
750	98.9	100.2	100.3	99.8	99.1	100.0	100.0	99.4	99.1	99.1	99.2	100.2	100.1	99.6	99.1
800	97.9	98.8	100.0	98.0	98.1	98.9	99.1	98.6	98.2	98.0	98.3	99.0	98.9	98.3	97.8
850	96.9	97.9	99.1	96.7	96.7	97.5	98.2	97.1	97.1	96.4	97.2	98.4	98.6	96.9	96.1
900	95.0	96.4	97.7	95.2	95.1	96.2	97.0	95.8	95.2	95.1	96.1	97.1	96.7	96.0	95.1
950	93.9	95.0	96.5	93.7	93.6	94.5	95.2	94.2	94.1	93.4	94.3	95.8	95.2	94.2	93.2
1000	91.9	93.4	94.7	92.1	92.0	93.1	94.0	92.8	92.3	91.8	93.0	94.3	93.8	93.0	92.0
1050	90.4	91.9	93.2	90.5	90.2	91.3	92.1	90.9	91.0	90.2	91.2	92.8	91.9	91.1	90.0
1100	88.6	90.3	91.4	88.9	88.4	89.5	90.6	89.2	89.1	88.3	89.5	91.2	90.3	89.4	88.3
1150	86.9	88.6	89.6	87.1	86.9	88.0	89.1	87.6	87.4	86.4	88.1	89.8	88.8	88.0	86.9
1200	85.2	86.9	87.9	85.4	85.0	86.2	87.1	85.7	85.8	84.8	86.1	88.1	86.9	86.0	85.0
1250	83.6	85.1	86.2	83.6	83.0	84.3	85.2	83.9	84.4	83.0	84.2	86.1	85.0	84.1	83.1
1300	81.8	83.3	84.3	81.8	81.1	82.4	83.9	82.1	82.1	81.2	82.5	84.4	83.2	82.0	81.5
1350	79.9	81.6	82.3	80.0	79.2	80.6	82.0	80.2	80.3	79.2	81.0	82.7	81.4	80.7	79.8
1400	78.2	79.8	80.4	78.3	77.4	78.8	80.0	78.4	79.0	77.4	79.1	81.0	79.8	78.9	78.0
1450	76.5	78.1	78.6	76.6	75.8	77.0	78.2	76.6	77.3	75.5	77.2	79.1	77.8	77.0	76.0
1500	74.8	76.3	76.7	74.7	73.9	75.1	76.4	74.7	76.1	73.7	75.3	77.5	75.9	75.0	74.1
1550	72.8	74.5	74.8	72.8	72.0	73.2	74.8	72.7	73.2	71.8	73.4	75.8	74.0	73.1	72.3
1600	70.9	72.6	72.9	70.9	70.0	71.2	73.0	70.8	71.4	69.9	71.8	73.8	72.0	71.2	70.5
1650	69.0	70.7	70.8	69.0	68.0	69.2	71.0	68.8	69.7	68.0	69.9	72.0	70.1	69.2	68.7
1700	67.1	68.8	68.8	67.1	65.9	67.2	69.1	66.9	67.8	66.0	68.0	70.0	68.2	67.4	66.8
1750	65.2	66.9	66.8	65.2	64.0	65.2	67.1	64.8	66.0	64.1	66.0	68.1	66.2	65.6	64.9
1800	63.5	65.0	64.7	63.3	62.0	63.3	65.1	62.8	64.0	62.1	64.0	66.2	64.1	63.6	62.9
1850	61.7	63.1	62.6	61.3	60.0	61.2	63.2	60.8	62.0	60.1	62.0	64.2	62.1	61.8	60.9
1900	59.8	61.2	60.5	59.3	57.9	59.2	61.2	58.5	60.0	58.0	59.9	62.3	60.0	59.8	58.9
1950	57.8	59.1	58.4	57.3	55.8	57.2	59.2	56.7	58.0	58.0	57.8	60.3	58.9	57.8	56.9
2000	55.8	57.2	56.3	55.3	53.9	55.2	57.3	54.5	56.0	53.9	55.7	58.3	56.9	55.8	54.9
2050	53.8	55.1	54.2	53.3	52.0	53.2	55.3	52.5	54.0	51.9	53.6	56.1	53.3	53.8	53.0
2100	51.9	53.1	52.2	51.3	49.9	51.1	53.3	50.4	52.1	49.8	51.3	54.1	51.8	51.8	51.0
2150	50.0	51.1	50.1	49.3	47.9	49.1	51.3	48.3	50.2	47.4	49.2	52.1	49.8	49.7	48.9
2200	48.0	49.0	47.9	47.3	45.9	47.0	49.2	46.1	48.1	45.2	47.2	50.0	47.8	47.7	46.9
2250	46.0	47.0	45.7	45.1	43.7	44.8	47.1	44.0	46.1	43.1	45.0	48.0	45.5	45.5	44.8

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds wwwwww	CEA No. 1 (% Withdrawn)	CEA No. 2 (% Withdrawn)	CEA No. 3 (% Withdrawn)	CEA No. 4 (% Withdrawn)	CEA No. 5 (% Withdrawn)	CEA No. 6 (% Withdrawn)	CEA No. 7 (% Withdrawn)	CEA No. 8 (% Withdrawn)	CEA No. 9 (% Withdrawn)	CEA No. 10 (% Withdrawn)	CEA No. 11 (% Withdrawn)	CEA No. 12 (% Withdrawn)	CEA No. 13 (% Withdrawn)	CEA No. 14 (% Withdrawn)	CEA No. 15 (% Withdrawn)
2300	44.0	44.8	43.3	42.9	41.6	42.6	45.1	41.8	00.9	40.7	43.0	45.8	43.5	43.4	42.8
2350	41.9	42.8	41.2	40.7	39.2	40.4	43.0	39.8	42.0	38.3	40.7	43.7	41.2	41.1	40.6
2400	39.9	40.6	39.1	38.6	37.0	38.2	40.9	37.4	39.9	36.1	38.3	41.5	39.1	39.0	38.4
2450	37.9	38.4	36.8	36.4	34.8	36.1	38.8	35.1	37.8	33.6	36.1	39.3	36.9	36.8	36.1
2500	35.9	36.3	34.5	34.3	32.8	34.0	36.7	32.9	35.9	31.2	33.9	37.1	34.7	34.8	33.9
2550	33.8	34.2	32.2	31.9	30.3	31.6	34.2	30.5	33.8	29.0	31.7	35.0	32.6	32.7	31.8
2600	31.8	32.1	30.0	29.7	27.9	29.3	32.0	28.3	31.8	26.5	29.1	32.8	30.3	30.3	29.6
2650	29.7	29.9	27.7	27.5	25.8	27.2	29.8	26.0	29.8	24.1	27.0	30.5	28.0	27.9	27.1
2700	27.7	27.7	25.3	25.3	23.5	25.0	27.8	23.7	27.4	21.5	24.9	28.2	25.8	25.8	24.9
2750	25.7	25.6	23.1	22.9	20.9	22.5	25.2	21.3	25.1	19.1	22.2	26.1	23.5	23.6	22.7
2800	23.5	23.3	20.7	20.6	18.7	20.2	22.9	18.9	22.9	16.5	19.9	23.8	21.1	21.0	20.1
2850	21.2	21.0	18.3	18.2	16.1	17.9	20.7	16.6	20.9	14.0	17.2	21.6	18.8	18.8	17.7
2900	19.0	18.7	15.9	15.8	13.8	15.4	18.1	14.2	18.5	11.3	14.8	19.1	16.4	16.3	15.2
2950	16.8	16.2	13.3	13.3	11.2	13.0	15.8	11.7	16.0	8.8	12.2	16.8	14.0	13.8	12.7
3000	14.7	13.9	10.9	10.8	8.7	10.4	13.1	9.2	13.8	6.1	9.8	14.4	11.5	11.5	10.2
3050	12.6	11.6	8.2	8.3	6.3	8.0	10.7	6.7	11.6	4.2	7.0	12.0	9.0	8.8	7.7
3100	10.2	8.8	5.9	5.9	4.6	5.6	8.0	4.7	8.9	2.8	4.9	9.6	6.5	6.6	5.4
3150	7.8	6.4	3.9	4.0	2.8	3.9	5.7	3.3	6.7	1.5	3.6	7.2	4.5	4.6	3.6
3200	5.5	4.4	2.4	2.5	1.6	2.5	3.8	2.1	4.7	0.8	2.1	4.9	3.0	2.7	2.1
3250	4.2	2.9	1.1	1.4	0.8	1.2	2.6	0.0	3.1	0.8	0.8	3.3	1.8	1.4	0.8
3300	2.9	1.7	0.8	0.5	0.6	0.8	1.6	0.7	1.8	0.8	0.7	2.1	0.6	0.6	0.6
3350	1.6	0.6	0.8	0.9	0.6	0.8	0.7	0.0	0.7	1.1	0.7	0.8	0.5	0.6	0.6
3400	0.6	0.7	1.1	0.7	0.9	0.9	0.7	2.1	0.7	1.1	0.7	0.5	0.7	0.6	0.6
3450	0.6	0.7	1.1	1.2	0.9	1.0	0.7	1.5	0.7	0.7	1.1	0.4	0.9	0.6	0.6
3500	0.6	0.7	1.1	1.0	0.6	0.9	1.0	0.5	0.9	0.6	0.7	0.7	1.1	0.6	0.6
3550	0.6	1.1	0.8	0.7	0.6	0.6	1.0	0.0	1.0	0.6	0.7	0.6	0.7	0.6	0.6
3600	0.6	0.5	0.8	0.6	0.6	0.6	0.7	0.1	0.7	0.6	0.7	0.6	0.6	0.6	0.6
3650	0.6	0.7	0.8	0.6	0.6	0.6	0.7	0.5	0.7	0.6	0.7	0.6	0.7	0.6	0.6
3700	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.3	0.7	0.6	0.7	0.6	0.7	0.6	0.6
3750	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.6	0.7	0.6	0.7	0.6	0.6
3800	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.1	0.7	0.6	0.7	0.6	0.7	0.6	0.6
3850	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.6	0.7	0.6	0.7	0.6	0.6
3900	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.6	0.7	0.6	0.7	0.6	0.6
3950	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.6	0.7	0.6	0.7	0.6	0.6
4000	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.6	0.7	0.6	0.7	0.6	0.6
4050	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.6	0.7	0.6	0.7	0.6	0.6

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds vvvvvvvv	CEA No. 16 (% Withdrawn)	CEA No. 17 (% Withdrawn)	CEA No. 18 (% Withdrawn)	CEA No. 19 (% Withdrawn)	CEA No. 20 (% Withdrawn)	CEA No. 21 (% Withdrawn)	CEA No. 22 (% Withdrawn)	CEA No. 23 (% Withdrawn)	CEA No. 24 (% Withdrawn)	CEA No. 25 (% Withdrawn)	CEA No. 26 (% Withdrawn)	CEA No. 27 (% Withdrawn)	CEA No. 36 (% Withdrawn)	CEA No. 37 (% Withdrawn)	CEA No. 38 (% Withdrawn)
0	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.3	100.0	100.3
50	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.0	101.2	100.0	100.3
100	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.0	101.2	100.0	100.3
150	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.0	101.2	100.0	100.3
200	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.2	100.0	100.3
250	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.3	100.0	100.3
300	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.3	100.0	100.3
350	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.2	100.0	100.3
400	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.2	100.0	100.3
450	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.3	100.0	100.3
500	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.2	100.0	100.3
550	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.3	100.0	100.3
600	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.3	100.0	100.3
650	100.0	100.1	100.1	100.1	100.2	100.0	100.0	100.0	100.2	100.1	100.1	100.1	101.2	100.0	100.3
700	100.0	99.8	100.1	100.1	100.2	100.0	99.7	99.2	100.2	100.1	100.1	100.1	100.8	100.0	100.3
750	99.6	98.9	100.0	99.1	99.0	99.1	98.9	98.2	99.5	99.1	99.2	99.1	100.1	99.0	99.5
800	98.7	97.5	99.1	98.2	98.3	98.2	97.8	97.1	98.8	98.2	98.2	98.2	99.2	97.9	98.9
850	97.4	96.2	98.0	97.1	97.0	97.1	96.2	95.8	97.4	97.1	97.0	96.6	98.3	96.3	97.7
900	96.1	94.8	96.3	95.3	95.5	96.0	94.9	94.1	96.1	95.8	95.3	95.1	97.0	95.0	96.4
950	94.7	93.2	95.1	94.1	94.0	94.2	93.2	92.5	94.8	94.1	94.0	93.4	95.5	93.2	95.3
1000	93.1	91.6	93.2	92.2	92.4	93.0	91.8	91.0	93.0	92.7	92.3	92.1	94.9	92.0	93.5
1050	91.6	90.0	91.9	90.7	90.9	91.0	90.1	89.1	91.4	91.1	90.6	90.2	92.4	90.0	92.3
1100	90.1	88.2	90.2	89.1	89.2	89.4	88.3	87.5	89.9	89.4	89.1	88.4	90.8	88.6	90.4
1150	88.3	86.4	88.3	87.1	87.5	87.9	86.6	85.9	88.2	88.1	87.3	86.8	89.1	86.8	88.9
1200	86.7	84.7	86.9	85.2	85.8	86.0	84.9	84.0	86.6	86.1	85.6	85.0	87.4	84.9	87.3
1250	85.1	83.0	85.1	83.5	84.0	84.4	83.1	82.1	84.9	84.6	84.0	83.1	85.7	83.2	85.4
1300	83.2	81.1	83.1	81.9	82.2	82.8	81.3	80.3	83.2	83.0	82.2	81.1	84.0	81.7	83.7
1350	81.4	79.2	81.2	80.0	80.4	80.9	79.4	78.8	81.4	81.1	80.3	79.2	82.2	79.9	82.1
1400	79.8	77.4	79.5	78.1	78.7	79.0	77.9	77.0	79.7	79.2	78.7	77.4	80.3	78.0	80.2
1450	78.1	75.6	78.0	76.2	77.0	77.2	76.9	75.1	78.0	77.7	77.0	75.6	78.7	76.0	78.4
1500	76.2	73.7	76.1	74.2	75.1	75.5	74.2	73.1	76.1	76.0	75.2	73.8	76.8	74.2	76.6
1550	74.4	71.9	74.1	72.3	73.2	73.9	72.1	71.2	74.3	74.1	73.2	71.8	75.0	72.3	74.7
1600	72.6	70.0	72.2	70.4	71.6	71.9	70.2	69.3	72.6	72.1	71.4	69.8	73.1	70.6	73.0
1650	70.9	68.6	70.2	68.4	69.4	70.0	68.2	67.4	70.7	70.2	69.5	67.7	71.1	68.7	71.1
1700	69.1	66.9	68.4	66.4	67.5	68.0	66.2	65.7	68.8	68.5	67.7	65.7	69.2	66.9	69.2
1750	67.1	64.1	66.4	64.3	65.6	66.0	64.3	63.9	66.8	66.7	65.9	63.5	67.2	64.9	67.2
1800	65.2	62.1	64.6	62.3	63.7	64.0	62.3	61.9	64.9	64.7	64.0	61.4	65.3	62.9	65.2
1850	63.3	60.0	62.7	60.3	61.7	62.2	60.3	59.9	63.0	62.8	62.0	59.3	63.4	60.8	63.2
1900	61.4	58.0	60.8	58.3	59.6	60.4	58.2	57.9	61.0	60.8	60.1	57.1	61.5	58.8	61.2
1950	59.4	55.9	58.8	56.1	57.6	58.4	56.2	55.9	59.1	58.8	58.1	55.0	59.6	56.8	59.2
2000	57.6	53.9	56.8	54.0	55.6	56.8	54.1	53.9	57.1	56.8	56.1	53.0	57.6	54.8	57.2
2050	55.7	52.0	54.7	52.0	53.6	54.4	52.2	52.0	55.0	54.8	54.1	50.8	55.6	52.9	55.2
2100	53.8	49.8	52.8	49.9	51.6	52.4	50.1	49.9	53.1	52.8	52.2	48.2	53.6	50.8	53.2
2150	51.9	47.7	50.5	47.8	49.5	50.3	47.9	47.7	51.0	50.3	50.2	46.0	51.8	48.7	51.2
2200	49.8	45.6	48.3	45.9	47.4	48.3	45.7	45.7	49.0	48.1	48.2	44.0	49.7	46.4	49.3
2250	47.7	43.4	46.1	43.8	45.2	46.2	43.3	43.3	46.9	46.1	46.1	41.4	47.7	44.2	47.0

BONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 16 (% Withdrawn)	CEA No. 17 (% Withdrawn)	CEA No. 18 (% Withdrawn)	CEA No. 19 (% Withdrawn)	CEA No. 20 (% Withdrawn)	CEA No. 21 (% Withdrawn)	CEA No. 22 (% Withdrawn)	CEA No. 23 (% Withdrawn)	CEA No. 24 (% Withdrawn)	CEA No. 25 (% Withdrawn)	CEA No. 26 (% Withdrawn)	CEA No. 27 (% Withdrawn)	CEA No. 36 (% Withdrawn)	CEA No. 37 (% Withdrawn)	CEA No. 38 (% Withdrawn)
2300	45.8	41.2	44.3	41.2	43.0	44.0	41.1	41.1	44.8	44.0	44.1	39.0	45.8	42.1	44.7
2350	43.5	39.1	41.9	39.0	40.9	41.9	39.0	39.0	42.7	41.9	42.0	36.9	43.5	39.9	42.5
2400	41.4	37.0	39.7	36.9	38.6	39.8	36.7	36.9	40.5	39.8	39.9	34.2	41.4	37.8	40.3
2450	39.2	34.8	37.4	34.8	36.4	37.8	34.3	34.7	38.3	37.4	37.9	31.9	39.4	35.8	38.1
2500	37.0	32.4	35.1	32.4	34.1	35.7	32.0	32.3	36.1	35.0	35.4	29.8	37.2	33.2	36.1
2550	34.9	30.2	32.9	30.0	31.8	33.4	29.8	29.9	33.9	32.9	33.2	27.6	35.1	30.8	33.8
2600	32.7	28.0	30.6	27.8	29.5	31.0	27.6	27.8	31.7	30.8	31.0	24.7	32.9	28.7	31.3
2650	30.2	25.9	28.0	25.6	27.3	28.8	25.1	25.6	29.5	28.4	28.8	22.0	30.7	26.7	29.0
2700	28.0	23.6	26.0	23.1	24.9	26.8	22.9	23.0	27.2	26.0	26.5	19.5	28.5	24.3	27.1
2750	25.8	21.0	23.7	20.8	22.4	24.3	20.2	20.9	24.9	23.9	24.1	16.9	26.4	21.9	24.5
2800	23.3	18.7	21.1	18.4	20.1	21.9	17.9	18.3	22.6	21.4	21.9	14.2	24.1	19.8	22.1
2850	21.0	16.1	18.9	16.8	17.6	19.8	15.3	15.9	20.3	18.9	19.3	11.8	21.8	17.2	20.0
2900	18.4	13.8	16.1	13.6	15.2	17.3	12.9	13.5	17.9	16.8	17.6	8.9	19.5	14.9	17.3
2950	15.9	11.1	13.9	10.9	12.7	14.8	10.3	10.8	15.5	14.0	14.4	6.5	17.2	12.8	15.0
3000	13.5	8.5	11.1	8.4	10.0	12.5	7.8	8.3	13.0	11.8	11.9	4.3	14.8	9.9	12.6
3050	10.7	6.1	8.8	5.8	7.5	9.8	5.7	5.8	10.5	9.0	9.3	2.7	12.4	7.8	10.0
3100	8.2	4.3	6.0	4.0	5.2	7.6	3.8	3.9	8.0	6.7	6.8	1.3	9.9	6.5	7.6
3150	5.8	2.7	4.3	2.6	3.5	5.2	2.4	2.7	5.6	4.7	4.7	0.7	7.5	3.6	5.2
3200	3.9	1.7	2.7	1.7	2.2	3.6	1.1	1.7	3.9	2.7	3.0	0.7	5.2	2.5	3.8
3250	2.4	0.7	1.8	0.7	1.0	1.9	0.7	0.7	2.6	1.7	1.8	0.7	3.5	1.2	2.2
3300	1.0	0.7	0.8	0.7	0.7	0.7	0.7	0.7	1.3	0.7	0.7	1.0	2.1	0.8	0.9
3350	0.7	0.7	0.8	0.7	0.6	0.7	0.7	0.7	0.6	0.4	0.7	1.0	0.8	0.6	0.6
3400	0.7	1.0	0.8	0.9	0.8	0.7	1.0	1.1	0.9	0.7	0.7	0.7	0.7	0.8	0.9
3450	0.7	1.0	1.1	0.8	1.2	1.0	0.8	1.1	0.8	0.7	0.7	0.7	0.8	1.0	0.9
3500	0.6	0.7	1.1	0.7	0.8	1.0	0.7	0.7	0.8	0.7	1.0	0.7	0.8	0.8	0.9
3550	1.0	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3600	0.7	0.7	0.8	0.7	0.6	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3650	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3700	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3750	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3800	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3850	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3900	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
3950	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
4000	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9
4050	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.9

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds vvvvvvvvv	CEA No. 39 (% Withdrawn)	CEA No. 40 (% Withdrawn)	CEA No. 41 (% Withdrawn)	CEA No. 42 (% Withdrawn)	CEA No. 43 (% Withdrawn)	CEA No. 44 (% Withdrawn)	CEA No. 45 (% Withdrawn)	CEA No. 46 (% Withdrawn)	CEA No. 47 (% Withdrawn)	CEA No. 48 (% Withdrawn)	CEA No. 49 (% Withdrawn)	CEA No. 50 (% Withdrawn)	CEA No. 51 (% Withdrawn)	CEA No. 52 (% Withdrawn)	CEA No. 53 (% Withdrawn)
0	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.1	100.1	101.4	100.4	101.1	100.1
50	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
100	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
150	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
200	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
250	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.1	100.1	101.4	100.4	101.1	100.1
300	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.4	101.2	100.1	101.4	100.4	101.1	100.1
350	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.4	101.2	100.1	101.4	100.4	101.1	100.1
400	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.4	101.2	100.1	101.4	100.4	101.1	100.1
450	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.1	100.1	101.4	100.4	101.1	100.1
500	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.4	101.2	100.1	101.4	100.4	101.1	100.1
550	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
600	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
650	100.1	100.2	101.4	100.3	100.2	100.1	100.3	100.0	100.3	101.2	100.1	101.4	100.4	101.1	100.1
700	100.1	99.3	100.7	99.7	100.2	99.0	100.2	100.0	100.4	101.1	100.1	101.4	100.3	100.2	99.7
750	100.0	98.4	100.4	98.8	99.2	98.2	99.3	99.9	100.3	100.6	99.1	99.7	99.5	100.0	99.1
800	99.2	97.3	99.5	97.5	98.6	97.0	98.3	99.0	99.4	99.4	98.3	98.6	98.5	99.0	98.0
850	97.9	95.9	98.3	96.4	97.2	95.7	96.7	97.7	98.4	98.4	97.1	97.5	97.3	97.9	96.4
900	96.4	94.3	97.4	94.9	95.9	94.2	95.3	96.2	97.4	97.1	95.8	96.3	95.6	96.3	95.2
950	95.2	92.7	95.6	93.4	94.3	92.7	93.8	95.1	95.6	95.7	94.3	94.8	94.4	95.1	93.6
1000	93.6	91.2	94.4	91.8	92.8	91.1	92.3	93.4	94.4	94.2	92.9	93.4	92.5	93.4	92.2
1050	92.2	89.4	92.6	90.3	91.1	89.5	90.4	92.1	92.6	92.7	91.3	91.8	91.3	92.0	90.4
1100	90.4	87.8	91.0	88.4	89.8	87.9	89.2	90.3	91.3	91.1	89.8	90.3	89.7	90.3	88.9
1150	89.0	86.0	89.4	87.1	87.9	86.2	87.3	88.8	89.4	89.4	88.1	88.4	87.8	88.9	87.2
1200	87.2	84.2	87.6	85.3	86.2	84.6	85.6	87.1	87.7	87.9	86.4	87.0	86.4	87.2	85.4
1250	85.4	82.3	85.8	83.4	84.6	82.8	84.2	85.4	86.3	86.1	84.8	85.4	84.4	85.4	83.9
1300	83.8	80.4	84.3	81.8	82.9	81.1	82.2	83.9	84.4	84.5	83.0	83.5	82.7	83.9	82.1
1350	82.2	78.5	82.3	80.1	81.2	79.3	80.4	82.0	82.5	82.7	81.3	82.0	81.2	82.2	80.2
1400	80.2	76.6	80.4	78.3	79.3	77.6	78.9	80.2	81.1	81.0	79.5	80.3	79.3	80.3	78.4
1450	78.5	74.7	78.7	76.4	77.5	75.8	77.2	78.7	79.3	79.2	77.8	78.5	77.5	78.7	76.5
1500	75.8	72.8	77.1	74.4	75.9	73.9	75.2	76.9	77.4	77.5	75.9	77.1	75.6	77.1	74.8
1550	75.1	70.8	75.3	72.6	74.0	72.0	73.3	75.1	75.6	75.6	74.0	75.3	74.0	75.2	73.0
1600	73.2	68.8	73.3	70.6	72.2	70.1	71.5	73.1	74.0	73.8	72.1	73.4	72.3	73.3	71.1
1650	71.3	66.8	71.4	68.9	70.3	68.2	69.9	71.3	72.3	71.9	70.2	71.5	70.3	71.5	69.2
1700	69.3	64.7	69.4	66.9	68.5	66.2	68.0	69.2	70.3	70.0	68.3	69.9	68.4	69.6	67.2
1750	67.4	62.6	67.8	65.0	66.6	64.2	66.1	67.3	68.3	68.0	66.3	68.3	66.4	67.9	65.2
1800	65.5	60.5	65.9	63.0	64.7	62.3	64.0	65.4	66.3	66.0	64.4	66.3	64.4	65.8	63.2
1850	63.8	58.4	64.0	60.9	62.8	60.3	62.0	63.6	64.3	64.0	62.4	64.3	62.4	63.9	61.1
1900	62.0	56.3	62.2	58.8	60.8	58.3	60.0	61.7	62.4	62.0	60.4	62.4	60.4	61.9	59.1
1950	60.0	54.2	60.2	56.7	58.8	56.1	58.0	59.8	60.4	60.0	58.5	60.7	58.5	59.9	57.1
2000	58.1	52.1	58.2	54.6	56.9	54.1	55.9	57.5	58.4	58.0	56.4	58.9	56.6	57.9	54.9
2050	56.1	49.8	56.2	52.5	54.8	52.1	53.8	55.5	56.4	55.9	54.4	57.0	54.5	55.9	52.9
2100	54.0	47.5	54.1	50.4	52.9	50.0	51.7	53.5	54.3	53.8	52.5	55.2	52.6	53.9	50.8
2150	52.1	45.3	52.1	48.3	50.8	47.9	49.4	51.5	52.3	51.8	50.4	53.2	50.5	52.0	48.3
2200	50.0	43.1	50.2	46.2	48.8	45.7	47.2	49.4	50.2	49.7	48.3	51.2	48.4	49.8	46.2
2250	48.0	40.7	49.1	44.2	46.7	43.5	45.0	47.3	48.2	47.6	46.2	49.3	46.4	47.7	44.1

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.	CEA No.
milliseconds	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
VVVVVVVV	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)	(% Withdrawn)
2300	45.9	38.3	48.1	41.9	44.6	41.3	43.0	45.1	46.0	45.5	44.1	47.2	44.3	45.6	41.7
2350	40.8	36.1	44.0	39.6	42.5	39.1	40.9	43.0	43.8	43.4	41.9	45.2	42.2	43.5	39.4
2400	41.5	33.7	41.8	37.3	40.3	36.9	38.7	40.9	41.5	41.1	39.8	43.2	40.2	41.4	37.1
2450	39.3	31.2	39.5	35.1	38.1	34.7	36.3	38.7	39.2	39.0	37.6	41.2	38.1	39.2	34.8
2500	37.1	28.8	37.4	33.1	35.9	32.4	34.0	36.4	37.1	36.8	35.3	39.2	35.9	37.1	32.3
2550	35.0	26.3	35.2	30.7	33.7	30.1	31.9	34.1	35.1	34.6	33.1	37.1	33.5	35.0	30.0
2600	33.0	23.9	33.1	28.3	31.5	27.8	29.8	31.9	32.7	32.3	30.9	35.1	31.3	33.0	27.7
2650	30.8	21.3	31.0	26.2	29.2	25.6	27.8	29.8	30.3	30.1	28.8	33.1	29.1	30.7	25.2
2700	28.3	18.9	28.7	23.8	27.0	23.3	25.0	27.3	28.0	27.8	26.5	30.7	27.1	28.4	22.7
2750	26.1	16.2	26.3	21.3	24.7	20.8	22.8	25.0	25.9	25.5	24.0	28.5	25.0	26.3	20.1
2800	23.9	13.5	24.1	19.1	22.3	18.4	20.4	22.8	23.3	23.2	21.8	26.3	22.4	24.1	17.6
2850	21.4	11.0	22.0	16.7	19.9	15.9	17.9	20.3	21.1	20.8	19.4	24.2	20.2	21.8	15.1
2900	19.1	8.2	19.4	14.1	17.6	13.5	15.7	17.9	18.8	18.5	17.0	22.0	18.0	19.3	12.4
2950	16.8	5.9	17.0	11.7	15.1	10.9	12.8	15.4	16.1	16.0	14.6	19.8	16.6	17.1	9.8
3000	14.2	3.9	14.8	9.0	12.5	8.3	10.6	12.9	14.0	13.6	12.0	17.3	13.1	14.6	7.0
3050	11.9	2.2	12.1	6.8	10.0	5.9	7.8	10.5	11.2	11.2	9.6	15.0	11.0	12.1	4.9
3100	9.2	1.0	9.9	4.8	7.5	4.1	5.8	7.9	8.9	8.7	7.1	12.9	8.2	9.7	3.9
3150	6.9	0.8	7.1	2.9	5.1	2.6	3.6	5.7	6.3	6.3	4.8	10.2	5.9	7.1	1.8
3200	4.8	0.8	4.9	1.9	3.4	1.5	2.5	3.6	4.5	4.2	3.4	7.9	4.1	4.9	0.8
3250	2.9	1.1	3.2	0.8	2.1	0.5	1.1	2.3	2.9	2.8	2.2	5.9	2.9	3.3	0.4
3300	1.8	1.1	1.9	0.9	0.9	0.9	0.6	0.8	1.9	1.4	1.1	3.9	1.9	2.0	0.8
3350	0.8	0.8	0.8	0.9	0.5	0.7	0.6	0.6	0.9	0.5	0.7	2.8	0.9	0.9	0.8
3400	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.8	0.9	0.4	0.8	1.4	0.8	0.7	0.8
3450	0.7	0.8	0.8	1.2	0.8	0.8	0.9	0.7	0.9	0.9	0.8	0.9	0.9	0.7	0.8
3500	1.1	0.8	0.8	0.9	0.8	0.8	0.7	0.9	1.2	0.7	0.8	0.9	0.9	0.7	0.8
3550	1.1	0.8	0.8	0.9	0.8	0.8	0.6	0.8	1.2	0.8	0.8	0.9	0.9	0.7	0.8
3600	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3650	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3700	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3750	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3800	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3850	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3900	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
3950	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
4000	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8
4050	0.7	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.9	0.8	0.8	0.9	0.9	0.7	0.8

SONGS–3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 54 (% Withdrawn)	CEA No. 55 (% Withdrawn)	CEA No. 56 (% Withdrawn)	CEA No. 57 (% Withdrawn)	CEA No. 58 (% Withdrawn)	CEA No. 59 (% Withdrawn)	CEA No. 60 (% Withdrawn)	CEA No. 61 (% Withdrawn)	CEA No. 62 (% Withdrawn)	CEA No. 63 (% Withdrawn)	CEA No. 64 (% Withdrawn)	CEA No. 65 (% Withdrawn)	CEA No. 66 (% Withdrawn)	CEA No. 67 (% Withdrawn)	CEA No. 68 (% Withdrawn)
0	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
50	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
100	100.3	101.1	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.2
150	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
200	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
250	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
300	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
350	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.3	101.3	100.3	100.1	100.1
400	100.3	101.2	100.0	100.3	100.1	101.5	100.0	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
450	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.3	101.3	100.3	100.1	100.1
500	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.3	101.3	100.3	100.2	100.1
550	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	101.3	100.3	100.1	100.1
600	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.3	101.3	100.3	100.1	100.1
650	100.3	101.2	100.0	100.3	100.1	101.5	100.1	100.3	100.3	101.0	101.2	100.5	100.3	100.1	100.1
700	100.3	101.2	100.0	100.3	100.1	100.5	100.1	99.4	100.3	101.0	101.0	100.2	100.3	100.1	100.1
750	100.3	101.2	98.7	100.3	100.0	100.2	98.9	98.4	99.5	101.0	100.2	99.3	100.3	100.1	99.8
800	99.4	100.2	97.8	100.3	99.1	99.3	98.1	97.2	99.0	100.4	99.3	98.3	99.4	100.1	99.1
850	98.4	99.4	96.7	100.0	98.0	97.8	96.9	95.4	97.5	100.0	98.3	96.8	98.4	100.1	97.7
900	97.3	98.4	95.1	99.2	96.6	96.6	95.4	94.3	96.3	99.1	97.1	95.3	97.2	98.9	96.3
950	95.5	97.3	93.7	97.9	95.2	95.2	93.9	92.5	94.8	97.9	95.4	94.1	96.5	98.0	95.0
1000	94.4	96.0	92.1	96.4	93.6	93.6	92.3	91.3	93.4	96.3	94.1	92.4	94.4	96.7	93.4
1050	92.5	94.3	90.6	95.4	92.2	92.3	90.8	89.5	91.7	95.1	92.4	91.1	93.5	95.3	92.0
1100	91.3	93.0	88.9	93.6	90.5	90.5	89.1	88.3	90.3	93.3	90.9	89.3	91.3	93.8	90.3
1150	89.4	91.2	87.3	92.3	89.1	88.7	87.6	86.4	88.4	91.9	89.3	88.0	89.4	92.2	88.7
1200	87.8	89.6	86.6	90.5	87.3	87.4	86.8	85.1	87.1	90.2	87.6	86.3	88.1	90.6	87.1
1250	86.3	88.2	83.9	89.2	85.7	85.5	84.1	83.2	85.3	88.6	85.9	84.6	86.3	89.0	85.5
1300	84.4	86.3	82.1	87.4	84.2	83.8	82.4	81.4	83.4	87.0	84.3	83.2	84.6	87.3	83.8
1350	82.7	84.8	80.4	85.6	82.3	82.3	80.6	79.9	82.0	85.2	82.4	81.2	83.2	85.6	82.0
1400	81.2	83.1	78.7	84.2	80.6	80.4	78.9	78.3	80.2	83.5	80.6	79.5	81.3	83.9	80.3
1450	79.3	81.2	77.0	82.3	79.0	78.6	77.1	76.3	78.4	81.9	78.9	78.1	79.6	82.1	78.6
1500	77.5	79.6	75.1	80.4	77.2	76.9	75.2	74.6	76.5	80.1	77.2	76.2	78.2	80.4	76.9
1550	75.6	78.0	73.3	78.9	75.3	75.2	73.3	73.0	74.9	78.4	75.3	74.3	76.3	78.7	75.1
1600	74.0	76.2	71.5	77.3	73.3	73.4	71.4	71.2	73.1	76.5	73.4	72.3	74.4	76.2	73.2
1650	72.3	74.2	69.6	75.3	71.4	71.4	69.5	69.2	71.2	74.8	71.4	70.4	72.5	75.0	71.4
1700	70.2	72.3	67.8	73.4	69.5	69.4	67.6	67.2	69.2	73.0	69.4	68.4	70.8	73.2	69.6
1750	68.3	70.4	66.9	71.4	67.6	68.2	65.8	65.2	67.3	71.2	67.4	66.4	69.1	71.3	67.6
1800	66.3	68.6	63.9	69.5	65.8	64.5	63.8	63.2	65.3	69.2	65.5	64.6	67.2	69.5	65.7
1850	64.3	67.0	62.0	67.6	63.8	63.5	61.8	61.2	63.4	67.2	63.5	62.5	65.2	67.6	63.8
1900	62.3	65.1	60.0	65.7	61.8	61.6	59.5	59.2	61.4	65.3	61.6	60.5	63.2	65.7	61.8
1950	60.4	63.1	58.1	63.8	59.8	59.8	57.5	57.2	59.5	63.2	59.5	58.4	61.2	63.7	59.8
2000	58.5	61.1	56.1	61.8	57.8	57.5	55.5	55.2	57.5	61.2	57.5	55.3	59.2	61.9	57.9
2050	56.6	59.1	54.1	59.8	55.5	55.4	53.5	53.2	55.6	59.2	55.5	54.3	57.3	59.9	55.9
2100	54.5	57.2	52.3	57.7	53.6	53.4	51.5	51.2	53.5	57.2	53.6	52.3	55.3	58.0	53.8
2150	52.6	55.3	50.3	55.6	51.5	51.4	49.4	49.1	51.6	55.2	51.5	50.3	53.3	56.0	51.8
2200	50.5	53.3	48.3	53.4	49.4	49.3	47.3	47.1	49.4	53.3	49.4	48.2	51.3	54.0	49.9
2250	48.5	51.4	46.3	51.4	47.3	47.3	45.1	45.1	47.3	51.3	47.3	46.2	49.2	52.1	47.9

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 54 (% Withdrawn)	CEA No. 55 (% Withdrawn)	CEA No. 56 (% Withdrawn)	CEA No. 57 (% Withdrawn)	CEA No. 58 (% Withdrawn)	CEA No. 59 (% Withdrawn)	CEA No. 60 (% Withdrawn)	CEA No. 61 (% Withdrawn)	CEA No. 62 (% Withdrawn)	CEA No. 63 (% Withdrawn)	CEA No. 64 (% Withdrawn)	CEA No. 65 (% Withdrawn)	CEA No. 66 (% Withdrawn)	CEA No. 67 (% Withdrawn)	CEA No. 68 (% Withdrawn)
2300	48.4	49.5	44.2	49.3	45.2	45.1	43.1	42.8	45.2	49.2	45.2	44.1	47.2	50.2	45.9
2350	44.3	47.4	42.2	47.3	43.2	42.7	40.9	40.4	43.1	47.1	43.2	42.0	45.1	48.1	43.7
2400	42.2	45.4	40.0	45.2	44.1	40.4	38.8	38.2	41.1	45.1	41.1	40.0	43.1	46.1	41.8
2450	40.1	43.3	38.0	43.1	38.9	38.3	36.6	36.1	38.9	42.9	38.9	38.0	41.1	44.0	39.5
2500	38.1	41.2	35.8	40.8	36.5	36.2	34.4	34.0	36.5	40.7	36.8	35.5	39.0	41.9	37.4
2550	36.0	39.1	33.7	38.4	34.2	33.8	32.2	31.7	34.2	38.4	34.3	33.2	36.7	39.9	35.2
2600	33.8	37.0	31.5	36.2	32.1	31.4	30.0	29.2	32.0	36.3	32.2	31.1	34.4	37.8	33.0
2650	31.5	34.9	29.4	34.1	30.0	29.4	27.8	27.1	29.9	34.1	30.1	28.9	32.1	35.7	30.8
2700	29.2	32.9	27.2	32.0	27.7	26.9	25.6	25.0	27.5	32.0	27.8	27.0	30.0	33.5	28.8
2750	27.1	30.7	24.9	29.4	25.3	24.3	23.4	22.4	25.1	29.7	25.4	24.3	27.9	31.4	26.4
2800	25.0	28.4	22.5	27.2	23.1	22.1	21.0	20.1	23.0	27.4	23.2	22.0	25.7	29.2	24.1
2850	22.8	26.2	20.4	25.1	20.8	19.4	18.7	17.9	20.4	25.2	20.8	19.9	23.2	27.1	21.8
2900	20.2	23.9	18.0	22.5	18.2	17.1	16.4	15.2	18.0	23.0	18.4	17.3	21.0	24.9	19.4
2950	17.9	21.8	15.6	20.2	15.9	14.3	14.0	12.9	15.9	20.5	16.1	15.0	18.8	22.6	17.0
3000	15.5	19.3	13.1	18.0	13.2	12.0	11.5	10.2	13.1	18.2	13.7	12.4	16.2	20.3	14.6
3050	13.0	16.9	10.7	15.3	11.0	9.2	9.1	7.9	10.9	15.8	11.2	9.9	13.9	17.9	12.1
3100	10.8	14.7	8.2	13.0	8.3	6.7	6.7	5.7	8.2	13.2	8.7	7.6	11.4	15.5	9.7
3150	8.0	12.0	5.8	10.3	6.0	4.8	4.6	3.8	5.9	10.8	6.2	5.3	8.9	13.1	7.1
3200	5.8	9.7	4.0	8.0	4.0	2.9	3.1	2.2	4.1	8.2	4.4	3.8	6.6	10.7	5.0
3250	3.8	7.0	2.6	5.7	2.8	1.9	1.8	0.9	2.6	5.9	2.9	2.3	4.7	8.1	3.3
3300	2.5	4.8	1.4	3.9	1.4	1.0	0.8	0.8	1.5	3.9	1.9	1.0	3.0	5.7	2.0
3350	1.0	3.3	0.4	2.1	0.8	1.0	0.8	0.8	0.8	2.5	0.9	0.8	1.8	3.9	0.7
3400	0.8	1.8	0.9	1.0	0.8	1.0	0.7	0.9	0.8	1.1	0.9	0.8	0.8	2.4	0.9
3450	0.8	0.7	0.7	1.0	1.1	1.3	1.0	1.2	0.8	0.7	0.9	0.8	0.8	1.3	0.8
3500	0.8	0.7	0.7	0.9	0.9	1.3	1.0	0.8	0.8	0.7	0.9	1.2	0.8	0.8	0.8
3550	1.0	0.7	0.7	1.2	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.8	0.8
3600	0.8	0.9	0.7	1.3	0.8	1.0	0.7	0.8	0.8	1.1	0.9	0.8	0.8	0.7	0.8
3650	0.8	1.0	0.7	1.0	0.8	1.0	0.7	0.8	0.8	0.8	0.9	0.8	0.8	1.2	0.8
3700	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	1.0	0.8
3750	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.8	0.8
3800	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.8	0.8
3850	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.7	0.8
3900	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.7	0.8
3950	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.7	0.8
4000	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.7	0.8
4050	0.8	0.7	0.7	0.9	0.8	1.0	0.7	0.8	0.8	0.7	0.9	0.8	0.8	0.7	0.8

SONGS–3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 69 (% Withdrawn)	CEA No. 70 (% Withdrawn)	CEA No. 71 (% Withdrawn)	CEA No. 72 (% Withdrawn)	CEA No. 73 (% Withdrawn)	CEA No. 74 (% Withdrawn)	CEA No. 75 (% Withdrawn)	CEA No. 76 (% Withdrawn)	CEA No. 77 (% Withdrawn)	CEA No. 78 (% Withdrawn)	CEA No. 79 (% Withdrawn)	CEA No. 80 (% Withdrawn)	CEA No. 81 (% Withdrawn)	CEA No. 82 (% Withdrawn)	CEA No. 83 (% Withdrawn)
0	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
50	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
100	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
150	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
200	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
250	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
300	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
350	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
400	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
450	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
500	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
550	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
600	100.8	101.4	100.3	100.5	100.1	100.1	100.8	100.3	101.3	101.0	100.2	101.1	101.1	100.3	100.3
650	100.0	101.4	100.3	100.5	100.1	100.1	100.2	100.3	101.3	100.4	100.2	101.1	101.1	100.3	100.3
700	100.2	100.4	100.3	100.5	100.1	100.0	100.1	100.2	101.3	100.3	100.2	101.1	101.1	100.3	100.3
750	98.9	99.5	100.3	100.5	100.1	99.2	99.2	99.4	100.3	99.4	98.5	99.9	100.1	99.4	100.3
800	97.0	98.6	100.3	100.5	100.0	98.2	98.3	98.4	99.4	98.4	98.2	99.3	99.0	98.5	100.3
850	96.8	97.5	100.1	99.8	99.2	97.1	97.2	97.1	98.4	97.2	97.0	98.4	98.1	97.1	99.4
900	95.3	96.4	99.4	99.3	98.2	95.4	95.8	95.4	97.4	95.5	95.6	97.1	96.8	96.3	98.4
950	93.9	94.8	98.2	98.0	96.8	94.2	94.3	94.2	95.8	94.4	94.1	95.7	95.3	95.0	97.5
1000	92.4	93.5	96.7	96.7	95.3	92.6	92.7	92.4	94.4	92.6	92.5	94.2	93.8	93.4	96.4
1050	90.9	91.6	95.4	95.6	94.1	91.2	91.3	91.1	92.9	91.4	90.9	92.8	92.2	92.1	94.9
1100	89.3	90.4	94.2	93.7	92.4	89.5	89.6	89.4	91.3	89.5	89.2	91.1	90.6	90.3	93.4
1150	87.8	88.6	92.4	92.5	91.1	88.2	88.2	87.7	89.8	88.2	87.5	89.5	89.0	88.8	91.9
1200	86.1	87.4	91.1	90.8	89.3	86.4	86.4	86.3	88.3	86.4	85.8	88.0	87.3	87.3	90.4
1250	84.5	85.4	89.4	89.5	87.7	85.0	85.0	84.4	86.5	84.8	84.1	86.3	85.7	85.5	88.7
1300	82.8	83.9	87.8	87.5	86.2	83.2	83.2	82.7	84.2	83.3	82.2	84.6	84.0	84.2	87.3
1350	81.1	82.4	86.3	86.0	84.4	81.6	81.5	81.2	83.3	81.4	80.6	83.0	82.2	82.8	85.4
1400	79.4	80.4	84.5	84.4	82.7	80.1	80.0	79.3	81.6	79.6	78.8	81.3	80.5	80.6	83.9
1450	77.7	79.0	83.2	82.6	81.2	78.3	78.3	77.5	80.2	78.1	77.0	79.8	78.8	79.2	82.3
1500	76.0	77.4	81.4	81.1	79.3	76.6	76.5	75.8	78.3	76.3	75.2	78.0	77.0	77.3	80.3
1550	74.1	75.3	79.6	79.4	77.6	75.1	74.8	74.1	76.4	74.4	73.3	76.2	75.1	75.5	76.8
1600	72.3	73.5	78.2	77.5	76.0	73.3	73.2	72.3	74.6	72.5	71.5	74.4	73.3	73.9	77.3
1650	70.4	71.8	76.4	75.8	74.3	71.4	71.3	70.3	72.9	70.6	69.6	72.6	71.5	72.2	75.3
1700	68.5	70.2	74.6	74.3	72.3	69.6	69.4	68.3	71.1	69.0	67.8	70.7	69.8	70.2	73.4
1750	66.5	68.3	72.8	72.4	70.3	67.9	67.4	66.3	69.2	67.0	65.7	68.9	67.9	68.2	71.6
1800	64.8	66.3	71.2	70.4	68.4	66.1	65.6	64.4	67.2	65.2	63.8	67.0	65.7	66.1	69.9
1850	62.8	64.3	69.3	68.5	66.3	64.1	63.7	62.4	65.2	63.2	61.8	65.2	63.8	64.3	68.2
1900	60.7	62.3	67.3	66.6	64.6	62.2	61.8	60.5	63.2	61.2	59.9	63.3	61.8	62.4	66.2
1950	58.7	60.3	65.4	64.7	62.7	60.3	59.9	58.5	61.2	59.2	57.9	61.4	59.8	60.5	64.2
2000	56.6	58.4	63.4	62.8	60.8	58.4	57.9	56.4	59.2	57.2	55.8	59.5	57.8	58.5	62.2
2050	54.5	56.4	61.4	61.0	58.9	56.5	56.0	54.3	57.2	55.2	53.8	57.6	55.7	56.4	60.2
2100	52.6	54.4	59.4	59.0	56.9	54.6	53.9	52.3	55.1	53.3	51.8	55.6	53.7	54.5	58.2
2150	50.5	52.5	57.5	56.9	55.0	52.7	52.0	50.3	53.2	51.2	49.7	53.7	51.8	52.8	56.2
2200	48.4	50.4	55.5	55.0	53.1	50.8	49.9	48.2	51.0	49.1	47.7	51.8	49.8	50.8	54.2
2250	46.2	48.4	53.5	53.0	51.0	48.8	47.9	46.2	48.9	46.9	45.6	49.8	47.5	48.8	52.3

SONGS_3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 69 (% Withdrawn)	CEA No. 70 (% Withdrawn)	CEA No. 71 (% Withdrawn)	CEA No. 72 (% Withdrawn)	CEA No. 73 (% Withdrawn)	CEA No. 74 (% Withdrawn)	CEA No. 75 (% Withdrawn)	CEA No. 76 (% Withdrawn)	CEA No. 77 (% Withdrawn)	CEA No. 78 (% Withdrawn)	CEA No. 79 (% Withdrawn)	CEA No. 80 (% Withdrawn)	CEA No. 81 (% Withdrawn)	CEA No. 82 (% Withdrawn)	CEA No. 83 (% Withdrawn)
2300	44.2	48.4	51.5	51.0	49.0	48.8	45.7	44.0	48.6	44.7	43.5	47.7	45.4	46.4	50.3
2350	41.9	44.3	49.5	48.7	46.8	44.8	43.8	41.7	44.6	42.4	41.3	45.6	41.3	44.4	48.2
2400	39.8	42.3	47.4	46.5	44.7	42.8	41.4	39.4	42.2	40.3	39.1	43.5	41.1	42.3	46.2
2450	37.5	40.2	45.3	44.4	42.6	40.5	39.3	37.2	40.1	38.2	36.9	41.4	39.0	40.2	44.2
2500	35.2	38.1	43.2	42.3	40.5	38.4	37.2	35.1	38.0	36.0	34.7	39.3	36.8	38.1	42.2
2550	33.0	36.1	41.2	40.2	38.6	36.3	35.3	33.0	35.8	33.5	32.5	37.2	34.6	36.1	40.1
2600	30.8	33.7	39.1	38.1	36.1	34.2	33.4	30.9	33.5	31.2	30.2	35.0	32.4	34.0	37.9
2650	28.5	31.4	36.6	36.1	34.1	32.1	30.8	28.2	31.3	29.1	27.9	32.8	30.2	31.9	35.6
2700	26.3	29.2	34.3	33.8	31.0	30.0	28.5	26.2	29.0	26.9	25.7	30.6	27.9	29.6	33.4
2750	23.9	27.2	32.1	31.2	29.5	27.7	26.4	24.0	26.7	24.3	23.4	28.4	25.8	27.3	31.2
2800	21.5	25.1	30.1	29.1	27.3	25.4	24.7	21.5	24.2	22.7	21.0	26.2	23.5	25.1	29.0
2850	19.1	22.7	27.8	27.1	25.1	23.2	22.0	19.1	22.0	19.5	18.7	24.0	21.2	23.0	27.1
2900	16.7	20.3	25.3	24.5	22.8	21.0	19.8	16.9	19.8	17.2	16.2	21.7	18.9	20.4	24.7
2950	14.3	18.1	23.1	22.1	20.3	18.7	17.4	14.3	17.1	14.9	13.7	19.3	16.5	18.1	22.3
3000	11.7	15.6	20.4	20.0	18.0	16.2	15.1	12.0	14.9	12.3	11.2	17.0	14.2	15.8	20.1
3050	9.2	13.2	18.1	17.4	15.4	13.9	12.9	9.3	12.1	9.9	8.7	14.6	11.8	13.1	17.9
3100	6.7	11.0	15.7	15.3	13.0	11.3	10.4	7.0	9.9	7.2	6.7	12.2	9.3	10.9	15.3
3150	4.7	8.3	13.1	12.4	10.3	9.0	8.0	4.9	7.2	5.1	4.3	9.6	6.8	8.2	13.0
3200	3.2	6.0	10.8	10.0	7.9	6.5	5.9	3.3	5.0	3.6	2.7	7.1	4.7	5.9	10.6
3250	2.0	4.1	8.1	7.8	5.6	4.5	4.0	1.9	3.8	2.2	1.6	4.9	3.9	4.0	8.0
3300	0.9	2.5	5.9	5.6	3.9	2.7	2.5	0.9	2.0	1.0	0.6	3.4	1.8	2.8	6.8
3350	0.6	1.4	3.9	3.8	2.5	1.6	1.6	0.9	0.9	0.9	1.0	2.1	0.4	1.5	4.0
3400	0.7	0.8	2.6	2.1	1.2	0.7	0.8	0.9	0.8	0.9	0.8	0.9	0.4	0.9	2.8
3450	4	0.9	1.0	1.0	0.8	0.8	0.8	0.9	0.9	1.2	0.9	0.6	0.7	0.9	1.8
3500	1.1	1.0	0.9	0.7	0.8	0.7	0.9	0.9	1.1	1.2	1.0	0.7	0.7	0.9	0.9
3550	0.7	1.0	0.9	0.8	0.8	0.7	1.1	0.9	1.2	0.9	0.8	0.8	0.7	0.9	0.9
3600	0.7	1.0	0.9	0.8	0.8	0.7	1.1	0.9	0.8	0.9	0.9	0.8	0.7	0.9	0.9
3650	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
3700	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
3750	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
3800	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
3850	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
3900	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
3950	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
4000	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9
4050	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.7	0.9	0.9

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds	CEA No. 84 (% Withdrwn)	CEA No. 85 (% Withdrwn)	CEA No. 86 (% Withdrwn)	CEA No. 87 (% Withdrwn)	Adjusted Time (millisec)	Maximum Position (% Withdrwn)	Average Position (% Withdrwn)	Minimum Position (% Withdrwn)	Standard Deviation (% Withdrwn)
0	101.1	100.1	100.3	101.5	-50.0	101.50	100.45	100.00	0.47
50	101.1	100.1	100.3	101.5	0.0	101.50	100.45	100.00	0.48
100	101.1	100.1	100.3	101.5	50.0	101.50	100.45	100.00	0.47
150	101.1	100.1	100.3	101.5	100.0	101.50	100.45	100.00	0.48
200	101.1	100.1	100.3	101.5	150.0	101.50	100.45	100.00	0.47
250	101.1	100.1	100.3	101.5	200.0	101.50	100.45	100.00	0.47
300	101.1	100.1	100.3	101.5	250.0	101.50	100.45	100.00	0.48
350	101.1	100.1	100.3	101.5	300.0	101.50	100.45	100.00	0.48
400	101.1	100.1	100.3	101.5	350.0	101.50	100.45	100.00	0.47
450	101.1	100.1	100.3	101.5	400.0	101.50	100.45	100.00	0.48
500	101.1	100.1	100.3	101.5	450.0	101.50	100.45	100.00	0.48
550	101.1	100.1	100.3	101.5	500.0	101.50	100.45	100.00	0.48
600	101.1	100.1	100.3	101.5	550.0	101.50	100.45	100.00	0.48
650	100.5	100.1	100.3	101.5	600.0	101.50	100.41	100.00	0.45
700	100.1	100.0	100.3	101.5	650.0	101.50	100.23	99.00	0.45
750	99.2	99.2	100.3	101.5	700.0	101.50	99.59	98.20	0.66
800	98.2	98.2	99.4	100.5	750.0	100.50	98.71	97.00	0.83
850	96.9	96.7	98.4	100.2	800.0	100.20	97.58	95.40	1.11
900	95.3	95.4	97.4	99.8	850.0	99.40	96.25	94.10	1.26
950	94.0	94.0	95.8	97.7	900.0	98.20	94.80	92.50	1.34
1000	92.3	92.3	94.4	96.8	950.0	96.70	93.30	91.00	1.40
1050	90.8	90.9	92.8	95.0	1000.0	95.50	91.74	89.10	1.50
1100	89.2	89.3	91.3	93.5	1050.0	94.20	90.11	87.50	1.52
1150	87.5	87.6	87.5	91.9	1100.0	92.50	88.46	85.90	1.56
1200	86.1	86.4	86.3	90.5	1150.0	91.10	86.83	84.00	1.62
1250	84.3	84.5	86.3	88.6	1200.0	89.50	85.11	82.10	1.67
1300	82.5	82.6	84.5	87.2	1250.0	87.80	83.37	80.30	1.71
1350	81.0	81.1	83.1	85.5	1300.0	86.30	81.65	78.50	1.76
1400	79.2	79.2	81.2	83.6	1350.0	84.50	79.89	76.80	1.78
1450	77.5	77.5	79.3	82.2	1400.0	83.20	78.16	74.70	1.84
1500	75.9	75.8	77.8	80.2	1450.0	81.40	76.38	72.80	1.87
1550	74.2	74.0	76.1	78.2	1500.0	79.80	74.54	70.80	1.93
1600	72.7	72.1	74.3	76.4	1550.0	78.20	72.69	68.80	1.97
1650	70.3	70.2	72.3	74.9	1600.0	76.40	70.81	66.80	2.03
1700	68.4	68.2	70.3	73.1	1650.0	74.50	68.91	64.70	2.07
1750	66.8	66.3	68.3	71.1	1700.0	72.80	67.00	62.80	2.10
1800	64.8	64.2	66.2	69.1	1750.0	71.20	65.04	60.50	2.15
1850	62.9	62.3	64.3	67.2	1800.0	69.30	63.	58.40	2.18
1900	60.9	60.3	62.3	65.2	1850.0	67.30	61.	56.30	2.22
1950	59.0	58.3	60.3	63.3	1900.0	65.40	59.13	54.20	2.25
2000	57.1	56.3	58.3	61.2	1950.0	63.40	57.12	52.10	2.29
2050	55.1	54.3	56.2	59.2	2000.0	61.40	55.10	49.80	2.31
2100	53.1	52.4	54.1	57.2	2050.0	59.40	53.20	47.50	2.36
2150	51.2	50.3	52.2	55.2	2100.0	57.50	51.05	45.30	2.42
2200	49.2	48.3	50.2	53.2	2150.0	55.50	43.98	43.10	2.45
2250	47.1	46.2	48.1	51.2	2200.0	53.50	46.88	40.70	2.53

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1985 Measured CEA Position (% Withdrawn) Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 84 (% Withdrawn)	CEA No. 85 (% Withdrawn)	CEA No. 86 (% Withdrawn)	CEA No. 87 (% Withdrawn)	Adjusted Time (millisec)	Maximum Position (% Withdrawn)	Average Position (% Withdrawn)	Minimum Position (% Withdrawn)	Standard Deviation (% Withdrawn)
2300	45.0	44.2	48.0	49.1	2250.0	51.50	44.75	38.30	2.80
2350	42.9	42.2	43.7	47.1	2300.0	49.50	42.61	36.10	2.64
2400	40.8	40.1	41.5	45.0	2350.0	47.40	40.49	33.70	2.72
2450	38.5	37.9	39.2	42.7	2400.0	45.30	38.25	31.20	2.77
2500	36.3	35.8	37.1	40.8	2450.0	43.20	36.09	28.80	2.81
2550	34.2	33.5	35.1	38.3	2500.0	41.20	33.87	26.30	2.89
2600	32.0	31.4	32.9	36.0	2550.0	39.10	31.65	23.90	2.93
2650	29.8	29.2	30.4	33.9	2600.0	36.80	29.41	21.30	2.98
2700	27.5	27.1	28.1	31.8	2650.0	34.30	27.15	18.90	3.01
2750	25.2	25.0	26.0	29.2	2700.0	32.10	24.83	16.20	3.11
2800	23.0	22.8	23.8	27.0	2750.0	30.10	22.53	13.50	3.20
2850	20.4	20.3	21.2	24.9	2800.0	27.80	20.17	11.00	3.29
2900	18.0	18.1	19.0	22.4	2850.0	25.30	17.77	8.20	3.35
2950	15.7	15.7	16.5	19.9	2900.0	23.10	15.35	5.90	3.37
3000	13.2	13.2	14.0	17.5	2950.0	20.40	12.90	3.90	3.46
3050	10.8	11.0	11.7	14.9	3000.0	18.10	10.47	2.20	3.40
3100	8.2	8.3	9.0	12.6	3050.0	15.70	8.15	1.50	3.23
3150	5.9	5.9	6.5	10.2	3100.0	13.10	6.00	0.70	2.84
3200	4.0	4.0	4.6	7.6	3150.0	10.80	4.24	0.70	2.38
3250	2.7	2.6	2.9	5.1	3200.0	8.10	2.79	0.00	1.91
3300	1.3	1.6	1.9	3.6	3250.0	6.80	1.77	0.50	1.39
3350	0.8	0.8	0.8	2.1	3300.0	4.00	1.13	0.00	0.85
3400	0.8	0.8	0.8	0.7	3350.0	2.80	0.91	0.40	0.44
3450	0.8	0.8	0.8	0.7	3400.0	1.80	0.89	0.40	0.21
3500	1.1	0.8	0.8	0.7	3450.0	1.30	0.85	0.50	0.16
3550	0.9	0.8	0.8	0.7	3500.0	1.20	0.80	0.00	0.17
3600	0.8	0.8	0.8	1.0	3550.0	1.30	0.78	0.10	0.15
3650	0.8	0.8	0.8	0.7	3600.0	1.20	0.78	0.50	0.11
3700	0.8	0.8	0.8	0.7	3650.0	1.00	0.76	0.30	0.11
3750	0.8	0.8	0.8	0.7	3700.0	1.00	0.76	0.00	0.13
3800	0.8	0.8	0.8	0.7	3750.0	1.00	0.76	0.10	0.12
3850	0.8	0.8	0.8	0.7	3800.0	1.00	0.76	0.00	0.13
3900	0.8	0.8	0.8	0.7	3850.0	1.00	0.76	0.00	0.13
3950	0.8	0.8	0.8	0.7	3900.0	1.00	0.76	0.00	0.13
4000	0.8	0.8	0.8	0.7	3950.0	1.00	0.76	0.00	0.13
4050	0.8	0.8	0.8	0.7	4000.0	1.00	0.76	0.00	0.13

SONGS–3 Cycle 4 CEA Drop Time Test – August, 1988 CEA Drop Times Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 1 (Seconds)	CEA No. 2 (Seconds)	CEA No. 3 (Seconds)	CEA No. 4 (Seconds)	CEA No. 5 (Seconds)	CEA No. 6 (Seconds)	CEA No. 7 (Seconds)	CEA No. 8 (Seconds)	CEA No. 9 (Seconds)	CEA No. 10 (Seconds)	CEA No. 11 (Seconds)	CEA No. 12 (Seconds)	CEA No. 13 (Seconds)	CEA No. 14 (Seconds)	CEA No. 15 (Seconds)
time to 90% inserted (seconds) >>>>>>>>>	3.054	3.027	2.967	2.956	2.924	2.958	3.013	2.934	3.029	2.876	2.946	3.042	2.980	2.978	2.954
time to 75% inserted (seconds) >>>>>>>>	2.716	2.711	2.657	2.656	2.617	2.650	2.704	2.622	2.702	2.581	2.648	2.724	2.667	2.668	2.648
time to 50% inserted (seconds) >>>>>>>>	2.100	2.126	2.102	2.083	2.048	2.078	2.131	2.060	2.105	2.041	2.081	2.150	2.095	2.093	2.074
time to 25% inserted (seconds) >>>>>>>	1.444	1.488	1.495	1.442	1.421	1.453	1.494	1.442	1.453	1.41[illegible]	1.458	1.520	1.474	1.450	1.426
time to 10% inserted (seconds) >>>>>>>>>	1.013	1.059	1.057	1.016	1.006	1.036	1.070	1.026	1.026	1.005	1.035	1.065	1.050	1.032	1.000
time to 1% inserted (seconds) >>>>>>>	0.695	0.743	0.804	0.700	0.705	0.745	0.756	0.725	0.706	0.705	0.711	0.750	0.748	0.723	0.704
Coil Decay Time (seconds) >>>>>>>>>	0.588	0.598	0.658	0.614	0.651	0.592	0.700	0.650	0.650	0.619	0.650	0.694	0.696	0.608	0.618

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 CEA Drop Times Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 16 (Seconds)	CEA No. 17 (Seconds)	CEA No. 18 (Seconds)	CEA No. 19 (Seconds)	CEA No. 20 (Seconds)	CEA No. 21 (Seconds)	CEA No. 22 (Seconds)	CEA No. 23 (Seconds)	CEA No. 24 (Seconds)	CEA No. 25 (Seconds)	CEA No. 26 (Seconds)	CEA No. 27 (Seconds)	CEA No. 36 (Seconds)	CEA No. 37 (Seconds)	CEA No. 38 (Seconds)
time to 90% inserted (seconds) >>>>>>>>>	3.014	2.922	2.974	2.918	2.950	2.996	2.906	2.916	3.010	2.982	2.987	2.831	3.048	2.948	3.000
time to 75% inserted (seconds) >>>>>>>>	2.716	2.618	2.672	2.612	2.648	2.686	2.602	2.612	2.698	2.674	2.681	2.543	2.730	2.635	2.690
time to 50% inserted (seconds) >>>>>>>>	2.145	2.045	2.111	2.048	2.088	2.108	2.052	2.048	2.125	2.107	2.105	2.084	2.143	2.069	2.132
time to 25% inserted (seconds) >>>>>>>	1.483	1.416	1.478	1.430	1.453	1.466	1.426	1.403	1.481	1.476	1.455	1.417	1.500	1.428	1.492
time to 10% inserted (seconds) >>>>>>>>>	1.053	1.000	1.055	1.022	1.028	1.031	1.003	0.976	1.047	1.032	1.026	1.006	1.074	1.000	1.063
time to 1% inserted (seconds) >>>>>>>	0.731	0.694	0.755	0.706	0.700	0.706	0.694	0.660	0.736	0.706	0.710	0.706	0.761	0.700	0.742
Coil Decay Time (seconds) >>>>>>>>>	0.654	0.608	0.689	0.649	0.646	0.650	0.606	0.602	0.650	0.649	0.651	0.654	0.607	0.651	0.648

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 CEA Drop Times Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 39 (Seconds)	CEA No. 40 (Seconds)	CEA No. 41 (Seconds)	CEA No. 42 (Seconds)	CEA No. 43 (Seconds)	CEA No. 44 (Seconds)	CEA No. 45 (Seconds)	CEA No. 46 (Seconds)	CEA No. 47 (Seconds)	CEA No. 48 (Seconds)	CEA No. 49 (Seconds)	CEA No. 50 (Seconds)	CEA No. 51 (Seconds)	CEA No. 52 (Seconds)	CEA No. 53 (Seconds)
time to 90% inserted (seconds) >>>>>>>>>	3.035	2.818	3.048	2.931	3.000	2.917	2.981	3.010	3.026	3.024	2.992	3.104	3.018	3.041	2.898
time to 75% inserted (seconds) >>>>>>>>	2.725	2.527	2.730	2.625	2.693	2.613	2.650	2.700	2.717	2.711	2.680	2.781	2.700	2.730	2.604
time to 50% inserted (seconds) >>>>>>>>	2.150	1.996	2.155	2.060	2.120	2.050	2.087	2.136	2.155	2.143	2.110	2.182	2.112	2.145	2.063
time to 25% inserted (seconds) >>>>>>>	1.503	1.392	1.508	1.435	1.474	1.421	1.455	1.503	1.519	1.517	1.474	1.508	1.469	1.505	1.444
time to 10% inserted (seconds) >>>>>>>>>	1.064	0.983	1.081	1.008	1.037	0.984	1.017	1.060	1.084	1.082	1.043	1.058	1.034	1.061	1.013
time to 1% inserted (seconds) >>>>>>>	0.758	0.667	0.771	0.689	0.717	0.650	0.715	3.750	0.770	0.770	0.706	0.732	0.726	0.750	0.705
Coil Decay Time (seconds) >>>>>>>>>	0.671	0.600	0.600	0.603	0.648	0.597	0.619	0.671	0.702	0.640	0.548	0.646	0.619	0.589	0.612

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 CEA Drop Times Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 54 (Seconds)	CEA No. 55 (Seconds)	CEA No. 56 (Seconds)	CEA No. 57 (Seconds)	CEA No. 58 (Seconds)	CEA No. 59 (Seconds)	CEA No. 60 (Seconds)	CEA No. 61 (Seconds)	CEA No. 62 (Seconds)	CEA No. 63 (Seconds)	CEA No. 64 (Seconds)	CEA No. 65 (Seconds)	CEA No. 66 (Seconds)	CEA No. 67 (Seconds)	CEA No. 68 (Seconds)
time to 90% inserted (seconds) >>>>>>>>>	3.064	3.143	3.014	3.167	3.019	2.986	2.981	2.954	3.017	3.116	3.024	2.998	3.078	3.183	3.044
time to 75% inserted (seconds) >>>>>>>>	2.750	2.826	2.698	2.802	2.707	2.687	2.664	2.650	2.702	2.805	2.709	2.687	2.764	2.848	2.730
time to 50% inserted (seconds) >>>>>>>>	2.163	2.237	2.108	2.233	2.136	2.133	2.088	2.079	2.138	2.230	2.136	2.107	2. 1	2.255	2.148
time to 25% inserted (seconds) >>>>>>>	1.519	1.580	1.453	1.608	1.508	1.509	1.455	1.438	1.497	1.594	1.508	1.482	1.534	1.600	1.503
time to 10% inserted (seconds) >>>>>>>>>	1.084	1.138	1.015	1.189	1.068	1.064	1.024	0.986	1.058	1.158	1.078	1.031	1.084	1.169	1.059
time to 1% inserted (seconds) >>>>>>>	0.770	0.820	0.688	0.858	0.755	0.760	0.696	0.670	0.750	0.854	0.765	0.715	0.770	0.846	0.754
Coil Decay Time (seconds) >>>>>>>>>	0.701	0.700	0.647	0.768	0.669	0.681	0.648	0.601	0.648	0.703	0.816	0.642	0.701	0.798	0.653

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 CEA Drop Times Versus CEA Number

Raw Time milliseconds VVVVVV	CEA No. 69 (Seconds)	CEA No. 70 (Seconds)	CEA No. 71 (Seconds)	CEA No. 72 (Seconds)	CEA No. [illegible] (Seconds)	CEA No. 74 (Seconds)	CEA No. 75 (Seconds)	CEA No. 76 (Seconds)	CEA No. 77 (Seconds)	CEA No. 78 (Seconds)	CEA No. 79 (Seconds)	CEA No. 80 (Seconds)	CEA No. 81 (Seconds)	CEA No. 82 (Seconds)	CEA No. 83 (Seconds)
time to 90% inserted (seconds) >>>>>>>>>	2.984	3.089	3.165	3.150	3.106	3.078	3.058	2.987	3.048	2.998	2.974	3.092	3.036	3.067	3.162
time to 75% inserted (seconds) >>>>>>>>	2.877	2.752	2.857	2.840	2.802	2.758	2.741	2.677	2.734	2.687	2.685	2.777	2.717	2.752	2.844
time to 50% inserted (seconds) >>>>>>>>	2.112	2.180	2.268	2.272	2.225	2.170	2.148	2.107	2.174	2.129	2.093	2.195	2.141	2.185	2.257
time to 25% inserted (seconds) >>>>>>>	1.476	1.508	1.637	1.627	1.579	1.503	1.494	1.474	1.539	1.484	1.456	1.533	1.503	1.516	1.608
time to 10% inserted (seconds) >>>>>>>>>	1.028	1.061	1.182	1.181	1.131	1.035	1.038	1.032	1.093	1.037	1.026	1.084	1.056	1.060	1.162
time to 1% inserted (seconds) >>>>>>>	0.696	0.728	0.887	0.882	0.810	0.710	0.711	0.720	0.770	0.720	0.700	0.767	0.750	0.722	0.820
Coil Decay Time (seconds) >>>>>>>>>	0.550	0.599	0.768	0.747	0.719	0.619	0.551	0.619	0.649	0.551	0.647	0.644	0.651	0.650	0.751

SONGS-3 Cycle 4 CEA Drop Time Test – August, 1988 CEA Drop Times Versus CEA Number

Raw Time milliseconds VVVVVVVV	CEA No. 84 (Seconds)	CEA No. 85 (Seconds)	CEA No. 86 (Seconds)	CEA No. 87 (Seconds)	Maximum Position (Seconds)	Average Position (Seconds)	Minimum Position (Seconds)	Standard Deviation (Seconds)
time to 90% inserted (seconds) >>>>>>>>>	3.015	3.019	3.031	3.104	3.165	3.009	2.818	0.071
time to 75% inserted (seconds) >>>>>>>>	2.705	2.700	2.723	2.798	2.857	2.699	2.527	0.067
time to 50% inserted (seconds) >>>>>>>>	2.130	2.108	2.155	2.229	2.288	2.127	1.996	0.058
time to 25% inserted (seconds) >>>>>>>	1.478	1.472	1.531	1.59.	1.637	1.489	1.392	0.053
time to 10% inserted (seconds) >>>>>>>>>	1.025	1.026	1.067	1.163	1.182	1.054	0.976	0.048
time to 1% inserted (seconds) >>>>>>>	0.710	0.710	0.770	0.857	0.867	0.738	0.650	0.048
Coil Decay Time (seconds) >>>>>>>>>	0.553	0.619	0.701	0.691	0.798	0.644	0.542	0.071