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16. Abstract

The principle objective of this study was to develop a procedure using available departmental data on operation, maintenance and replacement costs to provide DOTD with guidelines for the identification of equipment with a high priority for replacement. It was desired, further, to specify a required funding to bring the department's equipment pool current.

The objectives of the study were accomplished. A procedure for the assignment of priorities for equipment replacement is specified in the body of the report. The funding required to bring all equipment within an optimal operating cost area is estimated to be in the range of 36-42 million dollars.

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DEVELOPMENT OF AN APPROACH TO FACILITATE OPTIMAL EQUIPMENT REPLACEMENT

by

Thomas G. Ray, Ph.D., P.E.
Industrial and Manufacturing Systems Engineering Department
Louisiana State University
Baton Rouge, Louisiana

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LOUISIANA TRANSPORTATION RESEARCH CENTER

December 1998

ABSTRACT

The principle objective of this study was to develop a procedure using available departmental data on operation, maintenance, and replacement costs to provide DOTD with guidelines for the identification of equipment with high replacement priority. It was desired, further, to specify required funding to bring the department's equipment pool current.

The objectives of the study were accomplished. A procedure for the assignment of equipment replacement priorities is specified in the body of the report. The funding required to bring all equipment within an optimal operating cost area is estimated to be in the range of $36-42 million dollars.

IMPLEMENTATION STATEMENT

The results obtained by this study may be in part implemented through a directive requiring that the all equipment to be replaced be prioritized by the chosen urgency rating method. Results related to the funding required to bring the equipment pool current are for informational purposes and cannot be effected without legislative action.3

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INTRODUCTION

The Louisiana Department of Transportation and Development (DOTD) has a large quantity of equipment for which the department maintains a computerized database of information (EQMS). Management of the department is interested in two points with regard to the equipment. They are as follows: When insufficient funds are allocated to replace all equipment that is in service past its economic life, what would be a good procedure for allocating funds? Secondly, what funding requirement would be necessary to bring the equipment pool current, i.e., to replace all equipment that is past its economic service life?

Before exploring these questions further, a discussion of some relevant literature is deemed appropriate. Terborgh[1] says, "When we consider the advanced techniques now employed in other areas of business management, we may well wonder if equipment policy is not, in general, the most backward sector of all." At the time of this statement Terborgh had not developed his Machine and Allied Products Institute (MAPI) urgency rating and had not made other contributions in the area of equipment replacement policy. He was looking at the new techniques of operations research that had been used in the recent war effort and most recently applied to industrial problems in the civilian sector.

It goes without saying that there are still difficulties in applying economics to the replacement problem. Most models for usage in this area were developed as intertemporal (multi-period) planning models. They incorporate the time value of money and require the forecasting of the

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[1] George Terborgh, *Dynamic Equipment Policy*, McGraw-Hill Book Company, New York,1949, p.216

most significant elements of the data used in their application. [2] There is one theory, however, that is valid and applicable for the case at hand. This concept is that of economic service life.[3] The basic thesis of economic service life is that when an asset is placed in service it has associated costs for depreciation, operation, maintenance, and lost service time. In general, on an annual cost basis the cost of depreciation will drop with each year of use, and the other three components will rise. This relationship leads to the phenomena of economic life, the life at which the average annual cost of operation of the equipment is at its minimum cost. At this point the depreciation charge equals the sums of the other three costs of having the equipment in service. At this economic life, the annual cost of ownership is at a minimum, and past this economic life, the cost of use begins to increase.

The result of applying this principle is then to replace equipment when it reaches its economic life in order to minimize costs. This principle is true only for an ideal world in which there is no inflation. In reality, when the cost curve for the equipment begins to ascend, it may still be cheaper to operate the existing equipment than to purchase new equipment (the assumption of the model is like-for-like-replacement, i.e. that the new equipment is identical to, and cost the same as, the old). Further, the replacement policies in the private sector are structured for economic feasibility considering the time value of money. They are not necessarily limited to a fixed budget for one year but consider the possibility of borrowing funds to spend more in the current period if this can be economically justified.

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[2] William T. Morris, *The Analysis of Management Decisions*, pp.193-221, Richard D. Irwin, Inc., Homewood, Illinois, 1964.

[3]Chan S. Park, *Contemporary Engineering Economics*, pp.660-601, Addison-Wesley Publishing Company, Reading, Mass.,1994.

Terborgh's MAPI urgency rating was essentially a multi-period comparison based upon a model that assumes a constantly improving technology that provides equipment in each successive period that is more productive than what was available in the previous period. In that situation, it is possible to delay the replacement of a unit in order to get a unit next year that will be a significant improvement. The MAPI method yields an urgency rating based upon these assumptions. It is apparent that the case at hand does not meet the conditions for such an urgency rating.

For the case at hand, funds budgeted must be expended in the budgeted year. There is no borrowing and no investing of funds budgeted to provide flexibility in some future period. Hence, the results of applying the principle must be tempered to some extend for the reality that we wish to consider.

The DOTD system must take into the account two priorities: general case and a higher priority necessitated by logic. The general case must include the equipment in the pool not chosen for the higher priority category of funds allocation. Equipment in the higher priority category may be replaced and the replaced equipment functionally downgraded into the lower category to be evaluated later for replacement and disposal. Included in the high priority category could be equipment representing a new technology that is essential for evaluation (technically, this case is not replacement, but rather, an initial purchase). The equipment from the higher priority category may be replaced and the replaced equipment sold as would be the procedure for the lower priority category. Equipment placed into the higher priority category will be replaced if sufficient funds are available. Normally, the fund requirements for this category will be small in relation to the overall replacement budget, and hence inclusion in this category would ascertain that the

replacement occurs.

An administrative example of equipment placed into the high priority category would be an automobile used by an undersecretary that was entering a period of questionable reliability due to high mileage. If the unit was of the type that was included in the general pool it could be functionally downgraded and used in the general pool. If the car were not the type used in the general pool it would be sold.

For the top priority category of replacement candidates (defenders), if funds allocated in this category are insufficient to cover the entire set of units, an administrative determination can be made as to priority. For the general priority category of replacement, it appears that the urgency rating for replacement could be a priority assigned to each unit. The value assigned would be the ratio of the current age of the asset to the economic life for that category of asset.

Information available for analysis does not provide a basis for the analysis of a specific piece of equipment that is currently in operation, but rather for an equipment category or class. Thus, statistical information can be used to calculate the economic life for a category of equipment, but no conclusions can be drawn for a specific piece of equipment other than the generalizations made for the category. A management policy could be adopted to "disallow the application of maintenance funds for major repairs to equipment that has reached 80 percent of its economic life or if the repair cost will exceed 50 percent of the book value of the equipment." Policies such as these would be justifiable economically due to the fact that the large investment in the later years of the equipment's life would significantly increase the total annual costs for the last years of operation. The reduced economic life would default to the current period, thereby increasing the urgency rating for the equipment in question to the value of "one". The fact that the

equipment is not operating would necessarily need to be taken into account if the equipment were a required unit, thereby advancing this inoperable unit into the priority category.

The suggested process for funds allocation is as shown in figure 1. Figure 2 illustrates the consideration previously discussed related to the interface between allocation for capital budgeting and the on-going maintenance process for aged equipment.

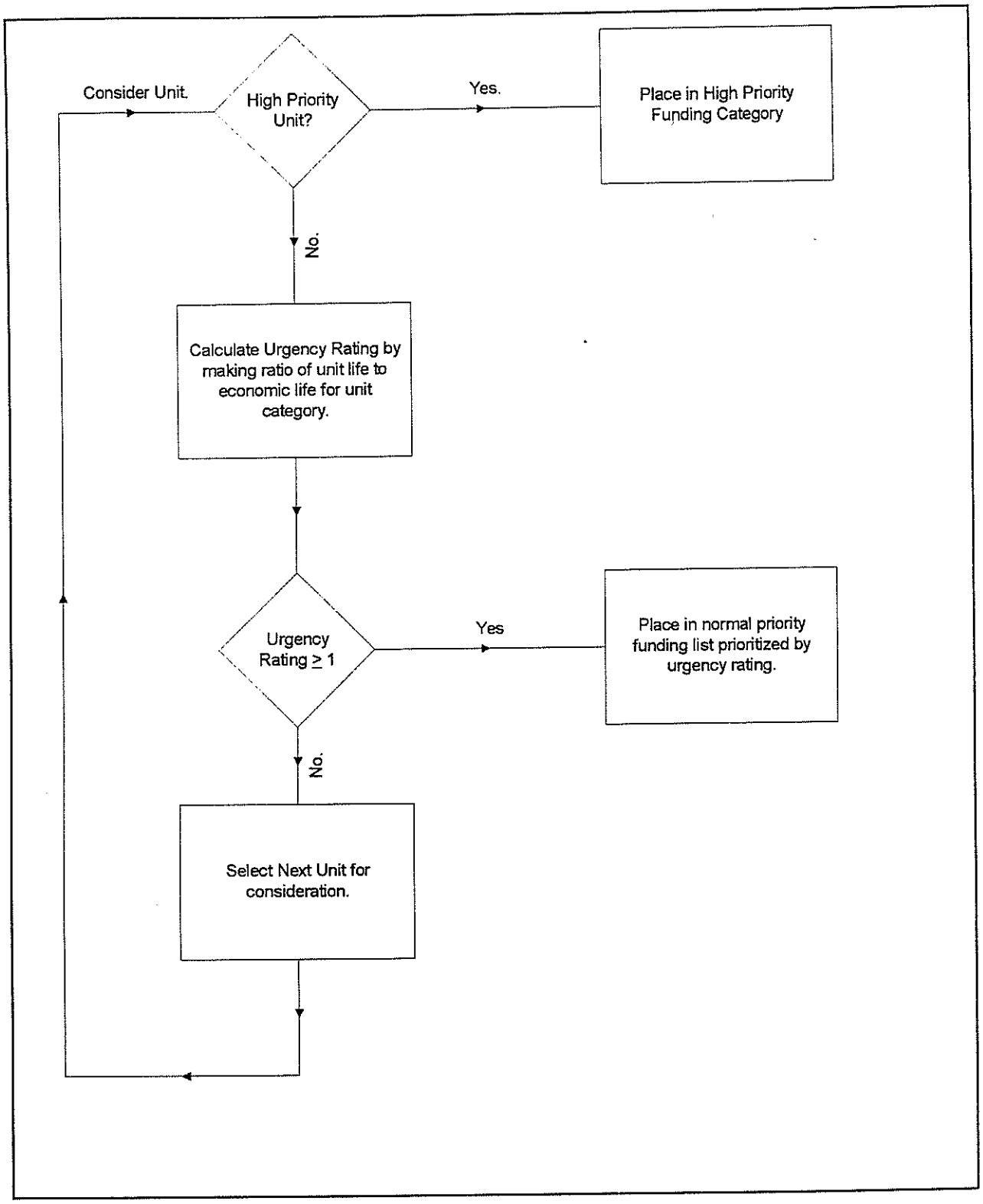

Figure 1
Flow diagram of suggested procedure for funds allocation to equipment

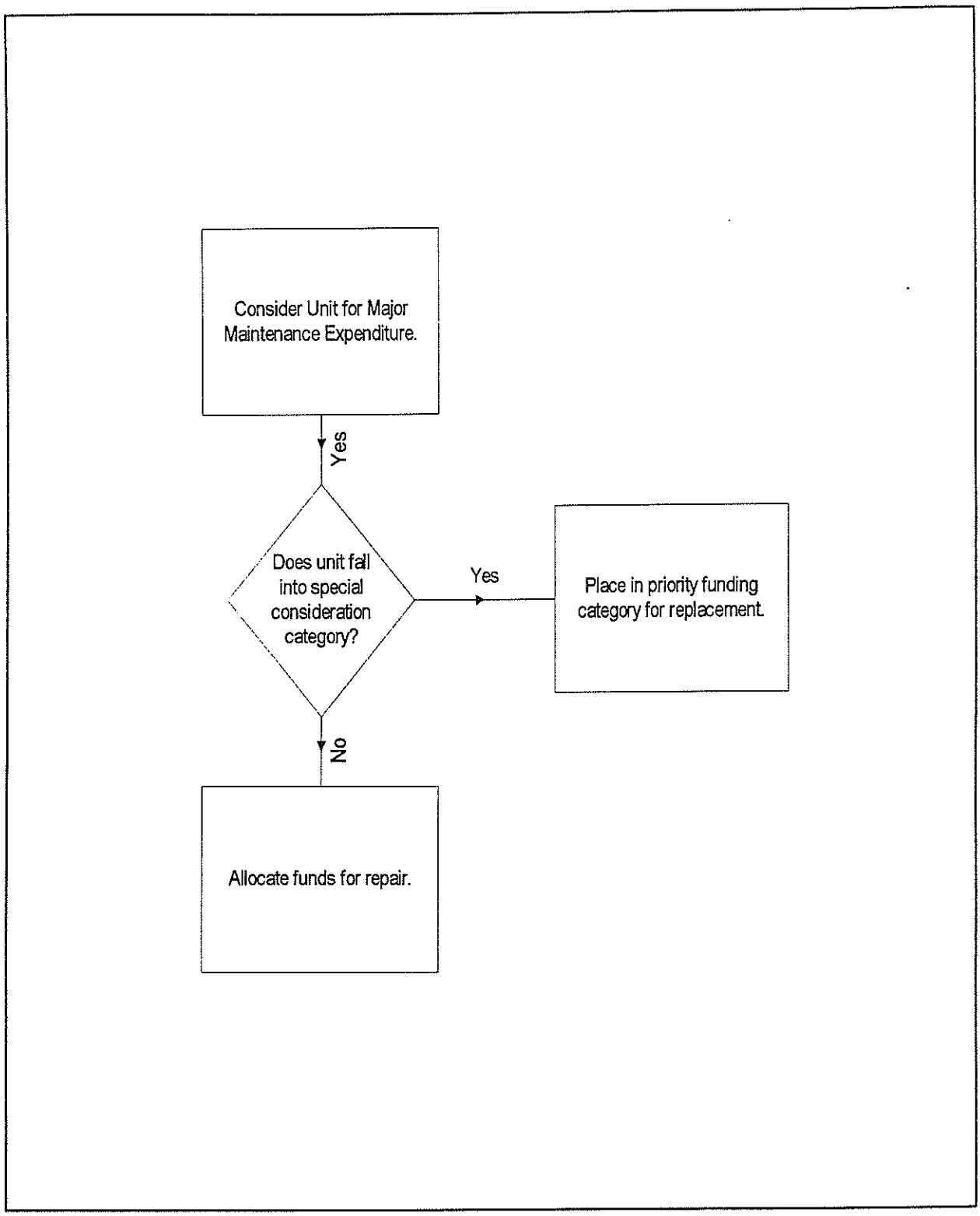

Figure 2
Flow diagram of process for maintenance consideration of major repairs

OBJECTIVE

The objective of the study was to determine a way or ways to assign an urgency rating to equipment that is currently in service but in need of replacement. This urgency rating must in some manner take into account the various costs associated with retaining the equipment in service. Further, it is desired to determine the required capital budget to bring the equipment pool current in terms of economic life, i.e., the required funds to replace all equipment that is past its economic life.

SCOPE

The study is of the equipment pool of the Louisiana Department of Transportation and Development. This pool includes all assigned automobiles, trucks, tractors, and equipment of various categories. The current pool includes approximately 6,000 pieces belonging to 240 or more categories. The data used was that of the EQMS (Equipment Management System) of DOTD. In some cases, the data was deficient or deemed lacking for analysis. Most of these cases involved new equipment where insufficient data had been accumulated for analysis. In other cases where there was data, but inconclusive results, no elimination was made of the information, rather it was left for study by department personnel who might have interest in the anomalies.

METHODOLOGY

Data from the EQMS was obtained. This data had been accumulated over a period in excess of twenty years. The initial analysis was done to index the data for inflation. All costs were converted to a "percent of initial cost" so that they could be used as a basis for statistical analysis. Using first costs and other maintenance and down time costs as a percentage of first cost, a one-way analysis of variance was run to analyze the cost data for each type of equipment (see figure 3). This analysis revealed that the confidence intervals on costs were the tightest in the earlier years of the equipment life and became more divergent as the equipment was held in service for longer and longer periods. Next, a model was formulated for analyzing the economic life of the equipment and the economic lives were calculated category by category. Curves were constructed (see figure 4) to illustrate the minimum cost lives for each category of equipment. Using these economic lives, pool equipment was examined piece by piece to determine whether it was past the economic point for replacement. Cost of replacement information was obtained from DOA Purchasing, and together with the individual economic life analysis result was used to determine the funds required to bring the pool current (appendix).

One-Way Analysis of Variance

Analysis of Variance for TAC

Source	DF	SS	MS	F	P
AGE	15	75.133	5.009	12.64	0.000
Error	2876	1140.018	0.396		
Total	2891	1215.151			

Level	N	Mean	StDev
1	168	0.9425	2.2588
2	274	0.3469	0.1809
3	300	0.3155	0.3416
4	299	0.3328	0.8872
5	215	0.2688	0.1629
6	243	0.2588	0.0830
7	251	0.2530	0.0614
8	274	0.2421	0.0354
9	257	0.2442	0.0365
10	222	0.2444	0.0366
11	195	0.2386	0.0305
12	99	0.2282	0.0250
13	55	0.2223	0.0237
14	26	0.2402	0.0393
15	12	0.2453	0.0470
16	2	0.2161	0.0092

Pooled StDev = 0.6296

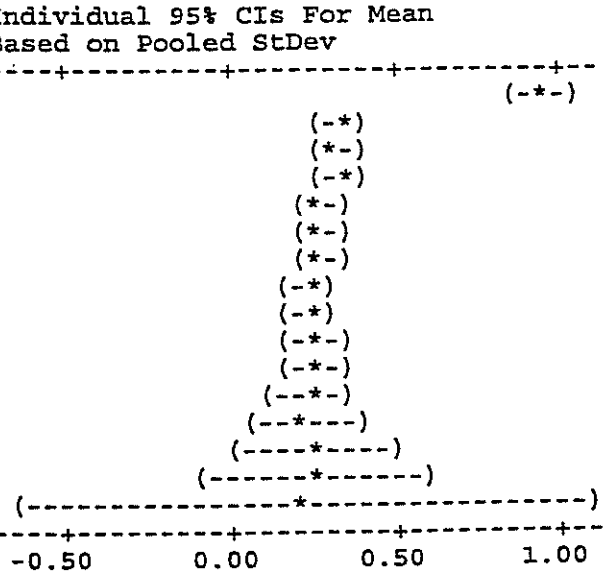

Figure 3
Example of one-way analysis-of-variance of data from EQMS

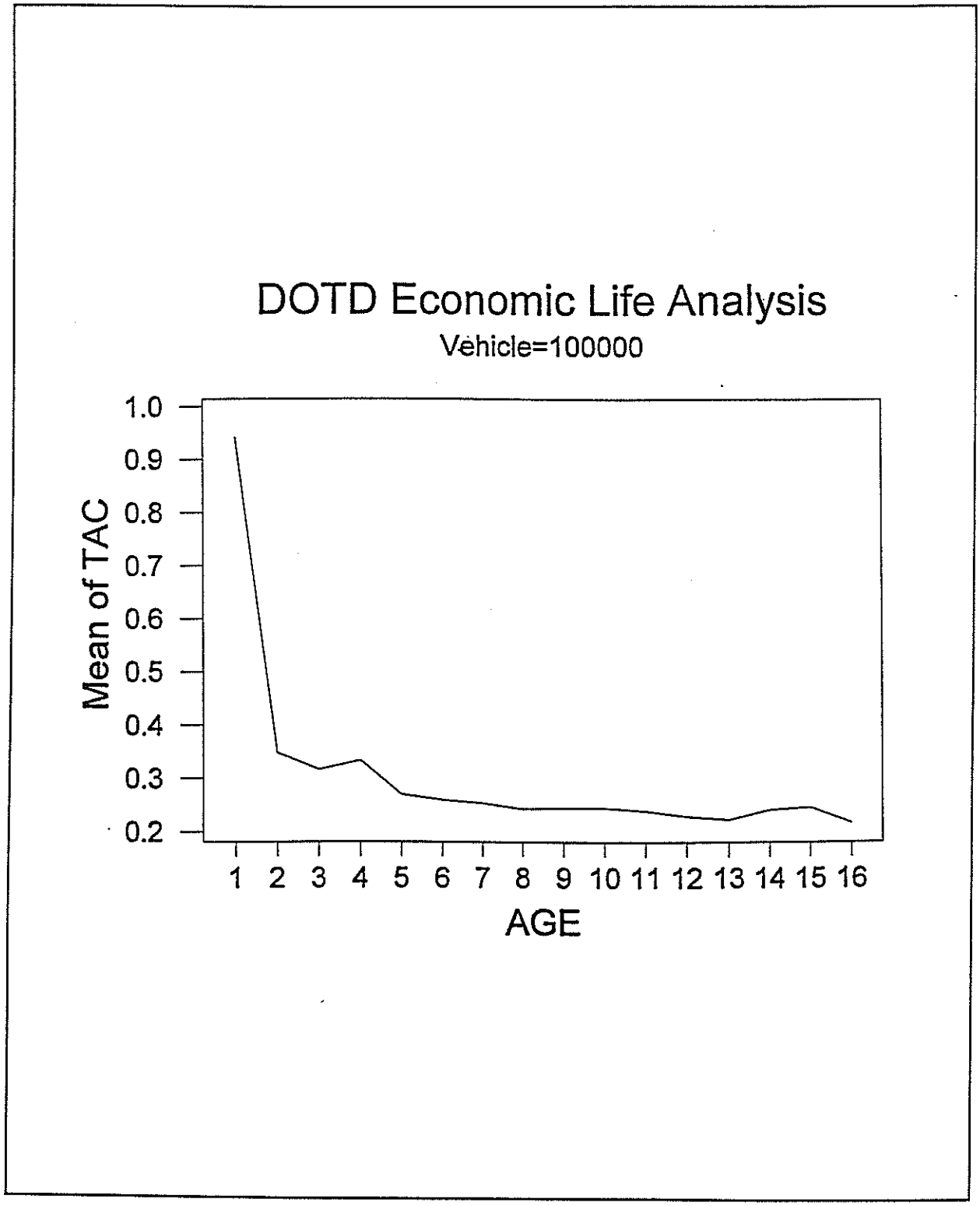

Figure 4
Example of cost per unit of usage for equipment category 100000

DISCUSSION OF RESULTS

It was surprising to the researcher that the economic lives were of such extended duration. It appears that in most cases it is more economical to refurbish and continue the equipment in service. The funds required to bring the pool of equipment current appeared to be approximately what was expected by departmental personnel. The model developed to prioritize equipment for replacement will give good results if applied objectively. One major limitation of the approach used by DOTD is that it does not provide for intertemporal planning. This is due to the legislative requirements on budgets. To achieve better results, it would be necessary to have the flexibility of moving funds forward or backward in time. If that flexibility is achieved at any point the future it will be necessary to restudy this problem.

CONCLUSIONS

The conclusions of the study are the following:

1. Approximately $36,000,000 would be required as a one-time funding increment to bring the equipment pool current.

2. The model developed to determine the priorities for the allocation of available funds for equipment will provide good results if applied objectively. This objective application would essentially require evaluation of the total equipment pool using the same criteria and methodology, then determining the amount of funds to go to each budgetary unit based upon their assigned equipment that falls within the prioritized units for replacement.

RECOMMENDATIONS

It is recommend to implement of priority or "urgency" rating into the process of budgeting by using the ratings to assist in the formulation of requests for replacement funds and, further, in the process of allocation of the funds that are received as a result of the legislative funding. In addition, it is recommended that the department study the utilization of equipment currently in the pool as funds are available for replacement. It is possible that certain equipment is underutilized and may be shared or in the case of multiple units, not be replaced. It should be kept in mind that as productivity improvements are integrated into new equipment there is normally an accompanying increase in cost for the improved versions and in many cases these more complex units may have shorter lives than the simpler, more labor intensive equipment which they replace. laced.

APPENDIX

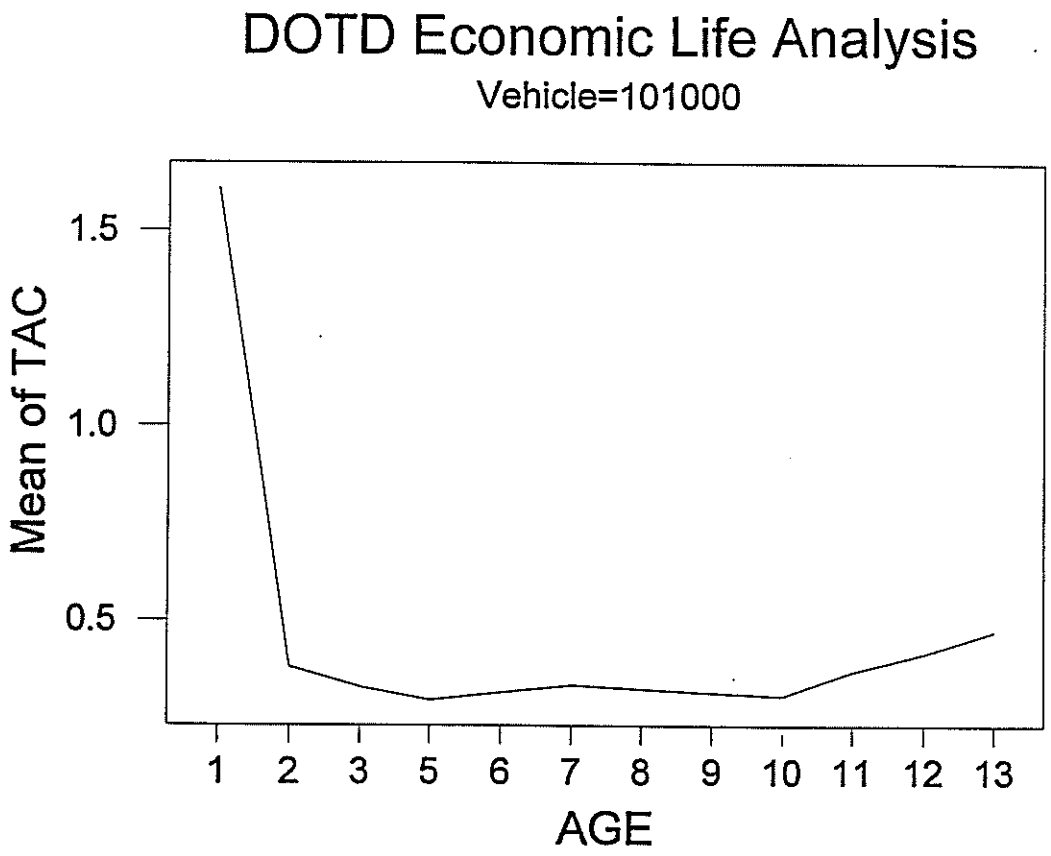

Figure 5
Graph of annual cost per unit of service for category 101000

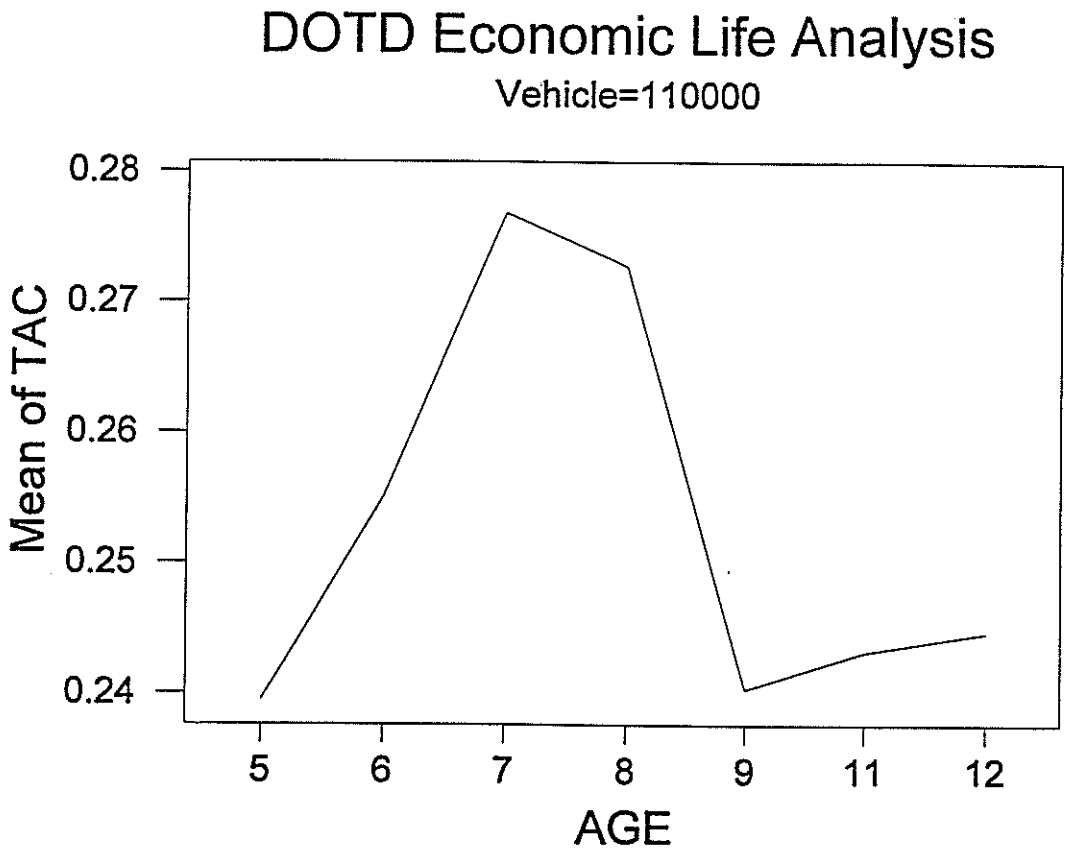

Figure 6
Graph of annual cost per unit of service for category 110000

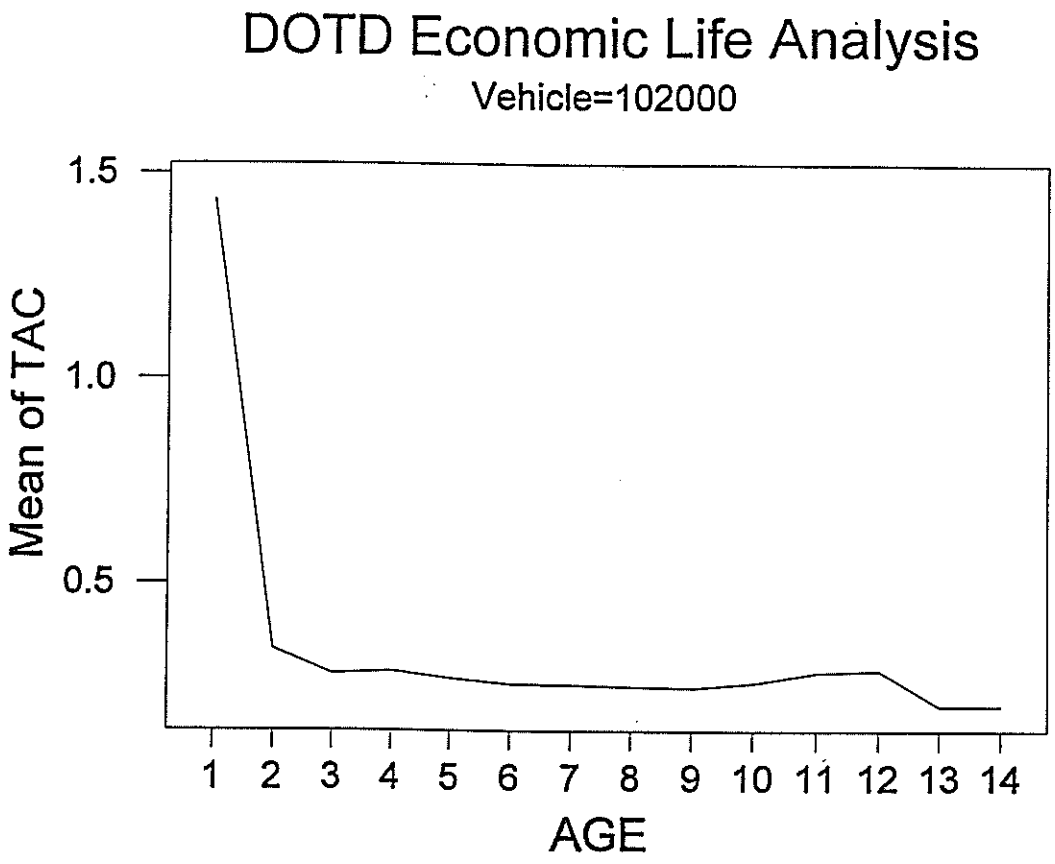

Figure 7
Graph of annual cost per unit of service for category 102000

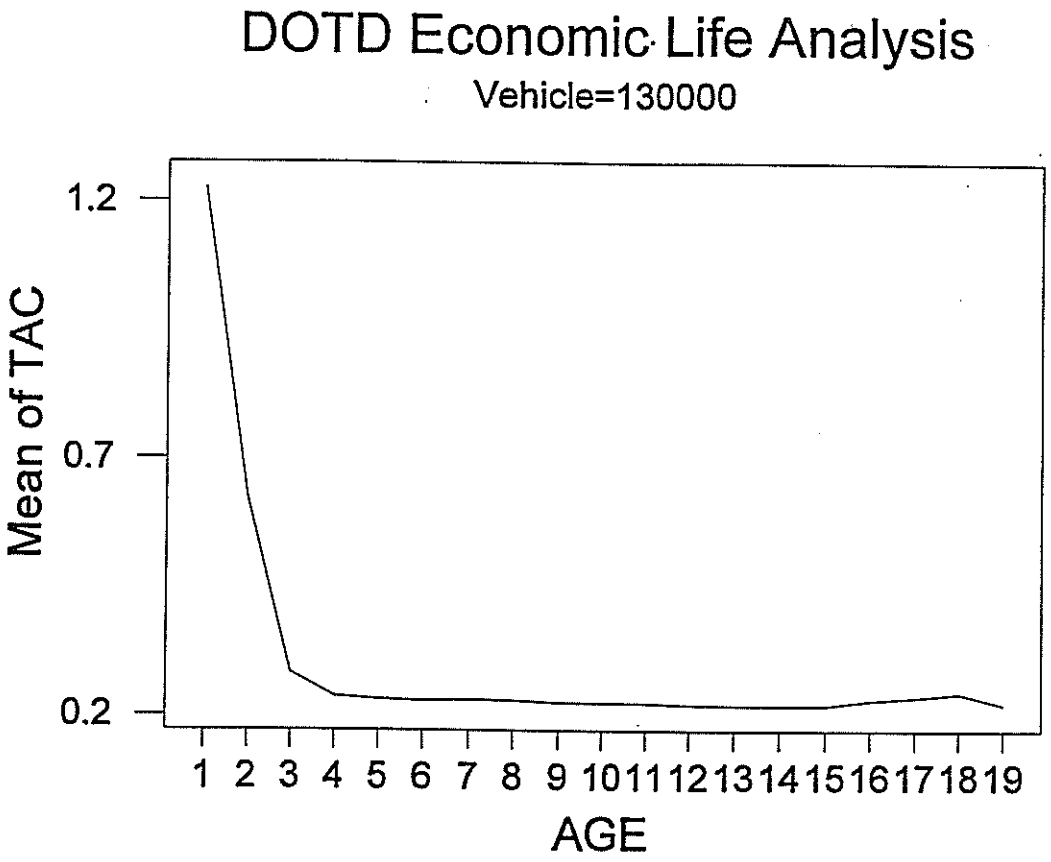

Figure 8
Graph of annual cost per unit of service for category 130000

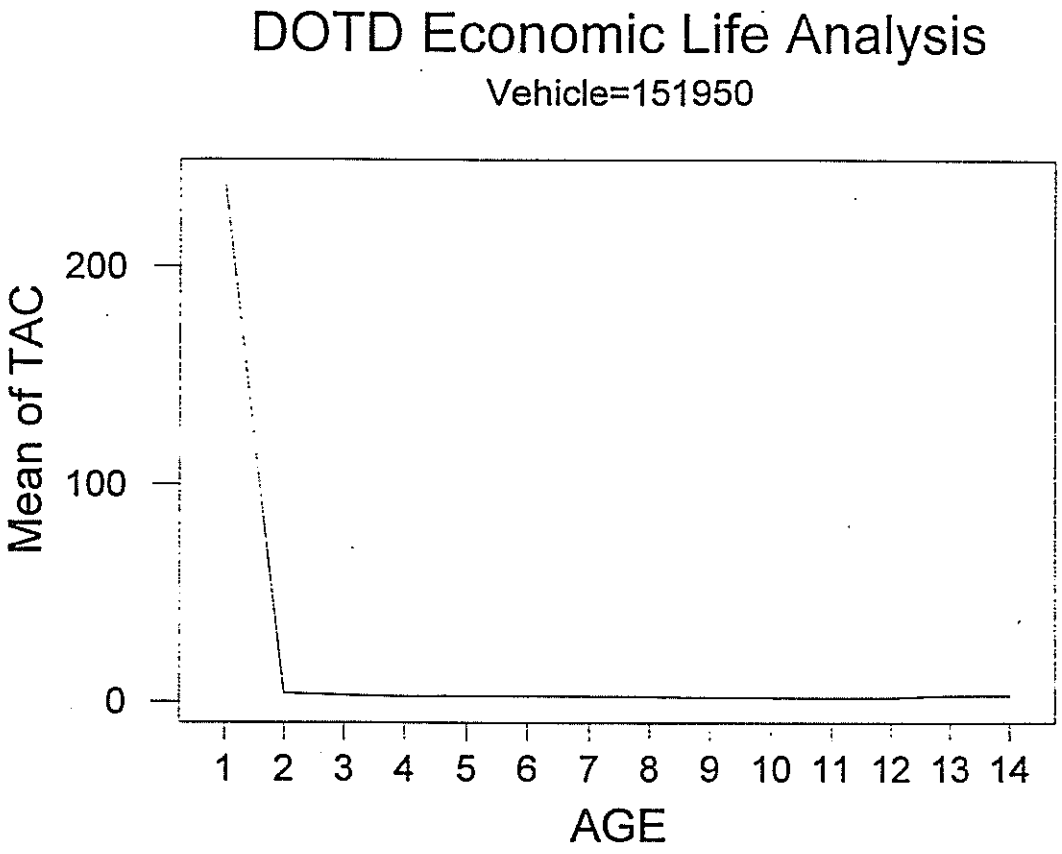

Figure 9
Graph of annual cost per unit of service for category 151950

One-Way Analysis of Variance

101000

Analysis of Variance for TAC

Source	DF	SS	MS	F	P
AGE	11	58.98	5.36	1.96	0.032
Error	273	746.91	2.74		
Total	284	805.89			

Level	N	Mean	StDev
1	42	1.612	4.260
2	42	0.380	0.183
3	42	0.329	0.114
5	42	0.295	0.081
6	40	0.315	0.084
7	19	0.335	0.088
8	18	0.325	0.080
9	16	0.316	0.082
10	14	0.307	0.088
11	5	0.370	0.111
12	3	0.418	0.146
13	2	0.474	0.161

Pooled StDev = 1.654

Individual 95% CIs For Mean
Based on Pooled StDev

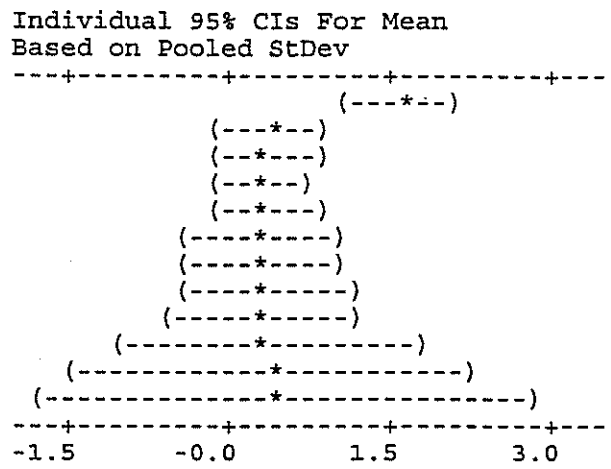

Table 1
Anova for equipment category 101000

One-Way Analysis of Variance

110000

Analysis of Variance for TAC

Source	DF	SS	MS	F	P
AGE	6	0.007183	0.001197	1.70	0.161
Error	26	0.018308	0.000704		
Total	32	0.025490			

Level	N	Mean	StDev
5	5	0.23944	0.02303
6	5	0.25510	0.03028
7	5	0.27678	0.03205
8	5	0.27269	0.03191
9	5	0.24035	0.01624
11	5	0.24319	0.02021
12	3	0.24466	0.02869

Pooled StDev = 0.02654

Individual 95% CIs For Mean
Based on Pooled StDev

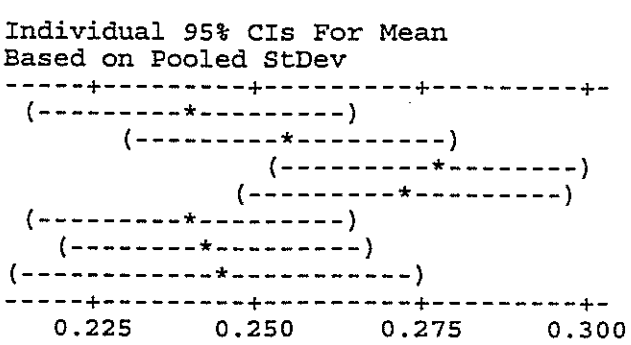

Table 2
Anova for equipment category 110000

102000

One-Way Analysis of Variance

Analysis of Variance for TAC

Source	DF	SS	MS	F	P
AGE	13	88.918	6.840	29.56	0.000
Error	768	177.695	0.231		
Total	781	266.613			

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
1	72	1.4344	1.5714	(*-)
2	93	0.3379	0.1051	(-*)
3	26	0.2786	0.0681	(--*--)
4	98	0.2852	0.0695	(*)
5	98	0.2682	0.0473	(-*)
6	95	0.2546	0.0414	(-*)
7	91	0.2530	0.0357	(-*)
8	71	0.2487	0.0320	(-*)
9	75	0.2464	0.0326	(-*)
10	30	0.2584	0.0342	(--*-)
11	20	0.2829	0.0489	(--*--)
12	10	0.2878	0.0684	(---*---)
13	2	0.2022	0.0002	(---------*---------)
14	1	0.2027	0.0000	(-------------*-------------)

Pooled StDev = 0.4810

-0.70 0.00 0.70 1.40

Table 3
Anova for equipment category 102000

One-Way Analysis of Variance

130000

Analysis of Variance for TAC

Source	DF	SS	MS	F	P
AGE	18	93.50	5.19	3.04	0.000
Error	3666	6254.64	1.71		
Total	3684	6348.14			

Level	N	Mean	StDev
1	65	1.227	1.515
2	225	0.623	5.156
3	309	0.282	0.696
4	327	0.236	0.060
5	342	0.230	0.032
6	323	0.228	0.030
7	193	0.229	0.030
8	263	0.228	0.026
9	307	0.224	0.022
10	293	0.224	0.023
11	273	0.223	0.022
12	252	0.220	0.019
13	213	0.219	0.019
14	132	0.219	0.019
15	87	0.219	0.020
16	45	0.229	0.024
17	23	0.236	0.020
18	12	0.243	0.018
19	1	0.221	0.000

Pooled StDev = 1.306

Individual 95% CIs For Mean
Based on Pooled StDev

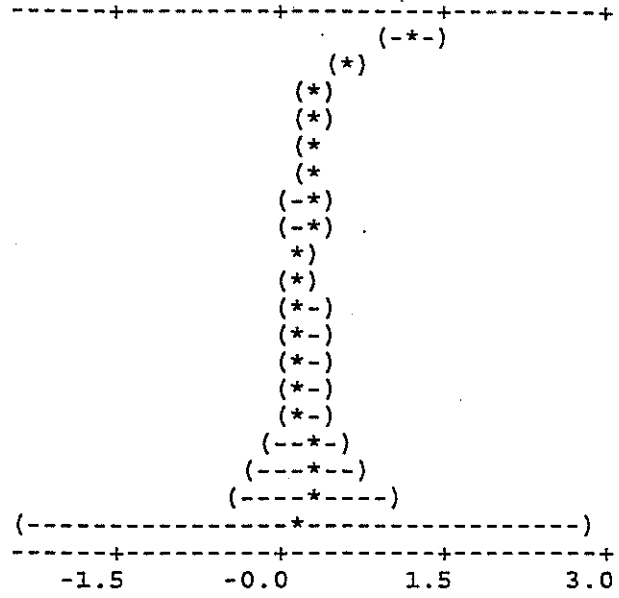

Table 4
Anova for equipment category 130000

One-Way Analysis of Variance

151950

Analysis of Variance for TAC

Source	DF	SS	MS	F	P
AGE	13	299381	23029	2.50	0.011
Error	47	432471	9202		
Total	60	731852			

Level	N	Mean	StDev
1	6	237.72	294.09
2	6	3.78	1.29
3	6	2.87	0.74
4	3	2.32	0.32
5	5	2.58	0.40
6	4	2.54	0.23
7	6	2.48	0.33
8	6	2.30	0.32
9	6	2.03	0.29
10	5	1.92	0.28
11	3	1.81	0.35
12	3	1.78	0.34
13	1	2.85	0.00
14	1	2.69	0.00

Pooled StDev = 95.92

Individual 95% CIs For Mean
Based on Pooled StDev

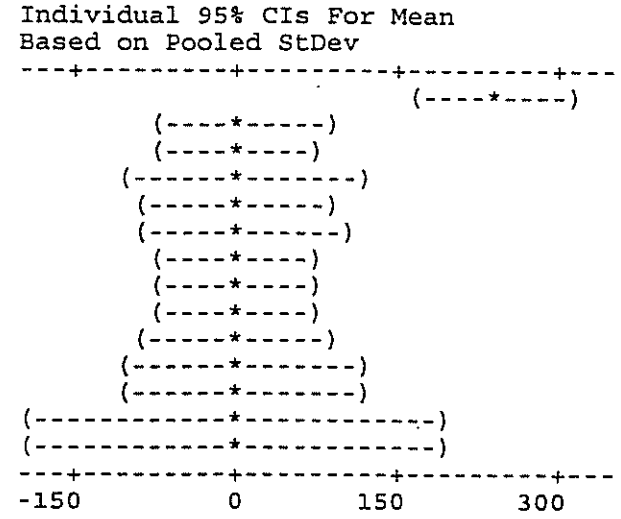

Table 5
Anova for equipment category 151950

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
100000	16	77	$ 14,200.00	$ 1,093,400.00
103000	9	18	$ 19,000.00	$ 342,000.00
127000	n/d		$ 13,863.34	
128000	7	69	$ 12,275.00	$ 846,975.00
129000	11	265	$ 9,100.00	$ 2,411,500.00
130000	15	219	$ 14,970.00	$ 3,278,430.00
131750	12	8	$ 19,250.00	$ 154,000.00
132000	12	17	$ 15,100.00	$ 256,700.00
132150	n/d		$ 16,200.00	$ -
132200	14	1	$ 20,000.00	$ 20,000.00
132250	15	20	$ 15,750.00	$ 315,000.00
133000	18	1	$ 18,000.00	$ 18,000.00
133800	5	24	$ 20,000.00	$ 480,000.00
133850	15	2	$ 24,000.00	$ 48,000.00
133900	14	0	$ 20,700.00	$ -
133950	10	2	$ 35,000.00	$ 70,000.00
134000	15	6	$ 21,660.00	$ 129,960.00
134500	n/d		$ 17,250.00	$ -
135000	6	8	$ 16,550.00	$ 132,400.00
136000	12	2	$ 27,500.00	$ 55,000.00
137000	5	1	$ 20,700.00	$ 20,700.00
138000	n/d		$ 23,900.00	$ -
140000	14	8	$ 20,064.00	$ 160,512.00
141000	n/d		$ 2,200.00	$ -
142000	n/d		$ 3,300.00	$ -
143000	n/d		$ 25,500.00	$ -
144000	n/d		$ 35,100.00	$ -
145000	n/d		$ 27,466.70	$ -
146000	n/d		$ 62,047.93	$ -
148000	n/d		$ 27,000.00	$ -
149000	n/d		$ 16,000.00	$ -
149500	n/d		$ 42,000.00	$ -
150000	11	328	$ 22,000.00	$ 7,216,000.00
151000	5	5	$ 25,700.00	$ 128,500.00
151200	n/d		$ 19,500.00	$ -
151950	12	6	$ 40,400.00	$ 242,400.00
152000	12	9	$ 25,700.00	$ 231,300.00
152200	n/d		$ 38,300.00	$ -
153000	n/d		$ 19,500.00	$ -
153500	10	1	$ 32,850.00	$ 32,850.00
155000	n/d		$ 43,700.00	$ -
155500	16	1	$ 62,500.00	$ 62,500.00
155950	16	1	$ 44,100.00	$ 44,100.00
158000	13	1	$ 20,000.00	$ 20,000.00
158500	n/d		$ 62,500.00	$ -
159500	n/d		$ 82,000.00	$ -
160000	n/d		$ 181,389.00	$ -
170000	20	0	$ 28,450.00	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
171000	6	4	$ 62,500.00	$ 250,000.00
171500	9	4	$ 70,000.00	$ 280,000.00
171700	15	1	$ 65,900.00	$ 65,900.00
171800	n/d		$ 64,453.00	$ -
171900	16	1	$ 66,900.00	$ 66,900.00
176000	n/d		$ 70,800.00	$ -
176250	n/d		$ 27,000.00	$ -
176500	12	2	$ 55,900.00	$ 111,800.00
176550	18	1	$ 40,300.00	$ 40,300.00
176750	10	1	$ 88,731.00	$ 88,731.00
177000	12	5	$ 10,600.00	$ 53,000.00
177400	17	0	$ 38,000.00	$ -
177700	18	0	$ 57,000.00	$ -
177950	n/d		$ 53,600.00	$ -
178000	n/d		$ 25,000.00	$ -
179500	5	3	$ 12,000.00	$ 36,000.00
180000	12	3	$ 15,350.00	$ 46,050.00
181000	7	4	$ 16,200.00	$ 64,800.00
182000	19	23	$ 24,150.00	$ 555,450.00
182200	9	1	$ 18,500.00	$ 18,500.00
183000	11	217	$ 24,950.00	$ 5,414,150.00
184000	n/d		$ 27,200.00	$ -
200000	16	9	$ 13,000.00	$ 117,000.00
200750	11	1	$ 23,700.00	$ 23,700.00
200900	15	2	$ 45,000.00	$ 90,000.00
201000	4	3	$ 13,000.00	$ 39,000.00
201250	3	1	$ 19,300.00	$ 19,300.00
201500	16	2	$ 35,000.00	$ 70,000.00
201550	n/d		$ 32,000.00	$ -
202750	12	1	$ 34,300.00	$ 34,300.00
203000	4	1	$ 7,400.00	$ 7,400.00
203250	n/d		$ 500.00	$ -
203500	n/d		$ 35,600.00	$ -
203750	n/d		$ 13,100.00	$ -
204750	4	1	$ 6,300.00	$ 6,300.00
210000	n/d		$ 292,000.00	$ -
210300	n/d		$ 118,135.00	$ -
210375	5	1	$ 154,548.00	$ 154,548.00
210500	n/d		$ 146,500.00	$ -
210750	4	10	$ 156,885.00	$ 1,568,850.00
210900	16	0	$ 117,000.00	$ -
215000	14	4	$ 25,000.00	$ 100,000.00
217000	n/d		$ 48,220.00	$ -
217250	n/d		$ 8,500.00	$ -
217500	20	0	$ 48,220.00	$ -
217750	15	1	$ 194,762.00	$ 194,762.00
217900	n/d		$ 102,000.00	$ -
219000	n/d		$ 12,411.86	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
220000	13	3	$ 95,000.00	$ 285,000.00
220700	n/d		$ 53,300.00	$ -
220750	n/d		$ 80,000.00	$ -
220950	n/d		$ 320,000.00	$ -
221000	n/d		$ 180,000.00	$ -
221100	n/d		$ 7,000.00	$ -
221800	4	5	$ 32,661.00	$ 163,305.00
223000	n/d		$ 17,810.56	$ -
223250	11	2	$ 16,000.00	$ 32,000.00
223300	5	1	$ 35,000.00	$ 35,000.00
223350	10	1	$ 138,350.87	$ 138,350.87
224000	14	1	$ 4,000.00	$ 4,000.00
224500	n/d		$ 2,100.00	$ -
225000	n/d		$ 57,500.00	$ -
225300	n/d		$ 8,800.00	$ -
225500	n/d		$ 29,000.00	$ -
225600	9	2	$ 33,300.00	$ 66,600.00
225750	n/d		$ 11,200.00	$ -
226000	n/d		$ 155,000.00	$ -
230000	n/d		$ 6,800.00	$ -
230750	8	1	$ 122,300.00	$ 122,300.00
231000	13	10	$ 10,000.00	$ 100,000.00
231200	16	11	$ 4,400.00	$ 48,400.00
231400	7	1	$ 8,800.00	$ 8,800.00
231500	15	1	$ 5,000.00	$ 5,000.00
232000	18	0	$ 1,000.00	$ -
232300	12	2	$ 2,000.00	$ 4,000.00
232400	18	0	$ 3,000.00	$ -
232700	n/d		$ 7,500.00	$ -
233000	14	64	$ 6,400.00	$ 409,600.00
233500	17	0	$ 21,400.00	$ -
233750	7	1	$ 14,000.00	$ 14,000.00
233900	n/d		$ 28,100.00	$ -
234500	n/d		$ 4,400.00	$ -
234750	8	1	$ 3,250.00	$ 3,250.00
234800	10	0	$ 26,000.00	$ -
235000	15	1	$ 34,200.00	$ 34,200.00
236000	14	2	$ 5,600.00	$ 11,200.00
236100	16	0	$ 6,100.00	$ -
236900	n/d		$ 6,300.00	$ -
237000	14	2	$ 13,000.00	$ 26,000.00
238000	n/d		$ 2,400.00	$ -
240750	3	1	$ 3,050.00	$ 3,050.00
240950	1	1	$ 5,100.00	$ 5,100.00
241000	16	0	$ 16,000.00	$ -
242000	13	8	$ 12,400.00	$ 99,200.00
243000	16	0	$ 14,050.00	$ -
244000	14	1	$ 19,700.00	$ 19,700.00

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
244900	9	4	$ 17,400.00	$ 69,600.00
245000	n/d		$ 105,000.00	$ -
245100	5	1	$ 20,900.00	$ 20,900.00
246000	10	3	$ 11,450.00	$ 34,350.00
246250	n/d		$ 950.00	$ -
247000	n/d		$ 17,300.00	$ -
248000	n/d		$ 3,500.00	$ -
250000	13	15	$ 30,350.00	$ 455,250.00
251500	12	4	$ 2,900.00	$ 11,600.00
251750	2	2	$ 22,000.00	$ 44,000.00
253100	n/d		$ 785.00	$ -
254000	n/d		$ 85,000.00	$ -
254100	n/d		$ 9,000.00	$ -
254250	n/d		$ 1,550.00	$ -
255000	10	1	$ 80,000.00	$ 80,000.00
255200	n/d		$ 12,000.00	$ -
255500	n/d		$ 4,800.00	$ -
255600	10	1	$ 106,500.00	$ 106,500.00
255900	3	2	$ 3,500.00	$ 7,000.00
255950	n/d		$ 22,500.00	$ -
256000	14	3	$ 3,550.00	$ 10,650.00
256400	9	1	$ 5,700.00	$ 5,700.00
256600	2	1	$ 5,300.00	$ 5,300.00
256850	7	1	$ 95,000.00	$ 95,000.00
256950	13	5	$ 90,000.00	$ 450,000.00
257000	n/d		$ 8,100.00	$ -
258500	5	1	$ 24,000.00	$ 24,000.00
259000	n/d		$ 13,900.00	$ -
259100	n/d		$ 2,300.00	$ -
259200	n/d		$ 2,600.00	$ -
259500	n/d		$ 25,300.00	$ -
259525	n/d		$ 6,400.00	$ -
259575	n/d		$ 43,500.00	$ -
259600	n/d		$ 3,100.00	$ -
259700	n/d		$ 28,000.00	$ -
260000	n/d		$ 6,300.00	$ -
260400	n/d		$ 56,000.00	$ -
260450	n/d		$ 23,150.00	$ -
260500	n/d		$ 8,600.00	$ -
260800	n/d		$ 9,000.00	$ -
261000	6	1	$ 68,500.00	$ 68,500.00
261250	n/d		$ 80,000.00	$ -
261500	n/d		$ 110,000.00	$ -
262000	20	0	$ 17,000.00	$ -
263000	16	3	$ 5,200.00	$ 15,600.00
263500	12	5	$ 22,000.00	$ 110,000.00
264000	4	1	$ 15,300.00	$ 15,300.00
266000	n/d		$ 53,000.00	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
266250	16	1	$ 46,750.00	$ 46,750.00
266500	1	1	$ 17,350.00	$ 17,350.00
267400	10	2	$ 22,450.00	$ 44,900.00
267450	n/d		$ 59,400.00	$ -
267500	n/d		$ 24,000.00	$ -
267750	17	2	$ 55,000.00	$ 110,000.00
268000	n/d		$ 27,000.00	$ -
268250	n/d		$ 200,000.00	$ -
268500	n/d		$ 15,500.00	$ -
268750	n/d		$ 33,000.00	$ -
269000	14	6	$ 21,000.00	$ 126,000.00
270000	n/d		$ 21,000.00	$ -
270300	n/d		$ 21,000.00	$ -
270500	19	1	$ 33,000.00	$ 33,000.00
275000	14	2	$ 7,100.00	$ 14,200.00
275800	13	2	$ 7,000.00	$ 14,000.00
276000	n/d		$ 9,200.00	$ -
277000	n/d		$ 4,500.00	$ -
277500	n/d		$ 8,350.00	$ -
278000	8	2	$ 6,000.00	$ 12,000.00
300100	n/d		$ 148,645.00	$ -
301350	n/d		$ 31,000.00	$ -
301400	9	6	$ 4,500.00	$ 27,000.00
301500	n/d		$ 8,000.00	$ -
304000	n/d		$ 720,000.00	$ -
305000	n/d		$ 115,000.00	$ -
340000	13	7	$ 1,300.00	$ 9,100.00
340200	17	5	$ 1,500.00	$ 7,500.00
340400	1	2	$ 3,260.00	$ 6,520.00
340600	1	6	$ 3,400.00	$ 20,400.00
340800	1	2	$ 5,500.00	$ 11,000.00
345000	20	0	$ 1,400.00	$ -
345500	2	1	$ 18,000.00	$ 18,000.00
345900	10	3	$ 3,400.00	$ 10,200.00
347250	n/d		$ 115,000.00	$ -
360000	n/d		$ 1,380,000.00	$ -
360250	n/d		$ 433,400.00	$ -
810000	n/d		$ 117,000.00	$ -
810500	n/d		$ 64,000.00	$ -
820000	n/d		$ 95,000.00	$ -
843000	n/d		$ 14,050.00	$ -
845000	n/d		$ 30,900.00	$ -
847000	n/d		$ 17,300.00	$ -
861000	n/d		$ 68,500.00	$ -
861250	n/d		$ 80,000.00	$ -
866000	n/d		$ 53,000.00	$ -
866500	n/d		$ 46,750.00	$ -
	Total	**1636**	**$ 3,841,436.87**	**$ 29,686,793.87**

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
100000	16	138	$ 14,200.00	$ 1,959,600.00
103000	9	28	$ 19,000.00	$ 532,000.00
127000	n/d		$ 13,863.34	
128000	7	69	$ 12,275.00	$ 846,975.00
129000	11	276	$ 9,100.00	$ 2,511,600.00
130000	15	232	$ 14,970.00	$ 3,473,040.00
131750	12	8	$ 19,250.00	$ 154,000.00
132000	12	17	$ 15,100.00	$ 256,700.00
132150	n/d		$ 16,200.00	$ -
132200	14	1	$ 20,000.00	$ 20,000.00
132250	15	45	$ 15,750.00	$ 708,750.00
133000	18	1	$ 18,000.00	$ 18,000.00
133800	5	24	$ 20,000.00	$ 480,000.00
133850	15	2	$ 24,000.00	$ 48,000.00
133900	14	5	$ 20,700.00	$ 103,500.00
133950	10	2	$ 35,000.00	$ 70,000.00
134000	15	10	$ 21,660.00	$ 216,600.00
134500	n/d		$ 17,250.00	$ -
135000	6	9	$ 16,550.00	$ 148,950.00
136000	12	2	$ 27,500.00	$ 55,000.00
137000	5	2	$ 20,700.00	$ 41,400.00
138000	n/d		$ 23,900.00	$ -
140000	14	8	$ 20,064.00	$ 160,512.00
141000	n/d		$ 2,200.00	$ -
142000	n/d		$ 3,300.00	$ -
143000	n/d		$ 25,500.00	$ -
144000	n/d		$ 35,100.00	$ -
145000	n/d		$ 27,466.70	$ -
146000	n/d		$ 62,047.93	$ -
148000	n/d		$ 27,000.00	$ -
149000	n/d		$ 16,000.00	$ -
149500	n/d		$ 42,000.00	$ -
150000	11	328	$ 22,000.00	$ 7,216,000.00
151000	5	5	$ 25,700.00	$ 128,500.00
151200	n/d		$ 19,500.00	$ -
151950	12	6	$ 40,400.00	$ 242,400.00
152000	12	9	$ 25,700.00	$ 231,300.00
152200	n/d		$ 38,300.00	$ -
153000	n/d		$ 19,500.00	$ -
153500	10	1	$ 32,850.00	$ 32,850.00
155000	n/d		$ 43,700.00	$ -
155500	16	1	$ 62,500.00	$ 62,500.00
155950	16	1	$ 44,100.00	$ 44,100.00
158000	13	2	$ 20,000.00	$ 40,000.00
158500	n/d		$ 62,500.00	$ -
159500	n/d		$ 82,000.00	$ -
160000	n/d		$ 181,389.00	$ -
170000	20	29	$ 28,450.00	$ 825,050.00

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
171000	6	4	$ 62,500.00	$ 250,000.00
171500	9	4	$ 70,000.00	$ 280,000.00
171700	15	1	$ 65,900.00	$ 65,900.00
171800	n/d		$ 64,453.00	$ -
171900	16	1	$ 66,900.00	$ 66,900.00
176000	n/d		$ 70,800.00	$ -
176250	n/d		$ 27,000.00	$ -
176500	12	2	$ 55,900.00	$ 111,800.00
176550	18	1	$ 40,300.00	$ 40,300.00
176750	10	1	$ 88,731.00	$ 88,731.00
177000	12	5	$ 10,600.00	$ 53,000.00
177400	17	0	$ 38,000.00	$ -
177700	18	2	$ 57,000.00	$ 114,000.00
177950	n/d		$ 53,600.00	$ -
178000	n/d		$ 25,000.00	$ -
179500	5	3	$ 12,000.00	$ 36,000.00
180000	12	3	$ 15,350.00	$ 46,050.00
181000	7	4	$ 16,200.00	$ 64,800.00
182000	19	23	$ 24,150.00	$ 555,450.00
182200	9	1	$ 18,500.00	$ 18,500.00
183000	11	223	$ 24,950.00	$ 5,563,850.00
184000	n/d		$ 27,200.00	$ -
200000	16	12	$ 13,000.00	$ 156,000.00
200750	11	1	$ 23,700.00	$ 23,700.00
200900	15	2	$ 45,000.00	$ 90,000.00
201000	4	3	$ 13,000.00	$ 39,000.00
201250	3	1	$ 19,300.00	$ 19,300.00
201500	16	2	$ 35,000.00	$ 70,000.00
201550	n/d		$ 32,000.00	$ -
202750	12	1	$ 34,300.00	$ 34,300.00
203000	4	1	$ 7,400.00	$ 7,400.00
203250	n/d		$ 500.00	$ -
203500	n/d		$ 35,600.00	$ -
203750	n/d		$ 13,100.00	$ -
204750	4	1	$ 6,300.00	$ 6,300.00
210000	n/d		$ 292,000.00	$ -
210300	n/d		$ 118,135.00	$ -
210375	5	1	$ 154,548.00	$ 154,548.00
210500	n/d		$ 146,500.00	$ -
210750	4	10	$ 156,885.00	$ 1,568,850.00
210900	16	0	$ 117,000.00	$ -
215000	14	4	$ 25,000.00	$ 100,000.00
217000	n/d		$ 48,220.00	$ -
217250	n/d		$ 8,500.00	$ -
217500	20	0	$ 48,220.00	$ -
217750	15	1	$ 194,762.00	$ 194,762.00
217900	n/d		$ 102,000.00	$ -
219000	n/d		$ 12,411.86	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
220000	13	3	$ 95,000.00	$ 285,000.00
220700	n/d		$ 53,300.00	$ -
220750	n/d		$ 80,000.00	$ -
220950	n/d		$ 320,000.00	$ -
221000	n/d		$ 180,000.00	$ -
221100	n/d		$ 7,000.00	$ -
221800	4	5	$ 32,661.00	$ 163,305.00
223000	n/d		$ 17,810.56	$ -
223250	11	2	$ 16,000.00	$ 32,000.00
223300	5	1	$ 35,000.00	$ 35,000.00
223350	10	1	$ 138,350.87	$ 138,350.87
224000	14	1	$ 4,000.00	$ 4,000.00
224500	n/d		$ 2,100.00	$ -
225000	n/d		$ 57,500.00	$ -
225300	n/d		$ 8,800.00	$ -
225500	n/d		$ 29,000.00	$ -
225600	9	2	$ 33,300.00	$ 66,600.00
225750	n/d		$ 11,200.00	$ -
226000	n/d		$ 155,000.00	$ -
230000	n/d		$ 6,800.00	$ -
230750	8	1	$ 122,300.00	$ 122,300.00
231000	13	14	$ 10,000.00	$ 140,000.00
231200	16	12	$ 4,400.00	$ 52,800.00
231400	7	1	$ 8,800.00	$ 8,800.00
231500	15	1	$ 5,000.00	$ 5,000.00
232000	18	1	$ 1,000.00	$ 1,000.00
232300	12	2	$ 2,000.00	$ 4,000.00
232400	18	0	$ 3,000.00	$ -
232700	n/d		$ 7,500.00	$ -
233000	14	84	$ 6,400.00	$ 537,600.00
233500	17	2	$ 21,400.00	$ 42,800.00
233750	7	1	$ 14,000.00	$ 14,000.00
233900	n/d		$ 28,100.00	$ -
234500	n/d		$ 4,400.00	$ -
234750	8	2	$ 3,250.00	$ 6,500.00
234800	10	2	$ 26,000.00	$ 52,000.00
235000	15	1	$ 34,200.00	$ 34,200.00
236000	14	3	$ 5,600.00	$ 16,800.00
236100	16	23	$ 6,100.00	$ 140,300.00
236900	n/d		$ 6,300.00	$ -
237000	14	2	$ 13,000.00	$ 26,000.00
238000	n/d		$ 2,400.00	$ -
240750	3	1	$ 3,050.00	$ 3,050.00
240950	1	1	$ 5,100.00	$ 5,100.00
241000	16	1	$ 16,000.00	$ 16,000.00
242000	13	10	$ 12,400.00	$ 124,000.00
243000	16	17	$ 14,050.00	$ 238,850.00
244000	14	17	$ 19,700.00	$ 334,900.00

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
244900	9	6	$ 17,400.00	$ 104,400.00
245000	n/d		$ 105,000.00	$ -
245100	5	1	$ 20,900.00	$ 20,900.00
246000	10	3	$ 11,450.00	$ 34,350.00
246250	n/d		$ 950.00	$ -
247000	n/d		$ 17,300.00	$ -
248000	n/d		$ 3,500.00	$ -
250000	13	15	$ 30,350.00	$ 455,250.00
251500	12	4	$ 2,900.00	$ 11,600.00
251750	2	2	$ 22,000.00	$ 44,000.00
253100	n/d		$ 785.00	$ -
254000	n/d		$ 85,000.00	$ -
254100	n/d		$ 9,000.00	$ -
254250	n/d		$ 1,550.00	$ -
255000	10	1	$ 80,000.00	$ 80,000.00
255200	n/d		$ 12,000.00	$ -
255500	n/d		$ 4,800.00	$ -
255600	10	1	$ 106,500.00	$ 106,500.00
255900	3	2	$ 3,500.00	$ 7,000.00
255950	n/d		$ 22,500.00	$ -
256000	14	5	$ 3,550.00	$ 17,750.00
256400	9	1	$ 5,700.00	$ 5,700.00
256600	2	1	$ 5,300.00	$ 5,300.00
256850	7	1	$ 95,000.00	$ 95,000.00
256950	13	5	$ 90,000.00	$ 450,000.00
257000	n/d		$ 8,100.00	$ -
258500	5	1	$ 24,000.00	$ 24,000.00
259000	n/d		$ 13,900.00	$ -
259100	n/d		$ 2,300.00	$ -
259200	n/d		$ 2,600.00	$ -
259500	n/d		$ 25,300.00	$ -
259525	n/d		$ 6,400.00	$ -
259575	n/d		$ 43,500.00	$ -
259600	n/d		$ 3,100.00	$ -
259700	n/d		$ 28,000.00	$ -
260000	n/d		$ 6,300.00	$ -
260400	n/d		$ 56,000.00	$ -
260450	n/d		$ 23,150.00	$ -
260500	n/d		$ 8,600.00	$ -
260800	n/d		$ 9,000.00	$ -
261000	6	1	$ 68,500.00	$ 68,500.00
261250	n/d		$ 80,000.00	$ -
261500	n/d		$ 110,000.00	$ -
262000	20	0	$ 17,000.00	$ -
263000	16	3	$ 5,200.00	$ 15,600.00
263500	12	5	$ 22,000.00	$ 110,000.00
264000	4	1	$ 15,300.00	$ 15,300.00
266000	n/d		$ 53,000.00	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
266250	16	1	$ 46,750.00	$ 46,750.00
266500	1	1	$ 17,350.00	$ 17,350.00
267400	10	2	$ 22,450.00	$ 44,900.00
267450	n/d		$ 59,400.00	$ -
267500	n/d		$ 24,000.00	$ -
267750	17	2	$ 55,000.00	$ 110,000.00
268000	n/d		$ 27,000.00	$ -
268250	n/d		$ 200,000.00	$ -
268500	n/d		$ 15,500.00	$ -
268750	n/d		$ 33,000.00	$ -
269000	14	6	$ 21,000.00	$ 126,000.00
270000	n/d		$ 21,000.00	$ -
270300	n/d		$ 21,000.00	$ -
270500	19	1	$ 33,000.00	$ 33,000.00
275000	14	3	$ 7,100.00	$ 21,300.00
275800	13	2	$ 7,000.00	$ 14,000.00
276000	n/d		$ 9,200.00	$ -
277000	n/d		$ 4,500.00	$ -
277500	n/d		$ 8,350.00	$ -
278000	8	2	$ 6,000.00	$ 12,000.00
300100	n/d		$ 148,645.00	$ -
301350	n/d		$ 31,000.00	$ -
301400	9	6	$ 4,500.00	$ 27,000.00
301500	n/d		$ 8,000.00	$ -
304000	n/d		$ 720,000.00	$ -
305000	n/d		$ 115,000.00	$ -
340000	13	10	$ 1,300.00	$ 13,000.00
340200	17	6	$ 1,500.00	$ 9,000.00
340400	1	2	$ 3,260.00	$ 6,520.00
340600	1	6	$ 3,400.00	$ 20,400.00
340800	1	2	$ 5,500.00	$ 11,000.00
345000	20	7	$ 1,400.00	$ 9,800.00
345500	2	1	$ 18,000.00	$ 18,000.00
345900	10	3	$ 3,400.00	$ 10,200.00
347250	n/d		$ 115,000.00	$ -
360000	n/d		$ 1,380,000.00	$ -
360250	n/d		$ 433,400.00	$ -
810000	n/d		$ 117,000.00	$ -
810500	n/d		$ 64,000.00	$ -
820000	n/d		$ 95,000.00	$ -
843000	n/d		$ 14,050.00	$ -
845000	n/d		$ 30,900.00	$ -
847000	n/d		$ 17,300.00	$ -
861000	n/d		$ 68,500.00	$ -
861250	n/d		$ 80,000.00	$ -
866000	n/d		$ 53,000.00	$ -
866500	n/d		$ 46,750.00	$ -
	Total	**1915**	**$ 3,841,436.87**	**$ 32,826,793.87**

Economic Life Analysis
LADOTD

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
100000	16	226	$ 14,200.00	$ 3,209,200.00
103000	9	28	$ 19,000.00	$ 532,000.00
127000	n/d		$ 13,863.34	
128000	7	71	$ 12,275.00	$ 871,525.00
129000	11	276	$ 9,100.00	$ 2,511,600.00
130000	15	248	$ 14,970.00	$ 3,712,560.00
131750	12	8	$ 19,250.00	$ 154,000.00
132000	12	17	$ 15,100.00	$ 256,700.00
132150	n/d		$ 16,200.00	$ -
132200	14	1	$ 20,000.00	$ 20,000.00
132250	15	58	$ 15,750.00	$ 913,500.00
133000	18	3	$ 18,000.00	$ 54,000.00
133800	5	24	$ 20,000.00	$ 480,000.00
133850	15	2	$ 24,000.00	$ 48,000.00
133900	14	5	$ 20,700.00	$ 103,500.00
133950	10	2	$ 35,000.00	$ 70,000.00
134000	15	10	$ 21,660.00	$ 216,600.00
134500	n/d		$ 17,250.00	$ -
135000	6	9	$ 16,550.00	$ 148,950.00
136000	12	3	$ 27,500.00	$ 82,500.00
137000	5	2	$ 20,700.00	$ 41,400.00
138000	n/d		$ 23,900.00	$ -
140000	14	8	$ 20,064.00	$ 160,512.00
141000	n/d		$ 2,200.00	$ -
142000	n/d		$ 3,300.00	$ -
143000	n/d		$ 25,500.00	$ -
144000	n/d		$ 35,100.00	$ -
145000	n/d		$ 27,466.70	$ -
146000	n/d		$ 62,047.93	$ -
148000	n/d		$ 27,000.00	$ -
149000	n/d		$ 16,000.00	$ -
149500	n/d		$ 42,000.00	$ -
150000	11	330	$ 22,000.00	$ 7,260,000.00
151000	5	5	$ 25,700.00	$ 128,500.00
151200	n/d		$ 19,500.00	$ -
151950	12	6	$ 40,400.00	$ 242,400.00
152000	12	12	$ 25,700.00	$ 308,400.00
152200	n/d		$ 38,300.00	$ -
153000	n/d		$ 19,500.00	$ -
153500	10	1	$ 32,850.00	$ 32,850.00
155000	n/d		$ 43,700.00	$ -
155500	16	4	$ 62,500.00	$ 250,000.00
155950	16	1	$ 44,100.00	$ 44,100.00
158000	13	2	$ 20,000.00	$ 40,000.00
158500	n/d		$ 62,500.00	$ -
159500	n/d		$ 82,000.00	$ -
160000	n/d		$ 181,389.00	$ -
170000	20	30	$ 28,450.00	$ 853,500.00

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
171000	6	4	$ 62,500.00	$ 250,000.00
171500	9	4	$ 70,000.00	$ 280,000.00
171700	15	1	$ 65,900.00	$ 65,900.00
171800	n/d		$ 64,453.00	$ -
171900	16	1	$ 66,900.00	$ 66,900.00
176000	n/d		$ 70,800.00	$ -
176250	n/d		$ 27,000.00	$ -
176500	12	2	$ 55,900.00	$ 111,800.00
176550	18	1	$ 40,300.00	$ 40,300.00
176750	10	1	$ 88,731.00	$ 88,731.00
177000	12	5	$ 10,600.00	$ 53,000.00
177400	17	3	$ 38,000.00	$ 114,000.00
177700	18	8	$ 57,000.00	$ 456,000.00
177950	n/d		$ 53,600.00	$ -
178000	n/d		$ 25,000.00	$ -
179500	5	4	$ 12,000.00	$ 48,000.00
180000	12	3	$ 15,350.00	$ 46,050.00
181000	7	4	$ 16,200.00	$ 64,800.00
182000	19	63	$ 24,150.00	$ 1,521,450.00
182200	9	1	$ 18,500.00	$ 18,500.00
183000	11	224	$ 24,950.00	$ 5,588,800.00
184000	n/d		$ 27,200.00	$ -
200000	16	14	$ 13,000.00	$ 182,000.00
200750	11	1	$ 23,700.00	$ 23,700.00
200900	15	2	$ 45,000.00	$ 90,000.00
201000	4	3	$ 13,000.00	$ 39,000.00
201250	3	1	$ 19,300.00	$ 19,300.00
201500	16	3	$ 35,000.00	$ 105,000.00
201550	n/d		$ 32,000.00	$ -
202750	12	1	$ 34,300.00	$ 34,300.00
203000	4	1	$ 7,400.00	$ 7,400.00
203250	n/d		$ 500.00	$ -
203500	n/d		$ 35,600.00	$ -
203750	n/d		$ 13,100.00	$ -
204750	4	1	$ 6,300.00	$ 6,300.00
210000	n/d		$ 292,000.00	$ -
210300	n/d		$ 118,135.00	$ -
210375	5	1	$ 154,548.00	$ 154,548.00
210500	n/d		$ 146,500.00	$ -
210750	4	10	$ 156,885.00	$ 1,568,850.00
210900	16	1	$ 117,000.00	$ 117,000.00
215000	14	5	$ 25,000.00	$ 125,000.00
217000	n/d		$ 48,220.00	$ -
217250	n/d		$ 8,500.00	$ -
217500	20	1	$ 48,220.00	$ 48,220.00
217750	15	1	$ 194,762.00	$ 194,762.00
217900	n/d		$ 102,000.00	$ -
219000	n/d		$ 12,411.86	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
220000	13	3	$ 95,000.00	$ 285,000.00
220700	n/d		$ 53,300.00	$ -
220750	n/d		$ 80,000.00	$ -
220950	n/d		$ 320,000.00	$ -
221000	n/d		$ 180,000.00	$ -
221100	n/d		$ 7,000.00	$ -
221800	4	5	$ 32,661.00	$ 163,305.00
223000	n/d		$ 17,810.56	$ -
223250	11	2	$ 16,000.00	$ 32,000.00
223300	5	1	$ 35,000.00	$ 35,000.00
223350	10	1	$ 138,350.87	$ 138,350.87
224000	14	1	$ 4,000.00	$ 4,000.00
224500	n/d		$ 2,100.00	$ -
225000	n/d		$ 57,500.00	$ -
225300	n/d		$ 8,800.00	$ -
225500	n/d		$ 29,000.00	$ -
225600	9	2	$ 33,300.00	$ 66,600.00
225750	n/d		$ 11,200.00	$ -
226000	n/d		$ 155,000.00	$ -
230000	n/d		$ 6,800.00	$ -
230750	8	1	$ 122,300.00	$ 122,300.00
231000	13	15	$ 10,000.00	$ 150,000.00
231200	16	14	$ 4,400.00	$ 61,600.00
231400	7	1	$ 8,800.00	$ 8,800.00
231500	15	1	$ 5,000.00	$ 5,000.00
232000	18	25	$ 1,000.00	$ 25,000.00
232300	12	2	$ 2,000.00	$ 4,000.00
232400	18	27	$ 3,000.00	$ 81,000.00
232700	n/d		$ 7,500.00	$ -
233000	14	110	$ 6,400.00	$ 704,000.00
233500	17	2	$ 21,400.00	$ 42,800.00
233750	7	1	$ 14,000.00	$ 14,000.00
233900	n/d		$ 28,100.00	$ -
234500	n/d		$ 4,400.00	$ -
234750	8	2	$ 3,250.00	$ 6,500.00
234800	10	2	$ 26,000.00	$ 52,000.00
235000	15	2	$ 34,200.00	$ 68,400.00
236000	14	3	$ 5,600.00	$ 16,800.00
236100	16	23	$ 6,100.00	$ 140,300.00
236900	n/d		$ 6,300.00	$ -
237000	14	5	$ 13,000.00	$ 65,000.00
238000	n/d		$ 2,400.00	$ -
240750	3	1	$ 3,050.00	$ 3,050.00
240950	1	1	$ 5,100.00	$ 5,100.00
241000	16	1	$ 16,000.00	$ 16,000.00
242000	13	10	$ 12,400.00	$ 124,000.00
243000	16	17	$ 14,050.00	$ 238,850.00
244000	14	19	$ 19,700.00	$ 374,300.00

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
244900	9	6	$ 17,400.00	$ 104,400.00
245000	n/d		$ 105,000.00	$ -
245100	5	1	$ 20,900.00	$ 20,900.00
246000	10	3	$ 11,450.00	$ 34,350.00
246250	n/d		$ 950.00	$ -
247000	n/d		$ 17,300.00	$ -
248000	n/d		$ 3,500.00	$ -
250000	13	15	$ 30,350.00	$ 455,250.00
251500	12	4	$ 2,900.00	$ 11,600.00
251750	2	2	$ 22,000.00	$ 44,000.00
253100	n/d		$ 785.00	$ -
254000	n/d		$ 85,000.00	$ -
254100	n/d		$ 9,000.00	$ -
254250	n/d		$ 1,550.00	$ -
255000	10	1	$ 80,000.00	$ 80,000.00
255200	n/d		$ 12,000.00	$ -
255500	n/d		$ 4,800.00	$ -
255600	10	1	$ 106,500.00	$ 106,500.00
255900	3	2	$ 3,500.00	$ 7,000.00
255950	n/d		$ 22,500.00	$ -
256000	14	5	$ 3,550.00	$ 17,750.00
256400	9	1	$ 5,700.00	$ 5,700.00
256600	2	1	$ 5,300.00	$ 5,300.00
256850	7	1	$ 95,000.00	$ 95,000.00
256950	13	5	$ 90,000.00	$ 450,000.00
257000	n/d		$ 8,100.00	$ -
258500	5	1	$ 24,000.00	$ 24,000.00
259000	n/d		$ 13,900.00	$ -
259100	n/d		$ 2,300.00	$ -
259200	n/d		$ 2,600.00	$ -
259500	n/d		$ 25,300.00	$ -
259525	n/d		$ 6,400.00	$ -
259575	n/d		$ 43,500.00	$ -
259600	n/d		$ 3,100.00	$ -
259700	n/d		$ 28,000.00	$ -
260000	n/d		$ 6,300.00	$ -
260400	n/d		$ 56,000.00	$ -
260450	n/d		$ 23,150.00	$ -
260500	n/d		$ 8,600.00	$ -
260800	n/d		$ 9,000.00	$ -
261000	6	1	$ 68,500.00	$ 68,500.00
261250	n/d		$ 80,000.00	$ -
261500	n/d		$ 110,000.00	$ -
262000	20	11	$ 17,000.00	$ 187,000.00
263000	16	8	$ 5,200.00	$ 41,600.00
263500	12	5	$ 22,000.00	$ 110,000.00
264000	4	1	$ 15,300.00	$ 15,300.00
266000	n/d		$ 53,000.00	$ -

SERIES	Econ. Life	# of Past Eqip. In Svc.	Cur. Repl. Cost	Final Req'd Cost
266250	16	1	$ 46,750.00	$ 46,750.00
266500	1	1	$ 17,350.00	$ 17,350.00
267400	10	2	$ 22,450.00	$ 44,900.00
267450	n/d		$ 59,400.00	$ -
267500	n/d		$ 24,000.00	$ -
267750	17	2	$ 55,000.00	$ 110,000.00
268000	n/d		$ 27,000.00	$ -
268250	n/d		$ 200,000.00	$ -
268500	n/d		$ 15,500.00	$ -
268750	n/d		$ 33,000.00	$ -
269000	14	6	$ 21,000.00	$ 126,000.00
270000	n/d		$ 21,000.00	$ -
270300	n/d		$ 21,000.00	$ -
270500	19	2	$ 33,000.00	$ 66,000.00
275000	14	3	$ 7,100.00	$ 21,300.00
275800	13	2	$ 7,000.00	$ 14,000.00
276000	n/d		$ 9,200.00	$ -
277000	n/d		$ 4,500.00	$ -
277500	n/d		$ 8,350.00	$ -
278000	8	2	$ 6,000.00	$ 12,000.00
300100	n/d		$ 148,645.00	$ -
301350	n/d		$ 31,000.00	$ -
301400	9	6	$ 4,500.00	$ 27,000.00
301500	n/d		$ 8,000.00	$ -
304000	n/d		$ 720,000.00	$ -
305000	n/d		$ 115,000.00	$ -
340000	13	10	$ 1,300.00	$ 13,000.00
340200	17	11	$ 1,500.00	$ 16,500.00
340400	1	2	$ 3,260.00	$ 6,520.00
340600	1	6	$ 3,400.00	$ 20,400.00
340800	1	2	$ 5,500.00	$ 11,000.00
345000	20	16	$ 1,400.00	$ 22,400.00
345500	2	1	$ 18,000.00	$ 18,000.00
345900	10	3	$ 3,400.00	$ 10,200.00
347250	n/d		$ 115,000.00	$ -
360000	n/d		$ 1,380,000.00	$ -
360250	n/d		$ 433,400.00	$ -
810000	n/d		$ 117,000.00	$ -
810500	n/d		$ 64,000.00	$ -
820000	n/d		$ 95,000.00	$ -
843000	n/d		$ 14,050.00	$ -
845000	n/d		$ 30,900.00	$ -
847000	n/d		$ 17,300.00	$ -
861000	n/d		$ 68,500.00	$ -
861250	n/d		$ 80,000.00	$ -
866000	n/d		$ 53,000.00	$ -
866500	n/d		$ 46,750.00	$ -
	Total	**2220**	**$ 3,841,436.87**	**$ 36,075,233.87**

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