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A BENEFIT VALUE COMPARISON OF A CASH BALANCE PLAN WITH A TRADITIONAL FINAL AVERAGE PAY DEFINED-BENEFIT PLAN

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Section 1. Introduction and Summary

This study compares the distribution of benefits under a cash balance plan with those under a final average pay plan, each plan having specific design characteristics. Funding for this study was provided by the Pension Section Council of the Society of Actuaries in response to a request from the Cash Balance Practitioners Group. Our intent is to provide an example of the potentially different benefit distribution patterns of these two classes of plan design, using recent data on actual turnover and retirement from a large database.

The demographic data used in this study were recently collected by the Society of Actuaries (SOA) for a study of turnover and retirement rates, which we refer to as the "SOA turnover study." The SOA turnover study will be published in the *1997-1998 TSA Reports* under the title of "Pension Plan Turnover Rate Table Construction" by Steve Kopp. Advance copies of this report are currently available from the SOA.

The aggregate data from the SOA turnover study were used to develop and compare the value of benefits that would have been provided to plan participants during the period covered by the SOA turnover study under two types of hypothetical defined-benefit plans—a traditional final average pay plan and a cash balance plan—to examine the benefit distribution patterns under the two plan types. As a first step, we determined the benefit levels for the two plans so that the aggregate value of benefits for the employees who actually terminated or retired would be equal under the plans. We found that the following two plans provided benefits with the same aggregate benefit values for those employees who terminated or retired:

- Final average pay: $1.0\% \times \text{final five year average pay} \times \text{years of service}$, with typical early retirement subsidies
- Cash balance: 3.95% annual pay credits and typical annual interest credits.

Each of these formulas would have provided benefits worth approximately \$8.4 billion to the total of about 259,000 terminated and retired employees considered in this comparison. The average benefit value was approximately \$32,400. Those who had less than five years of service at termination (or retirement) were excluded from

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the comparisons because it was assumed that such persons would have been ineligible for plan benefits because of vesting requirements.

It is important to note that other cash balance and final average pay benefit designs could have been considered which would have produced the same aggregate benefit values but different distribution patterns. The specific plan designs used in our comparison are not presented as representative of current industry practice.

This study shows that for the two plan designs, the final average pay plan concentrates benefits on those who terminate at the later ages with longer service when compared with the cash balance plan. About two-thirds of the employees would have received more valuable benefits under the cash balance plan. Their average benefit value was \$22,100 under the cash balance plan and \$8,500 under the final average pay plan. For the one-third of the employees who would have received more valuable benefits under the final average pay plan, the average benefit value was \$54,300 for the cash balance plan and \$83,200 for the final average pay plan. The proportion of females who would have received more valuable cash balance benefits is higher—about three-quarters—due to their relatively higher turnover particularly at the younger ages where the cash balance plan provides more valuable benefits than the final average pay plan.

This study focuses on benefit values potentially available at retirement from a single employer. An analysis of how job changes (that is, worker mobility) and the prevalence of different payment forms (for example, lump sums) might affect the amounts ultimately available at retirement under different plan designs is beyond the scope of this study.

More details on these comparisons are presented in the balance of this report.



Section 2. Description of Data

For a detailed description of the data, the reader is referred to “Pension Plan Turnover Rate Table Construction” by Steve Kopp, scheduled for publication in the *1997-98 TSA Reports*. Advance copies of this report are available from the SOA.

The data for the SOA turnover study consisted of data from 41 large pension plans, covering termination and retirement experience from 1989 through 1995. The benefit comparisons in this study included data for 35 of those plans—six of them were excluded either because the format of the data differed significantly from that of the other plans or because no pay information was provided. This process coincidentally excluded the data from Canadian employees. Some plans provided data for only one year, while a few provided data for all seven years. A summary of the data by year is shown in the Appendix on page 11. Tables 1 and 2 show the distribution of terminations included in this data by gender, age, and length of service. Some of the plans considered for this study provided age information using

age nearest birthday, while others provided data using age last birthday. The method for adjusting the age data to a consistent basis is presented in the SOA turnover study.

TABLE 1
Number Terminated by Age Group
and Accumulated Percentage through Indicated Age Group

Age	Males		Females		Sex Not Identified		Total	
	No.	Accum. Percentage	No.	Accum. Percentage	No.	Accum. Percentage	No.	Accum. Percentage
< 26	1,288	0.9%	2,142	3.3%	362	0.8%	3,792	1.5%
26-30	12,068	8.8	11,625	21.0	4,911	12.4	28,604	12.5
31-35	18,636	21.1	11,138	38.1	8,260	31.8	38,034	27.1
36-40	16,977	32.3	8,147	50.5	7,010	48.2	32,134	39.5
41-45	15,628	42.7	6,953	61.1	6,278	63.0	28,859	50.6
46-50	16,466	53.5	6,487	71.0	4,907	74.5	27,860	61.4
51-55	17,101	64.8	5,284	79.1	3,545	82.8	25,930	71.4
56-60	21,321	78.9	5,342	87.3	3,508	91.0	30,171	83.0
61-65	25,468	95.7	6,281	96.9	3,069	98.3	34,818	96.4
> 65	6,463	100.0	2,049	100.0	743	100.0	9,255	100.0
Total	151,417		65,447		42,595		259,458	

TABLE 2
Number Terminated by Service Group
and Accumulated Percentage through Indicated Service Group

Service	Males		Females		Sex Not Identified		Total	
	No.	Accum. Percentage	No.	Accum. Percentage	No.	Accum. Percentage	No.	Accum. Percentage
5-10	56,861	37.6%	41,380	63.2%	19,878	46.7%	118,119	45.5%
11-15	16,463	48.4	9,102	77.1	8,384	66.4	33,949	58.6
16-20	17,005	59.7	6,377	86.9	5,262	78.7	28,644	69.6
21-25	20,458	73.2	3,986	93.0	4,798	90.0	29,242	80.9
> 25	40,630	100.0	4,601	100.0	4,273	100.0	49,504	100.0
Total	151,417		65,447		42,595		259,458	

For this hypothetical plan comparison, a separation from employment which occurred at age 54 or under was assumed to be a termination. If separation occurred at age 55 or above, it was considered a retirement. The significance of this distinction was to credit all terminations at or after age 55 with the benefit of subsidized early retirement factors under the hypothetical final average pay plan. This distinction had no impact on cash balance accumulations.

The employees covered under the plans worked in various regions of the U.S. (that is, there was no concentration in any particular region) and the plan sponsors operated in a variety of industries, as follows:

- Manufacturers of food and textile products
- Lumber processors
- Chemicals, glass, plastics, printing
- Manufacturers of motor vehicles, aircraft, and other machinery
- Manufacturers of electronic and communications equipment
- Utilities and communications services
- Retail and medical services
- Financial services.

Separate comparisons by geographic or industry division were not made because of problems associated with the interdependence of the variables. In the judgment of the authors, there were not enough plans to be able to determine whether geography or industry could account for any noticeable difference. Readers interested in potential geographical or industry differentials are encouraged to review the SOA turnover study.



Section 3. Methodology for Completing the Comparison

This project used the broad sample of data on employees who terminated in recent years from several medium to large companies in various industries and geographic regions to compare the present value (at termination of employment) of the accrued pensions the employees would have received had they been covered under two hypothetical defined-benefit plans: a final five-year average pay plan and a cash balance plan. Employees who terminated or retired in a given plan in a particular year at each integral age and service combination had been grouped in earlier phases of the SOA turnover study. Thus, for purposes of the benefit comparison, each such grouping would have the number of people included and the total (or average) pay. Below, we characterize a person included in a particular grouping as a “representative terminated employee”—the annual pay being the average pay for the grouping.

HYPOTHETICAL PLANS AND PRESENT VALUES

Final Pay Plan. The accrued benefit was determined for each representative terminated employee by taking 1% of final five-year average pay, multiplied by total years of service with the employer. To develop a compensation history, the most

recent annual pay was “regressed” to estimate a five-year average assuming 4% annual pay increases.

Representative employees under age 55 at termination were assumed to have their benefits commence at age 65. Representative employees who terminated employment between ages 55 and 61 were assumed to receive an immediate annuity equal to the accrued benefit, reduced by 4% per year below age 62 (for example, 72% at age 55). Representative employees who terminated employment at ages 62 and older were assumed to receive an immediate annuity equal to the accrued benefit.

The present value of each representative terminated employee’s annuity benefit was determined at employment termination by using 7.5% interest and the 1983 GAM Table (50% male/50% female).

The present values for all 259,458 representative terminated employees (which excluded 102,587 persons with less than five years of service) totaled \$8,407,736,490.

Cash Balance Plan The estimated cash balance account, which was also deemed to be the present value, was developed in two stages. First, a preliminary benefit was developed by estimating pay credits in all prior years of service based on 5% of each such year’s pay; the most recent year’s annual pay was “regressed” assuming annual pay increases of 4%. Annual interest credits were assumed to be 6.5%. The calculated present values were then summed.

Next a “benefit equivalent” cash balance plan was determined. This was accomplished by multiplying each of the individual cash balance accounts by the following ratio for all plans and years combined: the sum of the final average pay plan present values divided by the sum of the preliminary cash balance benefits. The ratio turned out to be 0.79. Thus, this adjustment process converted the initial cash balance pay credit from 5.0% to 3.95%.

Comments on Assumptions and Methodology. In order to make our comparisons, assumptions were required with respect to discount rate, salary increases, mortality and cash balance interest credits. The assumptions chosen were considered to be individually reasonable (over the long term) and internally consistent at the time this study was performed.

The use of unisex rather than sex-distinct mortality in converting the final average pay benefits to present values is consistent with the presumption that all employees would receive their benefits (under both plan types) in a lump sum—by law, unisex mortality must be used in converting one form of benefit to another. The analysis could have been refined (but at the expense of additional complexity) had we assumed that one or both of the plans (more likely the final average pay plan) did not permit lump sums (at least with respect to amounts over the mandatory cashout limit) or had we assumed that females will tend to elect annuities more often than males (due to their longer life expectancies). However, we do not believe that such refinement would have materially changed the observations made in this study.

The cash balance credit assumption was chosen to be representative of the typical rates credited in such plans and to reflect the same underlying inflation assumption included in the other economic related assumptions.

Different assumptions would produce different results, but no sensitivity analysis was done as part of this study due to budget limitations and time constraints.

Other methods could have been used to determine the benefit levels at which the two hypothetical plans are equally generous (e.g., including the present values of projected benefits for active employees in addition to those of terminated and retired employees). The approach used was considered to be the most straightforward since it required the fewest assumptions regarding future contingencies.



Section 4. Presentation of Results

The tables in the Appendix show distributions by age and service of the terminated and retired employees. In addition to the number of persons in each group, we show the average pay and average present value of benefits under the two hypothetical plans. Three sets of tables of benefits by age and service are provided: Table A-1 shows all terminated and retired employees; Table A-2 separately by sex (for those whose sex was identified); and Tables A-3 separately by pay type (for those where hourly or salaried status was identified). In addition, several tables that follow summarize certain information in the Appendix.

All Terminated and Retired Employees (Table A-1). While the two different hypothetical plans produced the same aggregate benefit values for the employees who left service during the period covered, there were, as would be expected, significant differences depending upon a participant's age and service at the time of employment termination. Table 3 summarizes the relative distributions of benefits by age under the two hypothetical plans.

In a cash balance plan, especially one that uses a single pay credit factor such as the hypothetical plan selected for this study, the value of an accrued benefit tends to be independent of age—length of service and compensation history being the primary factors. In a final average pay plan, the value of an accrued benefit depends on age, service and recent compensation. Because the final average pay plan benefit value depends much more on age, younger employees tend to do relatively better in a cash balance plan than in a final average pay plan. Also, because there is a high correlation between age and service (that is, young employees tend to have short service and vice versa), shorter service employees also tend to do relatively better in the cash balance plan than in a final average pay plan—see Table 4. Thus, our hypothetical 3.95% cash balance formula provides similar benefits to all employees with similar lengths of service and salary histories. On the other hand, our hypothetical final average pay plan provides significantly better benefits to older employees at the expense of smaller benefits to younger employees with the same years of service.

TABLE 3
Comparison of Present Value of Benefits in Cash Balance
and Final Average Pay Plans by Age Groups

Age	Average Present Value of:		Average of Final Years' Pay	Present Value as a Percentage of Final Pay	
	Cash Balance Account	Final Average Pay Benefit		Cash Balance	Final Average Pay
All Employees					
< 26	\$ 4,568	\$ 464	\$19,644	23.3	2.4
26-30	8,490	1,151	29,379	28.9	3.9
31-35	13,169	2,399	35,406	37.2	6.8
36-40	19,046	4,785	38,271	49.8	12.5
41-45	26,563	9,129	39,879	66.6	22.9
46-50	34,206	16,140	41,311	82.8	39.1
51-55	45,925	41,176	41,272	111.3	99.8
56-60	55,200	83,272	40,334	136.7	206.5
61-65	55,831	89,302	37,963	147.1	235.2
> 65	55,622	78,382	37,313	149.1	212.7
Female Employees					
< 26	\$ 4,016	\$ 406	\$17,016	23.6	2.4
26-30	7,177	960	24,535	29.3	3.9
31-35	10,492	1,896	28,565	36.7	6.6
36-40	13,898	3,502	30,212	46.0	11.6
41-45	16,687	5,846	30,346	55.0	19.3
46-50	17,947	8,790	29,634	60.6	29.7
51-55	23,058	21,478	28,817	80.0	74.5
56-60	28,614	45,453	28,077	101.9	161.9
61-65	31,285	52,269	27,213	115.0	192.1
> 65	30,742	45,240	25,702	119.6	176.0
Male Employees					
< 26	\$ 5,084	\$ 518	\$22,086	23.0	2.3
26-30	8,991	1,226	31,849	28.2	3.8
31-35	13,506	2,474	36,955	36.5	6.7
36-40	20,010	5,025	39,739	50.4	12.6
41-45	28,884	9,910	42,036	68.7	23.6
46-50	39,143	18,367	44,249	88.5	41.5
51-55	52,592	47,039	44,067	119.3	106.7
56-60	62,030	92,694	42,826	144.8	216.4
61-65	61,901	98,117	40,100	154.4	244.7
> 65	63,355	88,562	40,681	155.7	217.7

A BENEFIT VALUE COMPARISON OF A CASH BALANCE PLAN

TABLE 4
Comparison of Present Value of Benefits in Cash Balance
and Final Average Pay Plans by Service Groups—
Separately by Terminations and Retirees*

Service	Number	Average Present Value of:		Average of Final Years' Pay	Present Value as a Percentage of Final Pay	
		Cash Balance Account	Final Average Pay Benefit		Cash Balance	Final Average Pay
Retirees (Age 56 and Over)						
5-10	10,092	\$11,322	\$ 23,063	\$36,187	31.3	63.7
11-15	7,895	21,237	40,571	35,322	60.1	114.9
16-20	9,197	32,291	58,102	36,563	88.3	158.9
21-25	11,948	44,379	74,828	36,710	120.9	203.8
>25	35,112	85,870	124,338	41,727	205.8	298.0
Terminations (Age 55 and Under)						
5-10	108,027	\$10,319	\$ 3,141	\$34,718	29.7	9.0
11-15	26,054	25,379	8,032	37,832	67.1	21.2
16-20	19,447	34,710	15,090	39,644	87.6	38.1
21-25	17,294	49,736	25,974	41,600	119.6	62.4
>25	14,392	72,916	53,456	44,241	164.8	120.8

* Because of the way in which the five-year age groups were set in developing the tables, employees who terminated at age 55 were included with those who terminated in the age group 51-55. Therefore, they were included with the "terminations" rather than the "retirees" in this Exhibit.

About 68% of the people would have received cash balance benefits which exceeded the present value of benefits under the final average pay plan. These people were all under age 55. The aggregate cash balance accounts for these 68% is about \$3.9 billion, which is about 46% of the \$8.4 billion total present value. These same people would receive about \$1.5 billion in benefit value from the final average pay plan, which is about 18% of the \$8.4 billion total present value. Half of the total present value of \$8.4 billion would go to those under age 56 in the cash balance plan and half would go to those under age 60 in the final average pay plan. The converse is, of course, that the final average pay plan provides much larger benefits to the older employees, those who are actually retiring.

Distributions by Sex (Table A-2). Females tend to receive proportionately larger benefit values under the hypothetical cash balance plan than they do in the final average pay plan. This occurs because relatively more females terminated employment at the younger ages. About 77% of females received cash balance benefits with a higher present value than under the final average pay plan, compared with 61% of

males who received larger benefit values in the cash balance plan. Table 3 shows for females and males the relative distribution of benefits by age under the two hypothetical plans.

The data also reveal significant differences in average pay (and therefore benefits) by sex. The average pay for males was \$40,369 and for females was \$27,744. The average benefit value for males was \$42,638 in the final average pay plan and \$39,694 in the cash balance plan. The average benefit value for females was \$14,311 in the final average pay plan and \$16,635 in the cash balance plan. These results are a reflection of the fact that in this data older retirees tended to be higher paid or male, whereas younger terminees were more likely to be lower paid or female.

Distributions by Pay Type (Table A-3). The relationships observed for all terminated and retired employees are virtually the same as the relationships observed for those who are indicated as salaried and for those who are indicated as hourly paid. The fact that little difference was observed by pay type is an indication that there was not a material difference between salaried and hourly turnover rates by age. One should not conclude from this observation, however, that a comparison by pay levels would also reveal little difference. Because of the way the data were assembled, we were not able to make proper comparisons by pay levels.



Section 5. Conclusions

Using actual termination data, this study has compared the distribution of benefits from a hypothetical final average pay plan with those from a hypothetical cash balance plan with similar total benefit distributions. It demonstrates that the hypothetical final average pay plan provides relatively higher benefits to employees who retire from the employer. On the other hand, the hypothetical cash balance plan provides relatively higher benefits to employees who terminate at younger ages.

Finally, the authors thank the Pension Section Council of the Society of Actuaries for financial support of this project.

APPENDIX

DATA SUMMARY

- (a) Total number of *active* lives covered by the plans, shown separately for each calendar year (including those with less than five years of service):

1989	273,598
1990	460,681
1991	566,415
1992	600,005
1993	612,573
1994	624,827
1995	354,449

Total 3,492,548

- (b) Total number of *terminations/retirees* included in the calculation, shown separately for each calendar year:

1989	26,788
1990	49,000
1991	58,609
1992	62,617
1993	64,004
1994	64,234
1995	36,793

Total = 362,045, less 102,588 terminations with under five years of service = 259,458.

TABLE A-1
Benefits by Age and Service
All Terminated and Retired Employees

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
< 26	5-10	3,792	\$19,644	\$ 464	\$ 4,567
< 26	11-15	0	23,158	1,285	13,225
26-30	5-10	27,445	29,425	1,116	8,240
26-30	11-15	1,159	28,292	1,979	14,413
26-30	16-20	0	27,714	3,011	23,452
31-35	5-10	28,947	35,829	2,010	10,961
31-35	11-15	8,177	34,296	3,524	19,675
31-35	16-20	910	31,914	4,665	24,922
31-35	21-25	0	32,397	5,964	35,728
36-40	5-10	17,997	38,188	3,093	11,691
36-40	11-15	6,978	40,203	5,949	24,209
36-40	16-20	6,273	36,690	7,623	31,577
36-40	21-25	887	35,931	9,896	39,052
36-40	> 25	0	26,329	9,521	40,877
41-45	5-10	12,739	38,321	4,442	11,558
41-45	11-15	4,131	41,555	8,924	25,104
41-45	16-20	5,562	42,219	12,543	37,558
41-45	21-25	5,873	39,922	15,255	46,931
41-45	> 25	555	39,246	19,182	56,113
46-50	5-10	10,791	38,904	6,470	11,739
46-50	11-15	2,923	40,626	12,600	24,525
46-50	16-20	3,591	43,019	18,400	38,176
46-50	21-25	5,955	43,966	24,116	53,309
46-50	> 25	4,599	42,627	28,986	65,240
51-55	5-10	6,317	37,371	10,544	11,225
51-55	11-15	2,685	37,780	23,440	22,726
51-55	16-20	3,111	39,369	33,927	34,796
51-55	21-25	4,579	41,773	45,255	50,758
51-55	> 25	9,239	45,347	67,695	77,746
56-60	5-10	4,148	36,933	22,140	11,249
56-60	11-15	3,084	36,317	40,269	21,881
56-60	16-20	3,681	37,788	57,867	33,402
56-60	21-25	5,023	38,988	76,482	47,218
56-60	> 25	14,236	43,329	119,365	83,677
61-65	5-10	4,280	36,555	24,839	11,600
61-65	11-15	3,578	35,148	42,317	21,095
61-65	16-20	4,339	35,785	59,685	31,661
61-65	21-25	5,693	35,173	75,073	42,457
61-65	> 25	16,928	40,410	127,908	85,050

A BENEFIT VALUE COMPARISON OF A CASH BALANCE PLAN

TABLE A-1
Benefits by Age and Service
All Terminated and Retired Employees

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
> 65	5-10	1,664	33,379	20,794	10,787
> 65	11-15	1,233	33,336	36,257	20,039
> 65	16-20	1,177	35,598	52,999	31,139
> 65	21-25	1,232	34,523	66,948	41,684
> 65	> 25	3,948	41,597	126,963	97,297
Total		259,458			

TABLE A-2
Benefits by Age and Service
for Females and Males

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Females					
< 26	5-10	2,142	\$17,016	\$ 406	\$ 4,015
< 26	11-15	0	24,996	1,438	14,880
26-30	5-10	11,217	24,542	933	6,985
26-30	11-15	408	24,358	1,698	12,448
26-30	16-20	0	41,796	4,256	31,798
31-35	5-10	8,794	28,476	1,578	8,658
31-35	11-15	2,103	28,895	2,960	16,760
31-35	16-20	241	28,957	4,208	22,682
31-35	21-25	0	24,835	4,778	26,430
36-40	5-10	5,368	29,027	2,308	8,694
36-40	11-15	1,448	32,825	4,863	19,831
36-40	16-20	1,171	32,228	6,586	27,628
36-40	21-25	160	31,541	8,663	34,307
41-45	5-10	4,311	28,445	3,246	8,409
41-45	11-15	911	32,293	6,945	19,441
41-45	16-20	877	34,548	10,160	30,330
41-45	21-25	771	34,305	12,929	40,473
41-45	> 25	83	35,728	17,425	51,180
46-50	5-10	3,965	27,717	4,594	8,321
46-50	11-15	808	30,301	9,424	18,201
46-50	16-20	695	32,105	13,655	28,002
46-50	21-25	543	33,821	18,243	40,499
46-50	> 25	486	35,921	24,394	56,347

TABLE A-2
Benefits by Age and Service
for Females and Males

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Females-Continued					
51-55	5-10	2,330	25,897	7,278	7,800
51-55	11-15	853	28,825	17,918	17,336
51-55	16-20	785	30,376	26,500	26,549
51-55	21-25	551	30,763	34,300	36,592
51-55	>25	764	34,703	54,336	62,615
56-60	5-10	1,383	24,661	14,981	7,628
56-60	11-15	994	26,976	30,026	16,324
56-60	16-20	1,017	28,516	43,391	25,017
56-60	21-25	791	29,028	56,396	34,538
56-60	>25	1,157	32,071	89,455	63,361
61-65	5-10	1,359	22,939	16,002	7,482
61-65	11-15	1,164	25,639	30,922	15,427
61-65	16-20	1,225	27,943	46,392	24,599
61-65	21-25	930	28,199	59,500	33,601
61-65	>25	1,602	30,851	98,824	66,757
>65	5-10	521	20,417	13,012	6,720
>65	11-15	414	23,701	25,850	14,304
>65	16-20	365	26,252	38,894	22,885
>65	21-25	240	28,333	54,514	33,899
>65	>25	509	31,110	94,241	72,900
Female Total		65,447			
Males					
<26	5-10	1,288	\$22,086	\$ 518	\$ 5,084
26-30	5-10	11,648	31,946	1,197	8,780
26-30	11-15	420	29,151	2,039	14,839
26-30	16-20	0	23,968	2,680	21,231
31-35	5-10	14,425	37,589	2,096	11,388
31-35	11-15	3,699	35,202	3,647	20,201
31-35	16-20	513	31,765	4,656	24,795
31-35	21-25	0	36,611	6,582	40,460
36-40	5-10	9,172	40,713	3,279	12,390
36-40	11-15	3,506	41,186	6,112	24,865
36-40	16-20	3,794	36,706	7,631	31,573
36-40	21-25	505	34,813	9,588	37,804
36-40	>25	0	26,329	9,521	40,877

A BENEFIT VALUE COMPARISON OF A CASH BALANCE PLAN

TABLE A-2
Benefits by Age and Service
for Females and Males

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Males-Continued					
41-45	5-10	6,168	42,740	4,927	12,812
41-45	11-15	2,069	43,572	9,373	26,405
41-45	16-20	3,445	42,865	12,758	38,224
41-45	21-25	3,591	39,509	15,170	46,387
41-45	>25	355	38,376	18,785	54,898
46-50	5-10	5,192	45,365	7,487	13,557
46-50	11-15	1,418	44,258	13,751	26,774
46-50	16-20	2,166	44,683	19,168	39,833
46-50	21-25	4,328	44,048	24,274	53,548
46-50	>25	3,363	42,501	28,996	64,880
51-55	5-10	3,136	44,652	12,582	13,305
51-55	11-15	1,280	42,205	26,485	25,377
51-55	16-20	1,787	41,967	36,365	37,206
51-55	21-25	3,381	42,296	45,925	51,611
51-55	>25	7,517	45,435	67,952	77,715
56-60	5-10	2,274	44,361	26,347	13,362
56-60	11-15	1,511	42,204	46,744	25,348
56-60	16-20	2,055	41,440	63,607	36,701
56-60	21-25	3,596	40,350	79,420	49,091
56-60	>25	11,885	43,600	120,278	84,301
61-65	5-10	2,534	44,319	29,762	13,893
61-65	11-15	1,890	40,976	49,283	24,563
61-65	16-20	2,579	39,021	65,139	34,554
61-65	21-25	4,179	35,667	76,351	43,210
61-65	>25	14,287	40,727	129,019	85,758
>65	5-10	1,024	40,196	24,780	12,867
>65	11-15	672	40,009	43,443	24,010
>65	16-20	666	40,317	59,973	35,261
>65	21-25	879	36,068	70,176	43,738
>65	>25	3,223	42,307	129,143	98,744
Males Total		151,417			

TABLE A-3
Benefits by Age and Service
by Pay Type

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Hourly					
< 26	5-10	421	\$25,374	\$ 589	\$ 5,783
26-30	5-10	2,812	26,417	1,070	8,045
26-30	11-15	388	29,246	2,051	14,881
26-30	16-20	0	20,394	2,403	19,599
31-35	5-10	3,772	28,674	1,661	9,003
31-35	11-15	3,134	31,075	3,229	18,195
31-35	16-20	453	31,163	4,567	24,315
31-35	21-25	0	21,393	3,075	22,767
36-40	5-10	2,594	29,602	2,453	9,314
36-40	11-15	2,328	32,307	4,820	19,754
36-40	16-20	3,088	32,530	6,758	28,383
36-40	21-25	517	33,721	9,284	36,623
36-40	> 25	0	25,157	9,173	40,142
41-45	5-10	1,741	29,431	3,467	9,059
41-45	11-15	1,267	32,176	6,976	19,733
41-45	16-20	2,204	32,994	9,812	29,618
41-45	21-25	3,088	34,082	12,984	40,357
41-45	> 25	300	34,956	17,088	49,945
46-50	5-10	1,363	28,707	4,915	8,945
46-50	11-15	848	30,846	9,707	18,907
46-50	16-20	1,317	32,530	13,974	28,982
46-50	21-25	2,675	33,293	18,276	40,502
46-50	> 25	2,241	34,245	23,110	52,467
51-55	5-10	770	27,358	7,950	8,525
51-55	11-15	726	29,806	18,584	18,321
51-55	16-20	1,143	31,138	26,788	27,648
51-55	21-25	2,044	32,074	35,178	38,997
51-55	> 25	3,839	32,455	46,992	55,132
56-60	5-10	472	25,974	16,256	8,293
56-60	11-15	741	29,064	32,720	17,863
56-60	16-20	1,265	30,418	46,819	27,106
56-60	21-25	2,134	31,339	61,493	37,961
56-60	> 25	5,612	30,502	83,383	58,450
61-65	5-10	471	24,651	17,548	8,226
61-65	11-15	722	28,719	35,280	17,637
61-65	16-20	1,431	28,002	47,090	24,993
61-65	21-25	2,504	26,276	56,214	31,757
61-65	> 25	6,911	26,561	82,841	54,685

A BENEFIT VALUE COMPARISON OF A CASH BALANCE PLAN

TABLE A-3
Benefits by Age and Service
by Pay Type

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Hourly-Continued					
> 65	5-10	196	24,410	15,981	8,372
> 65	11-15	211	29,283	32,096	17,689
> 65	16-20	291	30,034	45,239	26,480
> 65	21-25	477	25,622	49,900	30,911
> 65	> 25	1,648	28,591	85,954	65,066
Hourly Total		70,159			
Salaried					
< 26	5-10	351	\$24,148	\$ 582	\$ 5,499
< 26	11-15	0	24,996	1,438	14,880
26-30	5-10	4,356	34,752	1,256	9,142
26-30	11-15	110	33,940	2,383	17,396
31-35	5-10	5,083	41,270	2,282	12,455
31-35	11-15	1,096	42,542	4,405	24,116
31-35	16-20	87	41,175	6,025	32,255
31-35	21-25	0	43,214	8,465	51,687
36-40	5-10	2,990	44,858	3,600	13,581
36-40	11-15	1,406	48,164	7,179	29,118
36-40	16-20	947	48,092	10,097	41,015
36-40	21-25	131	48,771	13,456	53,132
36-40	> 25	0	28,593	10,192	42,297
41-45	5-10	2,071	46,184	5,306	13,800
41-45	11-15	842	49,454	10,662	30,157
41-45	16-20	1,197	53,168	15,813	47,346
41-45	21-25	1,150	53,470	20,533	62,632
41-45	> 25	103	51,753	25,255	74,027
46-50	5-10	1,575	47,770	7,787	14,158
46-50	11-15	515	50,349	15,664	30,627
46-50	16-20	695	52,924	22,595	47,149
46-50	21-25	1,335	57,490	31,539	69,792
46-50	> 25	991	57,033	38,838	86,896
51-55	5-10	816	46,206	12,718	13,705
51-55	11-15	414	46,563	29,316	28,294
51-55	16-20	498	49,852	42,442	44,156
51-55	21-25	890	53,909	57,934	65,880
51-55	> 25	2,127	59,045	87,463	100,462

TABLE A-3
Benefits by Age and Service
by Pay Type

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Salaried-Continued					
56-60	5-10	486	45,423	26,966	13,697
56-60	11-15	434	46,830	52,112	28,359
56-60	16-20	491	50,139	76,405	44,200
56-60	21-25	747	50,214	98,570	61,116
56-60	>25	2,906	54,381	148,939	104,673
61-65	5-10	483	42,038	27,998	13,050
61-65	11-15	495	44,617	53,985	26,929
61-65	16-20	545	47,388	78,972	41,890
61-65	21-25	715	48,182	103,182	58,373
61-65	>25	3,180	52,848	167,341	111,142
>65	5-10	227	37,760	23,133	12,008
>65	11-15	147	44,745	48,719	26,825
>65	16-20	153	47,385	71,398	41,710
>65	21-25	122	48,724	93,836	58,368
>65	>25	706	57,623	179,382	138,010
Salaried Total		43,614			
Hourly and Salaried Combined					
<26	5-10	3,020	\$18,323	\$ 435	\$ 4,290
<26	11-15	0	21,320	1,132	11,570
26-30	5-10	20,277	28,698	1,092	8,073
26-30	11-15	660	26,786	1,869	13,639
26-30	16-20	0	37,810	3,850	28,765
31-35	5-10	20,092	35,796	2,007	10,951
31-35	11-15	3,947	34,565	3,514	19,617
31-35	16-20	370	30,647	4,462	23,935
31-35	21-25	0	35,588	6,918	38,384
36-40	5-10	12,413	38,376	3,104	11,733
36-40	11-15	3,244	42,419	6,226	25,278
36-40	16-20	2,238	37,603	7,770	31,990
36-40	21-25	239	33,686	9,272	36,606
41-45	5-10	8,927	38,230	4,432	11,525
41-45	11-15	2,021	44,145	9,421	26,366
41-45	16-20	2,161	45,564	13,518	40,233
41-45	21-25	1,635	41,420	15,828	48,299
41-45	>25	151	39,235	19,200	56,144

A BENEFIT VALUE COMPARISON OF A CASH BALANCE PLAN

TABLE A-3
Benefits by Age and Service
by Pay Type

Age Band	Years of Service	Number of Terminees	Avg. Pay at Termination	Avg. PV Final Pay	Avg. Cash Balance
Hourly and Salaried Combined-Continued					
46-50	5-10	7,853	38,895	6,476	11,739
46-50	11-15	1,560	42,733	13,161	25,564
46-50	16-20	1,579	47,406	20,244	41,893
46-50	21-25	1,945	49,363	27,053	59,612
46-50	>25	1,366	45,922	31,475	70,480
51-55	5-10	4,731	37,477	10,592	11,236
51-55	11-15	1,545	39,175	24,148	23,304
51-55	16-20	1,469	42,216	36,592	37,181
51-55	21-25	1,645	47,257	50,914	57,189
51-55	>25	3,273	51,567	79,131	89,510
56-60	5-10	3,190	37,260	22,274	11,313
56-60	11-15	1,908	36,740	40,505	21,966
56-60	16-20	1,925	39,480	60,398	34,784
56-60	21-25	2,141	42,695	83,717	51,596
56-60	>25	5,717	50,304	139,654	97,769
61-65	5-10	3,326	37,442	25,411	11,866
61-65	11-15	2,361	35,127	42,020	20,928
61-65	16-20	2,363	37,820	62,860	33,337
61-65	21-25	2,474	40,418	86,037	48,686
61-65	>25	6,836	48,624	155,125	103,610
>65	5-10	1,241	33,994	21,126	10,945
>65	11-15	876	32,402	35,173	19,469
>65	16-20	734	35,353	52,249	30,789
>65	21-25	633	38,506	74,637	46,601
>65	>25	1,593	47,949	146,157	112,597
Hourly and Salaried Total		145,685			