

Appendix B: Detailed Cash Flow Models and Results

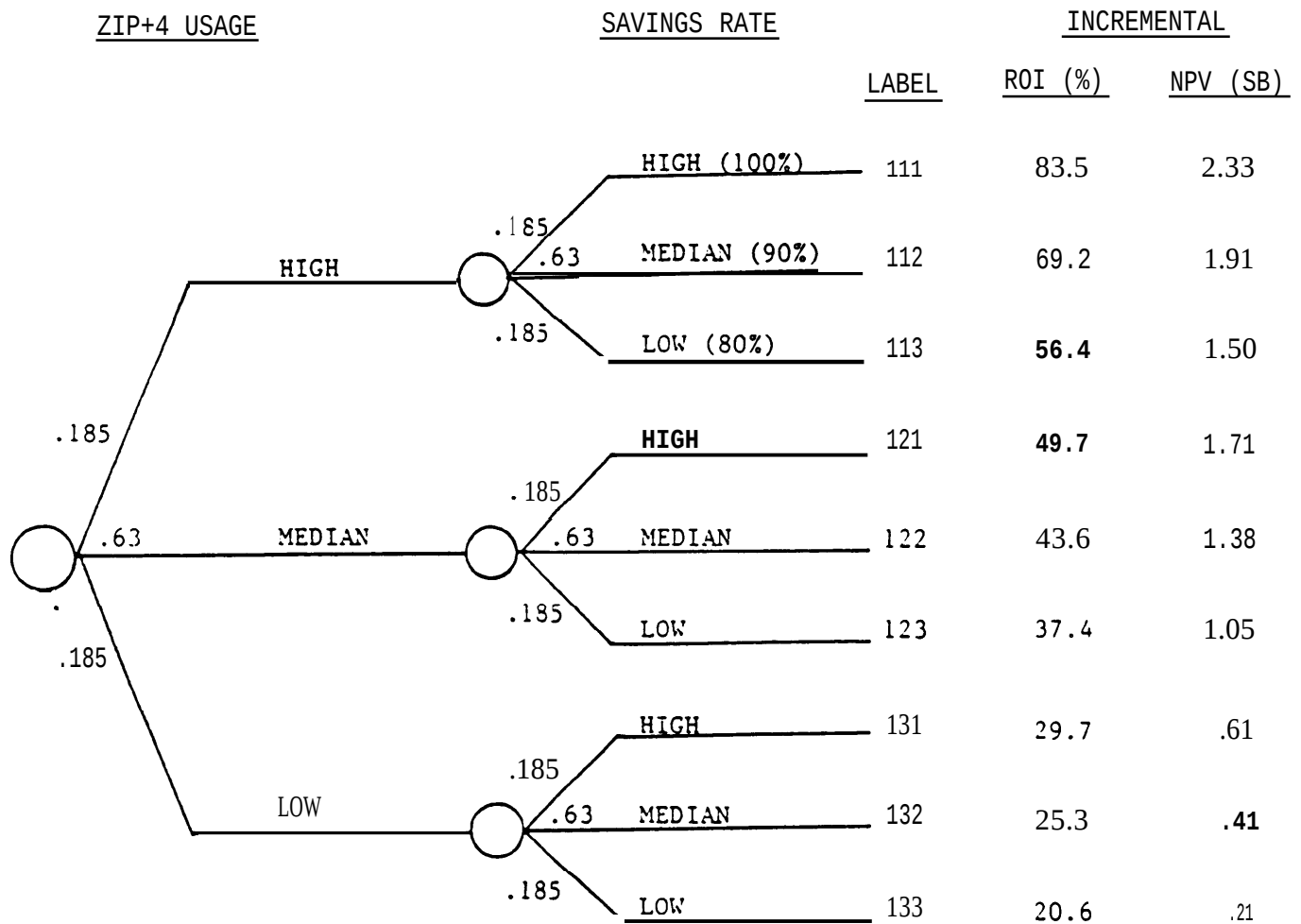
The detailed cash flow model and results for options A, B, C, D, and F are presented in this appendix. For each option, a complete probabilistic event tree is shown, along with the incremental rate of return (ROI) and net present value (NPV) over option F (cancel) for each condition of all options modeled. Also for each option, detailed year-by-year cash flows are shown for each condition.

The detailed cash flows show two ROIs and NPVs. The first ROI and NPV are for total cash flows of the option modeled. The second ROI and NPV are for total cash flows less cash flows for Option F (cancel).

All dollar figures are in thousands, and are carried to the nearest thousand dollars.

Figure B-1

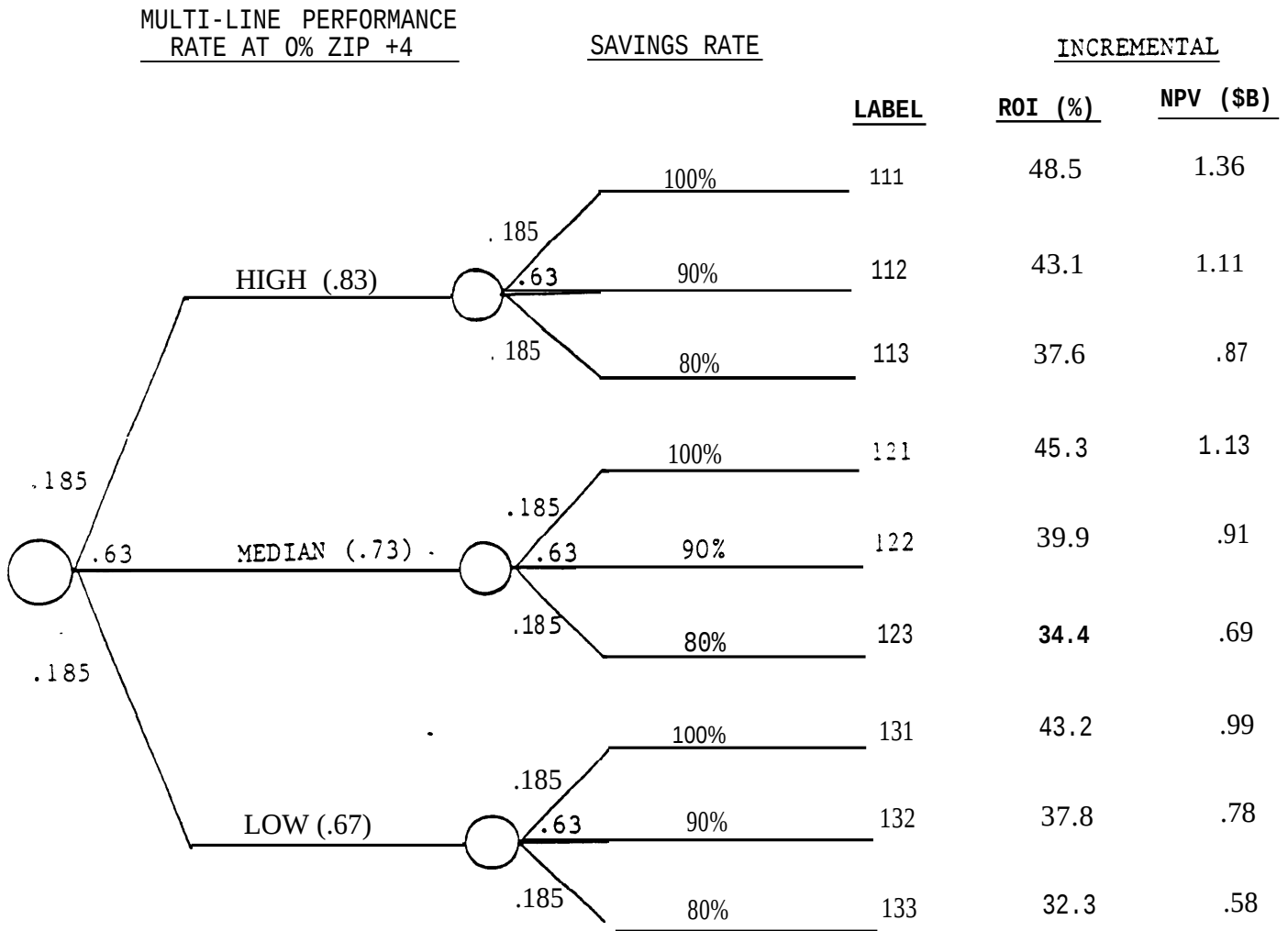
**Cash Flow Model and Results for
Option A: Single-Line OCR**



SOURCE : Off ice of Technology Assessment

Figure B-3

Cash Flow Results for
Option C: Multi-Line OCR Without ZIP+4



SOURCE: Office of Technology Assessment

Figure B-2

Cash Flow Model and Results for
Option B: Multi-Line OCR with ZIP+4

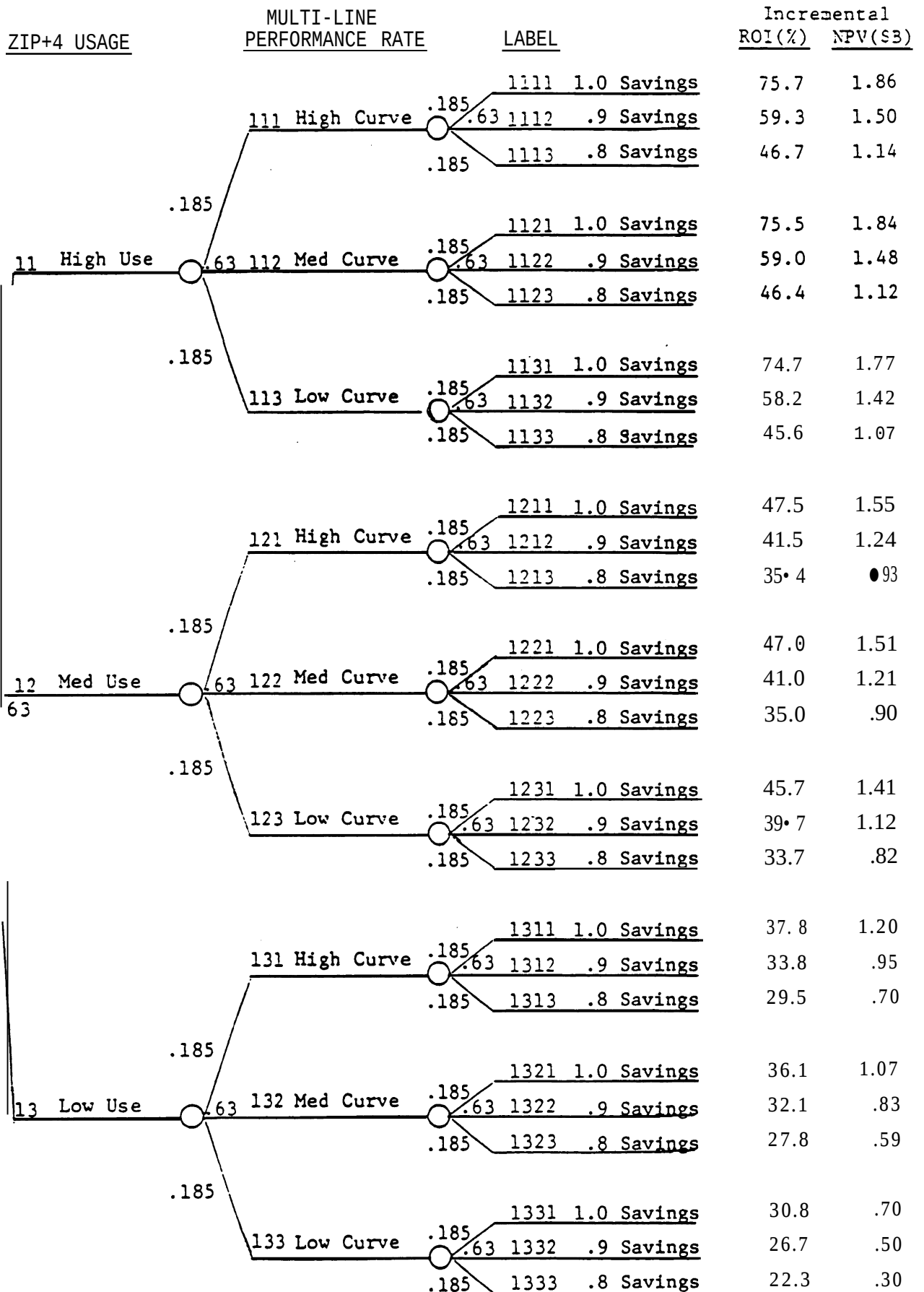


Figure B-4

Cash Flow Results for
option D: **Automatic Conversion**

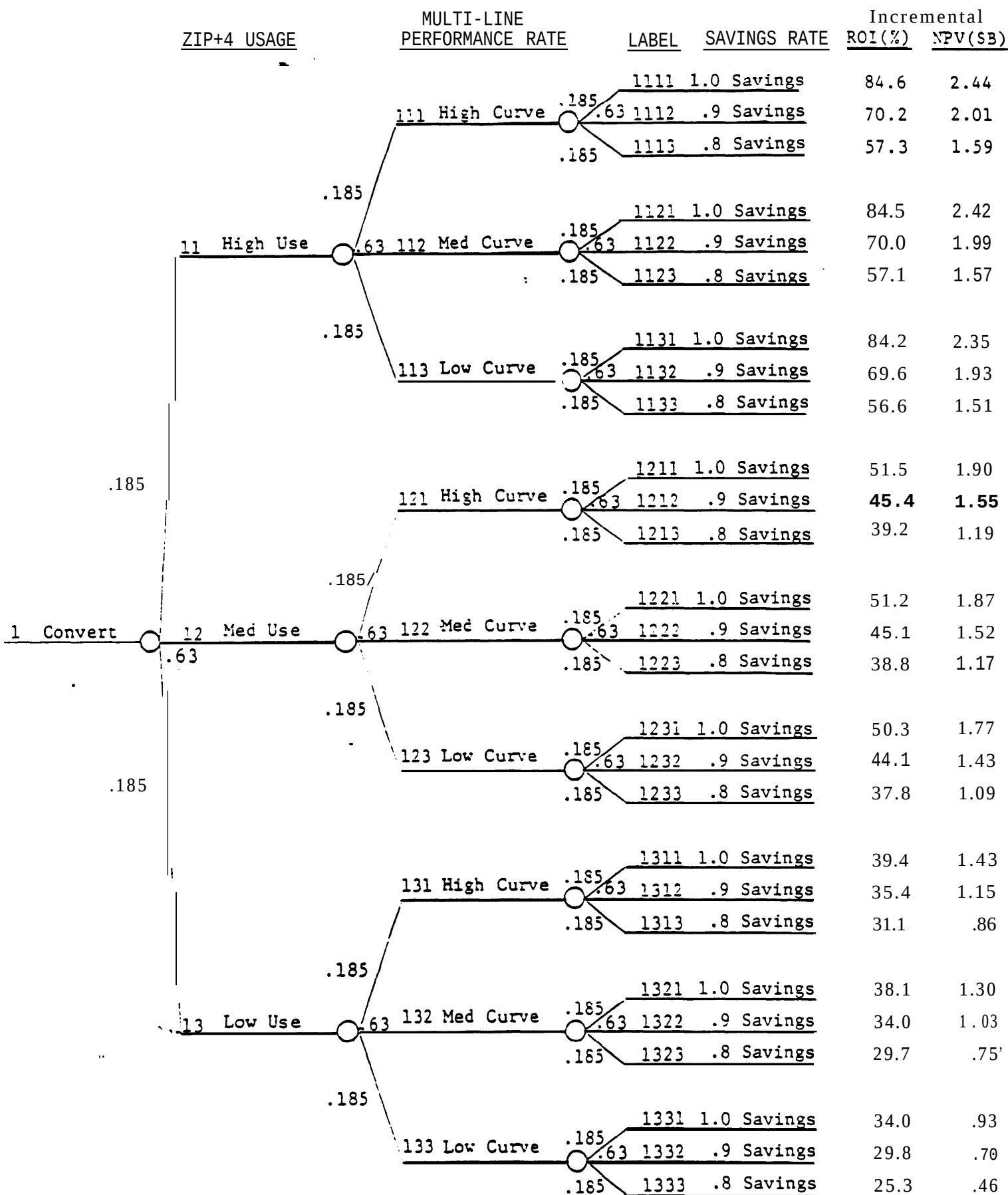


Table B-1

Detailed Cash Flows for Option A (Single-Line OCR)
at High Savings Rate

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ESCALATION FACTOR	1.0742													
BEGINNING OF YEAR USAGE	27%	48%	66%	85%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
AVERAGE USAGE	37.5%	57.0%	75.5%	87.5%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS INFORMATION	(32,400)	(30,900)	(15,700)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
EQUIPMENT INVESTMENT	(140,325)	(140,325)	(113,200)	0	0	0	0	0	0	0	0	0	0	0
PROGRAM CONTINGENCY	(14,033)	(14,033)	(11,320)	0	0	0	0	0	0	0	0	0	0	0
SITE PREPARATION	(6,044)	(6,044)	(4,827)	0	0	0	0	0	0	0	0	0	0	0
MAINTENANCE SUPPORT	(29,665)	(40,321)	(56,124)	(51,334)	(58,778)	(63,139)	(67,824)	(72,857)	(78,263)	(84,070)	(90,308)	(97,009)	(104,207)	(111,939)
EQUIPMENT SPARE PARTS	(991)	(5,475)	(15,244)	(14,842)	(15,943)	(17,126)	(18,397)	(19,762)	(21,228)	(22,803)	(24,495)	(26,313)	(28,265)	(30,362)
TOTAL INVESTMENT & MAINTENANCE	(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
CLERK SAVINGS	161,128	259,443	449,278	686,366	797,987	857,198	920,802	989,125	1,062,518	1,141,357	1,226,046	1,317,018	1,414,741	1,519,715
CARRIER SAVINGS	0	9,510	16,469	25,160	29,253	31,424	33,755	36,260	38,950	41,840	44,945	48,280	51,862	55,710
TOTAL SAVINGS	161,128	268,953	465,747	711,526	827,240	888,621	954,557	1,025,385	1,101,469	1,183,198	1,270,991	1,365,298	1,466,603	1,575,425
NET CASH FLOW	(120,663)	(56,812)	131,888	492,539	594,519	649,020	707,566	770,455	838,011	910,579	988,532	1,072,269	1,162,220	1,258,844
CASH FLOW - PHASE I	(175,132)	(91,696)	98,462	456,822	563,393	615,585	671,649	731,874	796,567	866,060	940,709	1,020,898	1,107,037	1,199,567
ROI	109.5%													
NPV	2,557,473													
REDUCED ROI				83.5%										
RED NPV				2,325,275										

SOURCE: Office of Technology Assessment

Table B-1 (continued)

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BEGINNING OF YEAR USAGE AVERAGE USAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
	17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%	90.0%
YEAR DATE	0 1985	1 1986	2 1987	3 1988	4 1989	5 1990	6 1991	7 1992	8 1993	9 1994	10 1995	11 1996	12 1997	13 1998
TOTAL INVESTMENT & MAINTENANCE	(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	132,117	237,500	386,257	591,994	733,112	845,976	935,664	1,034,004	1,136,609	1,254,309	1,365,298	1,466,603	1,575,425
NET CASH FLOW	(175,487)	(148,536)	(38,804)	229,492	409,828	524,623	619,207	696,289	781,435	870,991	974,184	1,072,269	1,162,220	1,258,844
CASH FLOW - PHASE I	(229,956)	(183,420)	(72,230)	193,775	378,702	491,187	583,291	657,708	739,990	826,471	926,361	1,020,898	1,107,037	1,199,567
ROI	60.1%		REDUCD ROI	49.7%										
NPV	1,945,794		RED NPV	1,713,596										

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BEGINNING OF YEAR USAGE AVERAGE USAGE	6%	12%	18%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
	9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
YEAR DATE	0 1985	1 1986	2 1987	3 1988	4 1989	5 1990	6 1991	7 1992	8 1993	9 1994	10 1995	11 1996	12 1997	13 1998
TOTAL INVESTMENT & MAINTENANCE	(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	70,777	129,546	219,557	414,654	484,299	536,938	576,779	619,576	665,549	714,932	767,980	824,964	886,177
NET CASH FLOW	(198,787)	(189,654)	(119,536)	94,681	270,600	325,587	367,725	399,627	433,896	470,708	510,251	552,729	598,358	647,373
CASH FLOW - PHASE I	(253,256)	(224,538)	(152,962)	58,964	239,474	292,151	331,808	361,045	392,452	426,189	462,429	501,358	543,175	588,096
ROI	37.4%		REDUCD ROI	29.7%										
NPV	844,867		RED NPV	612,668										

SOURCE: Office of Technology Assessment

Table B-2

Detailed Cash Flows for Option A (Single-Line OCR)
at Median Savings Rate

112	REDUCED SAVINGS	TO	90%												
	AVERAGE USAGE		37.5%	57.0%	75.5%	87.5%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	YEAR		0	1	2	3	4	5	6	7	8	9	10	11	12
	DATE		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	TOTAL INVESTMENT & MAINTENANCE		(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)
	RATE REDUCTION		(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
	TOTAL SAVINGS		145,015	242,058	419,172	640,373	744,516	799,759	859,101	922,847	991,322	1,064,878	1,143,892	1,228,769	1,319,943
	NET CASH FLOW		(136,776)	(83,707)	85,313	421,386	511,795	560,158	612,110	667,916	727,864	792,259	861,433	935,739	1,015,559
	CASH FLOW - PHASE I		(191,245)	(118,591)	51,887	385,669	480,669	526,723	576,193	629,335	686,420	747,740	813,610	884,368	960,376
	ROI		89.0%		REDUCD ROI	69.2%									
	NPV		2,143,372		RED NPV	1,911,173									
122	AVERAGE USAGE		17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%
	TOTAL INVESTMENT & MAINTENANCE		(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)
	RATE REDUCTION		(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)
	TOTAL SAVINGS		67,674	118,906	213,750	347,631	532,794	659,801	761,378	842,097	930,603	1,022,948	1,128,878	1,228,769	1,319,943
	NET CASH FLOW		(183,006)	(161,748)	(62,554)	190,866	350,629	451,311	534,609	602,723	678,034	757,330	848,753	935,739	1,015,559
	CASH FLOW - PHASE I		(237,475)	(196,632)	(95,980)	155,149	319,503	417,876	498,693	564,141	636,590	712,810	800,930	884,368	960,376
	ROI		52.9%		REDUCD ROI	43.6%									
	NPV		1,611,979		RED NPV	1,379,781									
132	AVERAGE USAGE		9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	TOTAL INVESTMENT & MAINTENANCE		(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)
	RATE REDUCTION		(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
	TOTAL SAVINGS		34,804	63,699	116,591	197,601	373,189	435,869	483,244	519,101	557,618	598,994	643,439	691,182	742,468
	NET CASH FLOW		(202,654)	(196,732)	(132,491)	72,725	229,134	277,157	314,031	341,949	371,938	404,153	438,758	475,931	515,862
	CASH FLOW - PHASE I		(257,123)	(231,616)	(165,917)	37,008	198,008	243,721	278,114	303,367	330,494	359,634	390,935	424,560	460,679
	ROI		32.7%		REDUCD ROI	25.3%									
	NPV		644,771		RED NPV	412,572									

Table B-3

Detailed Cash Flows for Option A (Single-Line OCR)
at 'Low Savings Rate

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SEDUCED SAVINGS	To	80%													
AVERAGE USEAGE		37.5%	57.0\$	75.5%	87.5\$	90.0\$	90.0;	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
YEAR		0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE		(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION		(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS		128,902	215,162	372,598	569,221	661,792	710,897	763,646	820,308	881,175	946,558	1,016,793	1,092,239	1,173,283	1,260,340
NET CASH FLOW		(152,889)	(110,602)	38,738	350,234	429,071	471,296	516,654	565,378	617,717	673,940	734,334	799,210	868,899	943,759
CASH FLOW - PHASE I		(207,358)	(145,486)	5,312	314,517	397,945	437,861	480,738	526,797	576,273	629,420	686,511	747,838	813,716	884,482
ROI		71.7%		REDUCD ROI	56.4%										
NPV		1,729,271		RED NPV	1,497,072										

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AVERAGE USEAGE	17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%	90.0%
TOTAL INVESTMENT & MAINTENANCE	(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	60,154	105,694	190,000	309,006	473,595	586,490	676,781	748,531	827,203	909,287	1,003,447	1,092,239	1,173,283	1,260,340
NET CASH FLOW	(190,526)	(174,960)	(86,304)	152,241	291,429	378,000	450,012	509,157	574,634	643,669	723,322	799,210	868,899	943,759
CASH FLOW - PHASE I	(244,995)	(209,844)	(119,730)	116,524	260,303	344,565	414,095	470,575	533,190	599,150	675,499	747,838	813,716	884,482
ROI	45.7%		REDUCD ROI	37.4%										
NPV	1,278,164		RED NPV	1,045,966										

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AVERAGE USEAGE	9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
TOTAL INVESTMENT & MAINTENANCE	(223,458)	(237,098)	(216,415)	(82,876)	(92,721)	(99,601)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	30,937	56,622	103,636	175,645	331,723	387,439	429,551	461,423	495,661	532,439	571,946	614,384	659,972	708,941
NET CASH FLOW	(206,521)	(203,810)	(145,445)	50,769	187,669	228,727	260,337	284,271	309,981	337,598	367,265	399,133	433,365	470,138
CASH FLOW - PHASE I	(260,990)	(238,694)	(178,871)	15,052	156,543	195,291	224,421	245,690	268,537	293,079	319,442	347,762	378,183	410,861
ROI	27.8%		REDUCD ROI	20.6%										
NPV	444,675		RED NPV	212,476										

Table B-4

**Detailed Cash Flows for Option B (Multi-Line with ZIP+4)
at High Performance Rate and High Savings Rate**

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PRICE PER OCR	\$850				HIGH CURVE									
NUMBER OF OCRs	655				*****									
ESCALATION FACTOR	1.0742													
BEGINNING OF YEAR USAGE	27%	48%	66%	85%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
AVERAGE USAGE	37.5%	57.0%	75.5%	87.5%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0
BCS & EZR	(32,325)	(32,325)	(26,950)	0	0	0	0	0	0	0	0	0	0	0
OCR UPGRADE	0	0	0	(16,800)	(16,800)	(16,800)	0	0	0	0	0	0	0	0
NEW OCRs	0	0	0	(114,183)	(114,183)	(114,183)	0	0	0	0	0	0	0	0
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
CLERK & CARRIER SAVINGS	161,128	214,754	276,599	343,181	435,811	630,435	1,015,649	1,091,010	1,171,963	1,258,922	1,352,334	1,452,677	1,560,466	1,676,253
NET CASH FLOW	(14,713)	3,613	58,718	16,437	89,143	241,426	768,657	836,080	908,505	986,304	1,069,876	1,159,648	1,256,082	1,359,671
CASH FLOW - PHASE I	(69,182)	(31,271)	25,292	(19,280)	58,017	207,991	732,741	797,498	867,061	941,784	1,022,053	1,108,277	1,200,899	1,300,394
ROI	181.6%	REDUCD ROI 75.7%												
NPV	2,093,992	RED NPV 1,861,793												

SOURCE: Office of Technology Assessment

Table B-4 (continued)

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BEGINNING OF YEAR USEAGE AVERAGE USEAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
	17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%	90.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	105,493	141,047	186,298	278,435	490,338	983,385	1,064,350	1,151,916	1,245,079	1,347,377	1,452,677	1,560,466	1,676,253
NET CASH FLOW	(69,537)	(60,536)	(19,279)	(78,224)	(17,678)	132,441	756,615	824,975	899,347	979,460	1,067,252	1,159,648	1,256,082	1,359,671
CASH FLOW - PHASE I	(124,006)	(95,420)	(52,705)	(113,941)	(48,804)	99,005	720,699	786,394	857,903	934,941	1,019,429	1,108,277	1,200,899	1,300,394
ROI	61.8%													
NPV	1,779,164													
REDUCED ROI				47.5%										
RED NPV				1,546,966										

1311

BEGINNING OF YEAR USEAGE AVERAGE USEAGE	6%	12%	18%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
	9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	56,514	76,935	105,896	159,797	266,184	891,556	957,710	1,028,772	1,105,107	1,187,105	1,275,189	1,369,808	1,471,447
NET CASH FLOW	(92,837)	(89,293)	(56,169)	(126,737)	(98,204)	(41,936)	722,343	780,557	843,092	910,266	982,424	1,059,937	1,143,201	1,232,644
CASH FLOW - PHASE I	(147,306)	(124,177)	(89,595)	(162,454)	(129,330)	(75,372)	686,426	741,976	801,647	865,746	934,602	1,008,566	1,088,019	1,173,366
ROI	47.0%													
NPV	1,436,073													
REDUCED ROI				37.8%										
RED NPV				1,203,875										

SOURCE: Office of Technology Assessment

Table B-5

**Detailed Cash Flows for Option B (Multi-Line OCR with ZIP+4)
at High Performance Rate and Median or Low Savings Rate**

.....															
	PRICE PER OCR	\$850	NUMBER		655										
DATE		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	19%	1997	1998
1112	CF-PH I, SAVINGS @ 90%, HI USE	(85,295)	(52,746)	(2,368)	(53,599)	14,436	144,947	631,176	688,397	749,864	815,892	886,819	963,009	1,044,853	1,132,769
	REDUCED ROI	59.3%		RED NPV	1,501,261										
1212	CF-PH I, SAVINGS @ 90%, MED USE	(131,525)	(105,970)	(66,809)	(132,571)	(76,647)	49,971	622,361	679,959	742,711	810,433	884,692	963,009	1,044,853	1,132,769
	REDUCED ROI	41.5%		RED NPV	237,034										
1312	CF-PH I, SAVINGS @ 90%, LOW USE	(151,173)	(129,829)	(97,288)	(173,044)	(145,310)	(101,990)	597,271	646,205	698,770	755,236	815,891	881,047	951,038	1,026,222
	REDUCED ROI	33.8%		RED NPV	951,878										
.....															
1113	CF-PH I, SAVINGS @ 80%, HI USE	(101,408)	(74,221)	(30,028)	(87,917)	(29,146)	81,904	529,611	579,296	632,668	690,000	751,586	817,742	888,806	965,143
	REDUCED ROI	46.7%		RED NPV	1,140,728										
1213	CF-PH I, SAVINGS @ 80%, MED USE	(139,045)	(116,519)	(80,914)	(151,201)	(104,491)	937	524,022	573,524	627,519	685,925	749,954	817,742	888,806	965,143
	REDUCED ROI	35.4%		RED NPV	927,103										
1313	CF-PH I, SAVINGS @ 80%, LOW USE	(155,040)	(135,480)	(104,982)	(183,634)	(161,290)	(128,609)	508,115	550,434	595,893	644,725	697,181	753,528	814,057	879,077
	REDUCED ROI	29.5%		RED NPV	699,882										

SOURCE: Office of Technology Assessment

Detailed Cash Flows for Option B (Multi-Line with ZIP+4)
at Median Performance Rate and High Savings Rate

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SOURCE: Office of Technology Assessment

Table B-6 (continued)

1221

BEGINNING OF YEAR USAGE AVERAGE USAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	105,493	141,047	186,298	278,435	490,338	961,430	1,043,842	1,133,191	1,227,922	1,332,761	1,439,024	1,545,800	1,660,498
NET CASH FLOW	(69,537)	(60,536)	(19,279)	(78,224)	(17,678)	132,441	734,661	804,467	880,622	962,304	1,052,636	1,145,995	1,241,416	1,343,917
CASH FLOW - PHASE I	(124,006)	(95,420)	(52,705)	(113,941)	(48,804)	99,005	698,744	765,886	839,178	917,705	1,004,813	1,094,624	1,186,233	1,284,640
ROI	61.3%													
NPV	1,744,339													
REDUCED ROI				47.0%										
RED NPV				1,512,141										

1321

BEGINNING OF YEAR USAGE AVERAGE USAGE	6%	12%	18%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	56,514	76,935	105,896	159,797	266,184	834,283	896,187	962,684	1,034,115	1,110,846	1,193,271	1,281,811	1,376,922
NET CASH FLOW	(92,837)	(89,293)	(56,169)	(126,737)	(98,204)	(41,936)	665,069	719,034	777,003	839,274	906,165	978,019	1,055,205	1,138,118
CASH FLOW - PHASE I	(147,306)	(124,177)	(89,595)	(162,454)	(129,330)	(75,372)	629,153	680,453	735,559	794,755	858,342	926,648	1,000,022	1,078,841
ROI	45.2%													
NPV	1,290,732													
REDUCED ROI				36.1%										
RED NPV				1,066,533										

SOURCE: Office of Technology Assessment

Table B-7

Detailed Cash Flows for Option B (Multi-Line with ZIP+4)
at Median Performance and Median or Low Savings Rate

=====															
DATE	PRICE PER OCR	\$850	NUMBER		655										
		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1122	CF-PH I, SAVINGS @ 90%, HI USE REDUCED ROI	(85,295) 59.0%	(52,746)	(2,368) RED NPV	(53,599) 1,480,659	14,436	144,947	622,585	679,169	739,951	805,243	875,380	950,722	1,031,653	1,118,590
1222	CF-PH I, SAVINGS @ 90%, MED USE REDUCED ROI	(131,525) 41.0%	(105,970)	(66,809) RED NPV	(132,571) 1,205,692	(76,647)	49,971	602,601	661,502	725,859	794,992	871,537	950,722	1,031,653	1,118,590
1322	CF-PH I, SAVINGS @ 90%, LOW USE REDUCED ROI	(151,173) 32.1%	(129,829)	(97,288) RED NPV	(173,044) 828,271	(145,310)	(101,990)	545,724	590,834	639,291	691,343	747,258	807,321	871,841	941,149
: ~~~~~															
1123	CF-PH I, SAVINGS @ 80%, HI USE REDUCED ROI	(101,408) 46.4%	(74,221)	(30,028) RED NPV	(87,917) 1,122,416	(29,146)	81,904	521,975	571,093	623,856	680,534	741,418	806,819	877,073	952,540
1223	CF-PH I, SAVINGS @ 80%, MED USE REDUCED ROI	(139,045) 35.0%	(116,519)	(80,914) RED NPV	(151,201) 899,243	(104,491)	937	506,458	557,118	612,540	672,200	738,261	806,819	877,073	952,540
1323	CF-PH I, SAVINGS @ 80%, LOW USE REDUCED ROI	(155,040) 27.8%	(135,480)	(104,982) RED NPV	(183,634) 590,009	(161,290)	(128,609)	462,296	501,215	543,023	587,932	636,173	687,994	743,660	803,457

SOURCE : Office of Technology Assessment

Table B-8

**Detailed Cash Flows for Option B (Multi-Line with ZIP+4)
at Low Performance Rate and High Savings Rate**

1131

=====														
PRICE PER OCR	\$850	LOW CURVE												
NUMBER OF OCRs	655	*****												
ESCALATION FACTOR	1.0742													
BEGINNING OF YEAR USAGE	27%	48%	66%	85%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
AVERAGE USAGE	37.5%	57.0%	75.5%	87.5%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0
BCS & EZM	(32,325)	(32,325)	(26,950)	0	0	0	0	0	0	0	0	0	0	0
OCR UPGRADE	0	0	0	(16,800)	(16,800)	(16,800)	0	0	0	0	0	0	0	0
NEW OCRs	0	0	0	(114,183)	(114,183)	(114,183)	0	0	0	0	0	0	0	0
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
CLERK & CARRIER SAVINGS	161,128	214,754	276,599	343,181	435,811	630,435	978,230	1,050,815	1,128,785	1,212,541	1,302,511	1,399,158	1,502,975	1,614,496
NET CASH FLOW	(14,713)	3,613	58,718	16,437	89,143	241,426	731,239	795,885	865,327	939,922	1,020,053	1,106,129	1,198,591	1,297,915
CASH FLOW - PHASE I	(69,182)	(31,271)	25,292	(19,280)	58,017	207,991	695,322	757,303	823,883	895,403	972,230	1,054,757	1,143,408	1,238,637
ROI	180.9%	REDUCD ROI 74.7%												
NPV	2,004,262	RED NPV 1,772,064												

SOURCE: Office of Technology Assessment

Table B-8 (continued)

1231

BEGINNING OF YEAR USAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
AVERAGE USAGE	17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%	90.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	105,493	141,047	186,298	278,435	490,338	901,044	987,036	1,080,827	1,179,423	1,290,653	1,399,158	1,502,975	1,614,496
NET CASH FLOW	(69,537)	(60,536)	(19,279)	(78,224)	(17,678)	132,441	674,275	747,661	828,258	913,805	1,010,528	1,106,129	1,198,591	1,297,915
CASH FLOW - PHASE I	(124,006)	(95,420)	(52,705)	(113,941)	(48,804)	99,005	638,359	709,080	786,814	869,285	962,705	1,054,757	1,143,408	1,238,637
ROI	59.9%													
NPV	1,646,231													
REDUCED ROI				45.7%										
RED NPV				1,414,032										

1331

BEGINNING OF YEAR USAGE	6%	12%	18%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
AVERAGE USAGE	9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	56,514	76,935	105,896	159,797	266,184	681,363	731,920	786,228	844,566	907,233	974,550	1,046,862	1,124,539
NET CASH FLOW	(92,837)	(89,293)	(56,169)	(126,737)	(98,204)	(41,936)	512,149	554,768	600,548	649,726	702,552	759,299	820,255	885,735
CASH FLOW - PHASE I	(147,306)	(124,177)	(89,595)	(162,454)	(129,330)	(75,372)	476,233	516,186	559,104	605,206	654,730	707,927	765,073	826,458
ROI	39.7%													
NPV	932,031													
REDUCED ROI				30.8%										
RED NPV				699,832										

SOURCE: Office of Technology Assessment

Table B-9

Detailed Cash Flows for Alternative B (Multi-Line with ZIP+4)
at Low Performance Rate and Median or Low Savings Rate

		PRICE PER OCR	\$850	NUMBER	655											
DATE			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1132	CF-PH I, SAVINGS @ 90%, HI USE REDUCED ROI	(85,295) 58.2%	(52,746)	(2,368)	(53,599)	14,436	144,947	597,499	652,222	711,004	774,149	841,979	914,842	993,111	1,077,188	
					MED NPV 1,420,504											
1232	CF-PH I, SAVINGS @ 90%, MED USE REDUCED ROI	(131,525) 39.7%	(105,970)	(66,809)	(132,571)	(76,647)	49,971	548,254	610,376	678,731	751,343	833,640	914,842	993,111	1,077,188	
					RED NPV 1,117,394											
1332	CF-PH I, SAVINGS @ 90%, LOW USE REDUCED ROI	(151,173) 26.7%	(129,829)	(97,288)	(173,044)	(145,310)	(101,990)	408,096	442,994	480,481	520,750	564,006	610,472	660,386	714,004	
					RED NPV 498,240											
1133	CF-PH I, SAVINGS @ 80%, HI USE REDUCED ROI	(101,408) 45.6%	(74,221)	(30,028)	(87,917)	(29,146)	81,904	499,676	547,140	598,126	652,895	711,728	774,926	842,813	915,738	
					RED NPV 1,068,944											
1233	CF-PH I, SAVINGS @ 80%, MED USE REDUCED ROI	(139,045) 33.7%	(116,519)	(80,914)	(151,201)	(104,491)	937	458,150	511,673	570,648	633,401	704,574	774,926	842,813	915,738	
					RED NPV 820,756											
1633	CF-PH I, SAVINGS @ 80%, LOW USE REDUCED ROI	(155,040) 22.3%	(135,480)	(104,982)	(183,634)	(161,290)	(128,609)	339,960	369,802	401,858	436,293	473,283	513,017	555,700	601,550	
					RED NPV 296,648											

SOURCE: Office of Technology Assessment

Table B-10

Detailed Cash Flows for Option C (Multi-Line OCR Without ZIP+4)
at High Performance Rate

111

PRICE PER OCR	\$850				CURVE FACTOR				"						
NUMBER OF OCRs	655				0.83										
ESCALATION FACTOR	1.0742														
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)	
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0	
BCS & EZR	(32,325)	(32,325)	(26,950)	0	0	0	0	0	0	0	0	0	0	0	
OCR UPGRADE	0	0	0	(16,800)	(16,800)	(16,800)	0	0	0	0	0	0	0	0	
NEW OCRs	0	0	0	(114,183)	(114,183)	(114,183)	0	0	0	0	0	0	0	0	
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)	
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)	
RATE REDUCTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLERK & CARRIER SAVINGS	82,175	72,056	70,066	75,010	190,058	498,441	792,282	851,070	914,219	982,054	1,054,922	1,133,198	1,217,281	1,307,603	
NET CASH FLOW	(35,333)	(50,418)	(30,371)	(115,623)	(16,610)	249,432	685,291	736,140	790,761	849,436	912,464	980,168	1,052,897	1,131,022	
CASH FLOW - PHASE I	(89,802)	(85,302)	(63,797)	(151,340)	(47,736)	215,997	649,374	697,558	749,317	804,916	864,641	928,797	997,714	1,071,744	
ROI	67.5%					REDUCD ROI	48.5%								
NPV	1,587,975					RED NPV	1,355,776								

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	PRICE PER OCR	\$850	NUMBER	655											
DATE		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
CF-PH I,SAVINGS @ 90%		(98,020)	(92,508)	(70,804)	(158,841)	(66,742)	166,152	570,146	612,451	657,895	706,711	759,149	815,478	875,986	940,984
REDUCED ROI		43.1%		RED NPV	1,113,300										
CF-PH I,SAVINGS @ 80%		(106,237)	(99,713)	(77,810)	(166,342)	(85,748)	116,308	490,918	527,344	566,473	608,505	653,656	702,158	754,258	810,224
REDUCED ROI		37.6%		RED NPV	870,823										

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SOURCE: Office of Technology Assessment

Table B-n

**Detailed Cash Flows for Option C (Multi-Line OCR Without ZIP+4)
at Median Performance Rate**

121

PRICE PER OCR	\$850		CURVE FACTOR											
NUMBER OF OCRs	655		0.73											
ESCALATION FACTOR	1.0742													
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0
BCS & EZR	(32,325)	(32,325)	(26,950)	0	0	0	0	0	0	0	0	0	0	0
OCR UPGRADE	0	0	0	(16,800)	(16,800)	(16,800)	0	0	0	0	0	0	0	0
NEW OCRs	0	0	0	(114,183)	(114,183)	(114,183)	0	0	0	0	0	0	0	0
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLERK & CARRIER SAVINGS	82,175	72,056	70,066	75,010	190,058	498,441	696,827	748,531	804,072	863,734	927,823	996,668	1,070,621	1,150,061
NET CASH FLOW	(35,333)	(50,418)	(30,371)	(115,623)	(16,610)	249,432	589,835	633,601	680,614	731,116	785,365	843,639	906,237	973,479
CASH FLOW - PHASE I	(89,802)	(85,302)	(63,797)	(151,340)	(47,736)	215,997	553,919	595,020	639,170	686,596	737,542	792,267	851,054	914,202
ROI	64.0%	REDUCED ROI		45.3%										
NPV	1,359,073	RED NPV		1,126,874										

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PRICE PER OCR	\$850	NUMBER		655										
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
@ 90% REDUCED ROI	(98,020) 39.9%	(92,508)	(70,804) RED NPV	(158,841) 907,288	(66,742)	166,152	484,236	520,166	558,763	600,223	644,760	692,601	743,992	799,196

@ 80% REDUCED ROI	(106,237) 34.4%	(99,713)	(77,810) RED NPV	(166,342) 687,701	(85,748)	116,308	414,553	445,313	478,356	513,850	551,977	592,934	636,930	684,190

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1

123

SOURCE: Office of Technology Assessment

Table B-12

Detailed Cash Flows for Option C (Multi-Line OCR Without ZIP+4)
at Low Performance Rate

131

PRICE PER OCR	\$850		CURVE FACTOR											
NUMBER OF OCRs	655		0.67											
ESCALATION FACTOR	1.0742													
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0
BCS & EZM	(32,325)	(32,325)	(26,950)	0	0	0	0	0	0	0	0	0	0	0
OCR UPGRADE	0	0	0	(16,800)	(16,800)	(16,800)	0	0	0	0	0	0	0	0
NEW OCRs	0	0	0	(114,183)	(114,183)	(114,183)	0	0	0	0	0	0	0	0
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)
TOTAL INVESTMENT & MAINTENANCE	(117,508)	(122,474)	(100,437)	(190,633)	(206,668)	(249,009)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLERK & CARRIER SAVINGS	82,175	72,056	70,066	75,010	190,058	498,441	639,553	687,008	737,984	792,742	851,564	914,750	982,624	1,055,535
NET CASH FLOW	(35,333)	(50,418)	(30,371)	(115,623)	(16,610)	249,432	532,562	572,078	614,526	660,124	709,105	761,721	818,240	878,954
CASH FLOW - PHASE I	(89,802)	(85,302)	(63,797)	(151,340)	(47,736)	215,997	496,645	533,496	573,082	615,605	661,282	710,350	763,058	819,676
ROI	61.7%		REDUCD ROI	43.2%										
NPV	1,221,732		RED NPV	989,533										

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132

133

PRICE PER OCR	\$850		NUMBER		655									
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
CF-PH I, SAVINGS @ 90%	(98,020)	(92,508)	(70,804)	(158,841)	(66,742)	166,152	432,690	464,796	499,283	536,330	576,126	618,875	664,795	714,123
REDUCED ROI	37.8%		RED NPV	783,681										
CF-PH I, SAVINGS @ 80%	(106,237)	(99,713)	(77,810)	(166,342)	(85,748)	116,308	368,735	396,095	425,485	457,056	490,970	527,400	566,533	608,569
REDUCED ROI	32.3%		RED NPV	577,829										

SOURCE: Office of Technology Assessment

Table B-13

**Detailed Cash Flows for Option D (Automatic Conversion)
at High Performance Rate and High Savings Rate**

1111

CONVERT

ESCALATION FACTOR

1.0742

BEGINNING OF YEAR USEAGE
AVERAGE USEAGE

27% 48% 66% 85% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90%
37.5% 57.0% 75.5% 87.5% 90.0% 90.0% 90.0% 90.0% 90.0% 90.0% 90.0% 90.0% 90.0% 90.0%

YEAR
DATE

0 1 2 3 4 5 6 7 8 9 10 11 12 13
1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998

ADDRESS, SITE, & CONTINGENCY

(52,477) (50,977) (31,847) (16,700) (18,000) (19,336) (20,770) (22,311) (23,967) (25,745) (27,656) (29,708) (31,912) (34,280)

RESEARCH

(5,000) (5,000) (5,000) 0 0 0 0 0 0 0 0 0 0 0

SINGLE-LINE EQUIPMENT

(140,325) (140,325) (113,200) 0 0 0 0 0 0 0 0 0 0 0

OCR UPGRADE

0 0 0 (43,667) (43,667) (43,667) 0 0 0 0 0 0 0 0

MAINTENANCE & SPARES

(27,706) (34,172) (36,640) (42,950) (57,685) (98,690) (86,221) (92,619) (99,491) (106,873) (114,803) (123,321) (132,472) (142,301)

TOTAL INVESTMENT & MAINTENANCE

(225,508) (230,474) (186,687) (103,317) (119,352) (161,693) (106,991) (114,930) (123,458) (132,618) (142,459) (153,029) (164,384) (176,581)

RATE REDUCTION

(58,333) (88,667) (117,444) (136,111) (140,000) (140,000) (140,000) (140,000) (140,000) (140,000) (140,000) (140,000) (140,000) (140,000)

CLERK & CARRIER SAVINGS

161,128 268,953 465,747 711,526 827,240 888,621 1,015,649 1,091,010 1,171,963 1,258,922 1,352,334 1,452,677 1,560,466 1,676,253

NET CASH FLOW

(122,713) (50,180) 161,616 472,098 567,888 586,929 768,657 836,080 908,505 986,304 1,069,876 1,159,648 1,256,082 1,359,671

CASH FLOW - PHASE I

(177,182) (85,072) 128,190 436,381 536,762 553,493 732,741 797,498 867,061 941,784 1,022,053 1,108,277 1,200,899 1,300,394

ROI 111.3%
NPV 2,674,972

REDUCED ROI 84.6%
RED NPV 2,442,773

SOURCE: Office of Technology Assessment

Table B-13 (continued)

1211

BEGINNING OF YEAR USAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
AVERAGE USAGE	17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%	90.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	132,117	237,500	386,257	591,994	733,112	983,385	1,064,350	1,151,916	1,245,079	1,347,377	1,452,677	1,560,466	1,676,253
NET CASH FLOW	(177,537)	(141,912)	(9,076)	209,051	383,197	462,531	756,615	824,975	899,347	979,460	1,067,252	1,159,648	1,256,082	1,359,671
CASH FLOW - PHASE I	(232,006)	(176,796)	(42,502)	173,334	352,071	429,095	720,699	786,394	857,903	934,941	1,019,429	1,108,277	1,200,899	1,300,394
ROI	62.0%		REDUCD ROI	51.5%										
NPV	2,136,691		RED NPV	1,904,493										

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1311

BEGINNING OF YEAR USAGE	6%	12%	18%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
AVERAGE USAGE	9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	70,777	129,546	219,557	414,654	484,299	891,556	957,710	1,028,772	1,105,107	1,187,105	1,275,189	1,369,808	1,471,447
NET CASH FLOW	(200,837)	(183,030)	(89,808)	74,240	243,969	263,495	722,343	780,557	843,092	910,266	982,424	1,059,937	1,143,201	1,232,644
CASH FLOW - PHASE I	(255,306)	(217,914)	(123,234)	38,523	212,843	230,059	686,426	741,976	801,647	865,746	934,602	1,008,566	1,088,019	1,173,366
ROI	46.6%		REDUCD ROI	39.4%										
NPV	1,666,239		RED NPV	1,434,041										

SOURCE: Office of Technology Assessment

Table d-14

Detailed Cash Flows for-Option D (Automatic Conversion)
at High Performance Rate and Median or Low Savings Rate

DATE		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1112	CF-PH I,SAVINGS @ 90%,HI USE REDUCED ROI	(193,295) 70.2%	(111,967)	81,615 RED NPV	365,228 2,014,022	454,038	464,631	631,176	688,397	749,864	815,892	886,819	963,009	1,044,853	1,132,769
1212	CF-PH I,SAVINGS @ 90%,MED USE REDUCED ROI	(239,525) 45.4%	(190,008)	(66,252) RED NPV	134,708 1,548,688	292,872	355,784	622,361	679,959	742,711	810,433	884,692	963,009	1,044,853	1,132,769
1312	CF-PH I,SAVINGS @ 90%,LOW USE REDUCED ROI	(259,173) 35.4%	(224,992)	(136,189) RED NPV	16,567 1,148,907	171,377	181,629	597,271	646,205	698,770	755,236	815,891	881,047	951,038	1,026,222

1113	CF-PH I,SAVINGS @ 80%,HI USE REDUCED ROI	(209,408) 57.3%	(138,862)	35,040 RED NPV	294,076 1,585,271	371,314	375,769	529,611	579,296	632,668	690,000	751,586	817,742	888,806	965,143
1213	CF-PH I,SAVINGS @ 80%,MED USE REDUCED ROI	(247,045) 39.2%	(203,220)	(90,002) RED NPV	96,083 1,192,884	233,672	282,473	524,022	573,524	627,519	685,925	749,954	817,742	888,806	965,143
1313	CF-PH I,SAVINGS @ 80%,LOW USE REDUCED ROI	(263,040) 31.1%	(232,070)	(149,143) RED NPV	(5,389) 863,774	129,912	133,200	508,115	550,434	595,893	644,725	697,181	753,528	814,057	879,077

SOURCE: Office of Technology Assessment

Table B-15

Detailed Cash Flows for Option D (Automatic Conversion)
at Median Performance and High Savings Rate

1121

=====														
CONVERT														

ESCALATION FACTOR	1.0742													
BEGINNING OF YEAR USEAGE	27%	48%	66%	85%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
AVERAGE USEAGE	37.5%	57.0%	75.5%	87.5%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0
SINGLE-LINE EQUIPMENT	(140,325)	(140,325)	(113,200)	0	0	0	0	0	0	0	0	0	0	0
OCR UPGRADE	0	0	0	(43,667)	(43,667)	(43,667)	0	0	0	0	0	0	0	0
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
CLERK & CARRIER SAVINGS	161,128	268,953	465,747	711,526	827,240	888,621	1,006,103	1,080,756	1,160,948	1,247,090	1,339,624	1,439,024	1,545,800	1,660,498
NET CASH FLOW	(122,713)	(50,188)	161,616	472,098	567,888	586,929	759,112	825,826	897,490	974,472	1,057,166	1,145,995	1,241,416	1,343,917
CASH FLOW - PHASE I	(177,182)	(85,072)	128,190	436,381	536,762	553,493	723,195	787,244	856,046	929,952	1,009,343	1,094,624	1,186,233	1,284,640
ROI	111.2%													
NPV	2,652,082													
REDUCED ROI	84.5%													
RED NPV	2,419,883													

SOURCE: Office of Technology Assessment

Table B-15 (continued)

1221

BEGINNING OF YEAR USAGE AVERAGE USAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	132,117	237,500	386,257	591,994	733,112	961,430	1,043,842	1,133,191	1,227,922	1,332,761	1,439,024	1,545,800	1,660,498
NET CASH FLOW	(177,537)	(141,912)	(9,076)	209,051	383,197	462,531	734,661	804,467	880,622	962,304	1,052,636	1,145,995	1,241,416	1,343,917
CASH FLOW - PHASE I	(232,006)	(176,796)	(42,502)	173,334	352,071	429,095	698,744	765,886	839,178	917,785	1,004,813	1,094,624	1,186,233	1,284,644
ROI	61.7%													
NPV	2,101,867													
REDUCED ROI				51.2%										
RED NPV				1,869,668										

1321

BEGINNING OF YEAR USAGE AVERAGE USAGE	6%	12%	18%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	70,777	129,546	219,557	414,654	484,299	834,283	896,187	962,684	1,034,115	1,110,846	1,193,271	1,281,811	1,376,922
NET CASH FLOW	(200,837)	(183,030)	(89,808)	74,240	243,969	263,495	665,069	719,034	777,003	839,274	906,165	978,019	1,055,205	1,138,118
CASH FLOW - PHASE I	(255,306)	(217,914)	(123,234)	38,523	212,843	230,059	629,153	680,453	735,559	794,755	858,342	926,648	1,000,022	1,078,841
ROI	45.3%													
NPV	1,528,898													
REDUCED ROI				38.1%										
RED NPV				1,296,699										

SOURCE : Office of Technology Assessment

Table B-16

Detailed Cash Flows for Option D (Automatic Conversion)
at Median Performance and Median or Low Savings Rate

DATE		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1122	CF-PH I, SAVINGS @ 90%, HI USE REDUCED ROI	(193,295) 70.0%	(111,967)	81,615 RED NPV	365,228 1,993,421	454,038	464,631	622,585	679,169	739,951	805,243	875,380	950,722	1,031,653	1,118,590
1222	CF-PH I, SAVINGS @ 90%, MED USE REDUCED ROI	(239,525) 45.1%	(190,008)	(66,252) RED NPV	134,708 1,517,346	292,872	355,784	602,601	661,502	725,859	794,992	871,537	950,722	1,031,653	1,118,590
1322	CF-PH I, SAVINGS @ 90%, LOW USE REDUCED ROI	(259,173) 34.0%	(224,992)	(136,189) RED NPV	16,567 1,025,300	171,377	181,629	545,724	590,834	639,291	691,343	747,258	807,321	871,841	941,149

1123	CF-PH I, SAVINGS @ 80%, HI USE REDUCED ROI	(209,408) 57.1%	(138,862)	35,040 RED NPV	294,076 1,566,959	371,314	375,769	521,975	571,093	623,856	680,534	741,418	806,819	877,073	952,540
1223	CF-PH I, SAVINGS @ 80%, MED USE REDUCED ROI	(247,045) 38.8%	(203,220)	(90,002) RED NPV	96,083 1,165,024	233,672	282,473	506,458	557,118	612,540	672,200	738,261	806,819	877,073	952,540
1323	CF-PH I, SAVINGS @ 80%, LOW USE REDUCED ROI	(263,040) 29.7%	(232,070)	(149,143) RED NPV	(5,389) 753,901	129,912	133,200	462,296	501,215	543,023	587,932	636,173	687,994	743,660	803,457

SOURCE: Office of Technology Assessment

Table B-17

**Detailed Cash Flows for Option D (Automatic Conversion)
at Low Performance and High Savings Rate**

1131

CONVERT

ESCALATION FACTOR

1.0742

BEGINNING OF YEAR USAGE	27%	48%	66%	85%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
AVERAGE USAGE	37.5%	57.0%	75.5%	87.5%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADDRESS, SITE, & CONTINGENCY	(52,477)	(50,977)	(31,847)	(16,700)	(18,000)	(19,336)	(20,770)	(22,311)	(23,967)	(25,745)	(27,656)	(29,708)	(31,912)	(34,280)
RESEARCH	(5,000)	(5,000)	(5,000)	0	0	0	0	0	0	0	0	0	0	0
SINGLE-LINE EQUIPMENT	(140,325)	(140,325)	(113,200)	0	0	0	0	0	0	0	0	0	0	0
OCR UPGRADE	0	0	0	(43,667)	(43,667)	(43,667)	0	0	0	0	0	0	0	0
MAINTENANCE & SPARES	(27,706)	(34,172)	(36,640)	(42,950)	(57,685)	(98,690)	(86,221)	(92,619)	(99,491)	(106,873)	(114,803)	(123,321)	(132,472)	(142,301)
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(58,333)	(88,667)	(117,444)	(136,111)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)	(140,000)
CLERK & CARRIER SAVINGS	161,128	268,953	465,747	711,526	827,240	888,621	978,230	1,050,815	1,128,785	1,212,541	1,302,511	1,399,158	1,502,975	1,614,496
NET CASH FLOW	(122,713)	(50,188)	161,616	472,098	567,888	586,929	731,239	795,885	865,327	939,922	1,020,053	1,106,129	1,198,591	1,297,915
CASH FLOW - PHASE I	(177,182)	(85,072)	128,190	436,381	536,762	553,493	695,322	757,303	823,883	895,403	972,230	1,054,757	1,143,408	1,238,637
ROI	110.9%		REDUCD ROI	84.2%										
NPV	2,585,242		RED NPV	2,353,043										

SOURCE: Office of Technology Assessment

Table B-17 (continued)

1231

BEGINNING OF YEAR USEAGE	12%	23%	33%	44%	51%	64%	76%	78%	82%	84%	87%	90%	90%	90%
AVERAGE USEAGE	17.5%	28.0%	38.5%	47.5%	57.5%	70.0%	77.0%	80.0%	83.0%	85.5%	88.5%	90.0%	90.0%	90.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(27,222)	(43,556)	(59,889)	(73,889)	(89,444)	(108,889)	(119,778)	(124,444)	(129,111)	(133,000)	(137,667)	(140,000)	(140,000)	(140,000)
TOTAL SAVINGS	75,193	132,117	237,500	386,257	591,994	733,112	901,044	987,036	1,080,827	1,179,423	1,290,653	1,399,158	1,502,975	1,614,496
NET CASH FLOW	(177,537)	(141,912)	(9,076)	209,051	383,197	462,531	674,275	747,661	828,258	913,805	1,010,528	1,106,129	1,198,591	1,297,915
CASH FLOW - PHASE I	(232,006)	(176,796)	(42,502)	173,334	352,071	429,095	638,359	709,080	786,814	869,285	962,705	1,054,757	1,143,408	1,238,637
	ROI 60.8%		REDUCD ROI 50.3%											
	NPV 2,003,758		RED NPV 1,771,559											

1331

BEGINNING OF YEAR USEAGE	6%	12%	10%	24%	30%	36%	40%	40%	40%	40%	40%	40%	40%	40%
AVERAGE USEAGE	9.0%	15.0%	21.0%	27.0%	33.0%	38.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
DATE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL INVESTMENT & MAINTENANCE	(225,508)	(230,474)	(186,687)	(103,317)	(119,352)	(161,693)	(106,991)	(114,930)	(123,458)	(132,618)	(142,459)	(153,029)	(164,384)	(176,581)
RATE REDUCTION	(14,000)	(23,333)	(32,667)	(42,000)	(51,333)	(59,111)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)	(62,222)
TOTAL SAVINGS	38,671	70,777	129,546	219,557	414,654	484,299	681,363	731,920	786,228	844,566	907,233	974,550	1,046,862	1,124,539
NET CASH FLOW	(200,837)	(183,030)	(89,808)	74,240	243,969	263,495	512,149	554,768	600,548	649,726	702,552	759,299	820,255	885,735
CASH FLOW - PHASE I	(255,306)	(217,914)	(123,234)	38,523	212,843	230,059	476,233	516,186	559,104	605,206	654,730	707,927	765,073	826,458
	ROI 41.4%		REDUCD ROI 34.0%											
	NPV 1,162,197		RED NPV 929,998											

SOURCE: Office of Technology Assessment

**Detailed Cash Flows for Alternative D (Automatic Conversion)
at Low Performance Rate and Median or Low Savings Rate**

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SOURCE: Office of Technology Assessment

Table B-19
Cash Flows for Option F: Cancel

DATE	1985	1986	1987	1988
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PHASE I ONLY CASH FLOW	54,469	34,884	33,426	35,717

NPV 232,199

1989	1990	1991	1992	1993	1994	1995
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31,126	33,436	35,916	38,581	41,444	44,519	47,823

1996	1997	1998
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51,371	55,183	59,277

SOURCE : Office of Technology Assessment