

## MEMORANDUM

**To:** Management Review Team  
Investment Committee  
Tina Kielmeyer, Administrator  
**Ohio Bureau of Workers' Compensation**

**From:** Kevin Jestice  
Richard Ennis, CFA

**Date:** September 15, 2005

**Re:** Evaluation of the Investment Performance of the Ohio Bureau of Workers' Compensation State Insurance Fund

EnnisKnupp has conducted an evaluation of the past performance of the State Insurance Fund (SIF) of the Ohio Bureau of Workers' Compensation (BWC). We report the results of that evaluation here.

### Summary and Recommendation

The SIF earned an annualized rate of return of 7.3% for the nine years, six months ended June 30, 2005. Had the SIF been invested in index funds during this period, it would have realized an annualized return of 8.1% per year and would be nearly \$1 billion greater in value than it is today.

Annual returns previously reported by BWC, for which support is lacking, exceed those calculated by EnnisKnupp by an average of 0.7% per year.

BWC should reform its procedures for calculating and reporting its investment performance. A complete set of recommendations appears below.

### Data

EnnisKnupp computed rates of investment return for the SIF using Fund market values and cash flows to and from the Fund. These data were provided by BWC's finance staff from the Bureau's general ledger. These accounting data are available beginning December 31, 1995. Monthly market values and daily cash flows were used for the most part; in a few years cash flows were aggregated monthly. We judge BWC's general ledger and associated accounting records to be free of influence of the BWC Investments department and have no reason to otherwise question their reliability for the purpose of computing accurate rates of investment return for the SIF.

Upon compiling the necessary market value and cash flow information, we turned our files over to BWC for a comprehensive review of the accuracy of the data. On September 8, 2005, Tracy Valentino, BWC chief financial officer, informed us that our data files were complete, accurate and appropriate for use in determining rates of investment return for the SIF. (Appendix 1 documents the market values and cash flows used for the analysis.)

Using the market values and cash flows, we calculated monthly dollar-weighted rates of return and linked them to form time-weighted returns for longer periods in accordance with the Modified Dietz Method. (See Appendix 2.)

The resulting rates of returns are *total* returns, meaning they include dividends and interest as well as changes in market value. They are net of investment management expenses. (Appendix 3 contains a summary of all the returns calculated. Information contained in the appendices is sufficient to enable one to reproduce all the rates of return discussed in this report using Microsoft's Excel.)

### **Benchmark**

We created a performance-evaluation benchmark against which to compare the historical SIF return series. The performance benchmark is designed to illustrate the effect of investing SIF moneys passively, i.e., in index funds, throughout its history. Described as the *Indexed Alternative*, the performance benchmark reflects the actual investment proportions of the SIF at month-end for these asset classes: U.S. stocks, non-U.S. stocks, bonds, short-term investments and private equity. The Indexed Alternative benchmark is created by applying the observed investment proportions for these asset classes to the returns of the following market indexes: S&P 500 Stock Index; MSCI Europe, Australasia and Far East (EAFE) Index; Lehman Bros. Aggregate Bond Index; U.S. Treasury bills, and Venture Economics Private Equity Performance Benchmark, respectively. The effect is to replicate passive investment of the SIF in its actual asset allocation. Returns of the Indexed Alternative benchmark were reduced by 0.03% per year to reflect the cost of implementing this strategy. (This approximates the management fee recently negotiated for BWC's index funds.)

## Performance Evaluation

Table 1 compares the return of the SIF to that of the Indexed Alternative.

**Table 1**  
**State Insurance Fund Performance**  
**December 31, 1995 to June 30, 2005**

	Total SIF	Indexed Alternative	Difference
1996	8.8%	11.1%	-2.3%
1997	19.4	19.1	0.3
1998	12.8	17.3	-4.5
1999	9.9	8.9	1.0
2000	5.8	2.9	2.9
2001	-3.1	-0.9	-2.2
2002	-4.7	-2.8	-1.9
2003	14.4	13.8	0.6
2004	7.3	8.7	-1.4
2005 (6 months)	1.4	1.6	-0.2
Trailing 1-Year	6.7	7.9	-1.2
Trailing 3-Year	6.6	7.5	-0.9
Trailing 5-Year	3.5	4.0	-0.5
Since January 1996 (9 years 6 months)	7.3	8.1	-0.8

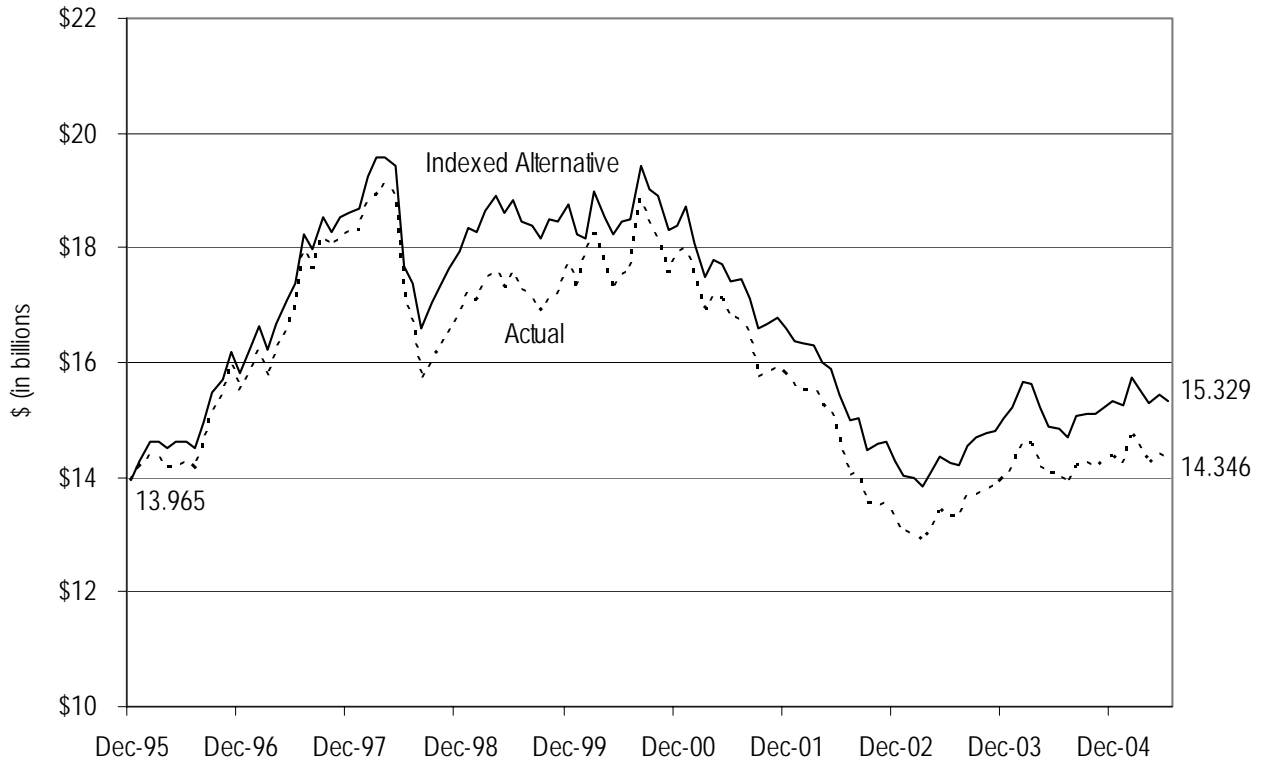
The SIF earned an annualized rate of return of 7.3% for the nine years, six months ended June 30, 2005. Had the SIF been invested in index funds, it would have realized an annualized return of 8.1% for that period. Thus, the SIF underperformed the Indexed Alternative by 0.8% per year. The SIF also underperformed passive investment for the most recent one-, three-, and five-year periods.<sup>1</sup>

### Dollar Consequences of Performance

Figure 1 illustrates the performance difference in dollar terms. The line identified as Actual shows the actual value of the SIF over time. The Indexed Alternative line represents the SIF balances that would have resulted from passive investment, as described above.

<sup>1</sup> We also calculated the single dollar-weighted rate of return that equates (1) the December 31, 1995, SIF value; (2) the June 30, 2005, SIF value; and (3) all the intervening cash flows. That calculation produces the same result as the time-weighted 7.3% rate of return reported in Table 1.

**Figure 1**  
**Comparison of Actual State Insurance Fund Value with Indexed Alternative**



At June 30, 2005, the value of the Indexed Alternative was \$15.329 billion. This figure exceeds the actual SIF value of \$14.346 billion by \$983 million. This difference, which is the opportunity cost of not simply investing the SIF in index funds, can be broken down as follows: fees paid to investment managers of \$270.8 million and underperformance relative to market indexes of \$712.2 million.

**Comparison with Previously Reported Figures**

Table 2 compares the SIF return history, as reported here, with figures previously reported by BWC for the nine calendar years, 1996 – 2004. These are the only calendar years for which we were able to calculate rates of return based on data available outside the Investments department.

**Table 2**  
**Comparison of Current and Previously Reported Performance Figures**

	<b>As Calculated By EnnisKnupp</b>	<b>Previously Reported</b>	<b>Difference</b>
1996	8.8%	9.7%	-0.9%
1997	19.4	19.5	-0.1
1998	12.8	15.5	-2.7
1999	9.9	8.5	1.4
2000	5.8	7.0	-1.2
2001	-3.1	-3.1	0.0
2002	-4.7	-4.2	-0.5
2003	14.4	15.7	-1.3
2004	7.3	8.5	-1.2
<b>Average</b>	<b>7.8</b>	<b>8.6</b>	<b>-0.7</b>

The returns reported here are lower than those previously reported by BWC in seven of nine calendar years. The average annual difference is 0.7%.

We made an intensive effort to reconcile our rate of return calculations with those maintained by BWC's Investments department. A thorough review of BWC's files provided no support for the SIF return history. While those files contain fragmentary data related to investment performance, collectively, they do not support any of the returns previously reported by BWC. Furthermore, BWC has failed to employ generally accepted methods for calculating rates of investment return and has failed to verify rates of return reported by its external investment managers.

In April 2005, BWC reported that the SIF earned "an average annual return of 16.51 percent for the past decade."<sup>2</sup> We were unable to establish any basis whatsoever for the 16.51% figure.

### **Recommendations**

All rate of return histories created by BWC in the past should be disregarded in any future analysis of investment performance that includes historical time periods. BWC needs to adopt conventional procedures for tracking the performance of its investments. These include the following:

1. Rates of return should be calculated by BWC's custodial bank and/or by an independent consultant, in addition to whatever calculations are performed internally. There should be at

<sup>2</sup> See "Workers' Compensation Invests in Innovation," OBWC Release, April 2005, page 3.

- least two, and preferably three, complete and independently maintained sets of rate of return calculations.
2. Rates of return should be calculated by all parties using generally accepted performance measurement methods.
  3. Rates of return should be calculated and reported net of investment management fees.
  4. Records should be maintained by BWC that provide support for each rate of return calculation.
  5. Rates of return among sources should be reconciled periodically. This applies to rates of returns reported by external investment managers.
  6. Managers should be directed to report their performance to BWC on a net-of-fee basis.
  7. Investment performance should be reported to BWC senior management and the Workers' Compensation Oversight Commission by an external party, i.e., consultant, that itself is accountable to the WCOC. Quarterly reporting is the norm.
  8. The WCOC's consultant for performance reporting should be a firm that is entirely independent of investment managers and brokers.
  9. An indexed-alternative type of performance benchmark of the type utilized here (sometimes referred to as a policy portfolio) should be maintained for the SIF as a whole and each investment manager.
  10. Investment performance should be reported regularly for time periods longer than one year. Greater emphasis should be placed on reporting and evaluating long-term performance than short-term performance.

**APPENDIX 1**  
**Market Values and Cash Flows for the State Insurance Fund**

	Total SIF
Jan-96	14,178,234,297
Feb-96	14,383,830,449
Mar-96	14,360,097,141
Apr-96	14,184,738,089
May-96	14,178,291,657
Jun-96	14,293,871,277
Jul-96	14,153,368,381
Aug-96	14,550,108,892
Sep-96	15,108,699,138
Oct-96	15,429,906,975
Nov-96	15,988,097,699
Dec-96	15,510,804,449
Jan-97	15,837,226,532
Feb-97	16,236,364,897
Mar-97	15,748,826,615
Apr-97	16,200,175,087
May-97	16,568,125,768
Jun-97	16,917,441,462
Jul-97	17,960,891,871
Aug-97	17,637,230,275
Sep-97	18,205,138,959
Oct-97	18,001,016,870
Nov-97	18,195,153,757
Dec-97	18,279,517,059
Jan-98	18,328,769,239
Feb-98	18,843,769,696
Mar-98	18,915,862,640
Apr-98	19,121,571,356
May-98	18,892,987,624
Jun-98	17,097,451,897
Jul-98	16,723,115,685
Aug-98	15,708,717,902
Sep-98	16,002,804,812
Oct-98	16,274,691,122
Nov-98	16,532,378,217
Dec-98	16,842,233,679
Jan-99	17,215,516,840
Feb-99	17,074,294,492
Mar-99	17,445,565,162
Apr-99	17,601,407,879
May-99	17,310,391,640
Jun-99	17,599,809,486
Jul-99	17,255,945,518
Aug-99	17,102,505,980
Sep-99	16,903,811,934
Oct-99	17,118,969,747
Nov-99	17,205,564,558
Dec-99	17,755,631,645
Jan-00	17,250,638,192
Feb-00	17,936,800,084
Mar-00	18,267,125,328
Apr-00	17,719,517,514
May-00	17,257,334,940

	Total SIF
Jun-00	17,521,866,224
Jul-00	17,594,715,167
Aug-00	18,863,709,443
Sep-00	18,419,593,836
Oct-00	18,139,019,854
Nov-00	17,567,119,197
Dec-00	17,927,007,670
Jan-01	17,977,619,716
Feb-01	17,486,510,020
Mar-01	16,913,339,222
Apr-01	17,195,791,829
May-01	17,132,456,635
Jun-01	16,799,888,620
Jul-01	16,740,744,737
Aug-01	16,445,644,353
Sep-01	15,757,174,096
Oct-01	15,832,035,489
Nov-01	15,924,411,935
Dec-01	15,780,373,867
Jan-02	15,576,513,146
Feb-02	15,519,754,833
Mar-02	15,536,984,207
Apr-02	15,271,598,726
May-02	15,132,112,048
Jun-02	14,663,122,530
Jul-02	14,035,986,793
Aug-02	14,079,964,691
Sep-02	13,545,456,258
Oct-02	13,521,579,826
Nov-02	13,542,631,896
Dec-02	13,257,801,149
Jan-03	13,043,349,080
Feb-03	13,015,561,076
Mar-03	12,873,996,836
Apr-03	13,115,941,867
May-03	13,412,964,563
Jun-03	13,322,044,548
Jul-03	13,325,885,288
Aug-03	13,673,280,546
Sep-03	13,677,872,077
Oct-03	13,803,941,528
Nov-03	13,838,728,702
Dec-03	13,995,787,279
Jan-04	14,185,004,033
Feb-04	14,608,728,612
Mar-04	14,601,241,995
Apr-04	14,162,065,599
May-04	14,045,041,712
Jun-04	14,070,394,922
Jul-04	13,891,853,647
Aug-04	14,225,540,484
Sep-04	14,266,991,453
Oct-04	14,186,100,300

	Total SIF
Nov-04	14,270,387,454
Dec-04	14,369,069,615
Jan-05	14,242,547,957
Feb-05	14,726,300,403
Mar-05	14,486,031,662
Apr-05	14,207,953,596
May-05	14,402,285,259
Jun-05	14,346,123,930

Jan-96		Feb-96		Mar-96		Apr-96		May-96		Jun-96		Jul-96		Aug-96		Sep-96			
1	3,776,714	1	56,780,110	1	30,540,996	1	(1,373,393)	1	4,271,826	1	-	1	(3,632,558)	1	44,760,764	1	75,220,075	1	
2	(6,769,185)	2	75,443,626	2	-	2	(7,267,949)	2	(10,088,587)	2	-	2	(4,531,452)	2	75,373,542	2	-	2	
3	(7,341,564)	3	-	3	-	3	(12,850,281)	3	1,727,035	3	(3,241,049)	3	(13,413,854)	3	-	3	38,248,824	3	
4	(5,054,243)	4	-	4	65,066,922	4	(5,135,517)	4	-	4	(2,143,459)	4	-	4	-	4	25,460,431	4	
5	(3,569,454)	5	32,792,975	5	5,472,790	5	(3,300,098)	5	-	5	(14,499,072)	5	(7,041,550)	5	41,829,593	5	(2,183,637)	5	
6	10,000	6	4,055,973	6	(793,280)	6	-	6	3,610,215	6	(6,137,841)	6	-	6	7,587,125	6	(10,116,101)	6	
7	1,800,399	7	7,258,715	7	(5,910,870)	7	-	7	(4,602,903)	7	(9,336,086)	7	-	7	5,555,588	7	-	7	
8	(8,819,374)	8	13,807,677	8	(3,650,324)	8	(900,543)	8	(7,460,793)	8	-	8	(5,100,261)	8	1,547,178	8	-	8	
9	(1,372,062)	9	4,769,273	9	-	9	(7,361,271)	9	(4,169,095)	9	-	9	143,017	9	4,698,866	9	5,157,721	9	
10	(13,241,048)	10	-	10	-	10	(4,085,518)	10	(3,694,390)	10	(2,087,006)	10	(5,299,416)	10	-	10	(9,823,377)	10	
11	(3,449,417)	11	-	11	(185,517)	11	(21,300,434)	11	-	11	(6,676,113)	11	(14,178,033)	11	-	11	(8,331,257)	11	
12	(9,736)	12	13,237,159	12	(3,958,805)	12	(2,642,278)	12	-	12	(9,034,226)	12	(1,441,533)	12	13,498,082	12	(4,702,244)	12	
13	-	13	(247,657)	13	(18,545,465)	13	-	13	17,257,637	13	(10,212,542)	13	-	13	2,405,421	13	(8,791,388)	13	
14	-	14	6,079,902	14	(3,625,470)	14	-	14	7,247,715	14	(4,529,062)	14	-	14	1,019,225	14	-	14	
15	-	15	7,097,635	15	(6,891,473)	15	(876,673)	15	(4,962,386)	15	-	15	6,270,656	15	1,017,886	15	-	15	
16	8,258,720	16	8,105,565	16	-	16	(4,340,407)	16	10,139,953	16	-	16	(14,051,967)	16	(8,471,762)	16	(2,009,566)	16	
17	(2,475,037)	17	-	17	-	17	(10,728,039)	17	11,831,007	17	(3,228,051)	17	2,907,284	17	-	17	(13,257,684)	17	
18	1,225,986	18	-	18	(1,675,729)	18	(4,677,423)	18	-	18	(10,416,355)	18	3,503,521	18	-	18	(9,249,958)	18	
19	730,210	19	24,636,284	19	(1,257,268)	19	(5,267,439)	19	-	19	(5,578,131)	19	(4,436,255)	19	29,800,048	19	(5,392,311)	19	
20	-	20	(8,687,731)	20	(13,265,913)	20	-	20	(3,350,024)	20	(14,856,184)	20	-	20	113,312	20	(4,792,678)	20	
21	-	21	(3,264,913)	21	(6,399,404)	21	-	21	(7,539,291)	21	(7,401,879)	21	-	21	1,379,812	21	-	21	
22	5,863,714	22	18,615,875	22	1,927,933	22	(1,306,984)	22	(5,529,519)	22	-	22	19,534,375	22	4,589,684	22	-	22	
23	1,600,619	23	(5,497,938)	23	-	23	(11,578,521)	23	(11,851,686)	23	-	23	3,547,200	23	11,397,532	23	(483,775)	23	
24	4,600,778	24	-	24	-	24	(5,245,570)	24	(7,874,884)	24	2,024,480	24	7,583,356	24	-	24	(15,129,378)	24	
25	11,318,463	25	-	25	(4,209,208)	25	(17,485,202)	25	-	25	(5,336,017)	25	12,554,889	25	-	25	(6,606,734)	25	
26	13,766,755	26	50,823,562	26	(5,806,563)	26	(2,031,710)	26	-	26	(10,300,883)	26	13,847,807	26	35,818,434	26	(5,389,645)	26	
27	-	27	27,293,547	27	(15,277,340)	27	-	27	-	27	(8,274,255)	27	-	27	9,989,277	27	(7,144,411)	27	
28	-	28	33,682,088	28	(4,032,096)	28	-	28	2,696,483	28	(4,816,474)	28	-	28	14,733,711	28	-	28	
29	42,918,731	29	39,134,663	29	(3,219,261)	29	(644,732)	29	(6,709,325)	29	-	29	58,347,621	29	25,789,702	29	-	29	
30	15,227,038	30	-	30	-	30	(6,901,694)	30	(11,251,065)	30	-	30	24,255,927	30	31,765,002	30	(977,161)	30	
31	36,215,063	31	-	31	-	31	-	31	(6,672,092)	31	-	31	35,734,888	31	-	31	-	31	
Tot	95,212,069	Tot	405,916,390	Tot	4,304,655	Tot	(137,301,677)	Tot	(36,974,170)	Tot	(136,080,206)	Tot	115,103,662	Tot	356,198,022	Tot	29,705,744	Tot	

Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	
(7,462,874)	1 (3,496,249)	1 -							
(11,379,824)	2 -	2 (5,983,008)							
(9,917,823)	3 -	3 (6,391,807)							
(3,645,393)	4 (5,268,072)	4 (18,411,437)							
-	5 (16,170,879)	5 (5,883,489)							
-	6 (11,898,659)	6 (3,178,601)							
(2,386,252)	7 1,141,214	7 -							
(17,470,139)	8 (9,395,303)	8 -							
(8,027,216)	9 -	9 (3,222,042)							
(10,601,694)	10 -	10 (6,419,970)							
(3,010,656)	11 -	11 (5,949,951)							
-	12 (3,559,200)	12 (10,470,699)							
-	13 (10,386,285)	13 (3,179,342)							
123,026	14 (12,925,468)	14 -							
(3,103,271)	15 (4,618,726)	15 -							
(11,314,875)	16 -	16 (6,223,203)							
(7,675,666)	17 -	17 (8,919,268)							
(8,818,966)	18 (2,505,462)	18 (13,330,639)							
-	19 (4,547,782)	19 (13,516,832)							
-	20 (17,031,428)	20 (4,230,002)							
11,498,933	21 (7,403,457)	21 -							
(15,215,926)	22 (5,004,599)	22 -							
(4,908,546)	23 -	23 (2,981,431)							
(5,196,784)	24 -	24 (13,955,618)							
(3,526,639)	25 (3,492,702)	25 -							
-	26 (4,449,247)	26 (8,469,662)							
-	27 (12,151,672)	27 (6,527,971)							
(4,309,658)	28 -	28 -							
(4,518,380)	29 (6,266,934)	29 -							
(7,321,662)	30 -	30 (5,760,822)							
(5,255,340)	31 -	31 (6,403,459)							
(143,445,626)	Tot (139,430,910)	Tot (159,409,253)	Tot (7,104,550)	Tot 274,074,442	Tot (19,681,178)	Tot (100,487,254)	Tot (90,818,145)	Tot (139,658,076)	Tot

Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97	Jan-98	Feb-98	Mar-98	
56,494,797	Tot 240,004,570	Tot (10,006,157)	Tot (161,084,096)	Tot (121,774,100)	Tot (168,205,437)	Tot (122,898,123)	Tot (19,489,638)	Tot (108,834,532)	Tot

Apr-98	May-98	Jun-98	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98
			1 (29,768,260)	1 -	1 2,236,440	1 (13,562,702)	1 -	1 (9,808,596)
			2 (16,527,272)	2 -	2 (28,046)	2 (4,096,165)	2 (8,998,815)	2 (15,369,637)
			3 (752,969)	3 2,729,887	3 (8,292,658)	3 -	3 914,955	3 (5,252,437)
			4 -	4 5,486,525	4 (5,669,830)	4 -	4 (20,466,234)	4 (3,449,335)
			5 -	5 (7,950,207)	5 -	5 (7,418,212)	5 (7,817,760)	5 -
			6 (15,636,755)	6 (9,982,563)	6 -	6 (10,048,802)	6 (4,455,836)	6 -
			7 (7,288,519)	7 (4,810,661)	7 -	7 (13,963,287)	7 -	7 (6,887,248)
			8 (8,210,037)	8 -	8 (12,802,067)	8 (10,691,021)	8 -	8 (5,519,502)
			9 34,507	9 -	9 (22,761,887)	9 (4,130,148)	9 (24,446,628)	9 (3,316,556)
			10 (3,783,815)	10 (6,606,238)	10 (5,660,187)	10 -	10 (4,121,817)	10 (15,072,618)
			11 -	11 (17,322,464)	11 (4,024,837)	11 -	11 484,379	11 (4,775,936)
			12 -	12 (30,023,115)	12 -	12 226,931	12 (18,240,104)	12 -
			13 (6,607,906)	13 (3,548,433)	13 -	13 (7,636,339)	13 (3,874,953)	13 -
			14 (14,012,699)	14 (3,345,609)	14 (4,745,955)	14 (8,494,381)	14 -	14 (5,482,544)
			15 (17,623,892)	15 -	15 (4,438,554)	15 (13,773,106)	15 -	15 (8,314,089)
			16 (7,784,234)	16 -	16 (4,216,228)	16 (4,323,162)	16 (9,115,645)	16 (15,858,984)
			17 (4,052,524)	17 885,997	17 (12,118,020)	17 -	17 (10,892,379)	17 (4,688,701)
			18 -	18 (2,182,796)	18 (3,556,269)	18 -	18 (16,496,165)	18 (3,178,219)
			19 -	19 (749,489)	19 -	19 (6,379,899)	19 (5,078,312)	19 -
			20 (3,781,539)	20 (7,417,196)	20 -	20 (9,935,941)	20 (4,189,862)	20 -
			21 (14,672,600)	21 3,377,146	21 (7,042,236)	21 (18,195,760)	21 -	21 (16,663,351)
			22 (18,309,778)	22 -	22 (8,610,528)	22 (5,361,300)	22 -	22 (3,711,965)
			23 (20,918,527)	23 -	23 (18,270,163)	23 (3,619,588)	23 (13,437,687)	23 (1,981,502)
			24 (6,736,445)	24 3,604,619	24 (5,660,453)	24 -	24 (3,650,752)	24 (8,032,151)
			25 -	25 (8,185,373)	25 (5,417,862)	25 -	25 (4,553,091)	25 -
			26 -	26 (10,634,815)	26 -	26 (3,614,836)	26 -	26 -
			27 (2,472,487)	27 (613,309)	27 -	27 (4,727,302)	27 (374,536)	27 -
			28 (15,913,727)	28 1,996,832	28 (4,994,441)	28 (4,493,088)	28 -	28 (11,205,407)
			29 (15,279,419)	29 -	29 (3,057,561)	29 (12,794,627)	29 -	29 (5,106,040)
			30 534,285	30 -	30 (7,317,791)	30 (5,176,786)	30 605,219	30 (12,891,140)
			31 4,111,703	31 9,128,738	31 -	31 -	31 -	31 (4,562,327)
(136,691,129)	Tot (116,194,255)	Tot (2,117,679,281)	Tot (225,452,909)	Tot (86,162,525)	Tot (146,449,133)	Tot (172,209,522)	Tot (158,206,025)	Tot (171,128,283)

Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99
1 -	1 48,904,055	1 36,624,927	1 (11,659,361)	1 -	1 (6,263,678)	1 (4,642,387)	1 -	1 1,005,724
2 -	2 40,613,491	2 39,337,251	2 (3,264,407)	2 -	2 (15,873,983)	2 (3,457,445)	2 9,375,013	2 10,186,541
3 -	3 27,804,659	3 59,383,570	3 -	3 (289,552)	3 (3,763,302)	3 -	3 3,775,390	3 (266,881)
4 (4,699,893)	4 17,233,770	4 12,217,907	4 -	4 (3,207,691)	4 (6,964,867)	4 -	4 5,827,547	4 -
5 (2,111,858)	5 18,844,336	5 8,305,698	5 (3,980,614)	5 (15,053,740)	5 -	5 -	5 (5,833,116)	5 -
6 (2,351,353)	6 -	6 -	6 (2,480,279)	6 (3,139,536)	6 -	6 (4,105,213)	6 2,243,617	6 -
7 (11,455,426)	7 -	7 -	7 (19,023,834)	7 347,133	7 (2,480,858)	7 (856,070)	7 -	7 (3,869,069)
8 (3,431,823)	8 16,616,577	8 (2,317,194)	8 (4,896,646)	8 -	8 (4,538,484)	8 (12,723,811)	8 -	8 (13,451,589)
9 -	9 (14,429,655)	9 (11,262,841)	9 (2,179,140)	9 -	9 (12,102,115)	9 (3,698,447)	9 (249,154)	9 (5,329,409)
10 -	10 (10,628,432)	10 (12,060,471)	10 -	10 9,070,588	10 (13,812,176)	10 -	10 (15,743,309)	10 (11,745,807)
11 (2,206,268)	11 3,551,983	11 (6,475,495)	11 -	11 (21,036,634)	11 (1,787,777)	11 -	11 (3,464,850)	11 -
12 (6,737,823)	12 446,373	12 (4,356,718)	12 (7,709,621)	12 349,236	12 -	12 (2,404,112)	12 (10,682,586)	12 -
13 (14,646,809)	13 -	13 -	13 (1,727,960)	13 (12,746,044)	13 -	13 (7,673,102)	13 (1,423,857)	13 (4,802,982)
14 (4,955,696)	14 -	14 -	14 (4,754,062)	14 14,791,076	14 (6,364,273)	14 (13,443,518)	14 -	14 (5,647,036)
15 324,292	15 -	15 (3,687,546)	15 (10,999,476)	15 -	15 (9,351,557)	15 (3,742,197)	15 -	15 (10,218,782)
16 -	16 18,785,915	16 669,622	16 (203,130)	16 -	16 (16,079,481)	16 (2,336,598)	16 2,165,013	16 (13,867,806)
17 -	17 14,436,277	17 (6,677,953)	17 -	17 10,008,015	17 (4,108,146)	17 1,813,550	17 1,813,550	17 (3,819,206)
18 -	18 (1,566,508)	18 (13,010,813)	18 -	18 10,000,312	18 (5,022,593)	18 -	18 (2,963,292)	18 -
19 5,942,828	19 12,111,983	19 (13,316,110)	19 (2,054,513)	19 (13,005,954)	19 -	19 176,177	19 (6,724,803)	19 -
20 1,487,546	20 -	20 -	20 (4,554,384)	20 (5,319,981)	20 -	20 (2,737,971)	20 684,513	20 (4,504,372)
21 (7,383,589)	21 -	21 -	21 (5,639,502)	21 1,237,675	21 (1,609,289)	21 (7,637,549)	21 -	21 (14,607,936)
22 10,187,886	22 26,889,924	22 (6,629,114)	22 (2,251,261)	22 -	22 (3,806,889)	22 (10,357,897)	22 -	22 (17,750,852)
23 -	23 10,951,691	23 (8,298,842)	23 (320,702)	23 -	23 (4,287,002)	23 (2,745,451)	23 6,186,264	23 (1,241,900)
24 -	24 87,149	24 (14,581,577)	24 -	24 4,537,954	24 (12,043,626)	24 -	24 (4,011,388)	24 (16,491,675)
25 23,882,541	25 29,173,755	25 (4,471,410)	25 -	25 (1,017,309)	25 (1,815,432)	25 -	25 (29,637,816)	25 -
26 3,188,091	26 25,107,067	26 (2,636,381)	26 (1,213,877)	26 (13,827,306)	26 -	26 3,580,684	26 4,319,374	26 -
27 5,158,226	27 -	27 -	27 (5,071,867)	27 (3,548,055)	27 -	27 658,689	27 5,954,625	27 (7,404,085)
28 17,924,068	28 -	28 -	28 (7,573,720)	28 (660,950)	28 (6,079,830)	28 (10,109,935)	28 -	28 (5,820,864)
29 27,455,505	29 -	29 (2,136,232)	29 (11,371,062)	29 -	29 (8,014,271)	29 3,431,776	29 -	29 (6,511,334)
30 -	30 -	30 (2,651,757)	30 536,117	30 -	30 (13,083,597)	30 5,580,801	30 10,273,464	30 (13,644,986)
31 -	31 -	31 (2,870,791)	31 -	31 -	31 -	31 -	31 4,407,547	31 -
Tot 35,570,443	Tot 284,934,408	Tot 39,097,730	Tot (112,393,299)	Tot (42,510,760)	Tot (159,253,223)	Tot (79,243,574)	Tot (23,708,253)	Tot (149,804,307)

	Oct-99		Nov-99		Dec-99		Jan-00		Feb-00		Mar-00		Apr-00		May-00	
1	(3,028,501)	1	(5,972,223)	1	(16,324,756)	1	-	1	8,260,668	1	7,655,491	1	-	1	6,266,882	1
2	-	2	(12,069,789)	2	(6,968,002)	2	-	2	1,710,167	2	(3,353,173)	2	-	2	(9,773,689)	2
3	-	3	(23,696,538)	3	(8,091,758)	3	(16,380,824)	3	(1,112,828)	3	3,485,121	3	(7,617,586)	3	(15,171,559)	3
4	(6,854,910)	4	(5,255,235)	4	-	4	(2,834,421)	4	6,531,258	4	-	4	(9,630,198)	4	(4,282,263)	4
5	(10,756,292)	5	(3,732,051)	5	-	5	(3,177,852)	5	-	5	-	5	(16,391,684)	5	(2,939,397)	5
6	(18,593,914)	6	-	6	(4,057,315)	6	(3,022,416)	6	-	6	1,164,982	6	(5,185,650)	6	-	6
7	(6,581,837)	7	-	7	(6,891,423)	7	(10,045,012)	7	1,349,256	7	(6,091,072)	7	(3,399,641)	7	-	7
8	(6,819,133)	8	(11,128,183)	8	(4,878,245)	8	-	8	(8,773,737)	8	(21,486,040)	8	-	8	(523,546)	8
9	-	9	(5,945,939)	9	(22,271,136)	9	-	9	(12,924,783)	9	(10,921,124)	9	-	9	(9,261,743)	9
10	-	10	(14,136,652)	10	(3,458,653)	10	(5,007,851)	10	(8,424,757)	10	(3,365,712)	10	(2,863,679)	10	(4,100,498)	10
11	-	11	-	11	-	11	(10,704,821)	11	(1,678,103)	11	-	11	(11,489,391)	11	(9,436,114)	11
12	(15,580,022)	12	(5,710,885)	12	-	12	(20,840,288)	12	-	12	-	12	(6,724,367)	12	(4,162,251)	12
13	2,541,475	13	-	13	(5,988,578)	13	5,355,224	13	-	13	(2,798,734)	13	(13,131,776)	13	-	13
14	(20,787,562)	14	-	14	(10,815,175)	14	(2,810,921)	14	242,054	14	(3,483,876)	14	(2,865,962)	14	-	14
15	(14,998,083)	15	(6,817,416)	15	(21,580,436)	15	-	15	(2,839,895)	15	(17,610,222)	15	-	15	(185,672)	15
16	-	16	(10,645,681)	16	(7,564,957)	16	-	16	(1,941,165)	16	(12,302,261)	16	-	16	(8,101,905)	16
17	-	17	(15,774,051)	17	(3,348,572)	17	-	17	(9,966,342)	17	(2,762,578)	17	(5,149,550)	17	(15,466,361)	17
18	3,646,813	18	(5,375,292)	18	-	18	370,972	18	1,198,364	18	-	18	(10,995,317)	18	(5,205,600)	18
19	(12,048,123)	19	(4,473,757)	19	-	19	9,264,358	19	-	19	-	19	(18,147,462)	19	(4,744,548)	19
20	(18,509,257)	20	-	20	(3,114,875)	20	(10,213,064)	20	-	20	(6,884,795)	20	(5,846,717)	20	-	20
21	(6,551,389)	21	-	21	(3,476,867)	21	(1,591,107)	21	-	21	(7,101,097)	21	(3,028,286)	21	-	21
22	(6,777,603)	22	(13,703,403)	22	(4,204,346)	22	-	22	9,269,138	22	(18,523,359)	22	-	22	(3,202,278)	22
23	-	23	(19,261,523)	23	(13,957,153)	23	-	23	(12,944,534)	23	(2,532,889)	23	-	23	(5,728,266)	23
24	-	24	(4,867,719)	24	1,014,776	24	1,737,542	24	(2,395,956)	24	(6,188,210)	24	(3,381,984)	24	(20,130,460)	24
25	(9,486,235)	25	-	25	-	25	(7,655,419)	25	(11,056,964)	25	-	25	(4,621,282)	25	(12,622,280)	25
26	(5,229,206)	26	(6,692,389)	26	-	26	(8,598,644)	26	-	26	-	26	(8,175,076)	26	(2,434,961)	26
27	(10,288,042)	27	-	27	(4,754,860)	27	(4,052,992)	27	-	27	(3,589,464)	27	(12,588,243)	27	-	27
28	(15,086,021)	28	-	28	(17,689,120)	28	5,111,445	28	11,839,496	28	(4,117,095)	28	(2,961,335)	28	-	28
29	(5,448,506)	29	(6,036,435)	29	(2,451,131)	29	-	29	9,610,120	29	(5,719,813)	29	-	29	-	29
30	-	30	(9,957,470)	30	(2,573,431)	30	-	30	-	30	(3,648,286)	30	-	30	(5,142,583)	30
31	-	31	-	31	1,783,974	31	9,473,401	31	-	31	(11,829,578)	31	-	31	(18,867,715)	31
Tot	(187,236,348)	Tot	(191,252,631)	Tot	(171,662,040)	Tot	(75,622,691)	Tot	(24,048,542)	Tot	(142,003,784)	Tot	(154,195,185)	Tot	(155,216,808)	Tot

Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	
(7,872,990)	1 -	1 34,911,200	1 19,441,415	1 -	1 (15,137,310)	1 (2,850,841)	1 -	1 (8,183,234)	1
(4,924,783)	2 -	2 35,851,820	2 -	2 (6,006,600)	2 (5,347,964)	2 -	2 (2,295,883)	2 7,269,953	2
-	3 (3,822,487)	3 28,174,628	3 -	3 (12,165,121)	3 (4,392,739)	3 -	3 (6,560,819)	3 -	3
-	4 -	4 29,040,753	4 -	4 (13,884,614)	4 -	4 (3,929,847)	4 (13,194,341)	4 -	4
(3,070,619)	5 (4,997,398)	5	5 33,873,901	5 (5,280,994)	5 -	5 (3,411,948)	5 (4,696,638)	5 7,720,440	5
(4,342,297)	6 (11,816,382)	6 -	6 (7,913,559)	6 (3,281,702)	6 190,963	6 (2,859,958)	6 -	6 664,227	6
(5,812,318)	7 (2,810,334)	7 24,694,437	7 315,918	7 -	7 (4,847,373)	7 (15,678,051)	7 -	7 (19,242,053)	7
(12,660,829)	8 -	8 (2,488,764)	8 (1,157,849)	8 -	8 (15,854,826)	8 (3,981,752)	8 (8,121,322)	8 (1,155,101)	8
(10,028,878)	9 -	9 (7,837,408)	9 -	9 -	9 (11,840,846)	9 -	9 (13,976,615)	9 (7,635,347)	9
-	10 (3,089,329)	10 (5,111,156)	10 -	10 (8,818,465)	10 (398,177)	10 -	10 (15,512,287)	10 -	10
-	11 (13,645,077)	11 4,626,023	11 (3,721,146)	11 (6,206,956)	11 -	11 (3,969,683)	11 (5,108,538)	11 -	11
(7,604,835)	12 (11,364,418)	12 -	12 (9,818,383)	12 (12,558,382)	12 -	12 (14,882,779)	12 (3,175,288)	12 2,902,370	12
(10,118,811)	13 (4,386,279)	13 -	13 (10,538,782)	13 (3,600,146)	13 (1,590,470)	13 (7,158,406)	13 -	13 (2,748,364)	13
(20,714,287)	14 1,868,250	14 7,194,366	14 (12,598,320)	14 -	14 (11,316,130)	14 (14,499,594)	14 -	14 (380,897)	14
(4,899,613)	15 -	15 2,926,711	15 (1,814,744)	15 -	15 (19,949,593)	15 (5,714,980)	15 -	15 (8,787,683)	15
(2,725,475)	16 -	16 2,259,575	16 -	16 (4,008,867)	16 (5,868,537)	16 -	16 (11,210,473)	16 6,830,123	16
-	17 11,961,303	17 (3,104,220)	17 -	17 (8,388,124)	17 (4,101,606)	17 -	17 (8,579,554)	17 -	17
-	18 7,804,238	18 9,128,924	18 (5,174,169)	18 (17,315,188)	18 -	18 (1,288,322)	18 (1,711,242)	18 -	18
(2,921,827)	19 (1,635,312)	19 -	19 (9,231,251)	19 (5,343,906)	19 -	19 (4,910,973)	19 (46,535)	19 -	19
(4,637,425)	20 (5,368,202)	20 -	20 (17,534,072)	20 (4,759,143)	20 (3,088,138)	20 (14,119,885)	20 -	20 6,313,071	20
(7,738,877)	21 5,600,432	21 18,517,564	21 (4,130,079)	21 -	21 (4,810,807)	21 (5,820,494)	21 -	21 (13,078,655)	21
(13,097,794)	22 -	22 3,002,501	22 (2,841,853)	22 -	22 (15,687,526)	22 (8,050,773)	22 7,427,791	22 (6,288,124)	22
(3,172,111)	23 -	23 (4,138,653)	23 -	23 (2,305,372)	23 -	23 -	23 (6,285,700)	23 (15,501,423)	23
-	24 24,158,240	24 (7,537,698)	24 -	24 (5,215,504)	24 (22,306,709)	24 -	24 (16,325,497)	24 -	24
-	25 4,367,230	25 13,001,007	25 (129,480)	25 (9,101,072)	25 -	25 -	25 (656,304)	25 -	25
(3,873,377)	26 3,602,040	26 -	26 (4,729,744)	26 (13,016,055)	26 -	26 (6,934,952)	26 1,073,522	26 8,310,270	26
(9,079,643)	27 20,723,626	27 -	27 (5,528,196)	27 (2,800,792)	27 (534,012)	27 (14,785,274)	27 -	27 3,613,551	27
(14,865,739)	28 19,766,348	28 35,695,781	28 (12,039,532)	28 -	28 (13,205,139)	28 (3,718,783)	28 -	28 (20,249,655)	28
(4,858,317)	29 -	29 22,545,892	29 (3,282,956)	29 -	29 (13,205,339)	29 (3,785,465)	29 8,989,732	29 -	29
(6,054,034)	30 -	30 24,496,029	30 -	30 (6,921,490)	30 (4,730,195)	30 -	30 10,526,118	30 -	30
-	31 36,550,141	31 45,020,096	31 -	31 (10,422,465)	31 -	31 -	31 3,594,808	31 -	31
(165,074,877)	Tot 73,466,631	Tot 310,869,406	Tot (58,552,881)	Tot (161,400,958)	Tot (178,022,474)	Tot (142,352,761)	Tot (85,845,064)	Tot (59,626,532)	Tot

Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01
(36,967,902)	1 -	1 (3,188,155)	1 (5,149,398)	1 -	1 (7,442,255)	1 -	1 (7,193,699)	1 (5,350,212)
(12,197,819)	2 (2,599,204)	2 (18,025,574)	2 -	2 (3,783,799)	2 9,243,686	2 -	2 (8,833,231)	2 (5,447,356)
-	3 (7,639,631)	3 (5,749,173)	3 -	3 (5,156,650)	3 1,820,696	3 -	3 (17,565,266)	3 -
-	4 (18,359,430)	4 (356,719)	4 (5,746,572)	4 -	4 -	4 1,156,109	4 (5,869,191)	4 -
(13,895,321)	5 (5,281,428)	5 -	5 (23,137)	5 (13,017,297)	5 -	5 (5,777,518)	5 (3,968,071)	5 (16,483,216)
(11,125,362)	6 (2,859,661)	6 -	6 (3,943,733)	6 (3,795,080)	6 398,357	6 7,011,814	6 -	6 (4,880,803)
(34,436,712)	7 -	7 8,038,869	7 (12,999,401)	7 -	7 (8,122,936)	7 (8,092,414)	7 -	7 (13,750,785)
(1,062,803)	8 -	8 (942,657)	8 (3,219,562)	8 -	8 (5,422,585)	8 -	8 -	8 (12,924,969)
(5,836,832)	9 (4,103,396)	9 (2,817,228)	9 -	9 (11,776,972)	9 (14,646,104)	9 -	9 (23,178,541)	9 (4,202,555)
-	10 (10,077,760)	10 (16,068,415)	10 -	10 (16,751,794)	10 (8,756,363)	10 (14,667,361)	10 (6,630,698)	10 -
-	11 (5,193,627)	11 2,145,823	11 (12,035,659)	11 (15,627,335)	11 -	11 (11,217,326)	11 (4,359,377)	11 -
(14,057,205)	12 (13,209,068)	12 -	12 290,435	12 (3,534,065)	12 -	12 (8,982,910)	12 (5,707,373)	12 -
(6,267,844)	13 (3,557,641)	13 -	13 (22,856,469)	13 (2,073,883)	13 (10,291,589)	13 (4,534,699)	13 -	13 (5,784,949)
(6,338,096)	14 -	14 7,436,975	14 (2,740,630)	14 -	14 (637,207)	14 (3,779,295)	14 -	14 (19,958,216)
(12,824,114)	15 -	15 (5,680,528)	15 (1,644,473)	15 -	15 (2,756,807)	15 -	15 (7,910,846)	15 (9,122,170)
(2,796,199)	16 (3,636,580)	16 (11,277,503)	16 -	16 1,771,388	16 (950,831)	16 -	16 (10,484,723)	16 (6,697,267)
-	17 (9,406,890)	17 8,439,526	17 -	17 (3,328,875)	17 1,453,876	17 (2,967,583)	17 (18,585,225)	17 -
-	18 (19,165,143)	18 (494,117)	18 (2,749,145)	18 (4,053,610)	18 -	18 (9,991,035)	18 (5,997,122)	18 -
(5,732,805)	19 (16,361,513)	19 -	19 (89,516)	19 (11,138,827)	19 -	19 (19,749,865)	19 (4,005,021)	19 (16,644,727)
(11,203,838)	20 (17,980,006)	20 -	20 (14,996,289)	20 781,151	20 55,445	20 (6,495,865)	20 -	20 (756,424)
(17,274,121)	21 -	21 (1,778,358)	21 (4,809,647)	21 -	21 (5,518,879)	21 (4,140,719)	21 -	21 (5,960,218)
(5,164,213)	22 -	22 (4,709,156)	22 (3,099,963)	22 -	22 (12,800,475)	22 -	22 (15,045,110)	22 -
(2,128,759)	23 (7,844,453)	23 (19,445,879)	23 1,039,713	23 5,436,793	23 1,482,162	23 -	23 (4,608,864)	23 (7,360,079)
-	24 (4,200,383)	24 (14,768,762)	24 -	24 (3,854,149)	24 2,242,706	24 (14,613,469)	24 (6,034,528)	24 -
-	25 (11,669,464)	25 (710,317)	25 (5,896,833)	25 (9,802,162)	25 -	25 (4,511,351)	25 (5,346,022)	25 -
(4,732,344)	26 (16,523,618)	26 -	26 (7,289,919)	26 659,136	26 -	26 (6,029,889)	26 (3,452,407)	26 (18,660,480)
(3,122,001)	27 (3,234,680)	27 -	27 (16,548,804)	27 2,872,607	27 (11,238,965)	27 (5,105,943)	27 -	27 (15,362,356)
(7,305,060)	28 -	28 (4,686,376)	28 (3,912,924)	28 -	28 4,929,925	28 (3,195,389)	28 -	28 (14,512,337)
(13,320,666)	29 -	29 (2,543,175)	29 (2,464,046)	29 -	29 (294,396)	29 -	29 (7,504,760)	29 (6,082,071)
(2,665,248)	30 (590,175)	30 (17,275,606)	30 -	30 15,423,927	30 (7,221,545)	30 -	30 (10,009,266)	30 (4,763,162)
-	31 -	31 (6,819,302)	31 -	31 1,744,508	31 7,850,909	31 -	31 (18,339,228)	31 -
(230,455,266)	Tot (183,493,750)	Tot (111,275,808)	Tot (130,885,972)	Tot (79,004,991)	Tot (66,623,174)	Tot (125,684,708)	Tot (200,628,566)	Tot (194,704,353)

Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	
1 -	1 -	1 6,089,472	1 6,206,854	1 (6,330,497)	1 (15,266,910)	1 -	1 (3,788,635)	1
2 -	2 (3,260,149)	2 -	2 -	2 (8,309,231)	2 (5,800,988)	2 -	2 (7,629,919)	2
3 (15,720,497)	3 (13,900,836)	3 -	3 -	3 (19,180,653)	3 (2,509,489)	3 (6,909,216)	3 (15,738,431)	3
4 (5,027,950)	4 (6,007,961)	4 9,981,568	4 5,359,374	4 (6,658,353)	4 -	4 (4,357,559)	4 -	4
5 (4,062,542)	5 -	5 (4,464,474)	5 (5,499,474)	5 (4,702,648)	5 -	5 (5,824,987)	5 (5,122,268)	5
6 (4,978,842)	6 -	6 (12,964,632)	6 (15,532,260)	6 -	6 (1,578,822)	6 (15,385,304)	6 -	6
7 (3,838,136)	7 (6,836,245)	7 (6,950,937)	7 (5,696,782)	7 -	7 (2,723,629)	7 (3,767,672)	7 -	7
8 -	8 (8,396,552)	8 (1,744,769)	8 (6,111,030)	8 (15,862,053)	8 (5,696,137)	8 -	8 (5,291,816)	8
9 -	9 (17,301,069)	9 -	9 -	9 (2,169,747)	9 (12,889,751)	9 -	9 (10,532,899)	9
10 (6,233,203)	10 (13,609,653)	10 -	10 -	10 (15,528,094)	10 (12,916,210)	10 (6,280,499)	10 (26,207,554)	10
11 (15,662,782)	11 (4,327,644)	11 795,339	11 (2,531,008)	11 (4,359,599)	11 -	11 (16,707,161)	11 (649,005)	11
12 (19,268,793)	12 -	12 (10,112,249)	12 (10,627,329)	12 (5,526,035)	12 -	12 (18,683,332)	12 (2,705,706)	12
13 (6,233,771)	13 -	13 (1,841,678)	13 (20,022,240)	13 -	13 393,436	13 (5,881,359)	13 -	13
14 (4,664,622)	14 (8,342,475)	14 (13,773,670)	14 (15,829,401)	14 -	14 (9,701,270)	14 (4,559,084)	14 -	14
15 -	15 (4,658,181)	15 (1,816,458)	15 (4,089,457)	15 (6,911,223)	15 (14,603,578)	15 -	15 (2,529,450)	15
16 -	16 (12,655,471)	16 -	16 -	16 (9,959,471)	16 (4,665,101)	16 -	16 (955,630)	16
17 (14,119,412)	17 (3,101,389)	17 -	17 -	17 (17,509,632)	17 1,877,064	17 (6,034,332)	17 (5,833,630)	17
18 (2,081,983)	18 (3,218,163)	18 -	18 (5,474,100)	18 (6,146,381)	18 -	18 (7,306,473)	18 (13,661,580)	18
19 (10,454,170)	19 -	19 5,800,702	19 (9,624,276)	19 1,205,021	19 -	19 (3,389,327)	19 (3,219,843)	19
20 3,985,093	20 -	20 (17,126,055)	20 (16,907,051)	20 -	20 (6,106,790)	20 (15,268,565)	20 -	20
21 (20,895,661)	21 -	21 1,707,603	21 (5,869,327)	21 -	21 (3,532,759)	21 (3,209,888)	21 -	21
22 (2,319,614)	22 3,409,611	22 (1,566,320)	22 (4,463,416)	22 (15,499,179)	22 (5,949,440)	22 -	22 564,884	22
23 -	23 (19,205,920)	23 -	23 -	23 (4,253,109)	23 (14,279,567)	23 -	23 (7,985,097)	23
24 (7,341,471)	24 (10,507,049)	24 -	24 -	24 (3,872,396)	24 (21,560,926)	24 (2,135,039)	24 (16,210,434)	24
25 -	25 (509,892)	25 (9,147,637)	25 (5,664,136)	25 (4,500,237)	25 -	25 (13,951,884)	25 876,648	25
26 (13,011,955)	26 -	26 4,770,323	26 (3,212,410)	26 (4,543,618)	26 -	26 (7,911,999)	26 (1,338,427)	26
27 (6,042,767)	27 -	27 3,833,611	27 (4,921,673)	27 -	27 (2,783,919)	27 (4,283,130)	27 -	27
28 (6,751,541)	28 4,003,168	28 (3,353,453)	28 (13,795,086)	28 -	28 (4,058,161)	28 (6,484,660)	28 -	28
29 -	29 2,202,681	29 -	29 (3,408,282)	29 (5,137,386)	29 (19,026,430)	29 -	29 10,861,087	29
30 -	30 (1,050,875)	30 -	30 -	30 (10,603,963)	30 (9,350,705)	30 -	30 1,830,533	30
31 (4,482,947)	31 (1,225,091)	31 -	31 -	31 -	31 (6,329,868)	31 -	31 6,232,000	31
Tot (169,207,564)	Tot (128,499,153)	Tot (51,883,714)	Tot (147,712,510)	Tot (176,358,484)	Tot (179,059,951)	Tot (158,331,471)	Tot (109,035,171)	Tot

Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03
(4,705,256)	1 -	1 (9,410,237)	1 (5,137,409)	1 -	1 -	1 -	1 -	1 (8,552,847)
6,606,379	2 (2,321,651)	2 (19,091,760)	2 -	2 (2,759,751)	2 (15,770,179)	2 -	2 -	2 (17,055,621)
-	3 6,906,765	3 (5,786,616)	3 -	3 (15,238,260)	3 (2,611,899)	3 16,191,327	3 5,714,308	3 (6,011,956)
-	4 (7,977,113)	4 (3,875,690)	4 (6,957,842)	4 (10,360,641)	4 -	4 31,668	4 (151,708)	4 (4,307,345)
2,209,128	5 (5,749,942)	5 -	5 (3,003,548)	5 (19,542,296)	5 -	5 (12,891,722)	5 (28,464,512)	5 -
(5,278,365)	6 (5,384,422)	6 -	6 (6,765,733)	6 (5,367,835)	6 (7,770,844)	6 (2,987,912)	6 (4,174,014)	6 -
(16,314,735)	7 -	7 (5,982,375)	7 (16,188,761)	7 -	7 (10,500,397)	7 (2,349,570)	7 (3,152,414)	7 (17,683,939)
(5,473,555)	8 -	8 (1,793,419)	8 (4,614,952)	8 -	8 (16,852,702)	8 -	8 -	8 (3,195,539)
(2,850,881)	9 (5,096,166)	9 (17,016,324)	9 -	9 (7,638,096)	9 (5,398,497)	9 -	9 -	9 (3,187,758)
-	10 (11,868,585)	10 (15,459,393)	10 -	10 (18,248,214)	10 (12,073,402)	10 (461,626)	10 (5,588,186)	10 (13,195,137)
-	11 (12,721,655)	11 (3,904,308)	11 (2,565,507)	11 (19,753,024)	11 -	11 (8,854,067)	11 (10,716,565)	11 (4,171,198)
(13,111,878)	12 (16,186,008)	12 -	12 (13,320,932)	12 (5,213,444)	12 -	12 (4,730,292)	12 (4,443,025)	12 -
(2,081,132)	13 (2,563,545)	13 -	13 (24,202,314)	13 (6,424,825)	13 (7,668,575)	13 (14,614,276)	13 (14,557,495)	13 -
(4,343,786)	14 -	14 (2,515,986)	14 (11,184,663)	14 -	14 (5,472,658)	14 607,321	14 (3,581,851)	14 (3,755,511)
(13,701,891)	15 -	15 (2,985,287)	15 (9,178,819)	15 -	15 (3,338,198)	15 -	15 -	15 (9,701,661)
361,880	16 (6,472,923)	16 (23,118,339)	16 -	16 (7,831,102)	16 (9,782,650)	16 -	16 -	16 (19,615,044)
-	17 (10,024,091)	17 (8,022,275)	17 -	17 (3,386,946)	17 (689,270)	17 (2,565,223)	17 (6,903,280)	17 (4,997,052)
-	18 (18,847,038)	18 (4,820,976)	18 (7,772,718)	18 (18,206,095)	18 -	18 5,023,822	18 (6,970,897)	18 (5,030,579)
2,039,551	19 (5,517,603)	19 -	19 (5,137,276)	19 (4,448,332)	19 -	19 (15,580,248)	19 (19,195,306)	19 -
(17,309,238)	20 (3,703,766)	20 -	20 (7,773,790)	20 (5,509,310)	20 -	20 (267,555)	20 (5,382,868)	20 -
(2,917,668)	21 -	21 (6,933,123)	21 (16,662,857)	21 -	21 11,044	21 3,010,681	21 (4,127,147)	21 (16,820,998)
(1,466,280)	22 -	22 (3,208,753)	22 (3,369,035)	22 -	22 (20,525,385)	22 -	22 -	22 (2,931,089)
(509,437)	23 (6,164,445)	23 (10,524,656)	23 -	23 (8,550,600)	23 (5,479,561)	23 -	23 -	23 (7,452,360)
-	24 (2,064,614)	24 (16,461,001)	24 -	24 (19,168,263)	24 (580,000)	24 4,272,450	24 (5,311,578)	24 (6,832,360)
-	25 (7,403,589)	25 (4,624,826)	25 (37,136,212)	25 -	25 -	25 (20,543,202)	25 (3,427,059)	25 (1,101,854)
(26,488,438)	26 (15,643,319)	26 -	26 (17,574,708)	26 (4,381,702)	26 -	26 (483,785)	26 (5,806,947)	26 -
2,431,539	27 (3,944,511)	27 -	27 (25,437,773)	27 (6,011,322)	27 2,862,409	27 (5,023,224)	27 (15,534,021)	27 -
(462,705)	28 -	28 (6,938,419)	28 -	28 -	28 3,186,570	28 7,493,574	28 (3,969,949)	28 (3,663,703)
1,522,901	29 -	29 (11,342,780)	29 (20,242,597)	29 -	29 82,897	29 -	29 -	29 (9,964,247)
5,229,655	30 (6,834,604)	30 (18,226,836)	30 -	30 (6,926,802)	30 (7,540,718)	30 -	30 -	30 (17,231,126)
-	31 -	31 (6,819,182)	31 -	31 (7,061,769)	31 7,192,990	31 -	31 (4,667,491)	31 -
(96,614,214)	Tot (149,582,824)	Tot (208,862,558)	Tot (244,227,442)	Tot (202,028,629)	Tot (118,719,026)	Tot (54,721,857)	Tot (150,412,005)	Tot (186,458,924)

May-03		Jun-03		Jul-03		Aug-03		Sep-03		Oct-03		Nov-03		Dec-03		Jan-04	
1	7,158,358	1	-	1	(9,468,858)	1	21,879,248	1	-	1	(13,944,360)	1	-	1	1,061,999	1	-
2	(1,522,270)	2	(2,977,234)	2	(5,412,523)	2	-	2	27,998,207	2	(8,751,817)	2	-	2	(5,602,493)	2	(4,814,044)
3	-	3	(4,798,859)	3	(21,535,509)	3	-	3	(5,506,508)	3	(3,543,046)	3	74,947	3	(5,615,042)	3	-
4	-	4	(7,639,104)	4	-	4	27,716,249	4	4,886,633	4	-	4	(3,294,388)	4	(19,530,326)	4	-
5	(1,794,834)	5	(18,318,714)	5	-	5	(1,173,772)	5	152,071	5	-	5	(3,767,792)	5	(868,128)	5	(3,901,169)
6	(1,871,252)	6	(3,454,337)	6	-	6	(8,907,089)	6	-	6	(3,811,513)	6	(16,880,212)	6	-	6	(9,527,024)
7	(5,939,589)	7	-	7	84,413	7	(3,945,668)	7	-	7	(1,423,144)	7	1,659,623	7	-	7	(17,655,778)
8	(15,995,097)	8	-	8	(5,685,534)	8	4,805,405	8	(1,240,837)	8	(4,958,873)	8	-	8	(5,164,501)	8	(9,837,059)
9	(1,646,801)	9	(3,788,375)	9	(17,544,513)	9	-	9	3,107,324	9	(18,127,916)	9	-	9	(7,967,352)	9	(4,255,863)
10	-	10	(7,551,030)	10	(9,313,192)	10	-	10	(11,155,005)	10	(1,802,195)	10	3,054,626	10	(16,044,179)	10	-
11	-	11	(17,688,630)	11	(1,869,982)	11	11,443,767	11	(16,548,215)	11	-	11	-	11	(9,670,977)	11	-
12	8,380,998	12	(8,585,753)	12	-	12	(1,312,042)	12	2,391,027	12	-	12	(12,555,162)	12	(3,375,191)	12	2,179,978
13	(3,777,282)	13	(12,037,719)	13	-	13	1,729,592	13	-	13	-	13	(6,836,114)	13	-	13	(4,720,562)
14	(15,330,635)	14	-	14	70,369,979	14	(20,541,195)	14	-	14	(3,995,518)	14	(10,310,455)	14	-	14	(854,487)
15	(11,806,117)	15	-	15	(7,426,625)	15	7,753,736	15	(7,982,605)	15	(26,627,066)	15	-	15	(11,231,572)	15	(22,172,312)
16	(259,720)	16	(2,362,697)	16	(1,870,764)	16	-	16	(8,812,612)	16	(10,558,893)	16	-	16	(2,250,678)	16	(84,970)
17	-	17	(3,309,215)	17	(15,633,151)	17	-	17	(14,095,348)	17	(4,920,370)	17	5,928,780	17	(5,478,554)	17	-
18	-	18	(8,180,396)	18	2,825,730	18	13,251,603	18	(9,410,682)	18	-	18	5,155,928	18	(19,959,908)	18	-
19	2,177,499	19	(19,384,829)	19	-	19	2,263,878	19	(3,431,563)	19	-	19	3,389,054	19	(2,474,404)	19	-
20	891,795	20	(1,743,693)	20	-	20	(8,231,643)	20	-	20	(1,927,856)	20	(14,366,075)	20	-	20	14,455,455
21	(3,641,058)	21	-	21	12,183,112	21	7,165,217	21	-	21	(5,995,355)	21	1,523,465	21	-	21	(14,368,516)
22	(18,756,041)	22	-	22	(2,061,088)	22	8,136,764	22	71,707	22	(5,587,822)	22	-	22	(2,078,883)	22	930,620
23	(4,313,687)	23	(5,025,484)	23	(10,351,662)	23	-	23	2,940,460	23	(19,548,498)	23	-	23	(8,426,651)	23	4,571,450
24	-	24	(15,702,938)	24	2,398,545	24	-	24	(7,590,972)	24	(3,970,712)	24	1,091,083	24	(25,208,051)	24	-
25	-	25	(9,346,203)	25	10,959,924	25	28,713,260	25	(16,981,040)	25	-	25	(4,498,189)	25	-	25	-
26	-	26	(9,404,712)	26	-	26	23,758,237	26	1,549,570	26	-	26	(16,160,984)	26	(5,869,115)	26	21,797,042
27	(2,963,369)	27	(5,270,332)	27	-	27	28,813,247	27	-	27	(3,139,374)	27	-	27	-	27	1,686,619
28	(18,862,132)	28	-	28	23,358,537	28	14,569,470	28	-	28	(7,825,103)	28	(20,360,964)	28	-	28	8,242,080
29	(10,380,770)	29	-	29	10,488,429	29	22,356,871	29	(4,167,134)	29	(14,450,754)	29	-	29	(3,970,253)	29	(601,944)
30	(23,043,564)	30	(4,191,307)	30	7,721,909	30	-	30	(10,040,968)	30	(6,604,463)	30	-	30	(1,648,069)	30	17,755,174
31	-	31	-	31	4,042,469	31	-	31	-	31	(5,166,518)	31	-	31	(19,524,073)	31	-
Tot	(123,295,569)	Tot	(170,761,561)	Tot	36,259,646	Tot	180,245,135	Tot	(73,866,490)	Tot	(176,681,166)	Tot	(87,152,827)	Tot	(180,896,402)	Tot	(21,175,311)

Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1 -	1 50,803,492	1 (7,886,179)	1 -	1 (3,076,491)	1 (27,675,477)	1 -	1 3,780,373	1 (3,392,085)
2 47,216,581	2 19,078,987	2 (2,516,593)	2 -	2 (6,493,627)	2 (799,198)	2 44,020,169	2 10,530,882	2 -
3 1,990,502	3 (1,227,932)	3 -	3 1,822,788	3 (21,810,360)	3	3 8,225,379	3 12,256,956	3 -
4 1,968,322	4 (817,298)	4 -	4 (2,748,170)	4 (3,655,619)	4	4 (5,219,232)	4	4 (3,892,893)
5 2,722,486	5 1,530,566	5 (4,126,994)	5 (3,721,007)	5 -	5	5 1,117,396	5 -	5 (4,391,058)
6 5,725,692	6 -	6 (1,360,388)	6 (16,169,511)	6 -	6 (3,661,215)	6 6,027,909	6 -	6 (4,592,134)
7 -	7 -	7 (5,875,449)	7 1,758,443	7 (3,155,340)	7 (15,700,265)	7	7 3,790,651	7 (20,996,728)
8 -	8 1,365,199	8 (18,509,739)	8 -	8 (6,689,487)	8 (10,311,973)	8	8 3,427,314	8 (1,795,643)
9 16,470,424	9 1,153,836	9 (3,138,045)	9 -	9 (16,600,141)	9 (3,497,609)	9 10,188,929	9 (19,526,941)	9 -
10 1,671,069	10 (4,585,429)	10 -	10 10,238,282	10 (10,185,103)	10 -	10 3,840,799	10 (1,854,370)	10 -
11 1,408,069	11 (17,831,397)	11 -	11 (3,722,405)	11 (4,418,035)	11 -	11 (2,463,590)	11	11 -
12 (4,339,668)	12 (1,027,210)	12 (2,793,596)	12 (12,468,090)	12	12 3,379,381	12 (14,212,916)	12 -	12 (3,026,017)
13 (5,975,830)	13 -	13 (5,521,346)	13 4,095,300	13 -	13 549,309	13 (3,028,504)	13 (836,848)	13 (18,002,176)
14 -	14 -	14 (16,363,996)	14 1,338,093	14 (3,127,291)	14 (3,173,341)	14 -	14 (7,319,491)	14 (9,382,453)
15 -	15 (9,268,419)	15 (15,206,856)	15 -	15 (7,878,074)	15 (25,592,123)	15 -	15 (22,050,388)	15 (12,573,728)
16 -	16 (7,292,757)	16 (1,938,346)	16 -	16 (9,680,945)	16 1,026,099	16 15,052,112	16 (7,559,142)	16 -
17 27,715,852	17 (20,163,898)	17 -	17 4,669,009	17 (21,028,643)	17	17 5,677,715	17 (974,673)	17 -
18 (11,342,633)	18 (8,238,178)	18 -	18 11,541,204	18 (1,917,886)	18 -	18 (7,144,608)	18	18 (4,797,116)
19 10,995,769	19 (4,359,326)	19 (821,180)	19 16,632,134	19 -	19 7,250,196	19 5,632,926	19 -	19 (5,864,355)
20 16,353,282	20 -	20 (1,427,962)	20 (21,134,317)	20 -	20 (5,519,958)	20 10,799,352	20 (2,010,525)	20 (8,008,416)
21 -	21 -	21 (6,538,284)	21 (8,784,901)	21 (4,246,996)	21 (10,843,255)	21	21 (1,032,143)	21 (21,589,109)
22 -	22 (1,511,029)	22 (18,458,773)	22 -	22 (16,632,281)	22 1,403,690	22 -	22 (6,974,891)	22 (3,594,688)
23 34,288,537	23 (1,609,101)	23 (290,805)	23 -	23 (6,791,671)	23 4,781,920	23 29,826,789	23 (21,606,733)	23 -
24 24,124,142	24 (4,787,234)	24 -	24 (3,162,584)	24 (8,741,108)	24 -	24 14,692,097	24 (2,461,708)	24 -
25 28,788,753	25 (18,112,957)	25 -	25 (9,198,835)	25 (3,827,996)	25 -	25 10,930,083	25	25 (3,295,708)
26 19,799,841	26 (2,173,342)	26 (938,446)	26 (17,555,944)	26 -	26 18,741,789	26 5,094,772	26 -	26 (7,388,672)
27 30,380,672	27 -	27 (7,683,235)	27 (8,679,576)	27 -	27 9,384,175	27 28,240,785	27 (4,241,796)	27 (19,290,497)
28 -	28 -	28 (16,284,045)	28 (21,516,938)	28 (4,136,330)	28 1,054,627	28	28 (4,481,745)	28 (9,759,372)
29 -	29 (1,754,906)	29 (5,553,650)	29 -	29 (4,746,565)	29 22,685	29 -	29 (15,011,946)	29 (4,084,885)
30 -	30 (6,648,751)	30 (439,519)	30 -	30 (1,372,919)	30 21,673,192	30 53,189,504	30 (9,263,942)	30 -
31 -	31 (18,477,402)	31 -	31 -	31 -	31 -	31 10,351,019	31 -	31 -
Tot 249,961,860	Tot (55,954,486)	Tot (143,673,425)	Tot (76,767,026)	Tot (170,212,909)	Tot (37,507,352)	Tot 230,838,886	Tot (93,421,108)	Tot (169,717,735)

Nov-04		Dec-04		Jan-05		Feb-05		Mar-05		Apr-05		May-05		Jun-05	
1	(3,779,256)	1	(7,837,478)	1	-	1	12,742,353	1	22,909,692	1	(2,892,678)	1	-	1	(4,818,219)
2	(645,250)	2	(24,743,421)	2	-	2	6,566,174	2	19,510,284	2	-	2	4,546,869	2	(23,804,753)
3	(7,881,305)	3	(1,481,550)	3	(116,857)	3	5,564,079	3	5,614,301	3	-	3	(337,192)	3	(4,668,467)
4	(22,255,554)	4		4	(6,860,509)	4	7,477,893	4	4,771,142	4	(1,945,099)	4	(2,732,020)	4	
5	(3,177,769)	5	-	5	(15,717,459)	5	-	5	-	5	(1,807,366)	5	(19,607,621)	5	-
6	-	6	(2,021,151)	6	(10,043,709)	6	-	6	-	6	(6,208,045)	6	879,749	6	(4,021,072)
7	-	7	(6,758,485)	7	(3,310,481)	7	14,248,597	7	4,076,408	7	(21,325,515)	7	-	7	(9,282,772)
8	(5,020,327)	8	(18,722,289)	8	-	8	7,252,432	8	1,147,734	8	(4,180,081)	8	-	8	(14,553,349)
9	(7,905,411)	9	(10,004,538)	9	-	9	231,920	9	(16,519,225)	9	-	9	12,151,162	9	(8,466,891)
10	(19,421,312)	10	(4,225,114)	10	(1,943,532)	10	(12,857,298)	10	(21,042,004)	10	-	10	(33,590)	10	(3,835,082)
11	-	11		11	(1,445,133)	11	5,072,612	11	(1,772,863)	11	(2,807,395)	11	(12,609,097)	11	
12	(5,010,386)	12	-	12	(5,720,885)	12	-	12	-	12	(8,575,153)	12	(1,095,403)	12	-
13		13	(3,011,663)	13	(20,595,278)	13	-	13	-	13	(14,072,405)	13	(6,713,480)	13	(3,957,300)
14	-	14	(2,349,624)	14	(8,435,870)	14	21,155,165	14	1,750,946	14	(7,246,867)	14	-	14	(2,610,189)
15	(11,878,495)	15	(14,437,483)	15	-	15	14,888,655	15	(13,066,227)	15	(11,098,524)	15	-	15	(16,135,656)
16	(4,749,173)	16	(22,009,236)	16	-	16	(5,857,167)	16	(16,749,920)	16	-	16	7,163,856	16	(22,751,048)
17	(8,048,005)	17	(2,634,060)	17	-	17	4,249,262	17	(9,085,720)	17	-	17	2,959,272	17	(4,662,521)
18	(23,335,552)	18		18	8,393,757	18	12,234,945	18	(2,361,978)	18	(1,055,102)	18	10,811,339	18	
19	(3,686,364)	19	-	19	(9,961,505)	19	-	19	-	19	(2,862,080)	19	(14,946,779)	19	-
20	-	20	(4,386,764)	20	(3,454,226)	20	-	20	-	20	(7,746,157)	20	(3,566,295)	20	(3,683,294)
21	-	21	(17,937,578)	21	375,492	21	-	21	(2,143,300)	21	(21,712,816)	21	-	21	(7,852,406)
22	(3,404,499)	22	(6,744,317)	22	-	22	44,574,764	22	(1,499,625)	22	(8,881,761)	22	-	22	(14,020,426)
23	(6,853,461)	23	(6,811,516)	23	-	23	27,895,261	23	(6,831,585)	23	-	23	(3,271,322)	23	(9,504,904)
24	(20,671,518)	24	(700,651)	24	16,935,365	24	19,587,202	24	(20,677,492)	24	-	24	(2,622,566)	24	(2,431,645)
25		25		25	2,872,366	25	47,313,980	25	(6,970,691)	25	(266,922)	25	(15,340,873)	25	
26	(6,251,862)	26	-	26	2,205,003	26	-	26	-	26	(6,770,284)	26	(8,381,277)	26	-
27		27	(28,963)	27	(5,483,642)	27	-	27	-	27	(18,030,834)	27	(1,809,983)	27	(3,864,052)
28	-	28	(6,992,766)	28	15,239,548	28	53,574,273	28	(553,630)	28	(5,370,057)	28	-	28	(3,334,808)
29	(20,044,788)	29	(6,633,041)	29	-	29	-	29	(7,675,282)	29	3,451,716	29	-	29	(8,913,451)
30	(4,855,301)	30	(19,920,451)	30	-	30	-	30	(13,528,195)	30	-	30	-	30	(22,757,511)
31	-	31	(877,714)	31	39,832,188	31	-	31	(6,870,272)	31	-	31	(22,659,455)	31	-
Tot	(188,875,586)	Tot	(191,269,854)	Tot	(7,235,366)	Tot	285,915,099	Tot	(87,567,501)	Tot	(151,403,426)	Tot	(77,214,706)	Tot	(199,929,815)

**APPENDIX 2**  
**Methodology**

## RETURN CALCULATION DESCRIPTION

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### Modified Dietz Method

The return calculation methodology we use is referred to as the Modified Dietz method. It is commonly used in the investment community. The Modified Dietz method estimates a monthly rate of return based on a beginning market value, an ending market value and non-investment-related cash flows (contributions and withdrawals) that occur during the month. This method seeks to remove the impact of these cash flows from the return calculation. (Other methods, such as dollar-weighted rates of return or internal rates of return (IRRs) are appropriate in different circumstances, such as in the case of a private equity investment manager that has control over cash flows as part of the investment process.)

Below is the formula for the return in a given period (in our case, one month).

$$r = \frac{MV_T - MV_{T-1} - \sum CF}{MV_{T-1} + \sum_{j=1}^n CF_j (1 - w_j)}$$

Where:

$$w_j = \frac{T - t_j}{T}$$

Translation:

- Ending market value minus beginning market value (dollar gain or loss)
- Plus or minus money that was put into/taken out of the fund (dollar gain or loss not due to investment fluctuations or income)
- Divided by beginning market value, which is adjusted for cash flows during the period

If multiple cash flows occur during a month, the total portfolio weight is calculated as a weighted average of the time remaining in the month for each cash flow.

*Example:*

Suppose a portfolio is valued at \$1,000,000 at the beginning of a month. Ten days into the month (or one-third of the way through the month) \$15,000 is withdrawn from the portfolio. Ten days later (or two-thirds of the way through the month) \$35,000 is added to the portfolio. The portfolio is valued at \$1,100,000 at the end of the month. Assume there are 30 days in the month.

BMV	= 1,000,000
Cash Flow 1	= -15,000
Cash Flow 2	= +35,000
EMV	= 1,100,000

$$r = \frac{1,100,000 - 1,000,000 - (-15,000 + 35,000)}{1,000,000 + ((1 - 1/3) \times -15,000) + ((1 - 2/3) \times 35,000)} = 7.99\%$$

### Linking Rates of Return

To determine a cumulative return for a given length of time where returns are available only for shorter sub-periods (such as monthly returns calculated as described above), one must "link" the returns. In order to link returns, they must first be converted to wealth relatives as follows:

Take the rate of return, which is expressed as a percent, and convert it to a decimal (i.e., 5.0% becomes 0.05) then add 1. Thus, the wealth relative of a 5% return is 1.05. When working with negative returns, one follows the same procedure (i.e., the wealth relative of a -5% return is 0.95).

Perform the same conversion for all the returns you wish to link and multiply each wealth relative by the next. To convert the resulting total wealth relative back to its percent form, subtract 1 and divide by 100.

Simply adding the returns will not provide the correct cumulative return because it eliminates the effect of compounding. This can be seen in the following example:

\$1 is invested in a savings account at 5% annually for 2 years. At the end of year 1, 5% of \$1, or \$0.05, is added to the account, bringing the total to \$1.05. At the end of year 2, 5% of \$1.05, or \$0.0525, is added to the account, bringing the total to \$1.1025. The value of this account has grown from \$1 to \$1.1025, which represents a percentage increase of 10.25%. By linking 5% and 5% one would arrive at a total return for the period of 10.25% ( $1.05 \times 1.05 = 1.1025$  or 10.25%). If one were to add 5% and 5% the total would only amount to 10%.

If a cumulative return is known and the returns for all but one of the sub-periods are known, simply reversing the linking procedure (or dividing) will provide the unknown return; this is referred to as "backing out."

*Example:*

Cumulative ROR	=	10.25%
Sub-period 1 ROR	=	5.00%
Sub-period 2 ROR ("x")	=	Unknown
If $1.05 \times$ ("x")	=	1.1025
then ("x")	=	$1.1025 / 1.05$
("x")	=	1.05

This is useful when an annual return and the returns for three of the four quarters are known. In order to determine the return for the fourth quarter, one simply backs out the three known quarterly returns from the annual return; the remainder is the return for the fourth quarter.

*Example:*

Annual ROR	=	12.5%
1 <sup>st</sup> Qtr. ROR	=	1.3%
2 <sup>nd</sup> Qtr. ROR	=	2.4%
3 <sup>rd</sup> Qtr. ROR	=	4.7%
4 <sup>th</sup> Qtr. ROR	=	Unknown

$$\text{If } 1.013 \times 1.024 \times 1.047 \times (1 + 4^{\text{th}} \text{ Qtr. ROR}) = 1.125$$

$$\begin{aligned} \text{then } 1.0861 \times (1 + 4^{\text{th}} \text{ Qtr. ROR}) &= 1.125 \\ (1 + 4^{\text{th}} \text{ Qtr. ROR}) &= 1.125 / 1.0861 \\ (1 + 4^{\text{th}} \text{ Qtr. ROR}) &= 1.0358 \end{aligned}$$

The fourth quarter return is 3.58%. This can be proven by linking the four quarterly returns.

### **Annualizing Rates of Return**

Linking rates of return provides the cumulative return over a period of time. Returns for period greater than one year, however, are generally expressed as annualized returns. An annualized return is the constant return that would provide the same terminal wealth (or cumulative return) if it were earned each year during the period. To calculate an annualized return, link the rates for the sub-periods involved, then take the “n<sup>th</sup>” root of the cumulative return, with “n” representing the number of years involved.

*Example:*

Year 1 ROR	=	6.2%
Year 2 ROR	=	4.8%
Year 3 ROR	=	12.7%
Cumulative ROR	=	25.43%

To annualize 25.43% one must find the cube root of one plus 25.43% (1.2543). This will provide the return per year, so that all years are equal, which would provide a cumulative return of 25.43%.

$$\sqrt[3]{1.2543} = 1.0785 \text{ or } 7.85\%$$

$$\text{Proof: } 1.0785 \times 1.0785 \times 1.0785 = 1.2543$$

When the time period for which a return is being annualized is other than whole years, such as two years and six months, the six months must be expressed as a percentage of a whole year. To do this, simply divide the number of months by twelve, and then add the number of whole years. Thus, two years and six months is expressed as 2.5 years.

Annualized returns cannot be linked with other returns. The annualized return must first be unannualized then linked and reannualized, if desired.

**APPENDIX 3**  
**Monthly Rates of Return for SIF and Indexed Alternative**

	Total SIF	Indexed Alternative
Jan-96	0.85	1.70
Feb-96	-1.39	-0.62
Mar-96	-0.20	0.00
Apr-96	-0.27	0.28
May-96	0.21	0.94
Jun-96	1.78	0.93
Jul-96	-1.79	-1.57
Aug-96	0.28	0.76
Sep-96	3.61	3.21
Oct-96	3.09	2.34
Nov-96	4.54	4.10
Dec-96	-2.00	-1.34
Jan-97	2.15	2.90
Feb-97	0.78	0.48
Mar-97	-2.88	-2.21
Apr-97	3.51	3.24
May-97	2.84	3.07
Jun-97	2.96	2.55
Jul-97	5.82	4.66
Aug-97	-3.12	-2.68
Sep-97	3.28	3.04
Oct-97	-0.24	-0.56
Nov-97	1.76	2.17
Dec-97	1.39	1.26
Jan-98	0.95	1.13
Feb-98	2.91	3.07
Mar-98	0.96	2.38
Apr-98	1.82	0.72
May-98	-0.60	-0.19
Jun-98	1.81	1.85
Jul-98	-0.89	-0.25
Aug-98	-5.59	-4.13
Sep-98	2.81	3.55
Oct-98	2.78	2.88
Nov-98	2.55	2.72
Dec-98	2.91	2.58
Jan-99	1.99	2.15
Feb-99	-2.48	-2.02
Mar-99	1.93	1.96
Apr-99	1.52	1.83
May-99	-1.44	-1.35
Jun-99	2.60	2.16
Jul-99	-1.53	-1.54
Aug-99	-0.77	-0.20
Sep-99	-0.30	-0.53
Oct-99	2.38	2.91
Nov-99	1.62	0.90
Dec-99	4.20	2.44
Jan-00	-2.44	-2.28
Feb-00	4.10	-0.21
Mar-00	2.63	5.14
Apr-00	-2.18	-1.40

	Total SIF	Indexed Alternative
May-00	-1.78	-0.80
Jun-00	2.49	2.12
Jul-00	-0.02	-0.15
Aug-00	5.37	3.29
Sep-00	-2.05	-1.78
Oct-00	-0.67	0.20
Nov-00	-2.21	-2.14
Dec-00	2.85	1.20
Jan-01	0.74	2.19
Feb-01	-2.43	-3.01
Mar-01	-1.98	-2.14
Apr-01	2.76	2.94
May-01	0.24	0.12
Jun-01	-1.18	-0.90
Jul-01	0.12	0.62
Aug-01	-1.42	-1.47
Sep-01	-3.44	-2.48
Oct-01	1.73	1.76
Nov-01	1.79	1.78
Dec-01	0.09	-0.05
Jan-02	-0.50	-0.54
Feb-02	-0.06	-0.01
Mar-02	1.06	0.89
Apr-02	-0.61	-0.81
May-02	0.24	0.31
Jun-02	-2.07	-1.72
Jul-02	-3.57	-2.29
Aug-02	0.96	0.88
Sep-02	-2.76	-2.72
Oct-02	1.36	2.32
Nov-02	1.95	1.81
Dec-02	-0.63	-0.83
Jan-03	-0.74	-0.94
Feb-03	0.17	0.11
Mar-03	0.07	0.00
Apr-03	3.33	3.28
May-03	3.18	2.77
Jun-03	0.59	0.41
Jul-03	-0.26	-0.59
Aug-03	1.22	1.19
Sep-03	0.56	1.36
Oct-03	2.20	1.92
Nov-03	0.86	0.68
Dec-03	2.45	2.93
Jan-04	1.48	1.19
Feb-04	1.18	1.27
Mar-04	0.33	0.12
Apr-04	-2.05	-1.69
May-04	-0.32	0.33
Jun-04	1.40	1.09
Jul-04	-1.03	-0.85
Aug-04	0.69	1.00

	Total SIF	Indexed Alternative
Sep-04	0.94	0.81
Oct-04	0.61	1.26
Nov-04	1.90	1.83
Dec-04	2.04	2.07
Jan-05	-0.86	-0.49
Feb-05	1.36	1.25
Mar-05	-1.06	-0.84
Apr-05	-0.91	-0.29
May-05	1.89	1.44
Jun-05	1.00	0.51

	Total SIF	Indexed Alternative
1996	8.80	11.06
1997	19.42	19.09
1998	12.77	17.26
1999	9.92	8.85
2000	5.81	2.91
2001	-3.13	-0.88
2002	-4.69	-2.84
2003	14.40	13.79
2004	7.32	8.66
2005 (YTD)	1.38	1.55
1 Year	6.69	7.88
3 Years	6.56	7.54
5 Years	3.45	3.98
9 Years 6 Months	7.33	8.13