

**FALL 2011**

**EXAM FETE**

**Financial Economic Theory  
and Engineering**

**CASE STUDY**

**FETE morning**



# **Financial Economic Theory and Engineering**

**Case Study**

**2011**

# **Wonka Life**

**It's your life!**

*From the desk of*  
**R. Tomas Lyon, IV**

April 16, 2010

Re New CFO

Congratulations. You will have been through a rigorous screening process. I have every confidence that the search committee has picked the right person for this important position. I am sure you will do a fine job as Wonka Life's new Chief Financial Officer.

Anyway, you have a lot of work to do. Your predecessor, Mr. A. Hugh Dodo, left to pursue other opportunities at a critical time for Wonka Life. My executive assistant, Mr. Charley Pigeon, will help you get settled in your new position.

Ideally we would have all the issues that you will face as our new CFO laid out similar to a fancy case study. Well, the real world is not that neat. Charley has been instructed to pull together memos, e-mails and other documents to help you familiarize yourself with the company and the issues in the Finance and Investment Departments. You should be finding this memo at the top of the collection that he has created for you. If there's anything else you need, please don't hesitate to ask him.

This job will be a real test. I am counting on you to learn quickly and to make decisions that will take our company to the next level.

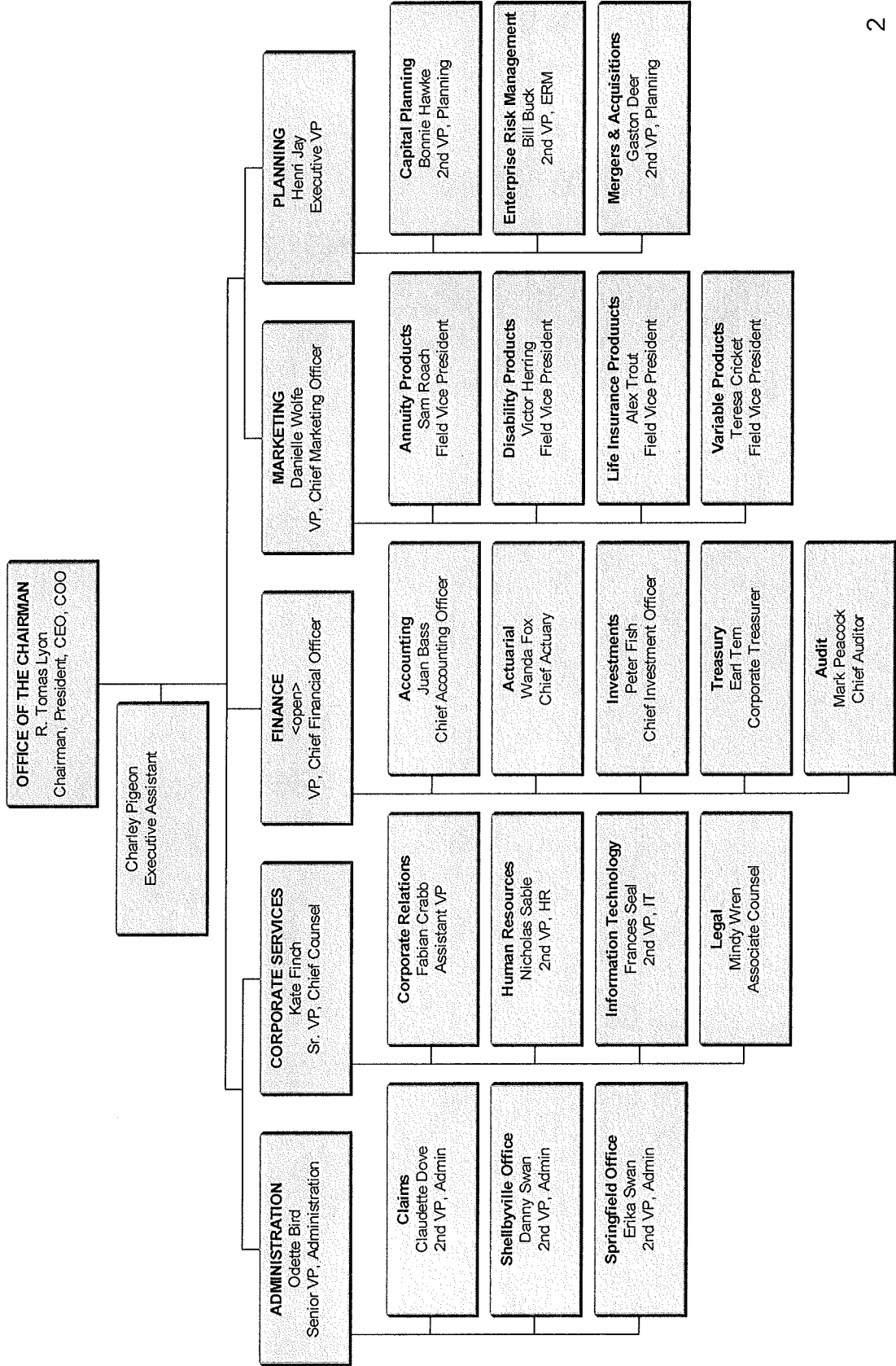
Very Sincerely

R. Tomas Lyon, IV  
Chairman, President, CEO and COO  
Wonka Life Insurance Company

Cc Charley Pigeon

# Wonka Life Insurance Company

as of March 19, 2010



# Wonka Life Insurance Company

## Mission, Vision, Values and Ethics

### Mission

The mission of Wonka Life is to be a high quality financial services company. To that end, we offer a range of insurance and financial services and products to meet the needs of our customers. We aim to provide the highest quality service to our customers. We maintain high ratings, financial strength and competitively priced products.

We respect our employees. We offer challenging career opportunities and personal development for all staff members. Our goal is to enable everyone to contribute to their fullest potential. We promote open and cooperative relationships among employees and customers.

In all that we do, we exemplify the highest standards of business ethics and personal integrity, and recognize our corporate obligation to the social and economic well-being of our community.

### Vision

The Company's vision is to seek a balance among our key operations: Individual Life and Annuity, Institutional Pensions and Group Benefits. Our Annuity operations will offer outstanding investment performance; in particular we seek to be an innovator in accumulation annuity market. We also would like to be competitive in Long-Term disability product line in Group Benefits.

### Values

We are in business to serve customers. Our goal is to establish long-term relationships; to that end, we endeavor to provide high quality customer service. We truly care about each person in our company. To be successful, we will treat others with the respect we desire for ourselves.

### Ethics

We conduct the Company's affairs in strict compliance with both the letter and the spirit of the law, and, at all times, we will treat policyholders, customers, suppliers, and all others with whom the Company does business fairly and honestly. We recognize that our reputation is our most important asset. We will not compromise our integrity. Honesty and fair dealing are hallmarks of our business operations.

## Excerpts from Wonka Life Proxy Statement – Dated March 11, 2010

### Board of Directors – Biographies

R. Tomas Lyon IV – Chairman, President, CEO, and COO. Age 69. Term Expires September 2010.

Karl Palomino – Former CFO, Wonka Life (retired September 2008). Age 62. Term began September 2008, term expires September 2012.

Jeanne Holstein-Palomino – Philanthropist, former administrative assistant, Wonka Life. Age 30. Term began September 2008, term expires September 2012.

Ivan X. Salmon – former Chief Legal Counsel, Wonka Life (retired September 2008). Age 58. Term began September 2008, term expires September 2012.

Hermine Dauphin – former accounting partner for Dollars ‘R Us, former insurance regulator for Insurance Department of Illinois. Age 52. Term began September 2008, term expires September 2010.

### Board of Directors Committees

Board Member	COMMITTEES				
	Audit	Compensation	Nomination	Investment	Risk Management
Lyon	M		C	M	
Palomino	C	M			M
Holstein-Palomino	M	C			M
Salmon		M	M	C	
Dauphin			M	M	C
Meetings Held	1	1	1	0	4

C = Chairperson  
M = Member

### Selected Excerpts from Meetings held in 2009

#### Report of Committees

1. Audit Committee – Mr. Lyon reported that the committee met once. The committee had voted to reappoint Brown & Co as Independent Accountants for 2010. This recommendation was approved unanimously by the full Board.

Mr. Lyon expressed appreciation for the Board’s support of the long-standing, strong relationship with Brown & Co., since it allowed Wonka to spend less money and streamline the audit process.

The committee also reviewed a report from Mr. Dodo outlining the status of Wonka’s system of internal controls. Mr. Lyon suggested that Mr. Dodo’s report focused too much on potential risks and too little on audit. Lyon noted that risk evaluation was the purview of the Risk Management committee. Further, Lyon, preferred that Mr. Dodo focus more effort on audit staff training in order to

prevent the possibility of fraud in the processing of paychecks and travel reimbursements.

The committee also received Mark Peacock's audit reports for the current and prior quarters.

2. Compensation Committee – Ms. Holstein-Palomino reported that at its annual meeting the committee submitted recommendations for increased compensation and performance awards to Mr. Lyon, who approved them.
3. Nominating Committee – Mr. Lyon reported that the nominating committee voted to recommend a continuation of the current Board structure (5 members with at least one independent member). Mr. Lyon noted that Ms. Dauphin recommended expanding the Board with a larger portion of independent members; this recommendation was defeated 2 to 1. The Committee also recommended that Mr. Salmon begin a search of candidates to replace Ms. Dauphin, whose term expires next year. It is contemplated that Mr. Lyon will be re-nominated in 2010. The recommendations were approved by the full Board by a vote of 4 to 1.
4. Investment Committee – Mr. Salmon reported that the committee was considering a number of decisions (for example there were plans to release some external investment managers following a period of poor performance and replace them with managers with a better track record). However, due to numerous calendar conflicts, this committee did not meet during the year. Mr. Salmon is also concerned that the committee might regret certain decisions made earlier.
5. Risk Management Committee – Ms. Dauphin reported that the committee met on a regular quarterly basis during the year. Meetings focused on reports and interviews with key employees in finance, systems, and audit. As a result of their investigation, a number of risk management concerns were discovered and the committee unanimously recommended the creation of an Enterprise Risk Management Officer.

During the debate of this recommendation with the full Board, Mr. Lyon expressed relief that this committee would not be needed in the future once the ERM Officer came on board. He also wanted to ensure that the position reported to someone with a lot of experience who knew the company well and could serve as a guide to the ERM Officer, helping him/her gather information from various areas within the company. The new ERM Officer should be able to prepare any reports needed by external audiences with respect to risk.

Ms. Dauphin brought up the subject of what would happen to the concerns that the Risk Management Committee had brought to light if the Committee were disbanded. Mr. Lyon responded that they would be forwarded to the new ERM Officer. He decided that Henri Jay would be the right person for the new ERM Officer to report to. Once the new ERM Officer formulated recommendations from this input, he would deliver them to Mr. Jay, who would pass them on to the manager of the area or areas involved.

The full Board voted 4 to 1 in favor of Mr. Lyon's recommendations.



## **Charley Pigeon**

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**From:** "Larry McCaw" McCawL@wlic.com  
**To:** "All Employees" <mail list zlicEEs@wlic.com>  
**Sent:** Monday, March 15, 2010 11:28 AM  
**Subject:** Founder's Day Celebration

Wonka Life will celebrate Founder's Day this year on Friday, June 11, 2010. In honor of the 106<sup>th</sup> anniversary of our founding, employees are encouraged to wear jeans to work on that day. In addition, we will have the traditional Founder's Day picnic. Back again this year by popular demand, we will have a bear wrestling demonstration and carnival games.

While this is always a fun time, the Founder's Day Committee would like to take this opportunity to remind everyone of our company's long and colorful history. After all, there is a reason we celebrate Founder's Day.

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Noah Wonka, pioneer, business mogul and town founder established the Wonka Friends Assessment Society in 1904. His belief was that even the common man had a right to insure his life for a fair price. Wonka served as the first president of the company which bore his name. Ironically, Noah Wonka lost the company in the Banking Panic of '05 when it was taken over by Lyon & Sons (now known as Lyon Enterprises).

R.T. Lyon served as the second President (1905-1915) until passing on those responsibilities to his son Richard (Rich) Lyon, Jr. Under Rich Lyon's leadership (1915-1929), the company grew to insure over 1,000 people and converted from an assessment society to a legal reserve mutual life insurance company. In October of 1929, Rich Lyon died under mysterious circumstances; his policy was the first paid out under the new legal structure and it nearly caused the company to fail.

Now known as the Wonka Life Insurance Society, the company then passed to R.M. (Trip) Lyon, III. Trip Lyon's tenure at the company (1929-1965) was mostly uneventful. In 1965, the Presidency of the company was handed to Trip Lyon's 24-year old son, R. Tomas Lyon, IV who continues to run the company today.

Tomas Lyon has been an innovator and champion in the insurance industry. He eliminated the Home Service Life Insurance division in the late 1960's and was one of the first to offer Term Insurance in a big way with the innovative "Life Term" policy. A Property & Casualty subsidiary (Wonka Car & Dwelling) was opened in 1977 and subsequently closed in 1989. In the early 1980's the company was one of the pioneers of Guaranteed Investment Contracts (GICs). Lyon also led the company's charge into Variable annuities in 1990. Lyon shepherded the company to conversion from a mutual insurer to a public company with a successful IPO in February 2008, whereby ownership was widely diversified amongst numerous investors.

In a little over 100 years, Noah Wonka's experiment of offering the common man a little life insurance to pay for final expenses has evolved into the insurance and financial services giant we know today. Remember at Wonka Life.....It's your Life™!

Larry McCaw  
Chair, Founder's Day Committee  
Company Historian  
Sr. Records Tech – Section AH  
Ext #752

# Wonka Life Insurance Company

MEMORANDUM

February 16, 2009

TO Department Heads

FROM Peter Fish

RE Derivative Team

I'm very excited to announce that John Badger has agreed to join Wonka Life, reporting to me in the newly created role of Head Derivatives Trader and Director of Derivative Securities Administration. He will be charged with building a derivatives team at Wonka to deal with trading and administration.

We managed to scoop this derivatives hotshot from the Crimson Sardine Hedge Fund that recently wound down operations. John is very keen on the opportunity to put his own leading-edge derivative pricing model to work developing innovative derivative strategies in the more collegial and autonomous environment offered here at Wonka.

Our investment team to date has lacked sophisticated derivatives skills. With John on board, not only will we be able to dynamically hedge our GICs and restore their profitability, but we will also be able to draw on his expertise when exploring ways to hedge various options that we might want to consider offering with our VA product. Even beyond this, in John's capable hands we'll be able to leverage the derivatives desk and generate excess earnings turning this into a profit center on its own!

As of now, John will be a one-man show, but we plan to hire a couple of derivatives traders within a few months, if we can get more budget dollars allocated to this initiative.

One of the ways that we can manage to establish this operation with minimal staff is that John has developed some rules of thumb that he uses to estimate credit-risk exposure. This saves having to bother with time-consuming modeling of this risk.

He also has developed good contacts in the industry so he is used to being able to informally set up an agreement with a trading partner each time a new type of trade is transacted. No matter how many positions we may have with a certain counterparty, each new deal has its own quirks and he likes to start fresh, without being constrained by the past. John has several years of experience in this market, so Wonka will be the beneficiary of his established relationships.

We're going to let John be the front man for a while, since he's the one with the relationships, even though he is going to keep in constant contact with senior management so that he doesn't get us into any deals that are bigger than we really want.

For now, we plan to say as little as possible publicly about these activities since we are still fleshing out all the operating parameters we do not want too much scrutiny before we feel that we are really ready for it, and things have become somewhat stabilized.

I see a very profitable future ahead!

# Wonka Life Insurance Company

MEMORANDUM

April 14, 2010

TO New CFO

FROM Peter Fish

RE Hedge Fund Initiative

I'm very excited to present our Hedge Fund initiative for your approval. Until now the activities of our head derivatives trader, John Badger, at Wonka have been limited to hedging Wonka's own risks. This initiative puts Wonka's resources to use in a new way.

We are seeking seed capital to launch a new hedge fund into the marketplace, Wonka's first, targeting high net worth individuals. John has built a proprietary model using what he has labeled: "volatility arbitrage strategy". Basically, the model can determine when the market has mispriced the volatility of complex derivatives. We can take advantage of those mispricings, and close our positions for profit when the market valuations catch up.

It is also important to note that John has agreed to manage the fund under tight delta limits, utilizing a dynamic hedging strategy derived from his model. We don't have to worry about administration as John's model can mark the fund's positions to market daily. John has thoroughly reviewed and tested his model. He can demonstrate that his model has consistently produced lower prices than where the market traded on some particular derivative.

Another advantage we plan to capitalize on is John's philosophy of not purchasing credit enhancements or any other related risk-reduction arrangements, as he considers them to be a waste of money.

John has forwarded his model assumptions to Bill Buck for his review. He also provided Bill with a walk-through of his model's calculations using a straight-forward interest rate swap. I am sure this will get Bill comfortable with this initiative.

Once we get this project launched, not only will we get our huge management fees, we will get great returns on as much seed capital as you want participating in this great strategy!

# Wonka Life Insurance Company

MEMORANDUM

April 2, 2010

TO Charley Pigeon  
FROM Isabel Cougar, Planning, ext 641  
RE Financial Statements for the New CFO

Per your request for asset liability management report for the past few years, I've been able to get these year-end 2009 reports for each product line. I received input from Wanda Fox regarding the asset allocation to each block, and this is reflected within these statements.

Although I didn't have prior historical statements readily available to pass along, I believe Wanda has a copy of the Byrd Ratings report for us. This report should provide various asset and product line financial trends over the past few years, as I'm assuming this is what you're after in your request for historical info. Simply drop her an E-mail and request a copy.

Attachments:  
2009 ALM report

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## **Asset Liability Management Report for December 31, 2009**

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This report details the ALM position for all of Wonka Life's products and focuses on the company's exposure to interest rate risk. The ALM guidelines specified in the company's ALM Policy Statement and Procedure Manual reflects the company's tolerance to interest rate risk.

Guarantees related to Equity Linked GICs and Variable Annuities are not included in this report. As these products were in good shape when the previous report was prepared, it was deemed unnecessary to include them this time. They will be updated when the next report is prepared.

	Book Value ('000)	Present Value ('000)	Effective Duration	Dollar Duration ('000)
<b>TRADITIONAL LIFE PRODUCTS</b>				
Assets	300,000	309,700	7.8	2,424,000
Liabilities	300,000	318,000	13.0	4,134,000
<b>Difference</b>	<b>0</b>	<b>-8,300</b>	<b>-5.2</b>	<b>-1,710,000</b>
<b>Guideline</b>	<b>&lt; 2,000</b>			<b>&lt; 300,000</b>
<b>NON-TRADITIONAL LIFE PRODUCTS</b>				
Assets	400,000	416,600	9.3	3,859,000
Liabilities	400,000	406,000	4.0	1,624,000
<b>Difference</b>	<b>0</b>	<b>10,600</b>	<b>5.3</b>	<b>2,235,000</b>
<b>Guideline</b>	<b>&lt; 2,000</b>			<b>&lt; 400,000</b>
<b>ACCUMULATION ANNUITIES</b>				
Assets	1,500,000	1,545,600	4.7	7,257,000
Liabilities	1,500,000	1,575,000	4.7	7,403,000
<b>Difference</b>	<b>0</b>	<b>-29,400</b>	<b>0.0</b>	<b>-146,000</b>
<b>Guideline</b>	<b>&lt; 2,000</b>			<b>&lt; 450,000</b>
<b>INSTITUTIONAL PENSION – PAYOUT</b>				
Assets	700,000	746,100	6.5	4,870,000
Liabilities	700,000	759,500	7.3	5,544,000
<b>Difference</b>	<b>0</b>	<b>-13,400</b>	<b>-0.8</b>	<b>-674,000</b>
<b>Guideline</b>	<b>&lt; 2,000</b>			<b>&lt; 700,000</b>
<b>INSTITUTIONAL PENSION – GIC</b>				
Assets	1,500,000	1,544,200	3.3	5,066,000
Liabilities	1,500,000	1,537,500	3.1	4,766,000
<b>Difference</b>	<b>0</b>	<b>6,700</b>	<b>0.2</b>	<b>300,000</b>
<b>Guideline</b>	<b>&lt; 2,000</b>			<b>&lt; 450,000</b>
<b>GROUP BENEFITS</b>				
Assets	630,800	660,900	8.0	5,262,000
Liabilities	630,800	624,000	6.5	4,056,000
<b>Difference</b>	<b>0</b>	<b>36,900</b>	<b>1.5</b>	<b>1,206,000</b>
<b>Guideline</b>	<b>&lt; 2,000</b>			<b>&lt; 630,000</b>
<b>SURPLUS ACCOUNT</b>				
Assets Target	625,000	807,912	9.1	7,350,400
<b>Difference</b>	<b>625,000</b>	<b>807,912</b>		
<b>Guideline</b>				
<b>TOTAL COMPANY</b>				
Assets	5,655,800	6,031,012	6.0	36,088,400
Liabilities	5,030,800	5,220,000	5.3	27,527,000
<b>Difference</b>	<b>625,000</b>	<b>811,012</b>		<b>8,561,400</b>
<b>Guideline</b>				<b>&lt; 5,219,000</b>

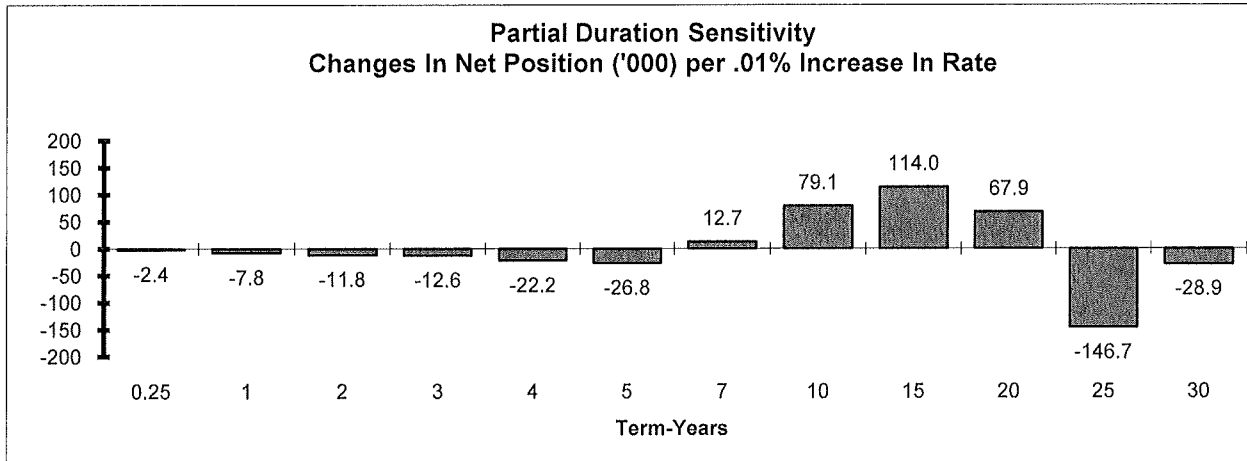
**ACCUMULATION ANNUITIES**

**Effective Duration (*Price Sensitivity to Parallel Shifts in the Yield Curve*)**

The effective duration of assets is longer than the duration of liabilities by less than 0.01. The difference between the dollar duration of assets and liabilities is (146,000,000). This is within the approved guideline of +/- 450,000,000.

**Partial Duration Sensitivity Analysis (*Price Sensitivity to Specific Rate Changes*)**

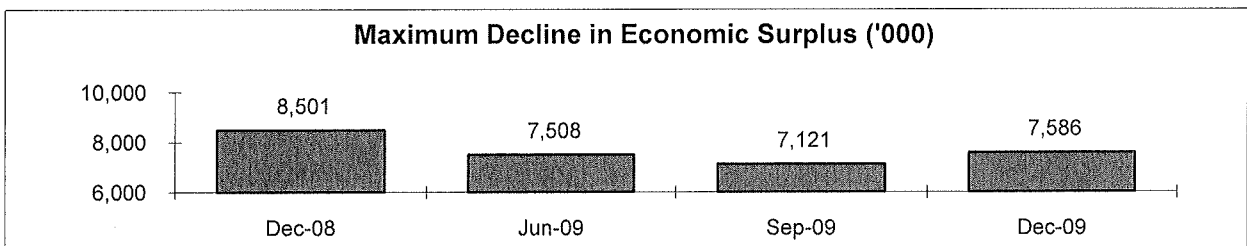
For all points along the curve partial duration sensitivities are within the approved guideline of 300,000.



**Scenario Testing**

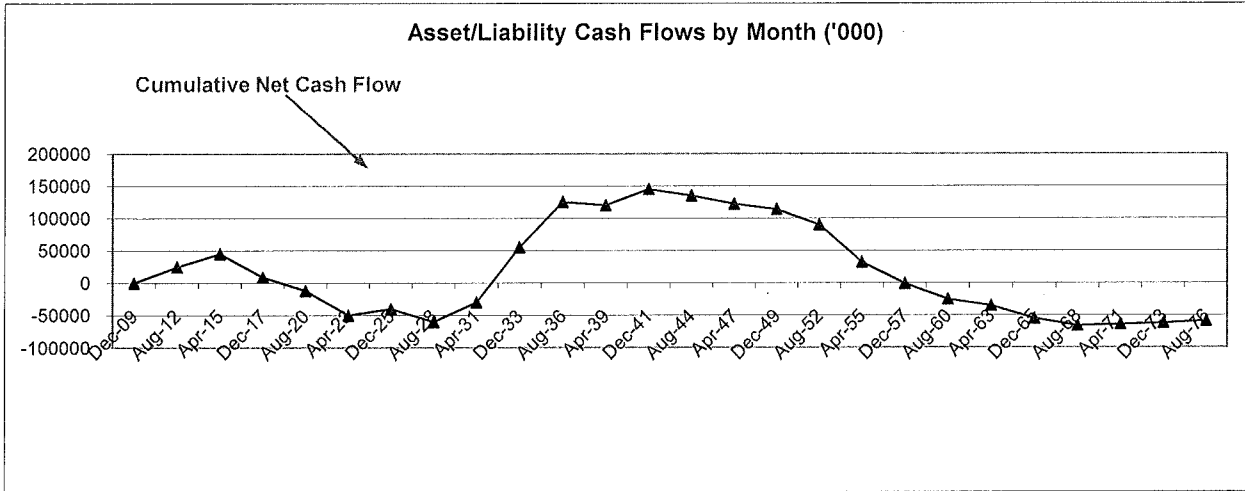
Worst Case Scenario

The worst case scenario that was tested was an increase followed by a decrease in interest rates. If this scenario were realized, it would result in a loss of \$7.6 million in economic surplus.



**Cash Flow Analysis**

The accompanying graph does not represent actual cash outflows but rather interest rate reset dates for the assets and liabilities. No renewals or new sales are projected and asset maturities are not reinvested. Thus the usefulness of this analysis is limited to studying interest rate risk exposure. This would represent an extreme adverse scenario for measuring liquidity risk exposure.



**Portfolio Rebalance**

Rebalancing is performed on a monthly basis for Accumulation Annuities. At the end of December, except for cash reallocation there was no rebalancing required for Accumulation Annuities.

**Asset Mix**

The target mix calls for more bonds and private placements and less mortgages. The C1 capital requirement for the Accumulation Annuities portfolio excluding additional requirements for troubled assets is approximately \$11.7 million at the end of December. In comparison, the C1 requirement based on the target asset mix would be \$11.2 million.



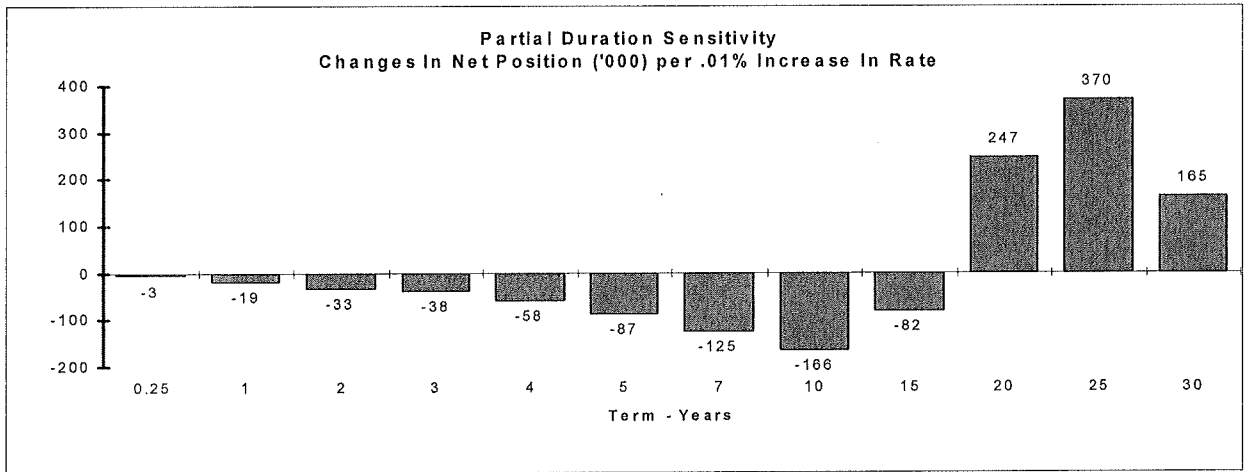
**TRADITIONAL LIFE PRODUCTS**

**Effective Duration (Price Sensitivity to Parallel Shifts in the Yield Curve)**

The effective duration of assets is shorter than the duration of liabilities by 5.2 years. This reflects the difficulty in finding assets that match the extremely long duration of the liabilities. The difference between the dollar duration of assets and liabilities is (1,710,000,000) which exceeds our approved guideline of +/- 300,000,000.

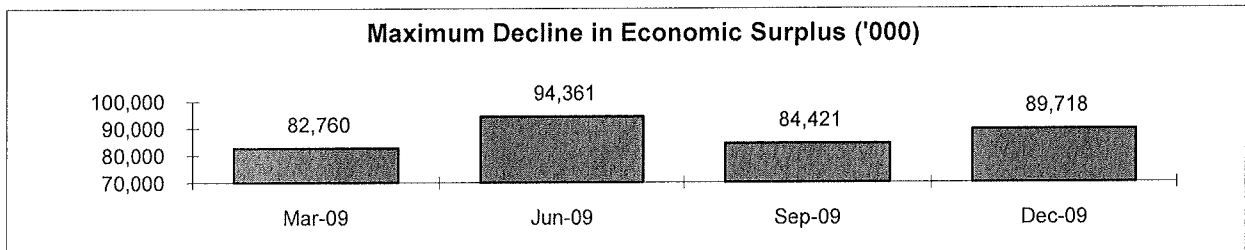
**Partial Duration Sensitivity Analysis (Price Sensitivity to Specific Rate Changes)**

We are exposed to rates falling at the 20, 25 and 30 year terms and to rates increasing at earlier terms. Exposure is large yet exceeds guidelines of 300,000 for the 20 year term only.



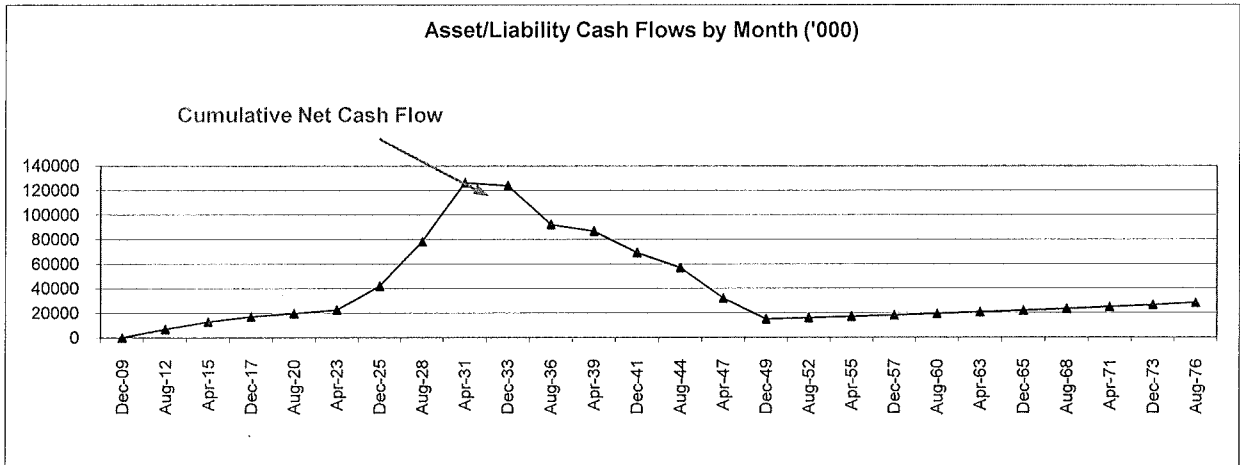
**Scenario Testing**

The maximum decline in economic surplus at the 95% confidence level was \$89.7 million at the end of December. The scenario that gives rise to this exposure is a decrease in long term interest rates.



**Cash Flow Analysis**

The large positive spikes represent the maturity of the long zero coupon bonds that were purchased to extend the duration of the assets.



**Portfolio Rebalance**

At the end of December rebalancing was necessary as a result of the lengthening of the liabilities due to assumption changes.

**Asset Mix**

The target mix does not reflect policy loans, calls for more government bonds, and less private placements. The C1 capital requirement for the Traditional Life Products portfolio excluding additional requirements for troubled assets is approximately \$0.5 million. In comparison, the C1 requirement based on the target asset mix would be \$0.5 million. The asset mix does not reflect the assumed equity position.

## NON-TRADITIONAL LIFE PRODUCTS

### **Projection of Cash Flows**

Based on December 31 assets and liabilities, net cash flows are projected to be an average of \$1.3 million per month going forward.

### **Margin Squeeze**

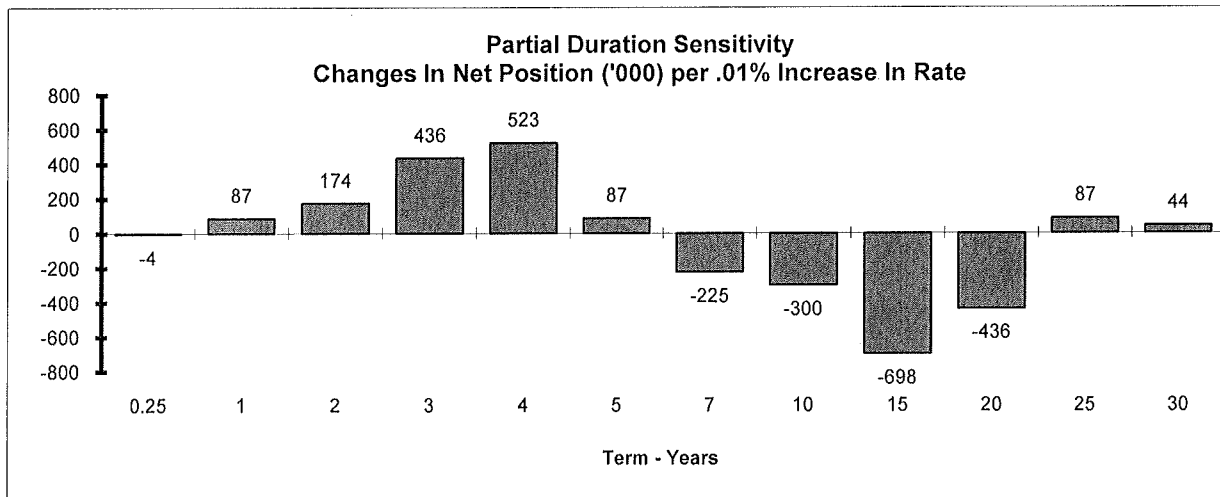
Interest sensitive cash flows have been modeled to vary for given changes in interest rates (i.e. the margin squeeze will be reflected in the price sensitivity statistics). The impact of the margin squeeze for a 1% decrease in interest rates is a \$10.3 million loss in economic value.

### **Effective Duration (Price Sensitivity to Parallel Shifts in the Yield Curve)**

The **effective** duration of assets is longer than the duration of liabilities by 5.3 years. The difference between the dollar duration of assets and liabilities is 2,235,000,000. This significantly exceeds the guideline of +/-400,000,000.

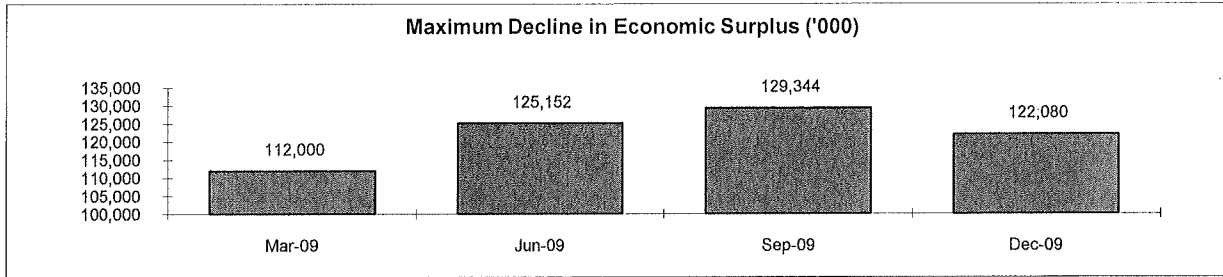
### **Partial Duration Sensitivity Analysis (Price Sensitivity to Specific Rate Changes)**

Significant exposure exists to an increase in interest rates between the 7 and 20 year rates, a result of the duration mismatch between the assets and liabilities. The company is exposed to a decrease in interest rates for early durations. The guideline of 400,000 is exceeded in both directions for 4 points on the rate curve.



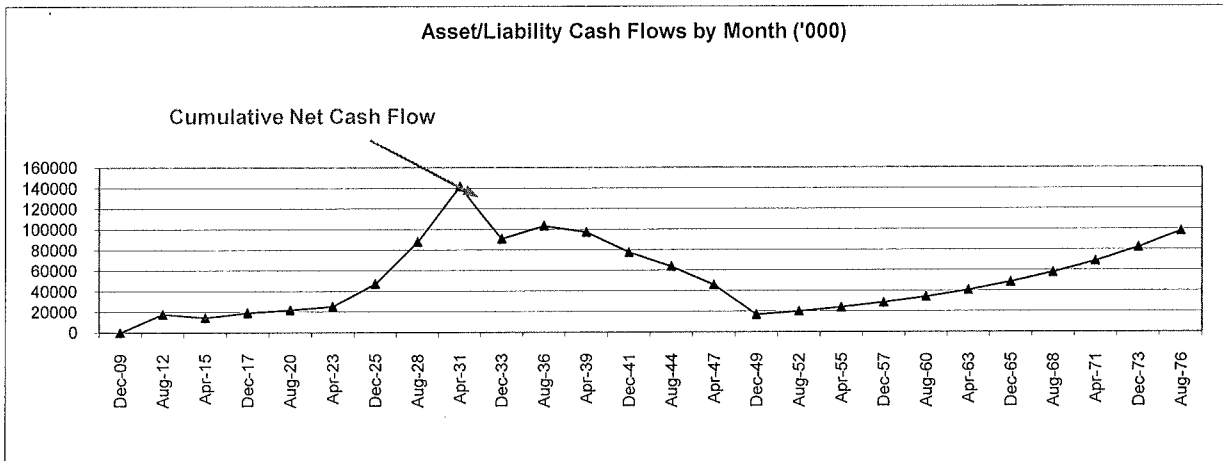
### **Scenario Testing**

The maximum decline in economic surplus at the 95% confidence level decreased from \$129.3 million to \$122.1 million at the end of December. The scenario that gives rise to this exposure is a gradual decrease in long-term interest rates.



### Cash Flow Analysis

Note that cash flows for both the fixed life and variable UL products are shown together.



### Portfolio Rebalancing

At the end of December the need for rebalancing was identified to deal with the growing duration mismatch between assets and liabilities. Implementation was postponed due to a lack of resources to analyze and explain the mismatch.

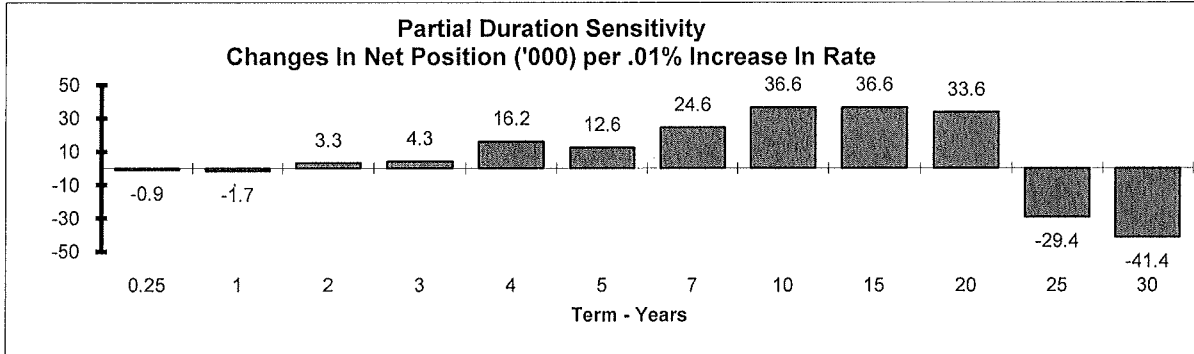
**INSTITUTIONAL PENSION - PAYOUT**

**Effective Duration (Price Sensitivity to Parallel Shifts in the Yield Curve)**

The effective duration of assets is shorter than the duration of liabilities by 0.80 years. The difference between the dollar duration of assets and liabilities is (675,000,000) and is within the approved guideline of +/-700,000,000.

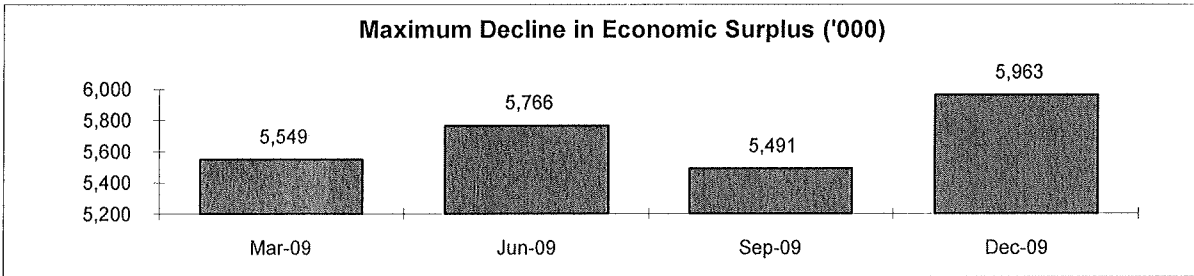
**Partial Duration Sensitivity Analysis (Price Sensitivity to Specific Rate Changes)**

Due to the efficiency of the immunization strategy, no significant interest rate exposure exists on that line of business.

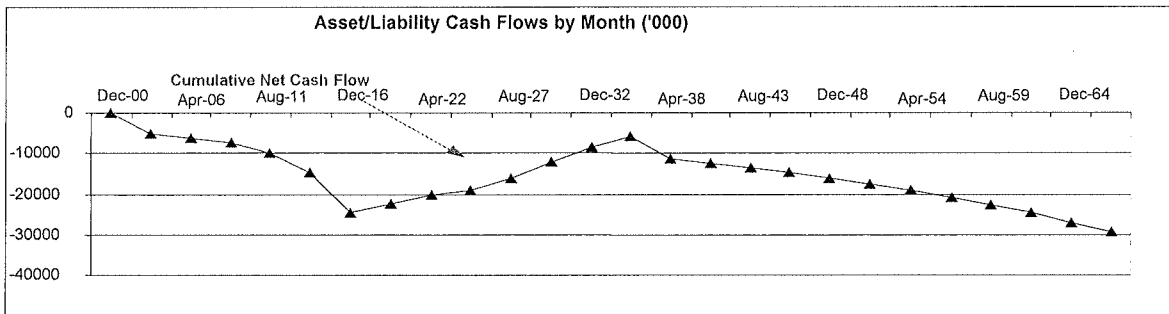


**Scenario Testing**

The maximum decline in economic surplus at the 95% confidence level stands at \$5.96 million, and is the result of a gradually increasing interest rate for the first 20 years followed by a sharp increase.



**Cash Flow Analysis**



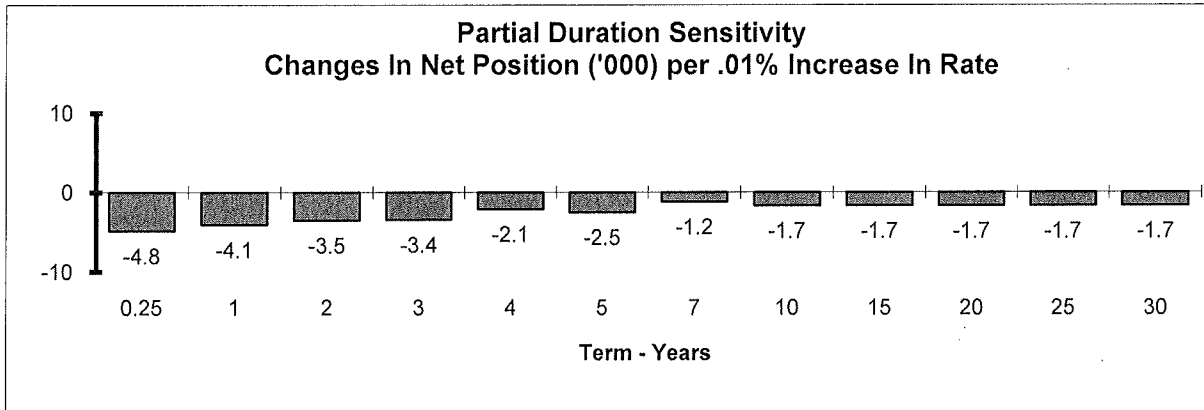
**INSTITUTIONAL PENSION - GIC**

**Effective Duration (Price Sensitivity to Parallel Shifts in the Yield Curve)**

The effective duration of assets is longer than the duration of liabilities by 0.20 years. The difference between the dollar duration of assets and liabilities is 300,000,000. This is within the approved guideline of +/-450,000,000.

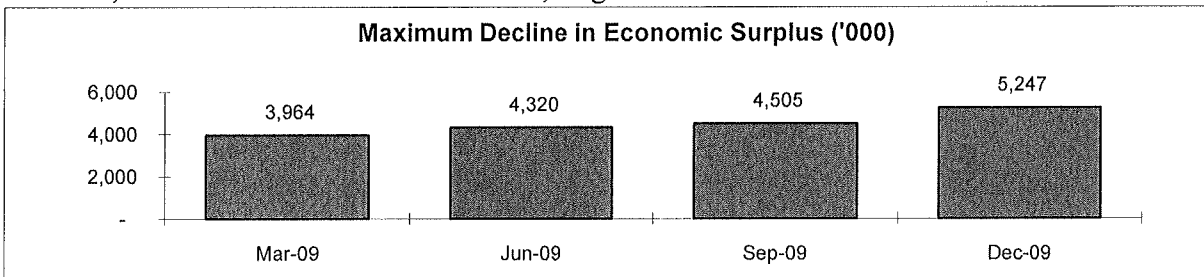
**Partial Duration Sensitivity Analysis (Price Sensitivity to Specific Rate Changes)**

Due to the efficiency of the immunization strategy and the short duration of the liabilities, no significant interest rate exposure exists on that line of business.

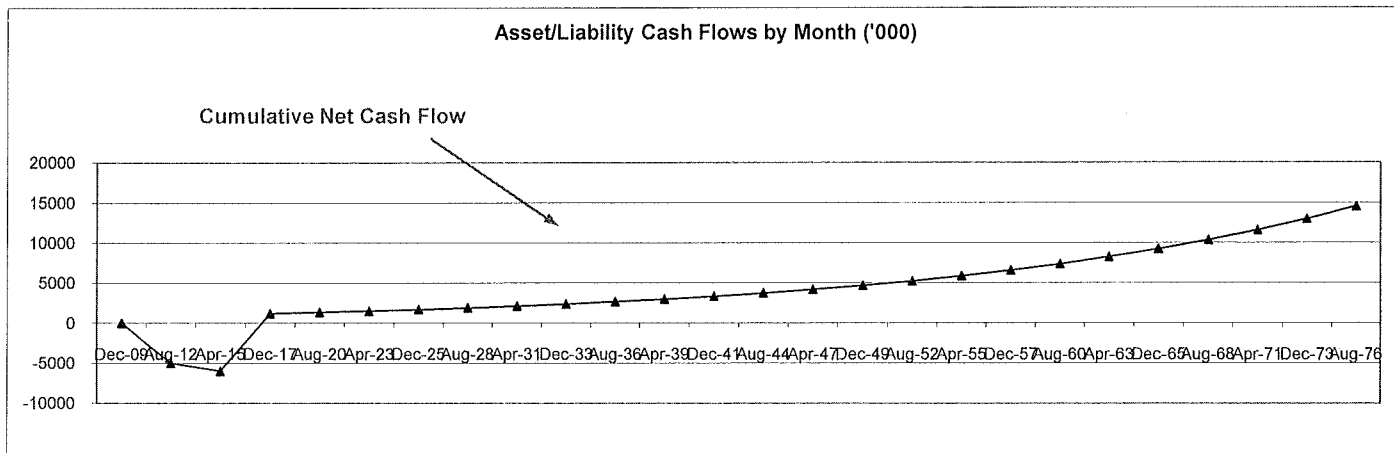


**Scenario Testing**

The maximum decline in economic surplus at the 95% confidence level stands at \$5.2 million, and is the result of an immediate, large increase in interest rates.



**Cash Flow Analysis**



**Currency Exposure**

The Euro-denominated liabilities are valued at \$100 million using exchange rates in effect as of December 31. This is approximately 20% higher than the value at last year-end. This liability exposure has not been hedged given the relatively small size of the exposure and the previously stable Euro/U.S. dollar exchange rate relationship over its short history.

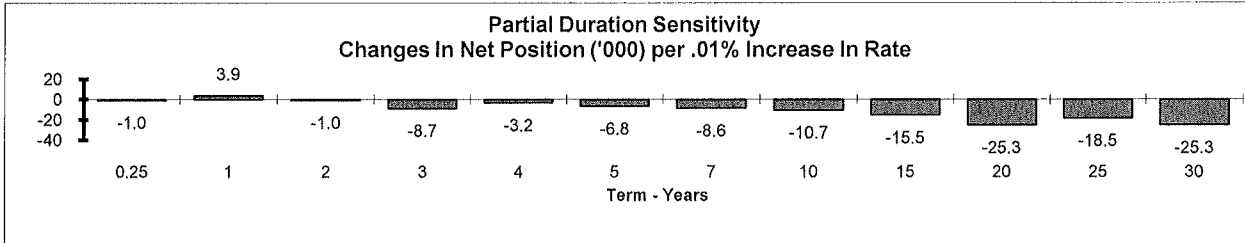
**GROUP BENEFITS**

**Effective Duration (Price Sensitivity to Parallel Shifts in the Yield Curve)**

The effective duration of assets exceeds the duration of liabilities by 1.51 year. The difference between the dollar duration of assets and liabilities is 1,206,000,000. This significantly exceeds the guideline of +/-630,000,000.

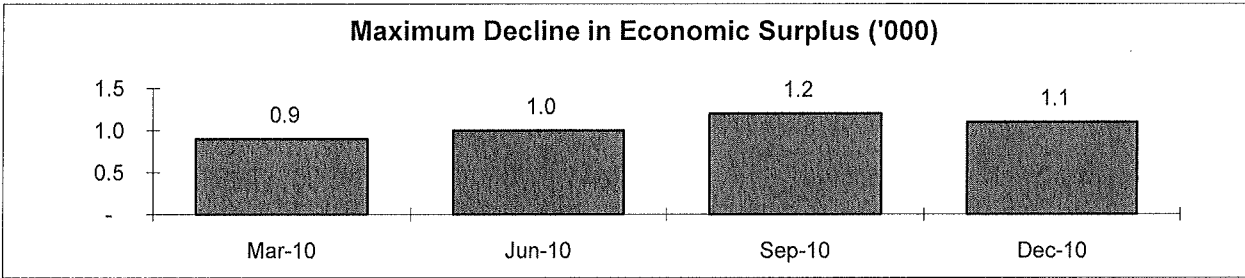
**Partial Duration Sensitivity Analysis (Price Sensitivity to Specific Rate Changes)**

The exposure tends to be at the longer durations, where an increase in interest rates will create a loss. All measures are within the 630,000 guideline.

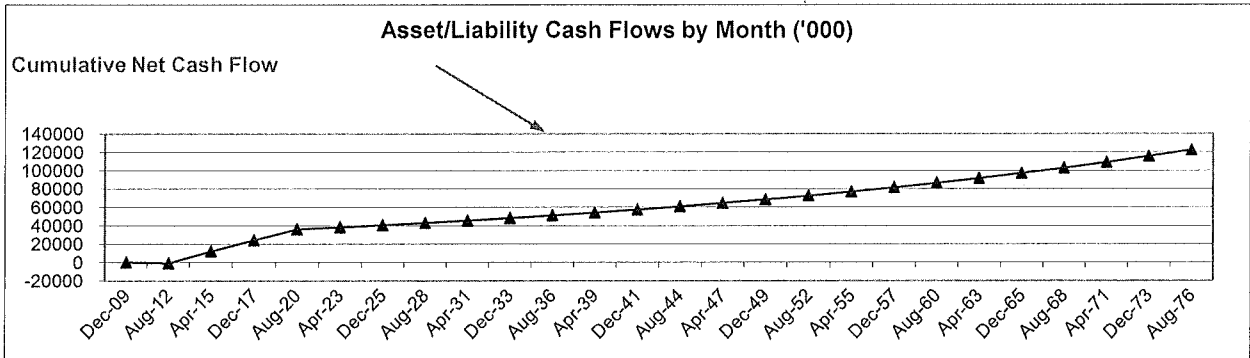


**Scenario Testing**

The maximum decline in economic surplus at the 95% confidence level stands at \$1.1 million, and is the result of a slow decrease in interest rates.



**Cash Flow Analysis**





# Byrd Ratings & Analysis

1 Byrd Drive, Capital City

ph 123/555-6500

www.ByrdR&A.com

February 10, 2010

A. Hugh Dodo, CFO  
Wonka Life Insurance Co  
411 Main Street  
Zoo Falls 54321

Dear Hugh

Time once again for Byrd Ratings & Analysis' annual review of Wonka Life. I will call you next week to set up a date. Ideally, Paula Silver, Director of our Financial Services Practice, and I would like to meet with Wonka Life sometime in early April. As in past years, we will come to your offices for a day of meetings with your senior management team. Count on the presentation from Wonka Life taking the first half of the meeting; the second half will be a free form Q&A with your management. We can finalize the agenda during next week's call.

I apologize that we did not meet with your company's management last year. However, let me assure you that Byrd's professional financial services analysts performed a thorough review of Wonka Life utilizing publicly available information.

Attached is Byrd's rating rationale from last year. Please look through this document and make note of any changes you feel are necessary. In addition, we will need your 2009 financial information to be provided in the same format as in past years. I would like to receive that in advance of our meeting.

I note that the Byrd Financial Wherewithal Rating<sup>TM</sup> (commonly known as the "Byrd Rating") for Wonka Life is currently **A-** with a negative implication. It is rare for a company's rating to carry a negative implication for two years. We would like to resolve the issues surrounding the negative implication during this review cycle of Wonka Life.

I have also attached the Byrd Liquidity Standards. In light of the current economic conditions, our economic modeling group is considering some revisions to the scenarios. Since liquidity is likely to be a future discussion topic, I thought I might as well start with our current standards.

Sincerely

Otto Gold  
Director  
Financial Services Rating Bureau  
Ph 123/555-6534  
[OGold@ByrdR&A.com](mailto:OGold@ByrdR&A.com)

Cc Paula Silver, Byrd Ratings & Analysis

When it comes to ratings, clearly you need Byrd

## Byrd Ratings & Analysis

### Insurance Enterprise Liquidity Standards *under review*

#### Rating Standards

<b>Rating Level</b>	<b>Stress Liquidity</b>	<b>Base Liquidity</b>
A+ (Superior)	0.71+	2.01+
A (Robust)	0.31-0.70	1.81-2.00
A- (Stable)	0.21-0.30	1.71-1.80
B+ (Fair)	0.11-0.20	1.01-1.70
B (Troubled)	0-0.10	0-1.00

Liquidity standards represent the ratio between liquid assets and projected demand liabilities under a specific scenario. Stress Liquidity is measured over a 6 month timeframe in a chaotic market. Base Liquidity represents a going concern analysis with a one year timeframe and standard cash flow testing assumptions.

Achieving the liquidity standard does not automatically imply qualification for a particular rating level.

Rating levels corresponding to liquidity standards are general guidelines to be used in conjunction with the full Byrd rating process.

## WONKA LIFE INSURANCE CO

411 Main St  
Zoo Falls 54321  
Ph 123/555-0000 Fax 123/555-0006

### Byrd Financial Wherewithal Rating™

Based on our opinion of the company's financial strength, it is assigned a **Byrd Financial Wherewithal Rating™ of A-** (Super). The company's Financial Size Category is Class VIII.

### Rating Rationale

Rating Rationale: The rating for Wonka Life reflects the company's strong capital position, fine operating performance and the long-term stability of its management. However, profitability has not been strong and Wonka will face new challenges as a public company. Future sales remain a question mark.

### Rating History

Date	Byrd Rating
12/12/1974	A+
10/5/1983	A
9/21/2008	A-

### Business Review

Wonka Life Insurance Company began operations in 1904. For most of its history, it has been controlled by the Lyon family. R. Tomas Lyon is its fourth generation leader. Earlier in 2008, Wonka completed a demutualization and issued public stock.

Wonka made its name selling innovative term life insurance at very aggressive rates. That continues to be a hallmark of the company today. The majority of the company's earnings come from the term life line of business.

The company's ventures outside of the term life insurance line have not been as profitable. Wonka's Long-Term Disability line has yet to show consistent results. Variable annuities have been marginally successful and have helped the company reach a more affluent class of customers.

Wonka's started its Guaranteed Investment Contracts (GIC) business in the early 1980's and has generally managed it well. Investment operations have not performed as well and there is some concern if the low interest rate environment persists. However, the company has seen increasing income in this line over the past few years.

The GIC business is viewed as a nice complement to Wonka's other businesses. The customers and the distribution system used to reach them are much different than those for the other lines of business.

With the demutualization earlier in 2008, Wonka has set some very aggressive growth targets. The company appears to have the capital to fund this growth internally; however the plan to actually achieve sales at these levels remains unclear.

### Earnings

Wonka's earnings have benefited over the years from investment income on its very strong capital position. We expect this source of earnings to decline in the future as the company attempts to grow its business in a very competitive market. The current low interest rate environment will also continue to put pressure on earnings.

Prior to its demutualization in 2008, the company did not break out results by business segment. The numbers attributable to those business segments for years prior to 2008 below are approximate.

### Profitability Analysis (in millions of dollars)

Net Op Gain	2008	2007	2006	2005
Corporate	8.7	6.2	5.4	6.1
Term, Whole Life	2.1	3.4	1.1	4.2
Universal Life	1.3	2.6	1.7	1.5
Deferred Ann.	2.1	1.9	6.5	3.7
Payout Ann.	3.1	4.5	6.2	1.2
GIC	6.2	5.9	2.4	3.0
Disability	3.2	(4.4)	(1.2)	0.3
Other A&H	(1.9)	3.2	0.6	(1.1)
Total	24.8	23.3	22.7	18.9

### Capitalization

Wonka's capital and surplus at the end of 2008 totaled nearly \$600 million). While the company continues to maintain a very strong capital position, the level of capital and surplus is not really comparable to prior years due to the demutualization in 2008.

We note that the company continues to operate without any long-term debt. While there is capital to fund available growth opportunities, Wonka has stated that their desired long term capital structure would be 30% debt. However, at this time there are no immediate plans to reach this target structure in the near future.

**Sources of Capital Growth**  
(in millions of dollars)

Year	Net Gain	Cap Gains	Change AVR	Other Changes	Change in Cap & Surp
2005	18.9	1.2	(0.5)	--	19.6
2006	22.7	8.7	(0.3)	(25.0)	6.1
2007	23.3	(6.6)	(0.3)	15.0	31.4
2008	24.8	3.1	0.8	235.0	263.7

**Capital Trends**  
(in millions of dollars)

Year	Capital & Surplus	Stkhldr Divds	Policy Divds	AVR	IMR
2005	297.1	n/a	0.0	0.7	0.9
2006	303.2	n/a	0.0	0.4	0.9
2007	334.6	n/a	0.0	0.1	0.8
2008	598.3	14.2	0.0	0.9	1.2

**Investments and Liquidity**

Default experience in the fixed income portfolio has been very good and can be viewed as much better than industry averages over the past five years.

Wonka's liquidity position has been dropping over the past few years as they have increased their allocation of investments to longer-term non-investment grade bonds and real estate in order to boost yields.

**Liquidity Tests**  
(ratios except for Cash Flow)

Year	Operating Cash Flow	Stress Liquidity	Base Liquidity	Non-Invest Grade Bonds to Capital
2005	63.5M	0.62	2.10	0.1
2006	11.2M	0.33	1.90	0.2
2007	11.0M	0.35	1.85	0.6
2008	11.8M	0.27	1.73	0.9

**Investment Yields**  
(as a %)

Year	Net Yield	Mort-Bonds	Cash & Sh Trm	Inv Exp Ratio	
2005	6.90	6.88	7.66	5.02	8.88
2006	6.92	6.70	7.59	5.22	10.24
2007	6.78	6.66	7.60	4.87	7.25
2008	6.54	6.41	7.34	4.64	11.05

**Investment Data**  
(in millions of dollars)

2008 distribution of bonds by maturity

	Years					yrs avg mature
	0-1	1-5	5-10	10-20	20+	
(% allocation)						
gov	....	0.9	0.3	.....	.....	4
gov agency	....	0.1	1.7	0.5	0.8	13
pub util	....	0.7	1.9	.....	.....	6
industrial	2.3	35.0	43.7	10.9	0.3	7
cap loans	....	0.2	0.3	0.3	.....	9
Total	2.3	36.9	47.9	11.7	1.1	7

	2008	2007	2006	2005
Bonds (Bil)	5.2	4.8	4.9	4.2

(% allocation)	2008	2007	2006	2005
gov	1.2	4.7	5.6	7.4
gov agency	3.2	1.7	1.9	2.1
pub util	2.6	6.2	8.4	6.8
industrial	92.1	86.3	82.2	81.4
cap loans	0.9	1.0	1.8	2.2
private	16.3	18.4	24.4	22.6
public	83.7	81.6	75.6	77.4

	2008	2007	2006	2005
Bond Quality (%)				
Class 1	67.9	70.6	73.1	79.6
Class 2	21.3	22.3	24.9	18.6
Class 3	7.1	4.3	2.0	1.8
Class 4	2.3	1.7	.....	.....
Class 5	.....	.....	.....	.....
Class 6	1.4	1.1	.....	.....

	2008	2007	2006	2005
Mortgage and RE (Bil)				
Mortgages	0.3	0.4	0.4	0.3
Real Estate	0.2	0.1	0.3	0.4

	2008	2007	2006	2005
Other Assets (Mil)	25.1	18.9	21.4	22.4
Cash & Short Term	10.7	7.7	9.1	8.9
Equity & Derivatives	6.7	4.7	6.0	6.4
All Other	7.8	6.5	6.4	7.1

## **History**

**Incorporated** -- August 8, 1904

Originally formed as the Wonka Friends Assessment Society in 1904. Purchased by the forerunner to Lyon Enterprises in 1905. Changed to a legal reserve Mutual life insurance company in 1929. In 2008 converted to a stock insurance company through an IPO and took on the current name.

## **Officers**

Chairman of the Board, President, CEO and COO R. Tomas Lyon, IV; Executive VP-Planning, Henri Jay; Sr VP & Chief Counsel, Kate Finch; Sr VP-Administration, Odette Bird; VP-CFO, A. Hugh Dodo; VP-CMO, Danielle Wolfe

## **Directors**

Hermine Dauphin, Jeanne Z. Holstein, R. Tomas Lyon IV, Karl Palomino, Ivan X. Salmon

## **Reinsurance**

Wonka Life utilizes a YRT reinsurance agreement with facultative support with Rose Reinsurance for their Term Life Insurance business. In addition, Wonka has coinsurance coverage through Rose Reinsurance on their disability business.

## **Regulatory**

An examination of the financial condition was made as of December 31, 2007 by the state insurance department. An annual, independent, audit of the company is conducted by the accounting firm of Brown & Company.

**Territory:** Wonka Life is licensed in all states except New York.

# Wonka Life Insurance Company

400 Main Street – Zoo Falls 54321

April 6, 2010

Mr. Otto Gold  
Director  
Financial Services Rating Bureau  
Byrd Ratings & Analysis  
1 Byrd Drive, Capital City

Dear Otto:

It was good to see you and Paula again last week. We certainly had a thorough discussion! I was a little surprised, though, at how much importance you seemed to place this year on processes and procedures. Our presentation was focused almost exclusively numbers because I have always felt that numbers drive results.

I am taking this opportunity to address a few of the topics you raised at the meeting for which either we did not have a sufficiently organized response, or you did not seem to understand or appreciate the response that we offered.

## Asset/Liability Management

I am very proud of the work we have done in this area. We have had our processes in place for some time now.

For interest sensitive liabilities we monitor Macaulay duration, which is a well-established measurement at Wonka. Within each of these blocks of business, we periodically measure the duration of the assets and liabilities. If these measures begin to drift apart, we rebalance our asset portfolio such that its new duration approaches that of the liabilities. The liability duration is measured as part of our semi-annual cash flow testing exercises. This immunization approach has worked in the past.

As mentioned during your visit, John Badger manages our hedging for the VA GMDB. He is our Head Derivatives Trader and reports directly to Peter Fish. John came from the Crimson Sardine Hedge Fund a year ago, and has helped us to avoid losses on our GMDB guarantees. He uses an ad hoc approach based on In-The-Money (ITM) and CTE measures from a stochastic analysis of the guarantee. His extensive experience working in the hedge fund business has made his ad hoc approach not only effective from a loss perspective, but also cost-effective.

Wonka has long term goals of moving to a more systematic approach, especially with our new VA Plus product, which has guaranteed living benefits, as well as death benefits. This long term plan involves utilizing liability portfolio characteristics, such as delta, gamma, vega and rho. However, John Badger does not have a timeline for this methodology change at this time.

## Internal Control

We have a very strong audit department, reporting to our CFO. These people have years of experience in detecting possible fraudulent claims and other such problems. In fact, we have

one staff member who was a pioneer in systems auditing. He works very closely with our IT department and makes sure he knows what is going on throughout our systems. Each quarter, Mark Peacock prepares a report for the Audit Committee of the Board. This report shows all exceptions to control limits that occurred in the past quarter. It also lists any audits performed on company processes that occurred during the past quarter.

Compliance is handled within the product/pricing area. As part of their research into developing a product, the pricing actuaries are expected to ensure that their products comply with current regulations. Additionally, Wanda Fox, our chief actuary, keeps up to date on any regulatory trends on the horizon, such as Fair Value. If any of these new concepts were implemented for regulatory or accounting purposes, Wanda would direct her staff accordingly for future pricing and financial reporting.

As I explained at the meeting, we have an ERM officer now, Bill Buck. He has set up a Risk Management committee to gather information on what is happening around the company. When he and his committee detect any risks that they feel should be of concern, Bill creates a documentation memo about it for his boss, Henri Jay. If Henri feels that Bill's recommendation has merit, he will forward it to the manager of the department involved.

We have a great Board of Directors, a group of people who are used to each other and who communicate with each other regularly, both professionally and socially. Because of this closeness, the Board rarely has disagreements and our meetings go smoothly. I am very proud of the job the Board has done, and I'm proud to be a part of it.

The CFO reports to us at each Board meeting about what is going on within the company. As I mentioned before, numbers drive results, so I believe it is critically important that the Board hear from and interact with our CFO on a regular basis. Over the years, we have developed detailed financial metrics that the CFO uses to lead those Board discussions

As I mentioned, I was surprised with your questions concerning processes and procedures. I noted your concerns that Senior Management does not take an active role in enforcing the company's policies and procedures and that there is no documentation of a plan in place to achieve the company's strategic goals. Mark Peacock's exceptional audit team reviews all business processes on a regular basis. I am planning on having Mark start sharing his Board report with the senior management team to help make senior leaders more aware of their role in ensuring the company complies with documented procedures in the future.

I hope this gives you an organized view of the internal controls and demonstrates to you that things go smoothly at Wonka.

#### Management of Specified Risks

*Credit Risk* – Although we don't have quantitative targets, we are comfortable with our current credit profile, and Peter Fish and his Investments team are very good about not straying too far away from this credit allocation. When I followed-up with them after our meeting, they reminded me that they also watch concentration to both corporate entities and industry sectors. Wanda Fox, our chief actuary, is also cognizant of the concentration of counterparty risk with reinsurers, which was included in the material we presented to you.

*ALM and Market Risk Control* – I already covered our ALM process above, but in addition, I would just like to mention how well Wanda Fox and Peter Fish work together in sharing information to make this work. The ALM activities are formally in Wanda's area but she is very dependent, of course, on Peter's cooperation to get everything to come together. At the end of each year, we close that year's block of new investments and liabilities and Wanda prepares a

report showing how the durations have been matched. She also takes a look at the prior years' blocks and lets Peter know if any of them have strayed too far with respect to the difference between total assets and total liabilities. If they have diverged too much, she lets Peter know and she makes sure that he transfers the appropriate assets to get the balances evened up. Also, before he left, Hugh Dodo wrote his proposal for liquidity risk management. He was very comprehensive and detail-oriented when it came to analyzing new things. All the top financial management has a copy of that proposal to use in case of any liquidity problems.

*Operational Risk* – As I explained in our meeting, here again we really benefit from our strong team and the fact that they have been working together for so long. Our new ERM officer is taking care of working with the various departments to gather up everyone's ideas about risk and sort them out into a report. He will be able to share this throughout Wonka's management and, of course, we will be happy to share it with Byrd Ratings. As I mentioned above, we have a strong audit team, including one person with a special focus on IT security issues.

### Economic Capital

I found our discussion on different types of financial reporting systems to be very enlightening, as well as challenging! The message I took away was that the outside world's expectations are growing that we will build our own Economic Capital model tailored to our own particular risks, rather than relying on statutory and regulatory formula-based capital requirements to determine whether the company is financially strong enough.

As I mentioned at the meeting, Wanda Fox has been providing updates from time to time on the changes going on in Europe and Canada, and new concepts that are gaining acceptance, such as Fair Value and Economic Capital. You will be happy to know that earlier today I sent her a memo instructing her to get started on planning the implementation of Economic Capital at Wonka.

I hope this additional information helps you get more comfortable with the processes here at Wonka. Please let me know if I can be of any further help.

Sincerely,

R. Tomas Lyon, IV  
Chairman, President, CEO and COO



# Wonka Life Insurance Company

MEMORANDUM

April 13, 2010

TO New CFO  
FROM Henri Jay  
RE Liquidity Risk

I am forwarding to you a memo I just received from Bill Buck, Second Vice President—ERM. I think that Bill's concerns are valid and that liquidity is an important issue for the new CFO to address.

Bill and I are happy to provide ideas and do footwork to support related projects, but when it comes to getting the right people to hear just the right words at just the right time, well, we are smart enough to look for just the right people to do it.

Hugh Dodo had attempted to get this ball rolling once before, but all that remains of that attempt is a rough draft of Hugh's initial ideas, which Tomas distributed to various executives, but has never discussed with anyone, including Hugh.

Among Hugh's ideas was a proposed liquidity management framework. Below is the summary of the framework:

<b>Responsibility</b>	The Investment Division has the ultimate responsibility to manage the liquidity risk.
<b>Methodology</b>	Calculate the Liquidity Ratio as of the currently quarterly valuation date. The ratio measures Wonka Life's exposure to liquidity risk as of the most recent quarter end. <b>Liquidity Ratio</b> = Cash & Short Term Assets / Demand Liabilities
<b>Scenarios</b>	The ratio will be calculated under two Scenarios: <b>Normal Scenario:</b> This scenario reflects the normal business but with management's best estimate as to sales or cash flows. <b>Panic Scenario:</b> This scenario is intended to cover a "run on the bank." Situation. Withdrawals should be set at a level that reflects anticipated policyholder reaction to a complete loss of confidence in the financial institution.

Would you be willing to provide some bullet points for a memo to the Board, describing liquidity risk and recommending methods of managing it? Perhaps if we make sure we are focusing our communication on the key items, and we work together to figure out the who and when, we can get things moving in a positive direction.

Welcome aboard!

Wonka Life.....It's your life™

# Wonka Life Insurance Company

MEMORANDUM

March 26, 2010

TO Henri Jay  
FROM Bill Buck  
RE Liquidity Risk

Henri, during my survey of Wonka's key risks, I have become particularly concerned about liquidity risk. I have a feeling I am not the only one. I think that our liquidity condition is one of the issues Byrd has with Wonka, that has resulted in the "negative implication" on our A- rating with them. The Liquidity Test numbers from the 2008 rating report certainly show a decreasing trend.

I need to account for liquidity in the ERM model I am building. As I consider the balance sheet as of December 31, 2009, I would like to make sure I have a good grasp of Wonka's liquidity ratios. Are they currently calculated? If so, how are they defined?

I realize that the balance sheet looks just fine and that most people would say that there are enough assets to cover all liabilities. But what if current market conditions were to worsen and trigger a run-on-the-bank scenario?

# Wonka Life Insurance Company

MEMORANDUM

April 15, 2010

TO New CFO

FROM Wanda Fox

RE Risk Adjusted Pricing

The Actuarial Pricing team has just completed the development of a new Term Insurance Portfolio. This represents the first time that Wonka has priced using risk adjusted measures (one of the components of the new strategic risk management process.)

As a result of the new risk adjusted measures, prices needed to increase for the longer duration Term plans. While this was justified based on the results of the pricing analysis, I am concerned that Term Insurance is now on an unlevel playing field vis-à-vis our other products since none of Wonka's other products are priced using risk adjusted measures.

I would like to set up some time to discuss this further with you. I look forward to your thoughts on this issue.

----- Original Message -----

**From:** "Sam Otterman" @wlic.com  
**To:** "Fox, Wanda" FoxW@wlic.com  
**Sent:** July 10, 2010 3:17PM  
**Subject:** Re: Interest rate scenarios for ALM

Wanda,

Thanks for your note. I really thought our meeting yesterday was very productive. The current interest rates that we are using are the US treasury rates given below:

Current yield curve: Treasury yields by maturity

Date	1 mo	2 mo	3 mo	1 yr	2yr	3yr	5yr	7yr	10 yr	20 yr	30 yr
07-08-10	0.17	0.15	0.19	0.3	0.63	1.01	1.80	2.48	3.04	3.81	4.00

The following three tables provide the rates used for three stress scenarios:

Stress Scenario #1: Treasury yields by maturity (actual rates on 01-30-08)

1 mo	2 mo	3 mo	1 yr	2yr	3yr	5yr	7yr	10 yr	20 yr	30 yr
1.93	2.21	2.29	2.30	2.30	2.44	2.96	3.32	3.78	4.45	4.44

Stress Scenario #2: Treasury yields by maturity (actual rates on 04-11-08)

1 mo	2 mo	3 mo	1 yr	2yr	3yr	5yr	7yr	10 yr	20 yr	30 yr
0.90	1.19	1.40	1.52	1.76	1.94	2.57	2.97	3.49	4.28	4.30

Stress Scenario #3: Treasury yields by maturity (actual rates on 01-30-09)

1 mo	2 mo	3 mo	1 yr	2yr	3yr	5yr	7yr	10 yr	20 yr	30 yr
0.15	0.24	0.36	0.51	0.94	1.32	1.85	2.27	2.87	3.86	3.58

All the intermediate rates were calculated using smoothing splines with variable roughness penalty. I've chosen the 11 rates that you provided as key-rates. I've done preliminary analysis of the key rate durations for each portfolio.

## Quarterly Product Report Wonka Product Committee

### **Individual Life and Annuity**

**Traditional Life** includes all non-interest-sensitive individual life products and is predominantly comprised of non-par term and whole life. Guaranteed interest on whole life policies ranges from 3% to 6%. Policyholders can take out policy loans against any cash surrender value. A maximum loan rate of 7% exists on older policies. The duration of the traditional life liability cash flows tends to be fairly long. It has been difficult to find assets with suitable characteristics to effectively match these liabilities. The liabilities in the traditional life segment are supported by \$300 million of assets.

**Non-Traditional Life** consists entirely of universal life. Universal life policyholders can direct their investments into a number of interest bearing or equity-linked accounts. Interest bearing accounts generally credit a portfolio average rate and have a minimum credited interest guarantee of 4% across the board. Because Wonka incurs significant costs associated with the acquisition of this business, even though the present value of future fund profits exceeds the present value of all future benefits and expenses, it will not have the hard assets to invest at issue in order to match the interest rate exposure of the liabilities. This situation creates significant reinvestment rate risk. To further complicate matters, the embedded options present in universal life mean that the liability cash flows will not be fixed and will vary with interest rates. The liabilities in the non-traditional life segment are supported by \$400 million of assets.

**Accumulation Annuity** contains all individual flexible and single premium deferred annuities. Assets total \$1.5 billion. Most funds are available for withdrawal at a book value basis. Surrender charges decline to 0% over a 5-7 year period. Minimum guarantees are generally in the 3-4% range but there is a \$500 million block of annuities that have a 5% minimum guarantee. This latter block was sold with a 6% cliff surrender charge and will be reaching the end of the surrender charge period in the next year (i.e. the surrender charge will go from 6% to 0%). There is also a \$250 million block of MVA (market value adjusted) annuities included in this segment. The Accumulation Annuity portfolio has been the subject of much modeling scrutiny over the years to better understand the product profitability and risk profile. Actuaries at Wonka have internally flagged each asset purchase in the portfolio to a particular product in order to support a more detailed level of analysis.

**Equity Linked GICs** offer the return of principal after five years, plus 75% of the percentage increase of the S&P 500 total return index over that five year period (if positive). As at December 31<sup>st</sup>:

- assets total \$55 million (held in separate accounts)
- remaining term to maturity of GICs is 4.5 years
- current percentage increase of the S&P 500 total return index since issue is 6%
- volatility of the S&P 500 index equals 18%
- S&P 500 total return index is expected to grow at 15% / year

**Variable Annuities** include a guaranteed minimum death benefit, which, upon death of the policyholder, will pay the maximum of the current account value and the deposits accumulated at 5%. Upon surrender, the market value less surrender charges is paid. The benefit is reduced dollar-for-dollar on partial surrenders. For example, assume a policy holder elects to take a \$10

partial surrender of the \$100 Account Value when the GMDB is \$110 after the surrender charge wears off. As a result of the partial withdrawal, the Account Value would be reduced by \$10 to \$90 and the GMDB would also be reduced by \$10 to \$100. Therefore, the dollar amount of the GMDB exposure in excess of the Account Value remains constant, but increases as a percentage of the Account Value.

***Separate Accounts for Variable Annuity and Variable Universal Life*** assets are invested in various externally managed mutual funds. Policyholders may transfer between the funds offered, make new deposits, and withdraw money, subject to a surrender charge.

## **Institutional Pensions**

***Payout Annuity*** contains pension buyout annuities in both immediate and deferred status, supplementary contracts arising from life and annuity contracts, and structured settlement annuities. This segment was established to hold intermediate to long-term income payment streams that may or may not include life contingencies. Structured settlement annuities contain standard and substandard life contingent annuities, non-life contingent streams and some COLA (cost-of-living adjustment) escalators. Assets total \$700 million.

***Guaranteed Investment Contract (GIC)*** includes both single deposit and window GIC's. This segment holds \$1.5 billion of assets. \$200 million of the portfolio consists of funding agreements that are puttable with 60 days notice. \$100 million of the portfolio consists of floating rate funding agreements, payable in Euro's, which mature over the next 5 years. The remaining liabilities are benefit-sensitive contracts with institutional pension plans, which mature over the next 5 years.

***Separate Account Institutional GIC*** offers single deposit and window GICs to larger institutional clients. For accounts larger than \$150 million, the company will offer to set up a separate portfolio for one client, with its own asset allocation targets. Administrative fees are reduced for the commingled accounts, which are available to clients with at least \$25 million. While the institutional client owns the market value of its share in the separate account, the individual participants receive interest credited to the book value of their individual accounts. Wonka annually resets the crediting rates, so that the market value gains and losses in the commingled account are shared with participants. The general formula used to set the credited rate is as follows:

*Credited rate*

$$\begin{aligned} &= \text{Market yield of separate account} \\ &- \text{Administration fees} \\ &+ (\text{MV separate account} - \text{BV individual accounts}) / (\text{Duration of separate account}) \end{aligned}$$

In addition, Wonka guarantees that the market value of each separate account will never be less than 80% of the book value of the individual accounts associated with it. Wonka does not offer synthetic GICs.

## **Group Benefits**

***Group Long-Term Disability*** pays up to 70% of an employee's salary prior to the disability claim. Premiums are paid through payroll deduction. Premium rates are guaranteed for 2 years. Claims incurred stay with Wonka even if the employer changes its insurance carrier for new

business. The current product provides “own occupation” benefits generally for two years from the date of incurral, after which payments continue only if the claimant is unable to work at all. Wonka offers rehabilitative services and counseling where it may be effective, usually through the first four years of a claim. Claim runoff is such that reserves at claim duration 10 are expected to be about 10% of the reserve at date of incurral. There is no cash surrender benefit to either individual claimants or group policyholders. The claim liabilities and unearned premium in respect of the group LTD segment are backed by \$500 million of assets.

**Other A&H** includes short-term group medical, dental, and term life products. These products are sold through the same group benefits general agents who distribute the company’s LTD product. The company competes on strong underwriting and customer service. The products are repriced at least annually to meet profitability targets. While investment margins are material, they are seen as independent of underwriting margins. Earned premium to surplus leverage is low, at about 4/1. The claim reserves and unearned premium in respect of the other A&H segment are backed by \$130.8 million of assets.

**Surplus Account** contains the surplus capital. The Surplus Account is managed to maximize total rate of return growth over time subject to a series of constraints related to liquidity, bond ratings and operating income versus surplus income concerns. Company guidelines require an asset mix of 10-70% in equities, 0-50% in real estate, and 5-90% in bonds. The target asset mix is 50% equities, 35% real estate, and 15% public and private bonds.

March 19, 2010  
Wanda Fox, Chair Product Committee

*From the desk of*  
**R. Tomas Lyon, IV**

April 6, 2010

To Wanda Fox

Re Economic Capital

Please put together a memo that outlines what is involved in getting us from where we are today to where we need to be in order to implement Economic Capital (EC) at Wonka.

I am becoming a believer in the EC framework you have been recommending. After listening to the rating agency speakers (including Otto Gold from Byrd Ratings & Analysis) at the industry conference earlier this week, I am convinced that EC has moved from just an expensive "nice to have," best practice item to almost a minimum standard of competence. We need to meet that challenge quickly.

Considering your prior updates on EC and based on some discussions with Byrd, articles I have read and conversations I have had with heads of other insurance companies. I think I have a pretty good handle on what needs to be done. Without a new CFO in place, I will be personally involved in this effort. Below are elements that I believe should be considered in our EC plan.

1. Cost. Please be sure to keep costs as low as possible.
2. IT. Please use existing systems and hardware as much as possible.
3. Definition of EC. It seems to me that there is a lot of confusing terminology out there. Please be specific about what definition Wonka should use and what it means, exactly. Keep in mind all interested parties, and how to minimize the number questions they will be likely ask. While you're at it, it might also be good to jot down some reasons we can give different audiences for why we are doing this and what goals we hope to accomplish.
4. Frequency of calculation. I don't want to give this thing a life of its own. Please see if we can piggy-back our calculations from our routine semi-annual cash flow testing.
5. Borrow where possible. I also don't want to reinvent the wheel. Similar to the calculation frequency, see if you can use our conservative cash flow testing models. For risks not explicitly modeled, like operational risk, let's try to use some kind of factor model with relevant exposures. We can start by borrowing Byrd's factors for these risks, and as we gain experience we can substitute our own measures and methodologies.
6. Methodology. I want to make sure we use the one-year mark-to-market approach (I think that's what it's called) because Jack Benson over at Hearth and Home told me that he knew of a company that used the other method and ended up

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spending way too much time. Please limit as much as possible the number of times this thing has to be rerun for different scenarios.

7. Type of information needed. To the extent possible please figure out what inputs and outputs could be piggybacked with other systems or reports that are currently in use. Also, if there is any kind of related need that you foresee in the near future, please incorporate that as much as possible in planning this EC effort so that we use our resources efficiently.
8. Resources needed. Please make sure we can do this with the people we have. It's OK to outsource some of it for peak times while it is in development, if it does not cost too much. If there are any decisions like this to be made, be sure to show me the differences not only in cost but also how much time would be saved.
9. Threats and Opportunities. As long as you are going through this thought process, it would be great if you could put together a list of problems we might run into and decision points that are likely to come up along the way. Also, anything you can give me that would help to tell the story to Byrd and the shareholders about why the way we are going about it is the best way would be helpful. And, it would also be prudent if you could list any objections you think they might have about what we are doing or how we are doing it.

Given the strong interest by Byrd, it is very important that we make this a top priority and get started as soon as possible. We should keep the Byrd people informed of our progress along the way. Some day I hope to convince them that Byrd's target capital figures are too conservative and not a good measure for Wonka. Through EC calculations will help with that argument.

While I realize there is a lot to do, this is very important for Wonka. Can you have an initial draft to me in a week or so?

Thanks,  
Tomas

R. Tomas Lyon, IV  
Chairman, President, CEO and COO  
Wonka Life Insurance Company

# Wonka Life Insurance Company

MEMORANDUM

November 13, 2010

TO New CFO

FROM Peter Fish

RE Employees' Pension Plan

Below is an outline of the financial position of our Employees' Pension Plan and its target asset allocation as well as a summary of its risk profile. I am concerned whether the plan's asset allocation policy and some of its investments are appropriate and believe we should be more engaged in setting and reviewing the investment strategies of the Plan.

The next meeting of the Investment Committee is in a few weeks and we should have a discussion on how to achieve our required rate of return objective for the Plan. But we should not forget about our risk tolerance and our risk mitigation options.

<b>Funded Status (12/31/10) – Market Values (\$ Million)</b>			
Assets	\$321.4	Assets/Liabilities	94.5%
Liabilities	\$340.2	Service Cost for 2011	10.1
<b>Target Asset Allocation (12/31/10)</b>			
Domestic Public Equity	30.0%	Domestic Fixed Income	10.0%
Domestic Private Equity	10.0%	Foreign Fixed Income	10.0%
Foreign Equity	15.0%	Hedge Funds	10.0%
Real Estate	15.0%	Cash	0.0%
<b>Risk Profile</b>			
Expected annual return on assets	8.0%	Fixed income duration	5.1
Standard deviation of annual return	12.5%	Liability duration	17.1
Expected liability growth (interest only)	5.5%	Interest rate hedge ratio	5.6%
Standard deviation of liability growth	13.2%	Standard deviation of funded position vs. liability	13.5%

Would you be willing to provide some bullet points for a memo to the Board, describing our odds of achieving our required rate of return objective and possible changes that could improve these odds? In addition, we need some recommendations on asset management strategies that could be employed to better manage the Plan's overall risk exposures.

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Here is an extract from the Statement of Investment Policies (SIP) of the Plan:

*"The objective of the DB Plan is to maximize return in order to manage the funded ratio and reduce the cash contribution over the long-term at an appropriate level of risk giving consideration to the need to secure the benefits and the company's ability to absorb fluctuations in cash contributions."*

Note the following important facts related to our Plan:

- The Plan assets and liabilities are not contained within Wonka's balance sheet.
- Pensions of all former employees are paid from the pension fund (the Plan is self-administered).
- The pensions of former employees who retired before January 1, 2001, are adjusted annually to reflect any increase in Consumer Price Index subject to a maximum increase of 5% per year.
- For former employees who retired after December 31, 2000, (and all future retirees) these annual cost-of-living adjustments (COLAs) are discretionary and our Board has been reluctant to grant them in recent years because of the weak funded status of the Plan.
- Every time the Board regretted these decisions and hoped that the financial position would improve sufficiently during the following year to allow for at least a fractional COLA.
- Mortality table used to value the Plan liabilities does not incorporate any mortality improvements and the Board is becoming concerned about the longevity risk.
- No derivatives are used by pension fund managers and there is no hedging of any kind as the managers believe that using derivatives is dangerous.