

## *Exposure Draft*

# Exposure Draft for Revised Standards of Practice, Section 2500 – Dynamic Capital Adequacy Testing

Actuarial Standards Board

July 2010

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## Memorandum

**To:** All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries and Other Interested Parties

**From:** A. David Pelletier, Chairperson  
Actuarial Standards Board  
Jacques Tremblay, Chairperson  
Designated Group

**Date:** July 7, 2010

**Subject:** **Exposure Draft to Revise the Standards of Practice – Dynamic Capital Adequacy Testing – Section 2500**

**Comment Deadline: September 10, 2010**

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### INTRODUCTION

The attached exposure draft was approved by the Actuarial Standards Board (ASB) on June 3, 2010. It represents a revision to the existing Standards of Practice – Dynamic Capital Adequacy Testing – Section 2500.

A notice of intent on this subject was published on December 21, 2009, with a comment period ending on February 28, 2010

(<http://www.actuaries.ca/members/publications/2009/209136e.pdf>).

### BACKGROUND

In 2009, the Office of the Superintendent of Financial Institutions (OSFI) published Guideline E-18 (Stress Testing), available at the following link: [http://www.osfi-bsif.gc.ca/app/DocRepository/1/eng/guidelines/sound/guidelines/e18\\_e.pdf](http://www.osfi-bsif.gc.ca/app/DocRepository/1/eng/guidelines/sound/guidelines/e18_e.pdf).

That document sets out OSFI's expectations with respect to stress testing. Dynamic capital adequacy testing (DCAT) was identified as one example of stress testing for insurers. At the time, the Actuarial Standards Board (ASB) proposed to revise Section 2500 to ensure consistency with Guideline E-18, as appropriate.

The following areas were identified as potential changes:

1. the definition of “satisfactory financial condition” (SFC),
2. the Appointed Actuary's (AA) opinion,

3. how reverse stress testing would be performed, and
4. with respect to frequency and timing: remove the reference to “annual” reporting and address up to date data.

## **SUMMARY OF PROPOSED CHANGES AND DESIRED OUTCOMES**

Upon further review, it was decided that the contents of Guideline E-18 extended beyond the scope of DCAT itself, so not all elements of Guideline E-18 were incorporated. Specifically, the concept of reverse stress testing was left out of this revision, as no guidance (such as an educational note) exists on the topic. The ASB will consider whether a new section within the Standards of Practice is warranted for the additional items included in the guideline.

A revised definition of “satisfactory financial condition” was developed, incorporating the concept of “targeted” regulatory capital, in addition to “minimum.”

Changes were made to the Appointed Actuary’s opinion which is now described as a Statement. The sentence “In my opinion, the [future] financial condition of the company [is satisfactory under these assumptions or is not satisfactory for the following reason(s)...]” was deleted. The rationale for this decision is that the emphasis of the dynamic capital adequacy testing is on the analysis itself (worthiness of the process) within a company’s risk management framework.

The listing of risk categories was expanded to incorporate additional risks enumerated in Guideline E-18.

As per the notice of intent, references to “annual” reporting were removed. As well, provisions governing the timeliness of data, methods, and assumptions were added.

## **COMMENTS RECEIVED ON THE NOTICE OF INTENT**

Two comments on the NOI were received—from a CIA member, and from the Autorité des marchés financiers (AMF). The Designated Group concurred with the member comment, which requested that the concept of reverse stress testing be handled through an educational note. The Designated Group also concurred with the comment from the AMF, and expanded the scope of item 4 above to include methods and assumptions.

## **INTENDED TIMELINE FOR FEEDBACK, DISCUSSION, AND ADOPTION OF PROPOSED STANDARDS OF PRACTICE**

Comments on this exposure draft are invited **by September 10, 2010**. Please send your comments, preferably in an electronic format, to Jacques Tremblay at [jacques.tremblay@oliverwyman.com](mailto:jacques.tremblay@oliverwyman.com) with a copy to Chris Fievoli at [Chris.Fievoli@actuaries.ca](mailto:Chris.Fievoli@actuaries.ca). The only forum planned for submitting comments regarding this exposure draft is the receipt of written comments at the above e-mail addresses.

Feedback is particularly invited on the following issues:

1. Do you agree that the dynamic capital adequacy testing analysis should be based on in-force data that is no older than six months? From a practical point of view would nine months work better?

2. Do you agree that the sentence “In my opinion, the [future] financial condition of the company [is satisfactory under these assumptions or is not satisfactory for the following reason(s) ...]” should be deleted?
3. Are there any other changes with respect to section 2500 that the exposure draft does not address and should be made?

It is hoped that the effective date of the final Standards of Practice will be near the end of 2010, so that the final Standards of Practice would be effective for the insurance company’s DCAT reports published in 2011.

#### **EARLY IMPLEMENTATION**

It is expected that early implementation of the proposed Standards of Practice will not be permitted since the changes represent substantive changes from the existing Standards of Practice.

ADP, JT

## 2500 DYNAMIC CAPITAL ADEQUACY TESTING

### 2510 SCOPE

- .01 This section 2500 applies to the appointed actuary of an insurer when preparing a report on the insurer's financial condition pursuant to law.

### 2520 INVESTIGATION

- .01 *The actuary should make an ~~annual~~ investigation at least once during each financial year of the insurer's recent and current financial position, and financial condition, as revealed by dynamic capital adequacy testing for ~~various~~selected scenarios.*
- .02 *The actuary should make a report of each investigation in writing to the insurer's Board of Directors (or to their audit committee if they so delegate) or its Chief Agent for Canada. The report should identify possible actions for dealing with any threats to satisfactory financial condition that the investigation reveals.*
- .03 *The actuary should also make an interim investigation if there is a material adverse change in the insurer's circumstances. [Effective January 1, 2003]*

### 2530 METHOD

#### Recent and current financial position

- .01 The investigation would review operations of recent years (normally at least three years) and the financial position at the end of each of those years.

#### Dynamic capital adequacy testing

- .02 Dynamic capital adequacy testing examines the effect of ~~various~~selected plausible adverse scenarios on the insurer's forecasted capital adequacy. It would be the actuary's primary tool for investigation of an insurer's financial condition.
- .03 The purpose of dynamic capital adequacy testing is to identify plausible threats to satisfactory financial condition, actions that would lessen the likelihood of those threats, and actions that would mitigate a threat if it materialized.

.04 Dynamic capital adequacy testing is defensive, i.e., it addresses threats to financial condition rather than the exploitation of opportunity.

### **Satisfactory financial condition**

.05 The insurer's financial condition would be satisfactory if throughout the forecast period it is able to meet all its future obligations under the base scenario and all plausible adverse scenarios, and under the base scenario it meets the supervisory minimum or the supervisory target regulatory capital requirement, whichever is greater. Under the plausible adverse scenarios, the insurer's future obligations are met if it remains solvent at all projected dates.

.06 ~~The minimum regulatory capital requirement is the requirement imposed by the regulator requiring the actuary's report on the insurer's financial condition or, in the absence of such a requirement, that selected by the insurer and approved by the regulator(s).~~ An insurer's supervisory minimum capital requirement will be as determined by the relevant regulator.

.06.1 The supervisory minimum MCCR/TAAM ratio for life insurers as of June 30, 2010 is 120%. The supervisory minimum capital test (MCT) ratio for property and casualty insurance companies as of June 30, 2010 is 100%. These may change over time.

.06.2 The supervisory target capital ratio for life insurers as of June 30, 2010 is 150%. The supervisory target capital ratio for property and casualty insurance companies as of June 30, 2010 is 150% MCT. These may change over time. However, the regulator may, on a case-by-case basis, establish in consultation with an institution an alternative supervisory target capital ratio based upon an individual institution's risk profile.

### **Data, methods and assumptions**

.06.3 The dynamic capital adequacy testing analysis would be based on in-force data that is no older than six months.

.06.4 The methods and assumptions would reflect up-to-date studies and analysis available to the actuary.

.06.5 The dynamic capital adequacy testing analysis and associated initial policy liabilities would be consistent with the in-force data, methods, and assumptions used. The policy liabilities would be revalued at the beginning of the forecast period or at the end of the first financial year if a change in method or assumptions contemplated by the company would result in a material change to the results.

**Forecast period**

- .07 The forecast period would begin at the most recent available fiscal year-end balance sheet date or the date of the data used, whichever is later. The forecast period for a scenario would be sufficiently long ~~enough~~ to capture the effect of its adversity and the ability of management to react. The forecast period for a typical life insurer would not be less than five fiscal years. The forecast period for a typical property and casualty insurer would not be less than three fiscal years.

**Scenarios**

- .08 The scenarios would consist of a base scenario and several plausible adverse scenarios. Each scenario takes into account not only in-force policies but also the policies assumed to be sold during the forecast period, and both insurance and non-insurance operations. ~~(For example, the operations of an insurer's trust company subsidiary).~~

**Base scenario**

- .09 The base scenario would be a realistic set of assumptions used to forecast the insurer's financial position over the forecast period. Normally, the base scenario is consistent with the insurer's business plan. It would be awkward if the base scenario is not consistent with the business plan, because that implies a difference in outlook between the insurer's management and the actuary. The actuary would normally accept the business plan's assumptions for use in the base scenario unless these assumptions are so inconsistent or unrealistic that the resulting report would be misleading. The actuary would report any material inconsistency between the base scenario and the business plan.

**Plausible adverse scenarios**

- .10 A plausible adverse scenario would be a scenario of adverse, but plausible, assumptions about matters to which the insurer's financial condition is sensitive. Plausible adverse scenarios vary among insurers and may vary over time for a particular insurer.
- .11 The actuary would consider plausible material risks to the insurer. Scenario testing may be required for the actuary to determine the sensitivity of the insurer's capital adequacy to each risk. ~~It is expected that the actuary would scenario test and report annually on the base scenario, and a minimum of three plausible adverse scenarios posing the greatest risk for the insurer. Fewer than three adverse scenarios may be reported only in the rare event that it is not possible to develop three plausible adverse scenarios.~~

- .12 For life insurers, the actuary would consider threats to capital adequacy under plausible adverse scenarios that include but are not limited to the risk categories
- mortality,
  - morbidity,
  - persistency and lapse,
  - cash flow mismatch (C-3 risk),
  - deterioration of asset values (C-1 risk),
  - [foreign exchange](#),
  - [commodity prices](#),
  - [liquidity](#),
  - new business,
  - expenses,
  - reinsurance,
  - government and political,
  - [operational and legal](#),
  - [concentration](#),
  - [contagion](#),
  - [securitization](#),
  - [counterparty](#),
  - off-balance-sheet [items](#), and
  - related companies.
- .13 For property and casualty insurers, the actuary would consider threats to capital adequacy under plausible adverse scenarios that include but are not limited to the risk categories
- claim frequency and severity,
  - [policy liabilities](#),
  - inflation,
  - premium revenue,
  - reinsurance,

investment,  
[foreign exchange](#),  
[liquidity](#),  
 government and political,  
[operational matters](#),  
[concentration](#),  
[contagion](#),  
[securitization](#),  
 off-balance-sheet [items](#), and  
 related companies.

- .14 To help the actuary determine whether a [plausible](#) risk is material ~~and plausible~~, it may be useful to stress test the capital adequacy of the [insurer](#). ~~The actuary might determine how much a base scenario assumption needs to be changed before an adverse scenario gives rise to an unsatisfactory financial condition.~~ The actuary can then judge whether a [plausible material](#) risk or event exists for the [insurer](#) over the forecast period.

### **Integrated scenarios**

- .15 In many cases, plausible adverse [scenarios](#) would be associated with a low probability of occurrence. In such cases, it would usually not be necessary for the actuary to construct integrated [scenarios](#) by combining two or more low-probability adverse [scenarios](#).
- .16 In some cases, however, the probability associated with a plausible adverse [scenario](#) may be close to the probability associated with the base [scenario](#). For example, a significant asset on the balance sheet may be showing early signs of distress. In such cases, an integrated [scenario](#) would be constructed by combining each more probable adverse [scenario](#) with a low-probability adverse [scenario](#). The low-probability adverse [scenario](#) selected would be the one that has the greatest effect on the [insurer's financial condition](#) and is plausible when combined with the more probable adverse [scenario](#).
- .17 An integrated [scenario](#) would be included in the minimum of three plausible adverse [scenarios](#) required by paragraph 2530.21.1 if it (i.e., an integrated [scenario](#)) was found to be one of the three most adverse [scenarios](#).

### **Ripple effects**

- .18 In assuring consistency within each [scenario](#), the actuary would consider “ripple” effects. Although most of the other assumptions used in the base [scenario](#) may remain appropriate under the plausible adverse [scenario](#), some may require adjustment to reflect the interdependence of assumptions in the plausible adverse [scenario](#).

- .19 Ripple effects would include both policyholder action and the insurer's expected response to adversity. Selection of the assumptions for the insurer's response would, where appropriate, take into account

effectiveness of the insurer's management information systems and adjustment mechanisms,

insurer's historical record of promptness and willingness, when faced with adversity, to make difficult decisions, and

external environment assumed in the scenario.

The actuary would report the expected response, so that users may consider its practicality and adequacy. The actuary may also report the results assuming that the insurer does not respond to the adversity.

- .20 Ripple effects also include regulatory action, especially under any plausible adverse scenario where the insurer fails to meet the supervisory minimum or supervisory target regulatory capital requirement. The actuary would consider action that could be taken by the Canadian regulator(s) as well as action taken by regulators in foreign jurisdictions. Such regulatory action and associated management response would consider the local assessment of solvency regardless of the insurer's worldwide solvency position as measured by Canadian regulatory standards.

#### **Scope of the investigation and report**

- .21 The report would contain the key assumptions of the base scenario and the plausible adverse scenarios posing the greatest risk to the satisfactory financial condition of the insurer.

- .21.1 The report would disclose each of the risk categories considered in undertaking the dynamic capital adequacy testing analysis, including those identified in these Standards of Practice. It is expected that the actuary would scenario test and report at least once during each financial year on the base scenario, and a minimum of three plausible adverse scenarios posing the greatest risk for the insurer. Fewer than three adverse scenarios may be reported only in the rare event that it is not possible to develop three plausible adverse scenarios. The meaning of satisfactory financial condition under this standard would be disclosed in the report.

- .22 The report would also contain the plausible adverse scenarios examined that cause the insurer to fall below the supervisory minimum or supervisory target~~regulatory~~ capital requirement. ~~Even though the actuary may have signed a satisfactory financial condition opinion, t~~The report would make it clear that under these scenarios the regulators may impose restrictions on the operations of the insurer, including its ability to write new business.
- .23 If the investigation identifies any plausible threat to satisfactory financial condition, then the actuary would attempt to identify extraordinary management action that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized. For each such plausible adverse scenario reported upon, the actuary would report the results with the insurer's expected response to adversity but before extraordinary management action, and additionally including the effect of any extraordinary management action. The actuary would report the extraordinary management action so that users may consider its practicality and adequacy. 2530.20

### Revaluation of the policy liabilities

- .24 Ideally, for each adverse scenario, the policy liabilities would be revalued throughout the forecast period. But their revaluation only at the end of the forecast period may be a suitable compromise, unless the actuary believes, given the financial position at the end of the forecast period, that the financial condition would not be satisfactory at some point during the forecast period if revaluation were performed at that point.

### Interim investigation

- .25 In rare cases, a material adverse change in the insurer's circumstances since the last annual investigation may be so far-reaching that to delay reporting to the time of the next annual scheduled investigation would be imprudent. For example, failure to meet the supervisory minimum or supervisory target applicable~~regulatory~~ capital requirement, or adoption of a radically different business plan, may make an immediate report urgent. In such a case, the actuary would undertake and report on an interim investigation.

## 2540 REPORTING

- .01 In the case of a Canadian insurer, the actuary would report to the Board of Directors or to their audit committee if they so delegate. In the case of a Canadian branch of a foreign insurer, the actuary would report to the Chief Agent for Canada and may also report to the responsible senior executive in the parent head office.

- .02 In order to give the insurer's senior management an opportunity to react to the results of the investigation, the actuary would normally discuss the report with the insurer's senior management in advance of its submission to the Board of Directors or Chief Agent for Canada.
- .03 The report would be in writing, but an additional oral report that permits questions and discussions is desirable. An interpretative report would be more useful than a statistical report.
- .04 The timing of the report would depend on the urgency of the matters being reported and on the desirability of integrating dynamic capital adequacy testing into the insurer's annual-financial planning cycle. The annual-report would be submitted within ~~twelve~~12 months of each fiscal year-end.

## 2550 OPINION STATEMENT BY THE ACTUARY

- .01 *The report should contain an opinion statement signed by the actuary. ~~The purpose of the opinion is to report on the financial condition of the insurer.~~ [Effective January 1, 2003]*
- .02 In this opinion statement, "future financial condition" has the same meaning as "financial condition." The actuary may use the words "future financial condition" in order to comply with legislation or regulation in some jurisdictions.
- .03 The wording of the opinion statement follows: [insert appropriate wording where indicated by square brackets]

"I have completed my ~~annual~~ investigation of the [future] financial condition of [company name] as at [date] in accordance with accepted actuarial practice in Canada.

I have analyzed the forecasted financial positions of the company during the [number] year forecast period under a series of scenarios. A description of these scenarios and their impact on the company is included within this report.

The analysis incorporates assumptions relating to business growth, investments, [mortality, morbidity, claims frequency, capital injections, other policy-related experience] and other internal and external conditions during the forecast period as well as potential management responses to various plausible adverse scenarios. The most significant assumptions are described within this report."

~~In my opinion, the [future] financial condition of the company [is satisfactory under these assumptions or is not satisfactory for the following reason(s)...].~~

[Montréal, Québec]

[Mary F. Roe]

[Report date]

Fellow, Canadian Institute of Actuaries