



## **AUDIT REPORT**

I, the undersigned

**Duncan T. Eriksson B.Compt(Hons) CA(SA) CISA**

do hereby certify as follows:

1.

I am the an adult male aged 50 years with ID number 5801295034082, resident at 4 The Park, 190 Willson Str, Fairland with Telephone number 011 678 9134, working as an IT and financial auditor.

2.

I have been practising as an auditor since qualifying as a chartered accountant in 1983. I am a member of ISACA, the Information Systems Audit and Control Association, after being certified as a CISA (Certified Information Systems Auditor) in 1994, and have served on the board of the South African chapter of ISACA for 5 years as treasurer.

3.

In my varied career I was appointed IT Audit Partner at BDO Spencer Steward before opening my own audit firm. In my various capacities I have audited the IT systems of AA Mutual, IGI, Glenrand MIB, Stalker Hutchison & Associates, Websoft Maven, Anglo Platinum and others.

4.

I was retained by Xtreme Loss Solutions on 5 January, 2008 to carry out an audit of version 2.0 of their earthquake model, which audit I hereby complete.



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5.

### **Methodology**

The audit was carried out using several methodologies. The outputs were sampled for coherence, the database was inspected for precision and the source code was reviewed for elements which may distort results.

6.

### **Actuarial Soundness**

It is not within the scope of the audit to comment on soundness of the methodology or the modelling process. These are laid out in the attached White Papers and the sole purpose of the audit was to confirm that the software accurately embodied this methodology. This paper has no commentary on the methodology itself - it will fall to the various actuaries who use the software to monitor the appropriateness of the processes and logic as they are completely transparent to the user.

7.

### **Engineering Quality**

The code itself was found to be of exceptional quality and readability. The use of aliases and custom classes has greatly reduced the scope for errors and it must be noted that the code is highly accessible. Major calculation methodologies re-use the same routines with various parameters making it impossible for the software to distort fitment results. In addition the audit noted features on complex queries which cross-check their own results within the code and warn users in the event of an unforeseen error. While this audit commends the quality of the code, it does not warrant the code for lack of bugs.



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8.

### **Precision**

The system uses 18 decimal of precision throughout. Numerous calculations were run in my presence from source code generating some 300,000 records in the database. The result was a calculated loss of approximately R1.7bn. The margin of error between the various database tables on this amount was proven to be below one cent where the auditing margin of 0.5% would have allowed up to R85m.

9.

### **Functional Accuracy**

A limited set of exposures was then damaged in a simulated earthquake and the calculations were followed line by line and manipulated at my request and replicated in Microsoft Excel for comparison. I have found the calculation in the software to be a an accurate reflection of the methodology laid out in the white papers with no errors found during testing. The reader will note that the code itself was reviewed and there were no hard-wired fixes that forced the system to balance.

10.

### **Reporting Accuracy**

The reports generated by the system were randomly sampled. In each case they related directly and precisely to the outcomes in the database tables as well as our audit spreadsheet. All various cross-sections matched, again with a margin of error in the region of  $5e-12$  where  $5e-2$  is normally considered sufficient.



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11.

**Conclusion**

I therefore certify that Xtreme Loss Solutions Earthquake Model 2.0 has been duly audited for accuracy, consistency and adherence to its declared methodology and confirm that the software is compliant with acceptable financial and technical standards.

SIGNED AT \_\_\_\_\_ ON THIS \_\_\_\_\_ DAY OF FEBRUARY 2008.

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**Duncan T. Eriksson** B.Compt(Hons) CA(SA) CISA

**IRBA Ref: 625159**