CHAPTER IV
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- Efficient methods for evaluating the financial loss and the associated probability in the presence of multiple gross errors are presented.

- The calculation results confirm that the approximation method needs short computation time and provides satisfactorily accurate solutions. The results also confirm that financial loss in the presence of biases is larger than financial loss without biases and that when more biases are present, financial loss increases.

- The financial loss incurred due to a set of gross errors at a particular location (i.e. at particular streams) is a function of the two factors: the coefficients α_i that indicate the effect of undetected gross errors in these streams to measurement accuracy of product stream and the power of the gross error detection strategy to detect this set of gross errors at this specific location.

5.2 Recommendations

We notice that the expressions for the probability and the financial loss were obtained under some simplified assumptions:

(i): When measurement indicates that the production is above the target, the operator does not take any action.

(ii): Maximum power measurement test has been assumed as the technique used and consistency is assumed.

(iii): Serial elimination strategy is assumed to be used in associated with the measurement test.

Methods for calculating expressions for the probability and the financial loss (under simplified assumptions) were presented in this work. The methods developed in this work for financial loss calculation can be used in the problem of designing or retrofitting sensor network subjected to economical objective: minimum

financial loss or maximum economical benefit (net present value). We therefore recommend including the following tasks in future works:

+ Identifying the effect of relaxing simplified assumptions to the model.

+ Studying the problem of optimal instrumentation design/retrofit subjected to economical objective (minimum financial loss or maximum economical benefit) based on the financial loss calculation.