Ability to evaluate the accurate available transfer capability (ATC) has important impact on
the trade of energy in power marketing. The impact of the transmission element status of
transmission path has a possibility to severely change the statistics of the ATC. The impact of
the line outage is more significant among the other component outages. The ATC assessment
requires N-1 security assessment under line outages scenarios. Moreover, an efficient
contingency ranking method to determine critical lines has significant impact on the ATC
computational time. In this paper, MW loss, MVAR loss and Load Margin Index are
described to find the critical lines for computing the ATC under contingencies. These
methods are tested on IEEE 118 bus system and the ATC based on Krylov algebraic method
are calculated for each critical line. Based on ATC results calculated from these contingency
ranking methods, the efficiency of these methods compare together.

Keyword: Available transfer capability (ATC); Contingency evaluation; Critical line
ranking; Line outage; Load margin index; MVAR loss; MW loss