

UNIVERSITI TEKNOLOGI MARA

**RELIABILITY STUDY OF SOLAR
OBSERVATION AS CONSTRAINTS
IN CADASTRAL NETWORK
ADJUSTMENT**

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Disertation submitted in partial fulfillment
of the requirements for the degree of
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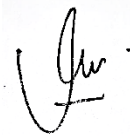
August 2020

AUTHOR'S DECLARATION

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ABSTRACT

Nowadays, the cadastral survey in Malaysia has experienced dramatic improvement structurally, technically, and operationally over a few years. These changes are because of high data quality assurance demand by clients and governments. The need for positional accuracy improvement (PAI) shows the dramatic changing of data adjustment techniques. With the modern technology to acquire high-quality data such as global navigation satellite system (GNSS), there is also caused the requirement to transform the current adjustment technique to the most accurate adjustment technique, which is using parametric linear regression adjustment. However, there are some issues regarding independent solar observation (lines) constraints implemented in the traditional adjustment approach, which might produce doubts in parametric linear regression adjustment. Thus, this study aims to investigate the reliability of solar observation as constraints in cadastral network adjustment. The traverse data with closed traverse types used to test several experiments related to line constraints. The block adjustment data with good, moderate, and poor distribution of the control point also will be examined. For different purposes, both traverse network and block adjustment data were compared to their reference value, which utilized point constraints and well control distribution with point constraints, respectively. Through the analysis, the outcomes have verified the irrelevant of independent lines constraints in parametric LR. However, the establishment of control points at either initial of end of lines could solve the limitation of issue. In both analyses for traverse network and cadastral block adjustment, control points at initial lines have demonstrated the best solution for constrained adjustment.

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