EVALUATION OF INTERNAL PROPERTIES OF *AGARWOOD* TREE USING ULTRASONIC VELOCITY MEASUREMENT.

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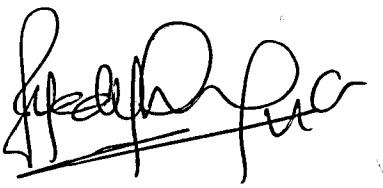

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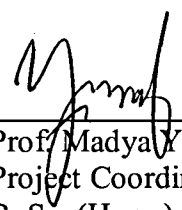

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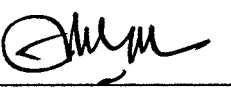

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TABLE OF CONTENTS

ABSTRACT

EVALUATION OF INTERNAL PROPERTIES OF *AGARWOOD* TREE USING ULTRASONIC VELOCITY MEASUREMENT.

This study presents the application of ultrasonic velocity in *agarwood* trees (*Aquilaria crassna*) with the purpose of evaluating the relationship of the ultrasonic velocity to the variations of internal properties of trees. In this study, three circular cross-sectional discs from the freshly cut fallen trees were selected as samples. First sample with a big hole (decay) in the middle, second sample with internal resinous and the last one is the sample with no defects. The through transmission ultrasonic testing method was carried out using *Tico* ultrasonic pulse velocity tester which is from Switzerland. Two-dimensional image of internal properties evaluation by an ultrasonic investigation was obtained using *Matlab*. The results showed that the ultrasonic wave cannot pass through the internal decay or resinous so that the wave went round it and thus ultrasonic wave velocity significantly decreased by increasing the hole or resinous. The difference in colour of the image generated by *Matlab* software based on variation of ultrasonic velocity between the internal decay area and its surrounding area was obvious. Therefore, the properties of internal properties of the tree could be detected by ultrasonic line imaging technique. Besides, the results also showed that ultrasonic velocity is sensitive to changes in moisture content. The ultrasonic velocity measured increased with decreasing moisture content.