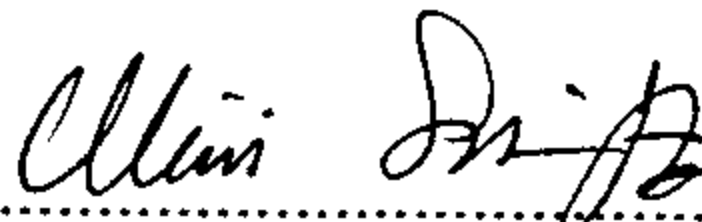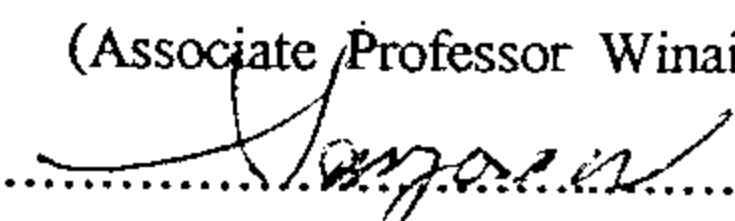THESIS TITLE : PREDICTION OF FLASH FLOODS DUE TO AN ASSUMED

FAILURE OF UBOL RATANA DAM BY USING DAMBRK

MATHEMATICAL MODEL

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ABSTRACT

One - dimensional mathematical model (1 - D) of the National Weather Service (NWS) Dam - Break Flood Forecasting Model (DAMBRK) was used to simulate the propagation of dam - break flood wave due to an assumed failure of Ubol Ratana dam , Northeast of Thailand through the Nam Pong river channel - valley downstream from the dam.

The dam is assumed to be totally failed within 5 minutes , with a trapezoidal breached shape. It was found that the peak discharge from the dam is 15,698.46 cms. , velocity from the dam is 11.56 m/s with a peak stage of 178.13 m. (MSL.) after breaching starts. Sensitivity analysis of model was carried out by increasing and decreasing Manning'n roughness coefficient of 20%. It was found that it play a big role on the calculation. Furthermore , the failure duration was also varied in order to study it's effect to the calculation. It was found that the failure duration has not much effect on the breach outflow hydrograph.

The results from the model are including the water surface elevations , peak discharge , flood wave velocity profiles , the arrival time of wave front and the profiles of flood peak. The discharge and stage hydrographs at various stations along Nam pong river

are presented. These informations are useful for flood forecasting , the estimation of flood damages and the establishment of an emergency plan.