ANALISIS PENELUSURAN BANJIR AKIBAT KERUNTUHAN BENDUNGAN (Studi Kasus pada Bendungan Tilong di Kab. Kupang, Prop. NTT)

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ABSTRACT

Overtopping or piping may cause dam failure and rapid propagation of flood wave, as well as inundate areas areas at the downstream of the dam. The purpose of this research is to understand how much does the effect of dam failure parameter toward hydrograph outflow, also the hazard level of the resulting flood.

The breach growth on the dam's body depends on the characteristic of material composure of the dam, such as: grain diameter, unit weight, internal friction angle, material compaction, and cohesiveness. That characteristic by DAMBRK known as failure parameter such as: basic opening width of failure (BB), time of failure process (TFH), and slope of failure opening (Z). In this research, failure simulation was done by using the cause of overtopping by inserting certain breach parameter to obtain outflow hydrograph form. Besides to the overtopping cause, flood of dam failure caused by piping was also being routed to the downstream area of the dam.

The most hazardous hydrograph outflow on dam failure caused by overtopping has the largest peak discharge and the shortest peak time. This occur when the BB value was large, as well as the Z value and minimum TFH value. This condition occurred on the fifth simulation with these following values; BB=78,92 m, Z=0,8 ,TFH=0,46 hours. Flood occurred on Tilong's Dam failure caused by piping, has peak discharge that occurred was as much as 3657 m^3/s by the maximum water elevation +100,13 m at the crest and the flow velocity is 4,58 m/s. This flood current will follow the Tilong River and then flood the rice field area and the inhabitant residence on the 6,10 to 8,59 km from the crest. Flood will reach 8,59 km for 2,0 hours after the failure. Flood's peak will occur on the 3,2 hour by discharge of 3510 m^3/s, and flood height of 3,38 m.

Key words: Dam, Breach parameter, Overtopping, Piping, and DAMBRK