Damage stability or in Indonesian language called leaky vessel stability, is state of stability when the vessel suffered a leak (the entry of seawater into a ship compartment where the intruding water compartment may consist of one compartment or more than one compartment close together). In the developing shipping world, damage stability calculation is made to replace calculation of floodable length and intact stability calculations which these calculations proved no longer safe to ensure the safety of the ship in case of leakage. Formerly, damage stability calculation is computed using the deterministic approach, but in 1990s it's computed using the probabilistic approach as close to the actual reality of events when the vessel suffered a leak. Began on February 1, 1992 damage stability calculation using formal probabilistic approach is required by SOLAS.

Damage stability with probabilistic approach has a very long process of calculation because the calculation of stability began from one leaking compartment to all compartments in the vessel suffered a leak. It is to anticipate if the actual incidence of the leaking vessel from a small leak to serious leak. The vessel which will be calculated and analyzed is Lentera Bangsa FSO. References used for damage stability calculating is the SOLAS 1997 Chapter II-1 Part B-1 Subdivision and Damage Stability of Cargo Ship, lost buoyancy method used as calculation method, and Maxsurf as an auxiliary software for its calculation. This program is using lines plan and general arrangement as input. In SOLAS, there are two index, index A (Attained Subdivision Index) and R (Required Subdivision Index). The initial step is to calculate the index value of R, where $R = \left(0.002 + 0.0009Ls^3\right)^{1/3}$. R value depends on the subdivision length of the ship. The next step is to calculate index A, where $A = \sum SiPi$. The notation $Si$ indicates the possibility of the ship survived the event of leakage, the notation $Pi$ is probability just that leaky compartment. The result of calculations put into the SOLAS requirement equations to get the ship value (A). This value will be compared with the R value to determine whether the damage stability and subdivision meet the standard of SOLAS.
By counting damage stability with probabilistic approach for Lentera Bangsa FSO is expected to be reference when there was a leak during its operation either due to natural factors or other factors considering Lentera Bangsa FSO is made to bear 10 years without land docking.

**Key Word :** Damage Stability, FSO Lentera Bangsa, SOLAS 1997 Chapter II-1 Part B-1 Subdivision and Damage Stability of Cargo Ship