## ABSTRACT

PT Pupuk Kujang is one of fertilizer producers in Indonesia. There are three main plant: utility, ammonia, and urea plant. In this final work, NH pipe lining in urea plant become the object to observed that connected directly with reactor. Inspection activity is necessary to monitor the thickness. Maintenance activity will cause highly cost especially for loss of benefit in production. So, good management policy is needed to make an optimal inspections interval. During this time, inspection is held every two year period. Does the policy effective enough? An analysis become more important thing to give an effective suggestion schedule followed by reasonable explanation theoretically.

Discard thickness allowed has settled in 0,504" and 0,01% for maximum probability of failure. Both are defined as failure when they are reached in certain period. These two information are important things to be known in maintenance policy planning. The using of Risk Based Inspection method caused of it implementation will consider about risk factor. Probability of failure should not higher than maximum allowed degree to control risk level. In this case, Weibull distribution is used to plot historical pipe thickness. Output of this plotting are beta ($\beta$) and eta ($\eta$) parameter. Beta parameter represent degradation of NH pipe thickness. Meanwhile, eta parameter represent NH pipe thickness average that must be controlled at lower limit which is called critical eta. End of useful life of this lining pipe is determined by the intersection of actual eta extrapolation with critical eta, it means both of discard thickness and maximum probability of failure are reached. When this is happen NH pipe should be replace. Since it has been determined by the intersection, inspection interval will be arrange as long as available range before end of useful life occur.

From data plotting we'll get several beta value. Failure degree will increase by years so it has to be controlled within allowed degree. With this limitation we can get some different critical eta value depends on what beta value that we used. In additional, end of useful life will show up as different eta effect.

| | **Beta** | **Critical Eta** | **End OF Useful Life** |
|---|---|---|---|
| **Maximum** | 49,92 | 0,6061 | Tahun ke- 44 |
| **Minimum** | 45,78 | 0,6163 | Tahun ke- 40 |
| **Average** | 47,155 | 0,6127 | Tahun ke- 42 |
| **The Last** | 48,5 | 0,6094 | Tahun ke- 43 |

By the result of data processing, we will get information that the end of useful life will occur on $40^{th}$ year. By managerial and technical consideration, suggested inspections are put on the $27^{th}$, $33^{th}$, $36^{th}$, and $38^{th}$ years. According to this decision there will be four times elimination of early schedule and save Rp 3.691.598.445,- as the result.



*Keywords :* *Inspection interval, Replacement, Discard thickness, Maximum probability of failure, Weibull parameter, Risk Based Inspection*