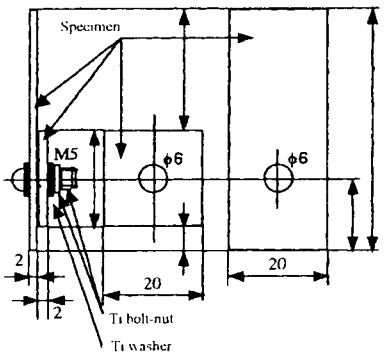
Question NO.2 : On the long-term preservation of conditions preventing localized corrosion.

- It is well accepted that the possibility for the initiation and development of localized corrosion could be judged by comparing the open circuit potential with the critical potential for the initiation and development of pitting and crevice corrosion.
- $E_{corr} >= E_{critical}$

Critical potential for pitting and and crevice corrosion

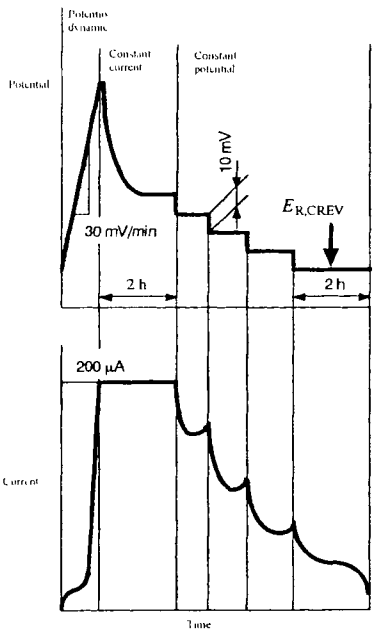
- Standardized method has been known for measuring the critical potential for pitting.
- Still many discussions on the definition of the initiation and repassivation of crevice as discussed in the Report.
- In Japan, same situation existed through 1980-90, but, this year, a method proposed by Prof. Tsujikawa is standardized in JIS.

Specimen with crevice for measuring $E_{R,CRV}$



Procedure to measure the critical potential, $E_{R,CREV}$ for repassivation of crevice

It is required to confirm the existence of 40μm depth crevice after the measurement.



Probability density function (pdf) of pitting potential

- The experimental data on pdf is accumulated for pitting potential.
- Normal distribution is observed for pitting potential.
- A general trend is observed : The higher pitting potential seems to show a wider scattering, but an exception exists.

Probability density function (pdf) of $E_{R,CREV}$

- Normal distribution can be fitted for $E_{R,CREV}$
- More narrow distribution is observed for $E_{R,CREV}$ than pitting potential.
- This is possibly caused by the measuring method itself, because the slower stepping method is used.

Conclusions(3)

- The method which was proposed by Tsujikawa will provide a reliable and confidential critical potential, $E_{R,CREV}$, for the repassivation of the crevice which was produced before the measurement.
- Information about the pdf of $E_{R,CREV}$ should be accumulated.

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Answer to Questions

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Question No.1: On the effects of long-term passive dissolution

- Increase in the long term passive dissolution rate of Alloy22 seems not to be expected, but still no definite evidence exists.
- The system of the WP in the repository environment is open with free exchange of matter and energy.
- Then the system is not at equilibrium, but at quasi-equilibrium.