RSE-M

IN-SERVICE INSPECTION, INSTALLATION AND MAINTENANCE RULES FOR MECHANICAL COMPONENTS OF PWR

2018 EDITION

1st Erratum – October 2020

Afcen

French Association
for Design, Construction
and In-Service Inspection Rules for
Nuclear Island Components

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NOTE TO THE USERS

This document proposes modification which correspond to a translation error in the RSE-M 2018 English edition.

The following page is to be replaced:

- Volume II – Appendix 5.4 – Page 31

If $L_r^* < L_r \leq 1$, a new value for K_r is determined by a linear interpolation between $K_r(L_r^*)$ and $K_r(L_r=1)$:

$$K_r = K_r(L_r^*) + \frac{K_r(L_r = 1) - K_r(L_r^*)}{1 - L_r^*}(L_r - L_r^*)$$

where $$K_r(L_r^*) = \left\{ \frac{E\varepsilon_{ref}(L_r^* S_y)}{L_r^* S_y} + 0.5\frac{(L_r^*)^2}{(L_r^*)^2 + 1} \right\}^{-\frac{1}{2}}$$

and $$K_r(L_r = 1) = \left\{ \frac{E\varepsilon_{ref}(S_y)}{S_y} + 0.25 \right\}^{-\frac{1}{2}}$$

d) J is calculated by the formula: ~~$K_J = \left[\frac{\sigma_{nor}}{\sigma_{no}}\right]^2 \cdot \left[\psi + \frac{\varepsilon_{ref}}{\sigma_{ref}/E}\right]$~~

$$J_s = J_{el.} \frac{1}{K_r^2}.$$

IV.4.1.1.2 J_S CLC OPTION – STRAIGHT PIPE - LONGITUDINAL SURFACE BREAKING DEFECT

a) L_r is calculated using the following expression:

$$L_r = \sqrt{\left[\frac{p}{q_p \mu_{ep}}\right]^2 + \left[\frac{m_1}{q_p \mu_{em1}}\right]^2 + \left[\frac{m_2}{q_m}\right]^2}$$

where p, n_1, m_1 and m_2 are normalized loads:

$$p = \frac{\sqrt{3}}{2}\frac{Pr_m}{tS_y} \qquad m_1 = \frac{\sqrt{3}}{2}\frac{M_1}{\pi r_m^2 tS_y} \qquad m_2 = \frac{M_2}{4r_m^2 tS_y}$$

P: internal pressure M_1: torsional moment M_2: bending moment

- if $m_2 \neq 0$ and $p \leq 0.5$, this expression is valid for $L_r \leq 1.4$;
- if $m_2 \neq 0$ and $p > 0.5$, this expression is valid for $L_r \leq 1.2$.

If only the applied moment modulus $|M|$ is known, it is assumed that: $M_1 = |M|$ and $M_2 = 0$.

The significance and value of coefficients q_m, q_p, μ_{em1} and μ_{ep} are given in compendium (**VII**).