

RSE-M

IN-SERVICE INSPECTION RULES FOR MECHANICAL COMPONENTS OF PWR NUCLEAR ISLANDS.

2016 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 2016 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:

~~$$K_J = \frac{\sigma_{nor}}{\sigma_{no}} \cdot \left[\psi + \frac{\varepsilon_{ref}}{\sigma_{ref}/E} \right]$$~~

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

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:

$$p = \frac{\sqrt{3} P r_m}{2 t S_y} \quad m_1 = \frac{\sqrt{3} M_1}{2 \pi r_m^2 t S_y} \quad m_2 = \frac{M_2}{4 r_m^2 t S_y}$$

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).