ERRATA
Ref: 11-650

\( O^* = 0 \)  
\( O^* = \ln (DO/0.04) \)  
\( O^* = \ln (12.5) \)

\( DO \leq 0.04 \text{ ppm} \)  
\( 0.04 \text{ ppm} < DO \leq 0.5 \text{ ppm} \)  
\( DO > 0.5 \text{ ppm} \)

-2432 For wrought and cast austenitic stainless steels, the transformed \( DO \), \( O^* \) is obtained as follows:

\[ O^* = 0.281 \]

(all \( DO \) levels)

-2433 For Ni-Cr-Fe alloys, the transformed \( DO \), \( O^* \) is obtained as follows:

\[ O^* = 0.09 \] (for BWR normal water chemistry)

\[ O^* = 0.16 \] (for PWR and BWR hydrogen water chemistry)

-2440 DETERMINATION OF TRANSFORMED SULFUR

Transformed sulfur is applicable only to carbon and low alloy steels.

The sulfur content, \( S \) in terms of weight percent may be obtained from the material procurement specification, the certified material test report or an equivalent source. If the sulfur content is unknown, then its value shall be assumed as \( 0.015 \% \). The transformed sulfur, \( S^* \) is obtained as follows:

\[ S^* = 0.015 \] (\( DO > 1.0 \text{ ppm} \))

\[ S^* = 0.001 \] (\( DO \leq 1.0 \text{ ppm and } S \leq 0.001 \text{ wt}\% \))

\[ S^* = S \] (\( DO \leq 1.0 \text{ ppm and } 0.001 < S \leq 0.015 \text{ wt}\% \))

\[ S^* = 0.015 \] (\( DO \leq 1.0 \text{ ppm and } S > 0.015 \text{ wt}\% \))

-2450 DETERMINATION OF \( F_{en,i} \)

The environmental correction factor \( F_{en,i} \) shall be calculated using equations given in -2100.

-2460 ALTERNATE DETERMINATION OF \( F_{en,i} \) BASED ON MODIFIED STRAIN RATE APPROACH

A procedure similar to that described in -2600 may be used to remove some of the conservatism built into the \( F_{en,i} \) determined in -2450.

-2500 EVALUATION PROCEDURE FOR PIPING

The procedures in this section use the input information and the partial fatigue results from the NB-3650 fatigue evaluation. The example of specific load set information needed is: internal pressure, the three moment components, \( I_{e} - T_{bl} \), \( \Delta T_{1} \) and \( \Delta T_{2} \). When the detailed results of one-dimensional transient heat transfer analyses are available in the form of time history of \( I_{e} - T_{bl} \), \( \Delta T_{1} \) and \( \Delta T_{2} \), such results may be used to reduce conservatisms in the calculated values of environmental correction factor.

-2510 DETERMINATION OF STRAIN RATE

The rules for determination of strain rate for piping are in the course of preparation. In the interim, the rules of -2410 may be used.

-2520 DETERMINATION OF TRANSFORMED TEMPERATURES

The transformed temperatures shall be obtained as described in -2420.

-2530 DETERMINATION OF TRANSFORMED \( DO \)

The transformed \( DO \) shall be obtained as described in -2430.

-2540 DETERMINATION OF TRANSFORMED SULFUR

The transformed sulfur shall be obtained as described in -2440.

-2550 DETERMINATION OF \( F_{en,i} \)

The environmental correction factor \( F_{en,i} \) shall be calculated using equations given in -2100.

-2560 ALTERNATE DETERMINATION OF \( F_{en,i} \) BASED ON MODIFIED STRAIN RATE APPROACH

A procedure similar to that described in -2600 may be used to remove some of the conservatism built into the \( F_{en,i} \) determined in -2550.

-2600 MODIFIED STRAIN RATE APPROACH

When the results of detailed transient analyses are available to predict strain rate, such results may be used to reduce conservatisms in the calculated values of \( F_{en,i} \). The following expression or equivalent shall be used:

\[ F_{en,i} = \frac{\sum F_{en,i} \Delta \varepsilon_i}{\sum \Delta \varepsilon_i} \]

where (refer to Fig. -2600-1)

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