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**Table 32.** Summary of corrosion behaviour of the isolated coatings and coatings coupled to steel after 1000 hours exposure to 3.5% NaCl solution.

## LIST OF SYMBOLS AND ABBREVIATIONS

$\alpha$	Significance level
B	Stern–Geary constant
$b_a, b_c$	anodic, cathodic Tafel constants
$\beta$	shape parameter
CE	Counter Electrode
$C_i$	initial hydrogen concentration
$C_L$	lattice hydrogen concentration
CNC	Computer Numerical Control
$C_o$	surface hydrogen concentration
$C_\sigma$	hydrogen concentration under tensile stress $\sigma$
$C_T$	hydrogen concentration in trapping sites
$\gamma$	location parameter
D	diffusion coefficient
DeE	De–Embrittlement
$\Delta G$	Gibbs free energy change
$D_{latt}$	trap free lattice diffusion coefficient
$\delta$	scale parameter
E	electrode potential
$E^\circ$	standard electrode potential
E <sub>b</sub>	potential well of a trapping site
E <sub>corr</sub>	corrosion potential
EDAX	Energy Dispersive X–Ray Analysis
EI	Embrittlement Index
E <sub>n</sub>	energy level for absorption from the surface to the bulk
E <sub>s</sub>	energy level for absorption from the bulk to a trapping site
E <sub>t</sub>	trap activation energy
F	Faraday constant
FIB	Focused Ion Beam
f(t)	probability density function
HAC	Hydrogen Assisted Cracking
HE	Hydrogen Embrittlement
HELP	Hydrogen Enhanced Local Plasticity

HER	Hydrogen Evolution Reaction
$\eta$	hydrogen overpotential
$\theta_T$	fraction of occupied trapping sites
$i_c$	charging current density
$I_{corr}$	corrosion current density
$i_r$	steady state desorption flux or hydrogen recombination current density
IVD	Ion Vapour Deposition
$i_\infty$	steady state hydrogen permeation flux
$j$	permeation flux
$J_0$	entrance current density
$J(t)$	efflux or permeation current density
$J_\infty$	steady state flux
$K$	stress intensity factor
$k$	trapping parameter
$k''$	equilibrium absorption–adsorption constant
$K_{th}$	threshold stress intensity factor
$L$	membrane thickness
LME	Liquid Metal Embrittlement
LPR	Linear Polarisation Resistance
$M$	atomic mass
$\mu$	mean value of the population
$N$	number of trap sites per unit volume of material
$n$	number of electrons participating in a reaction
$v$	degree of freedom
ORR	Oxygen Reduction Reaction
$p$	release rate parameter
$P_f$	probability of failure
$P_s$	probability of survival
PVD	Physical Vapour Deposition
$Q_t$	hydrogen quantity diffusing through a membrane within time $t$
$Q_{Tf}$	quantity of permeated hydrogen within time to failure
$R$	gas constant
RA	Reduction in Area

ReE	Re–Embrittlement
RE	Reference Electrode
Rp	polarisation resistance
$\rho$	density
s	standard deviation of a group
$s^2$	variance of a group
SCC	Stress Corrosion Cracking
SCE	Saturated Calomel Electrode
SD	Standard Deviation
SEM	Scanning Electron Microscope
$s_p$	pooled standard deviation of two groups combined
SSRT	Slow Strain Rate Test
$\sigma$	standard deviation of the population
$\sigma^2$	variance of the population
T	temperature
t	test statistic
$t_b$	breakthrough time
TEM	Transmission Electron Microscopy
$t_f$	time to failure for every test specimen individually
$t_i$	minimum crack incubation time
$t_L$	time lag
$t_o$	mean value of the times to failure of all uncoated control specimens
UMS	Unbalanced Magnetron Sputtering
UTS	Ultimate Tensile Strength
V	molar volume
WE	Working Electrode
x	Weibull slope
Y	yield stress
z	number of electrons in oxidation reaction
ZRA	Zero Resistance Ammeter