Corrosion Glossary

radiation damage
A general term for the alteration of properties of a material arising from exposure to ionizing radiation (penetrating radiation), such as x-rays, gamma rays. neutrons, heavy-particle radiation, or fission fragments in nuclear fuel material.

rare earth metal
One of the group of l5 chemically similar metals with atomic numbers 57 through 7l, commonly referred to as the lanthanides.

reactive metal
A metal that readily combines with oxygen at elevated temperatures to form very stable oxides, for example, titanium, zirconium, and beryllium. Reactive metals may also become embrittled by the interstitial absorption of oxygen, hydrogen, and nitrogen.

recrystallization
(1) Formation of a new, strain free grain structure from that existing in cold worked metal, usually accomplished by heating. (2) The change from one crystal structure to another, as occurs on heating or cooling through a critical temperature.

redox potential
The *potential* of a reversible oxidation-reduction electrode measured with respect to a *reference electrode,* corrected to the hydrogen electrode, in a given *electrolyte.*

reducing agent
A compound that causes *reduction,* thereby itself becoming oxidized.

reduction
A reaction in which there is a decrease in valence resulting from a gain in electrons. Contrast with *oxidation.*

reference electrode
A nonpolarizable *electrode* with a known and highly reproducible *potential* used for potentiometric and voltammetric analyses. See also *calomel electrode.*

refractory metal
A metal having an extremely high melting point, for example, tungsten, molybdenum, tantalum, niobium, chromium, vanadium, and rhenium. In the broad sense, this term refers to metals having melting points above the range for iron, cobalt, and nickel.

relative humidity
The ratio, expressed as a percentage, of the amount of water vapor present in a given volume of air at a given temperature to the amount required to saturate the air at that temperature.

residual stress
Stresses that remain within a body as a result of *plastic deformation.*

resistance
The opposition that a device or material offers to the flow of direct current, equal to the voltage drop across the element divided by the current through the element. Also called electrical resistance.

resistivity
See *electrical resistivity.*

rest potential
See *corrosion potential* and *open-circuit potential.*

ringworm corrosion
Localized corrosion frequently observed in oilwell tubing in which a circumfrential attack is observed near a region of metal "upset".

riser
(1) That section of pipeline extending from the ocean floor up the platform. Also, the vertical tube in a steam generator convection bank that circulates water and steam upward. (2) A reservoir of molten metal connected to a casting to provide additional metal to the casting, required as the result of shrinkage before and during solidification.

rust
A visible corrosion product consisting of hydrated oxides of iron. Applied only to ferrous alloys. See also *white rust.*