

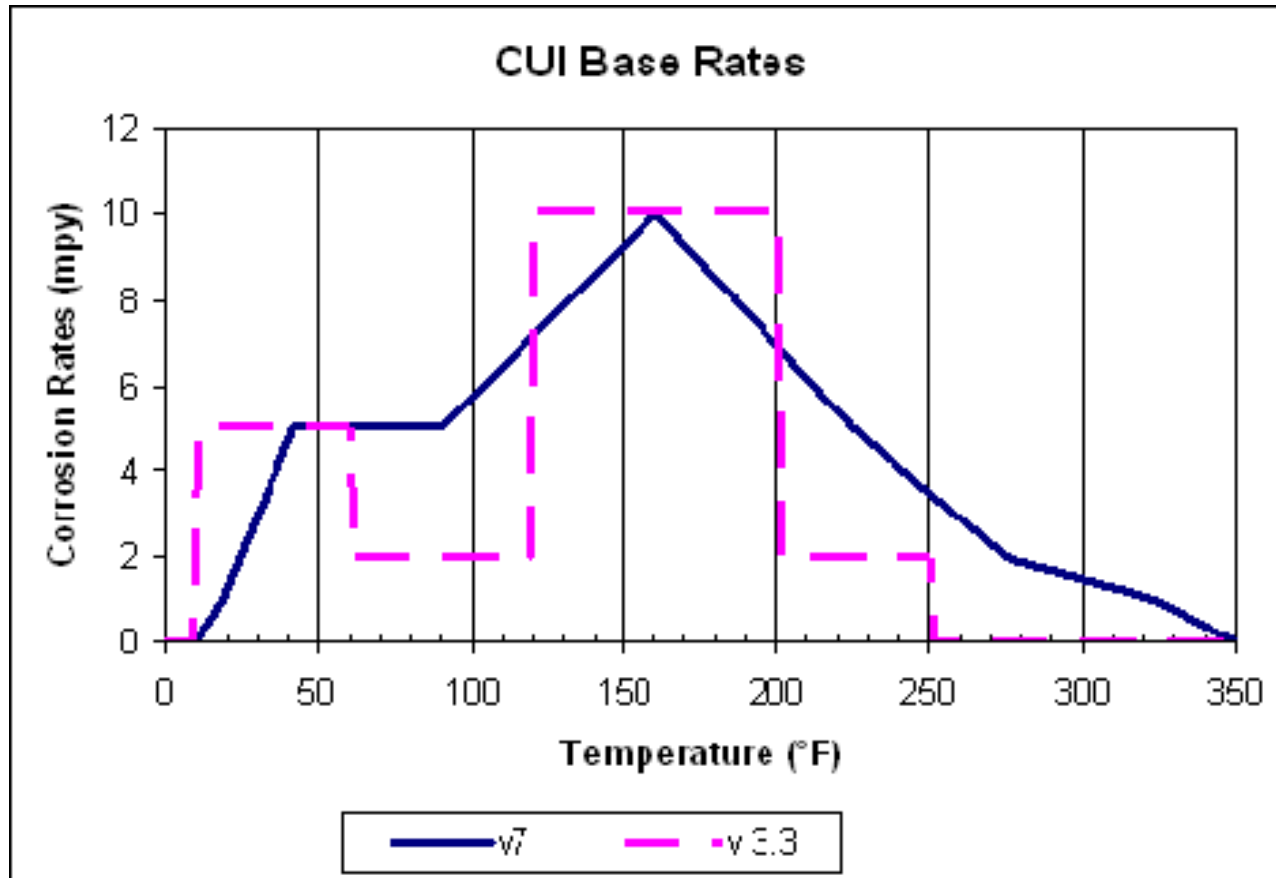
The page features a decorative arrangement of seven circles. Three circles are positioned in a horizontal row at the top, with the middle one being a thin outline and the two on either side being solid light purple. Below this row, there are two solid light purple circles on the left and one thin outline circle on the right, also in a horizontal row.

**Publ. 581, Appendix N**  
**External Damage Technical Module**

# Major Changes

- Editorial corrections
- Added a “severe” environment category
- Modified base rates:
  - *removed dip in rates at 60° - 120°F range*
  - *Extended rates above 250°F for CUI to a max of 350°F*
- Interpolate corrosion rates rather than step changes
- Lowered ESCC susceptible range from 140°F to 120°F
- Added credit for coating found intact during inspection
  - *A-Level inspection = +5 years*
  - *B-Level inspection = +2 years*
- Insulation condition factor: from (0.25, 0.5, 1) to (0.75, 1, 1.25)
- Added factor for insulation type

# Marine Base Rates



# Severe – CUI

Operating Temperature (°F)	Environment			
	Severe (mpy)	Marine (mpy)	Temperate (mpy)	Dry (mpy)
10 or less	0	0	0	0
18	3	1	0	0
43	10	5	3	1
90	10	5	3	1
160	20	10	5	2
225	10	5	1	1
275	10	2	1	0
325	5	0	0	0
>350	0	0	0	0

# Insulation Type Factor

Table N-14 – Adjustments for Insulation Type

•Foamglass	•Pearlite	•Fiberglas, Mineral Wool, Calcium silicate, Asbestos
•Rate = Rate x 0.75	•Rate = Rate x 1	•Rate = Rate x 1.25

# Current Ballot



- Technical changes to ballot #581-14-05 were made as a result of the ballot responses
- These changes are being balloted in ballot #581-16-06
- Only the technical changes highlighted in the balloted document are being balloted
- Responses due by Feb. 27<sup>th</sup>, 2006

# Current Ballot

- Summary of technical changes currently being balloted are:
  - *Clarified wording in tables N-4, N-9 and N-21 regarding coating quality*
  - *Corrected error in upper temperature limit for un-insulated carbon steel*
  - *Corrected errors in equations 1 and 2 for ESCC damage factor and updated the respective flowcharts based on the correction*
  - *Corrected table references in Figure N-4*
  - *Figures N-5A and N-5B were completely revised to reflect text*
  - *Corrected text in N-6.4 on ESCC to indicate adjusting susceptibility based on the modification factors rather than damage factor*
  - *Correct error in Tables N-5 and N-10 made in converting the temperature ranges to midpoints*
  - *Modified factors for insulation condition and insulation type in tables N-13 and N-14*

# Possible Future Improvements

- Smooth curve fit rather than linear
- More refinement of base rates
- More guidance on
  - *Cold service transition areas*
    - Supports, deadlegs, terminations, transitions
  - *Intermittent services*
  - *Cyclic services; especially through the dew point*
  - *Utilization of specific site data for base rates*
- Improved ESCC methodology – less qualitative