

CORROSION GROWTH RATES

Usage of Standards and Growth Rate Determination

NACE

ASME B31.8S

Other Standards

Joe Mataich

**PHMSA, Southern
Region**



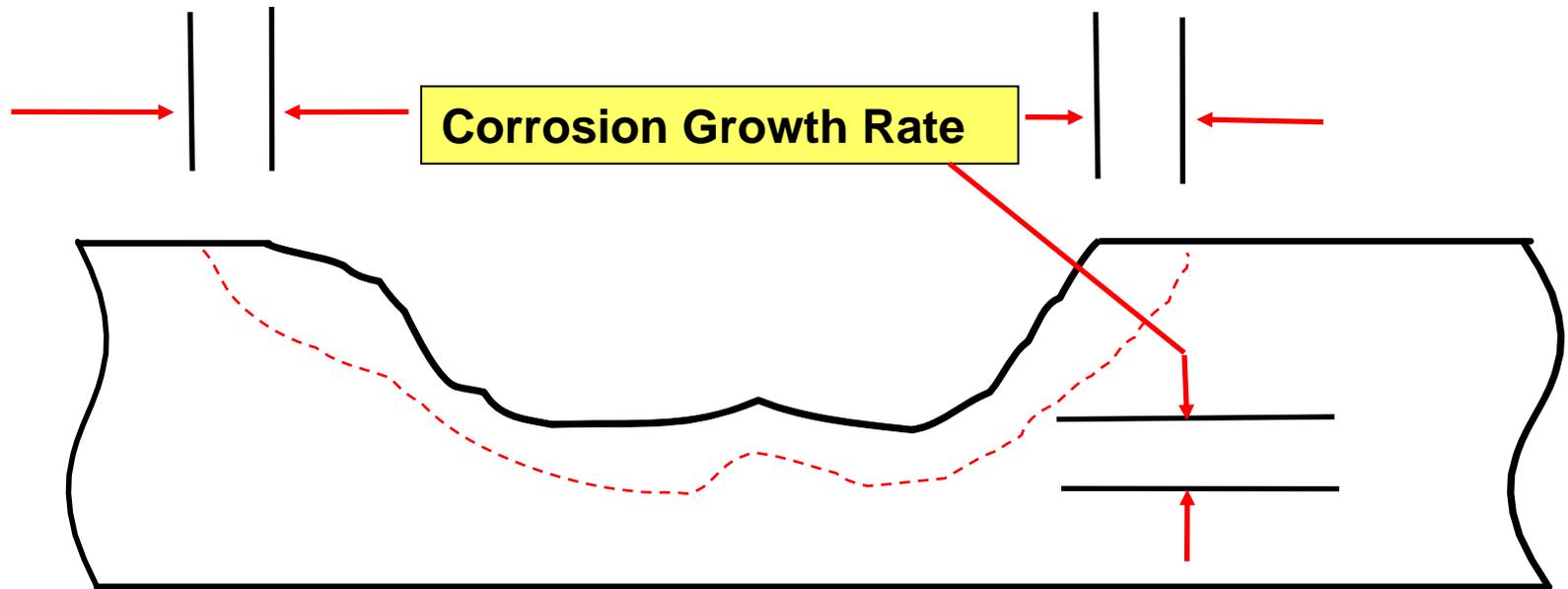
FUTURE GROWTH RATE OF ANOMALY

- Calculate defect length, width & depth
- Determine inspection intervals
- Handling MIC and stray current / interference
- Safety factors of corrosion rates
- Handling time between as-found and repairs of CP systems (i.e., subtract time from inspection interval)



ANOMALY REPAIRS

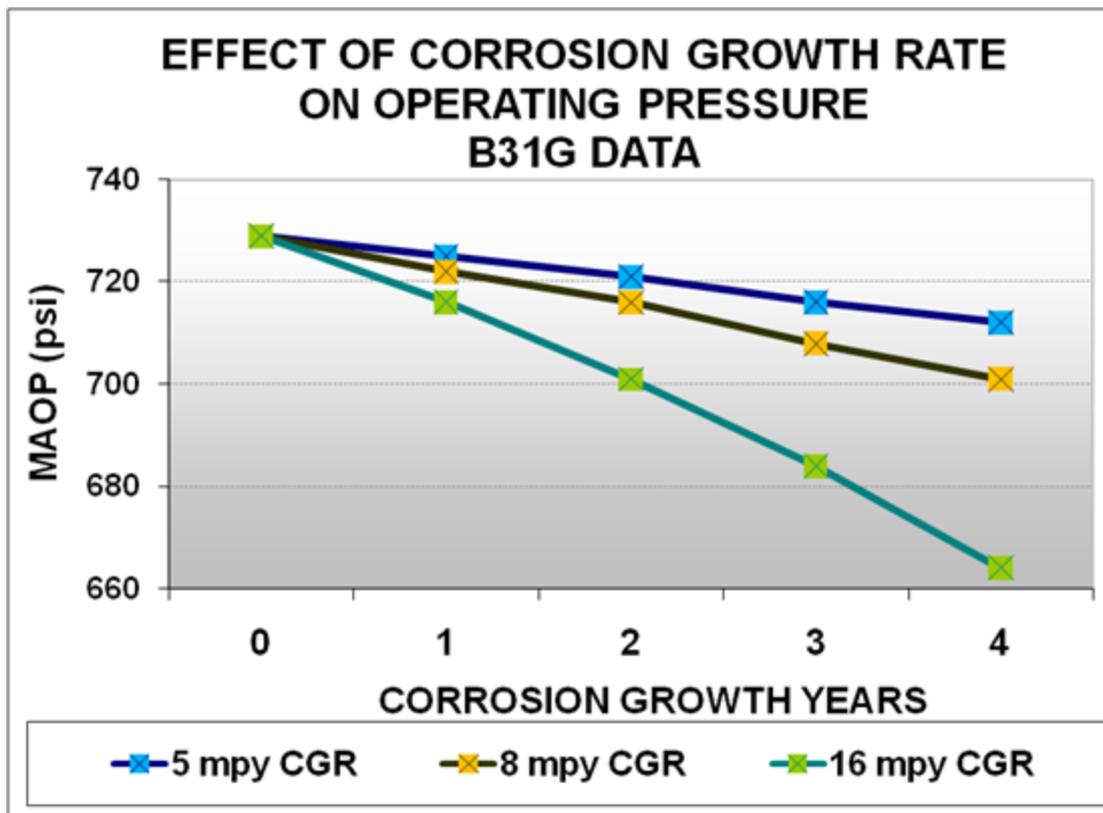
TIME DEPENDENT THREATS – CORROSION



ANOMALY REPAIRS

TIME DEPENDENT THREATS – CORROSION

IMPORTANCE OF CGR TO REPAIR



Year 0

- 30" x 0.25" x X60 pipe
- 72% SMYS
- MAOP = 720 psi
- Initial wall loss
0.13" x 2" length

Year 4

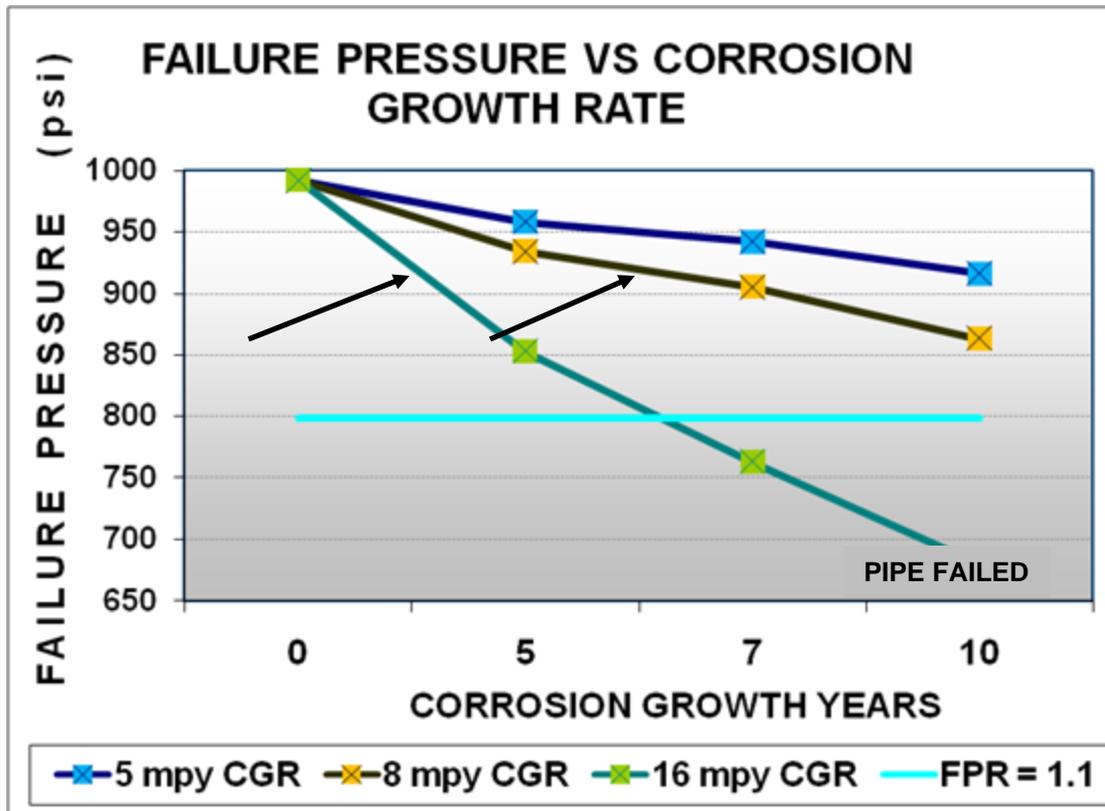
- CGR = 16 mpy
- 78% wall loss
0.194" x 2.128"



ANOMALY REPAIRS

TIME DEPENDENT THREATS – CORROSION

IMPORTANCE OF CGR TO REPAIR DECISIONS



**No class
location safety
factor**

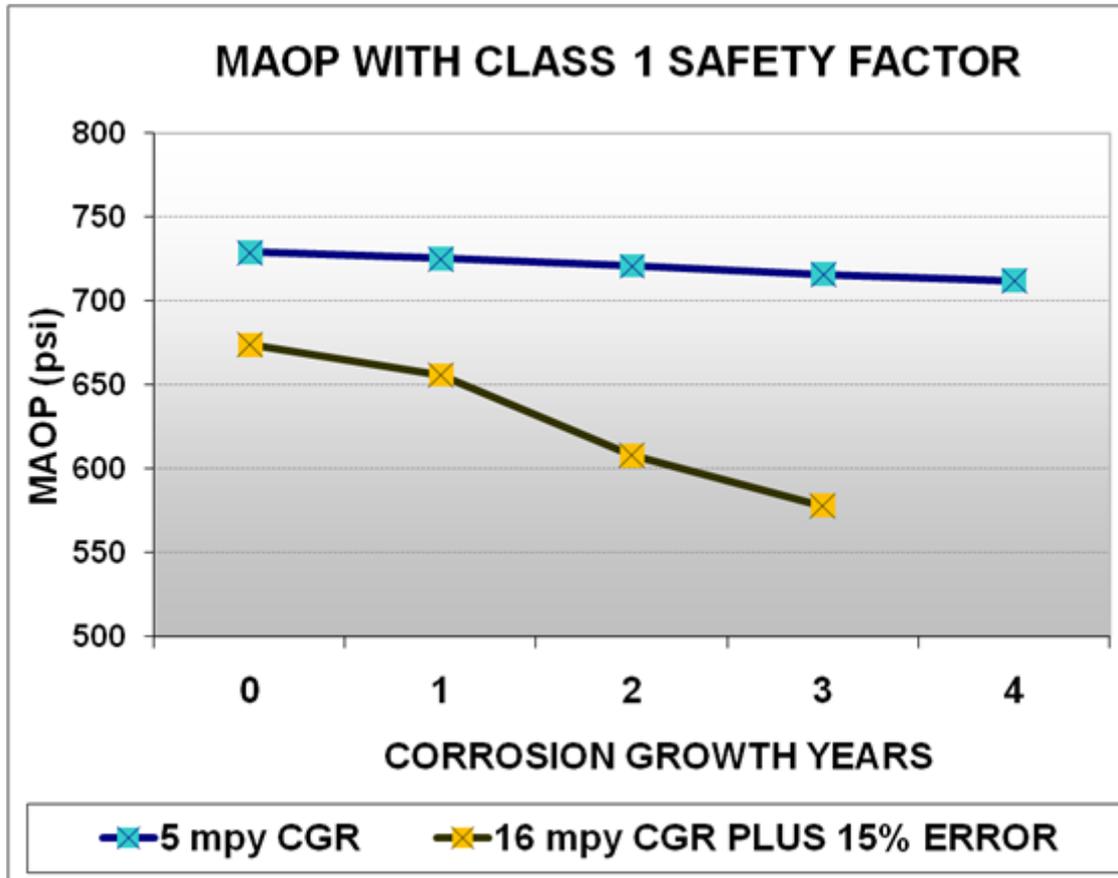
80% wall loss

- In 6 years for CGR 8 mpy
- In 3 years for CGR 16 mpy



ANOMALY REPAIRS

TIME DEPENDENT THREATS – CORROSION



Class location safety factor used

80% wall loss

- 2 years for 16 mpy and 5 mpy
- Depth and length under estimated by 15%

MAOP change in 4 years



ANOMALY REPAIRS

TIME DEPENDENT THREATS – CORROSION

Summary

- Corrosion Growth Rates may exacerbate problems with non-conservative remaining strength calculations
- Tool tolerances may exacerbate problems with non-conservative remaining strength calculations
- Outside Stresses



CORROSION GROWTH RATES

KEY TOPICS (cont.)

Individual Panelist Presentations

