



Assessment of Corrosion and Remaining Service Life on Aging ACSR Conductors

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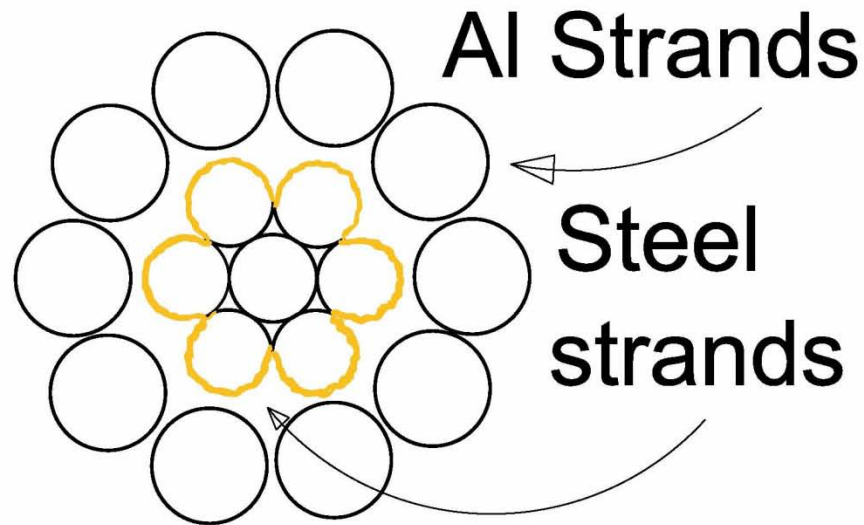


Range of conditions to be expected

- **Level #1** As-New Condition
- **Level #2** On-Set of loss of galvanizing – 80% Zn remaining
- **Level #3** Some exposure of the steel core wire – 50%
 - Loss of aluminum possible in damp environment
 - No loss of steel mass
- **Level #4** Most of the galvanizing lost – 20%
 - All Galvanizing lost – 0% Zn remaining
 - Loss of steel mass possible

Steel Core Corrosion

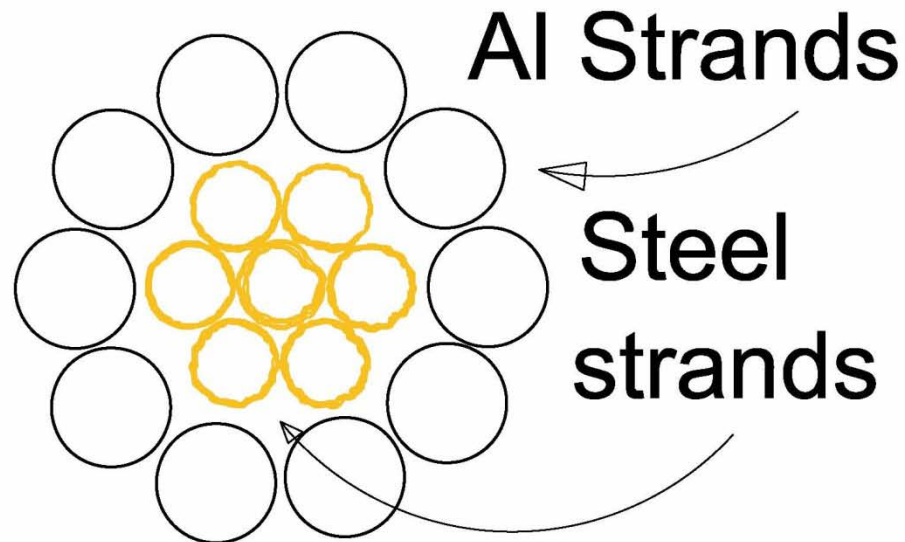
Corrosion Level #4 20% Galvanizing





Steel Core Corrosion

Corrosion Level #4 0% Galvanizing





Remaining Service Life

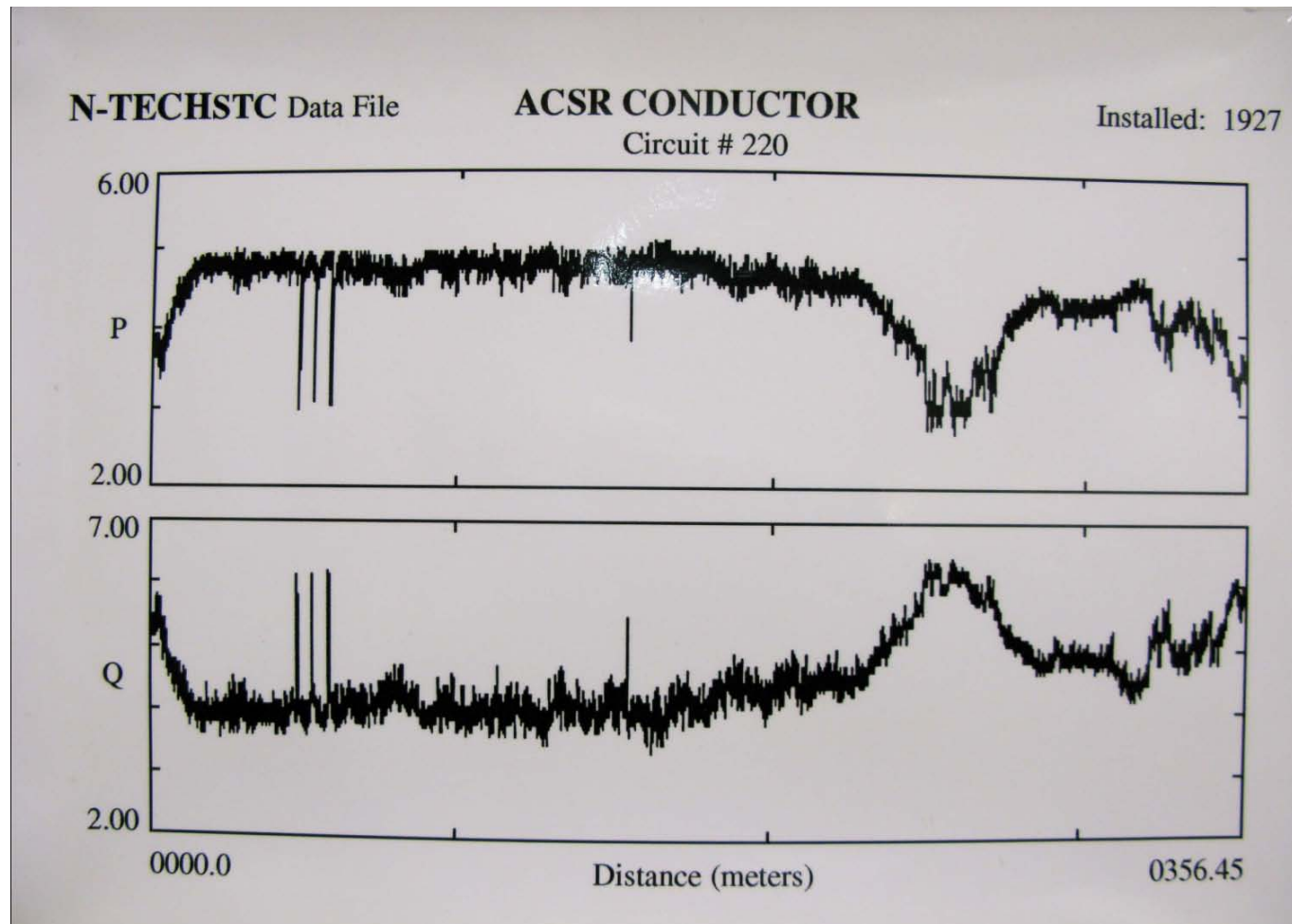
- Age of circuit
- Historical climate and Industrial pollution
- **CCAS** assessment
 - #1 – long service life
 - #2 – long service life
 - #3 – useful service life remaining
 - #4 – near end of service life



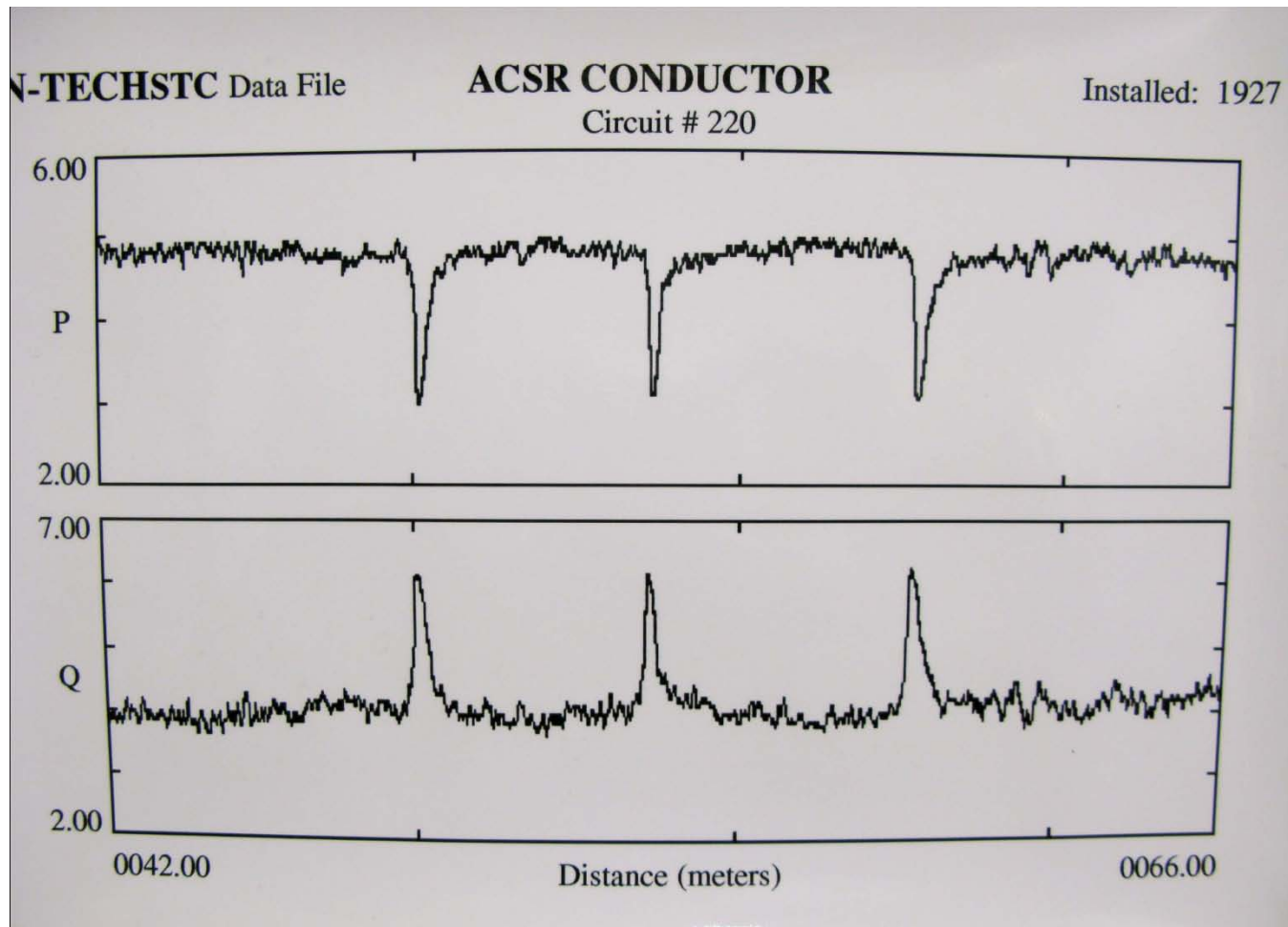
End of Service Life

- Majority of spans tested = #4
 - A measureable loss of steel mass
- At least 1 location on every span tested = #4
 - A measureable loss of steel mass
- A measureable loss of aluminum mass
- Only one section of circuit shows severe corrosion

Non-Destructive Test Result



Non-Destructive Test Result



Steel core bundle at level #3



Steel core bundle at level #4-20%



Steel core bundle at level #4-0%



Loss of aluminum



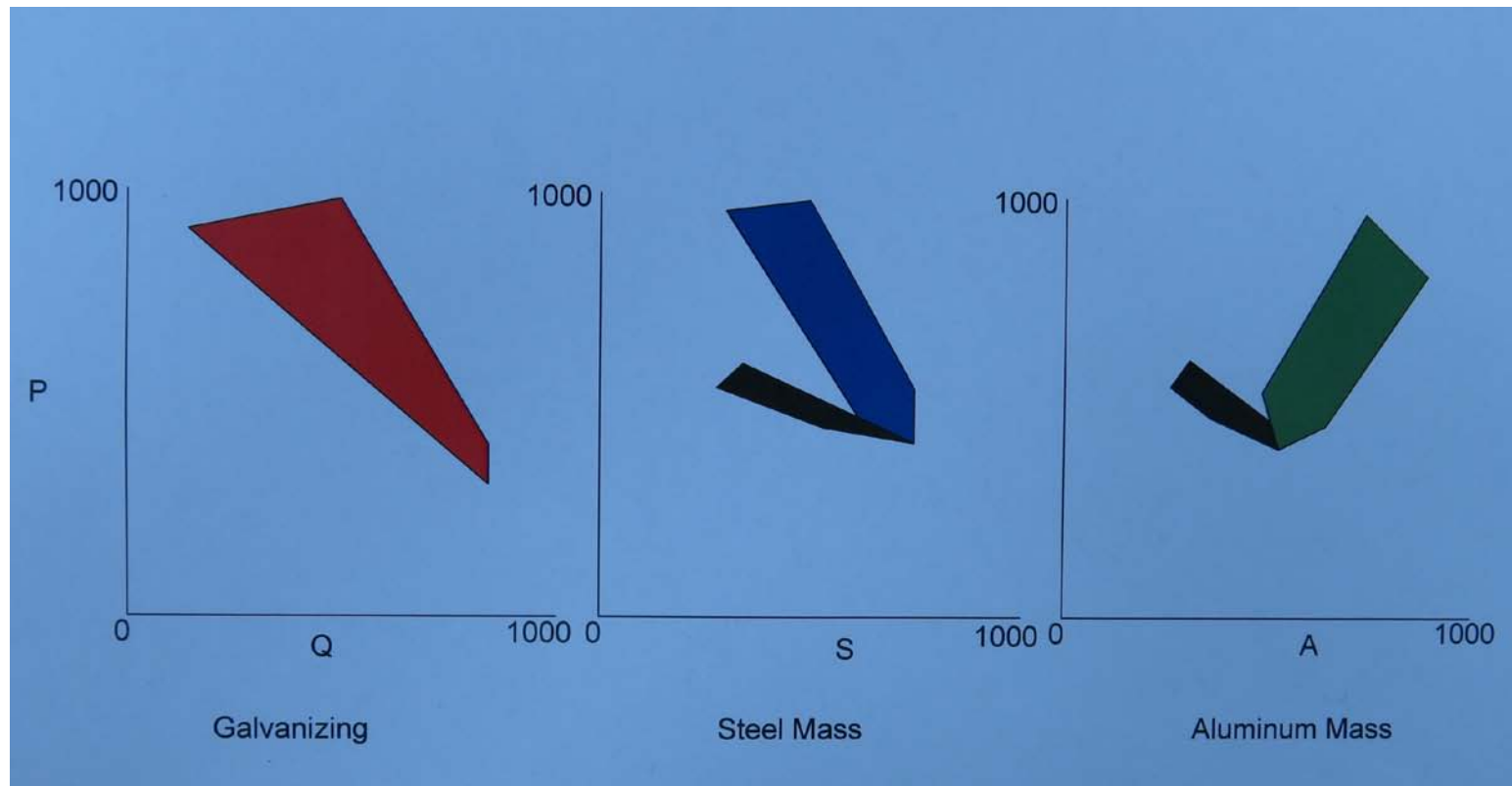
Loss of aluminum mass



Steel core condition



CCAS-Steel Measurement





Remaining Service Life (RSL) Projection

- Galvanizing loss is a leading indication
 - - at 0% galvanizing about 5 to 10% of useful life remains
- Aluminum loss should be considered
 - - likely no loss in steel mass
 - - adequate galvanizing on steel core
- Steel mass loss indicates critical failure
 - - any measurable mass loss indicates imminent failure

Failed ACSR Core Bundle





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