Management of Pipelines Affected by AC Interference – Good Practice Guide (GPG) General Information

By

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To

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Presentation

- This presentation has been produced to provide UKOPA with information on the present status of the Good Practice Guide (GPG) for the Management of AC Interference on Pipelines.
- I intend to provide a brief summary of the topics that the GPG will address and the approximate timescale for completing the document

Background

- I was asked by UKOPA to produce a GPG on the Management of AC Interference on Pipelines
- I have been involved in a few investigations into AC corrosion on pipelines in the past
- I was also involved in the preparation of BS EN 15280 *Evaluation of a.c. corrosion likelihood of buried pipelines applicable to cathodically protected pipelines* as one of the UK representatives
- About 30 years experience in the pipeline industry primarily on CP and related issues

Aim

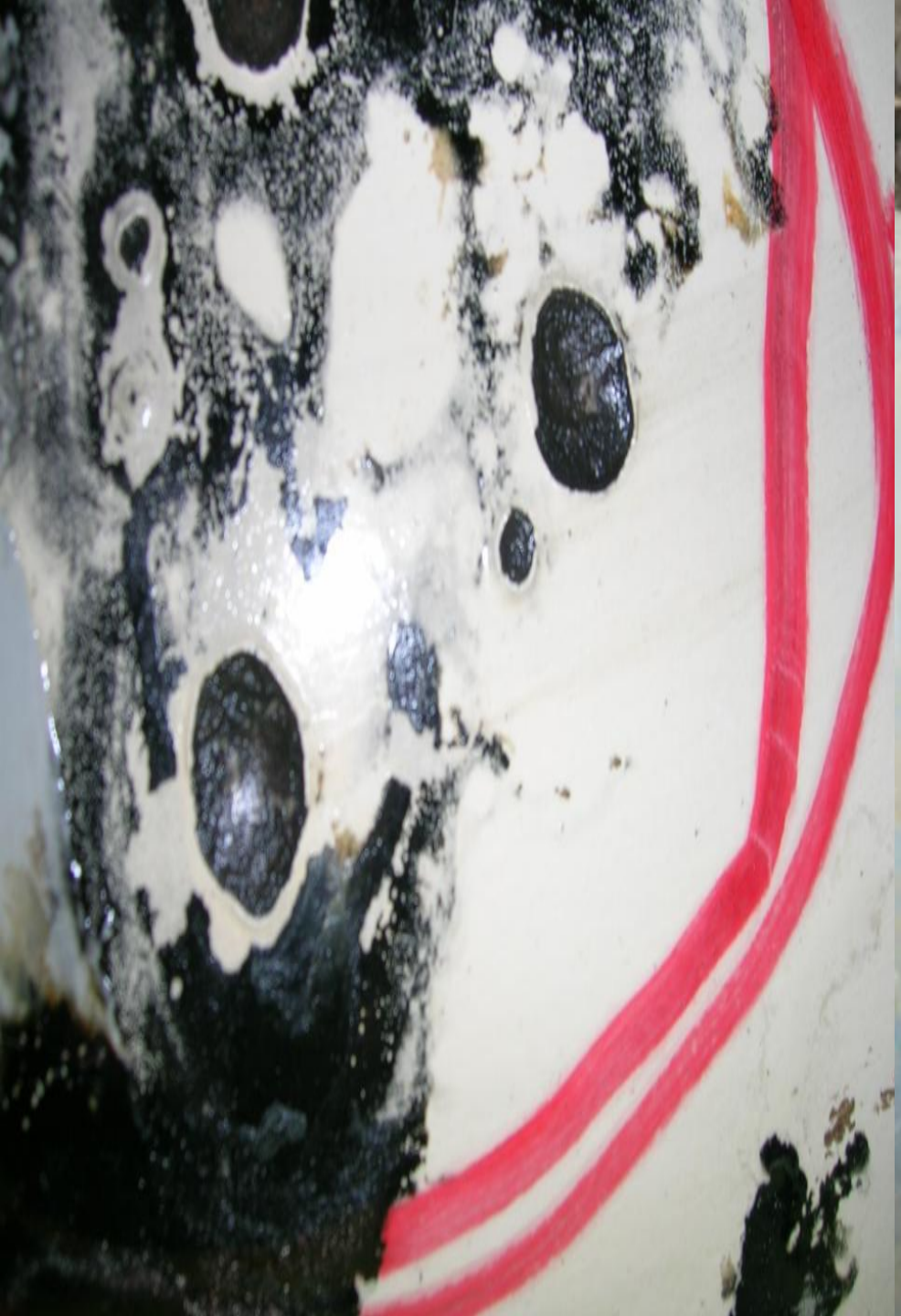
- **The aim of the Good Practice Guide (GPG) is to provide practical guidance on AC interference both from an electrical safety perspective and the management of AC corrosion risk.**
- **There is guidance given in BS EN 50443 on electrical safety but it is not ideal in certain respects and differs from international best practice advice and guidance in current UK legislation**
- **The GPG aims to provide some clarity particularly on touch potential values that operators in the UK should consider for pipelines.**
- **Suggested monitoring and maintenance frequencies for AC interference monitoring and mitigation systems are provided in the GPG**

Aim 2

- **BS EN 15280 specifies the protection criteria. However, the GPG expands on the criteria and discusses situations based upon experience where the alternative criteria given in BS EN 15280 may not be valid and have limitations.**
- **The guidance given in BS EN 15280 has been expanded upon to give practical information on AC corrosion mitigation and monitoring**
- **The GPG aims to provide identify issues that pipeline operators need to consider when installing an AC corrosion monitoring and mitigation system on both new and existing pipelines.**

Status

- Draft of document sent to UKOPA in January 2018
- Actual document was considered to be more detailed than had been anticipated by the PWG.
- The document has now been revised and sent to Simon Joyce for comment
- Once comments have been received and reviewed the document will then be revised and submitted for Peer review
- Peer review will be conducted by John Dyson
- If document back by end or May looking at completion by August 2018



Contents of GPG

- 1.0 Introduction to GPG
- 2.0 Described different methods of AC interference e.g. coupling types and consequences of AC interference i.e personnel safety and AC corrosion
- 3.0 Include a review of case histories on AC corrosion failures/incidents in the UK and provide guidance on typical corrosion AC corrosion rates that have been experienced

Contents of GPG- 2

- 1,0 Provide guidance on situations that lead to high AC corrosion rates on cathodically protected pipelines.
- 2.0 Identify high risk factors e.g soil resistivity, soil composition, situations that can lead to high levels of AC interference e.g acute crossing angles, out of balance loads etc.
- Requirements for remote monitoring and limitations of remote monitoring systems in realtion to AC interference

Contents - 3

- Protection criteria for AC corrosion mitigation are discussed and reasons why AC current density limits rather than AC voltage criteria have been selected.
- Some operators and CP companies still use voltage limits given in now withdrawn DD CEN/TS 15280. AC voltage limits were withdrawn because AC corrosion failures had occurred at voltages less than the values specified.
- Applicability of different protection criteria to mitigate AC interference
- Use of alternative protection criteria and methods of assessing AC corrosion

Contents - 4

- Section included on electrical safety.
- This will include construction and operational electrical safety risks
- It will include a lot of the information included in the Electrical Safety presentation to follow but a more detailed written text will be provided
- The requirements and processes for assessment of AC interference risk and mitigation on both new and existing pipelines will be outlined

Contents - 5

- Provide guidance on AC interference in specific situations

  - **Overhead pipeline crossings of railway lines**
  - **Pipeline to pylon separation**
  - **Routing of pipelines close to substations**
  - **Use of PCRs and surge protection devices**
  - **Microwave transmission towers and pipelines**
  - **AC interference from rail traction systems**
  - **Power cable crossing of above ground pipelines**
  - **Issues associated with routing new cables close to existing pipelines**

Contents - 6

- Guidance on AC interference monitoring and maintenance frequencies
- Nature of tests to be conducted
- Advice on how to conduct examinations on ILI features to determine the level of AC interference on a pipeline system.
- Indicate tests required so that operators can confirm whether AC corrosion is a possible cause of external corrosion defects

Supplementary Information

- Provide guidance on mitigation of AC interference during construction e.g earthing of pipework , inline current flow and mitigation of static electricity risk
- Discuss affect decoupling devices across I/Js can have on AGI earthing systems and spark risk.
- Increased incendive ignition risk from AC interference at I/Js..
- Provide guidance to powerline operators on effects increase in power line loading can have on buried utilities
- Guidance on use of surge protection and insulating devices.
- Identify maximum coating withstand and insulation joint voltage limits.
- Identify specific requirements for surge protection on insulated flanges

Technical Publications

- There are a number of published documents in the literature on AC interference
- The literature search conducted as part of the preparation of AC GPG will be given to UKOPA
- Nikki Barker is to include these technical papers in the members gallery.
- A detailed list of relevant standards and legislation will be provided

Appendices

- The Appendices to the document will include a complete list of references and relevant standards.
- Details of questionnaires that pipeline operators should send to powerline operators to gain details of interfering powerlines and details on pipeline system that powerline operators will require to undertake any model.
- List of useful definitions and abbreviations

Anything Else

- Is there anything that UKOPA want covered but has not been identified as being covered in the GPG?
- Are there any issues members wish to address in the GPG?