

Combined Application of In-Line Inspection Magnetic Technologies

for Detection of Stress Corrosion Cracks in
GAZPROM "Yambourg - Elets-1" Gas Pipeline By:

Dr. S.E. Popov,

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Venue: EF3_B WOC3 Pipeline Integrity and The
Human Challenge



Patron



Host

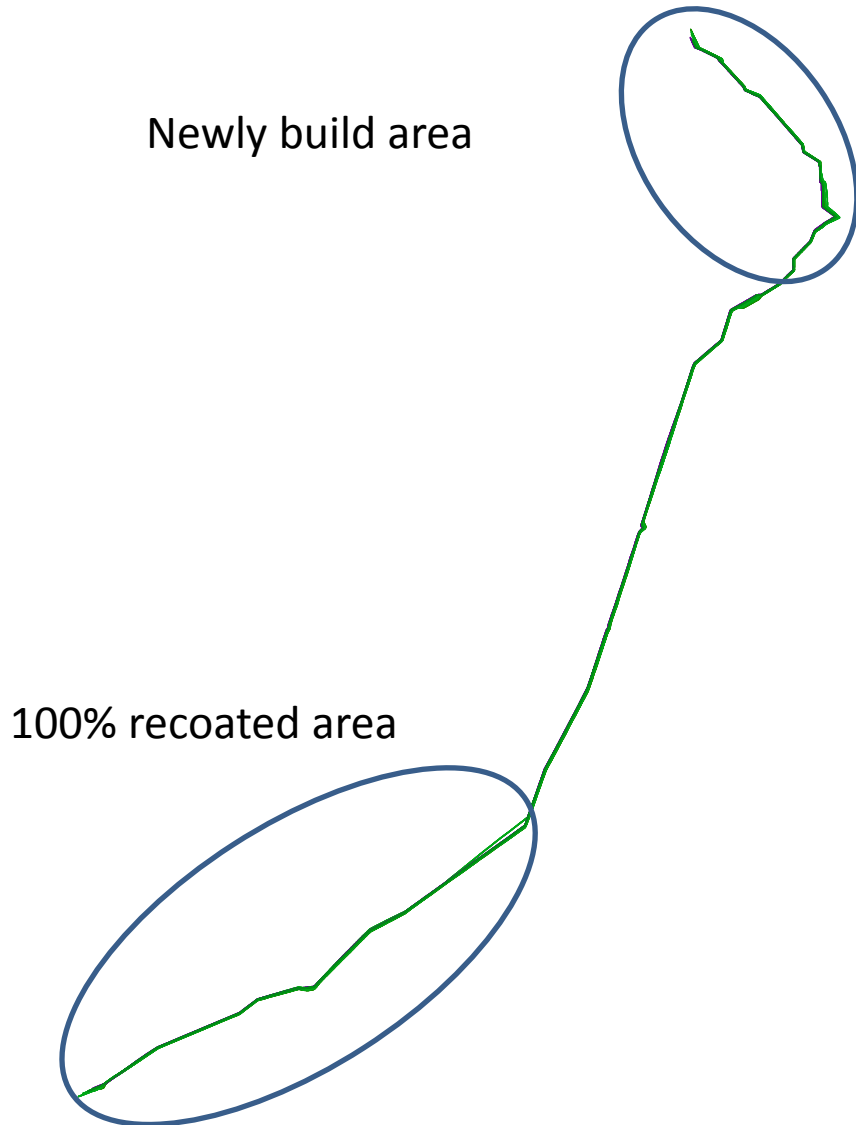


Host Sponsor



Jamburg-Elets-1

Pipeline area characteristics



6 56'' lines running in parallel
25 km were newly constructed
25 km were fully exposed
repaired and recoated

Jamburg-Elets-1 Pipeline area characteristics

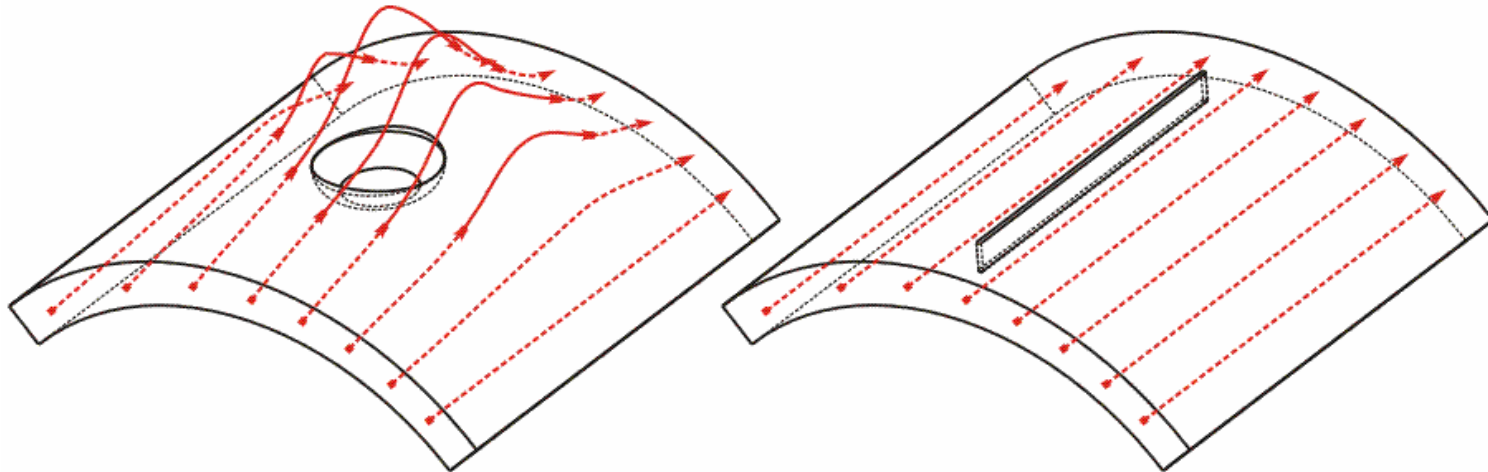


All lines SCC concentration zone

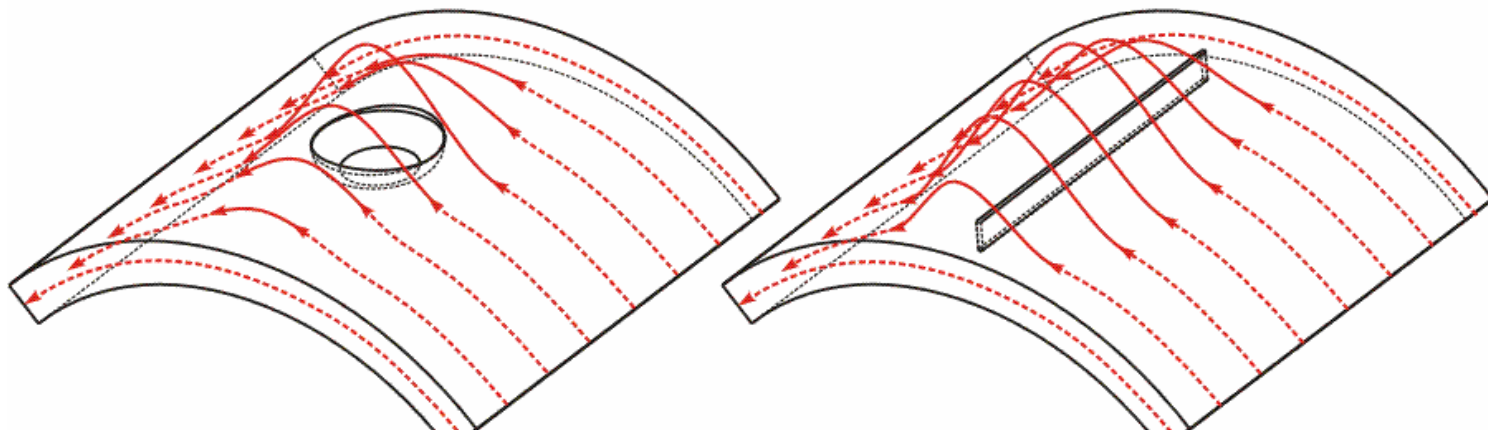


All lines Corrosion
concentration zone

MFL – longitudinal magnetization



TFI – transverse magnetization

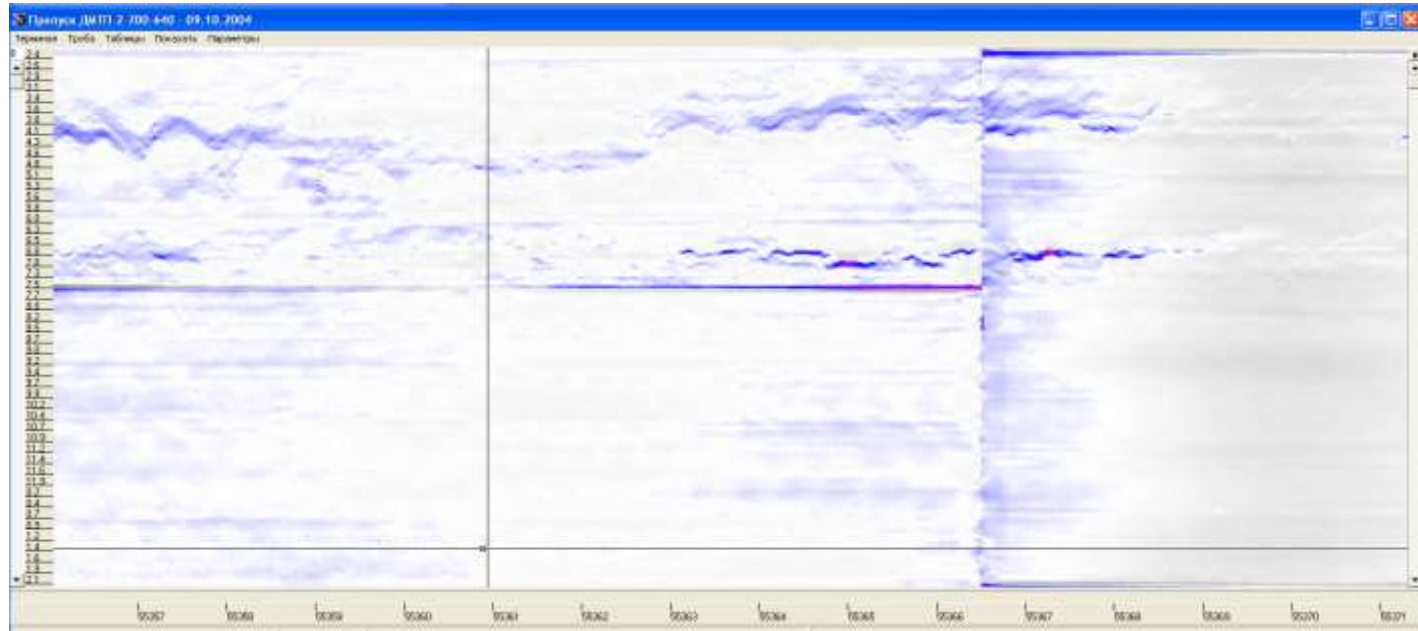


Spetsneftegaz NPO JSC combined in-line inspection technology

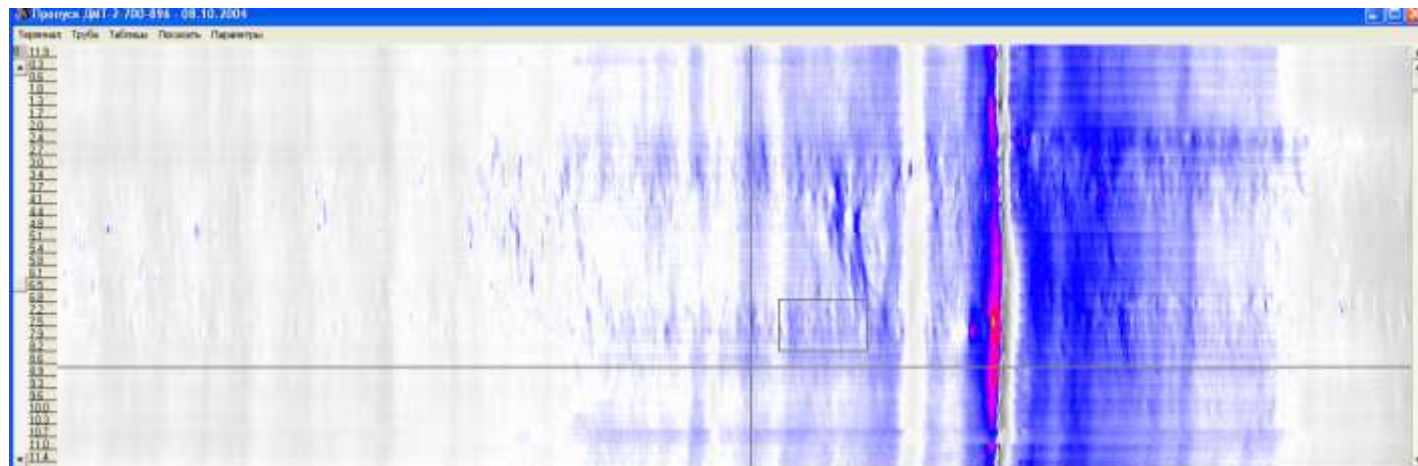


Spetsneftegaz NPO JSC combined in-line inspection technology

TFI

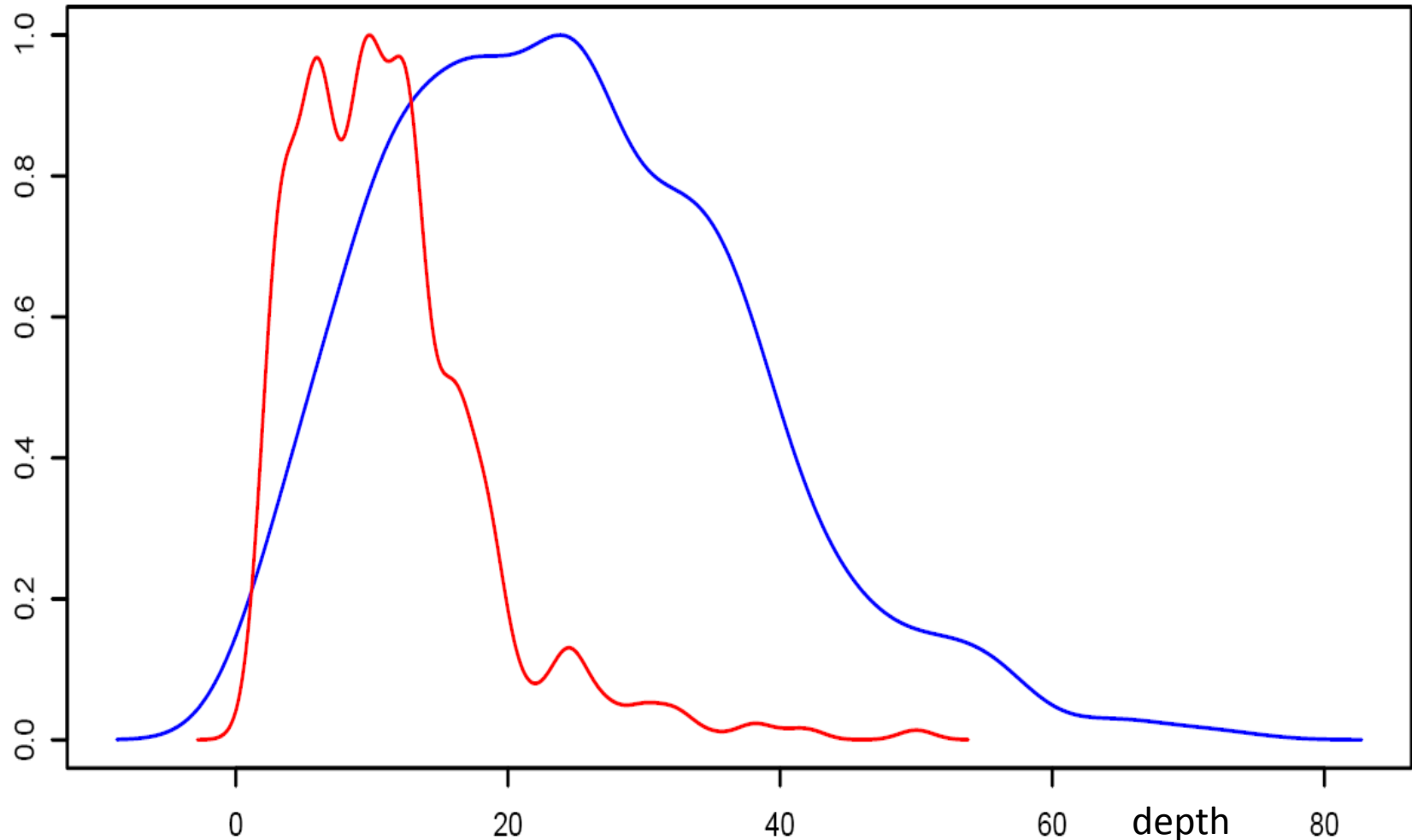


MFL



Combined in-line inspection technology

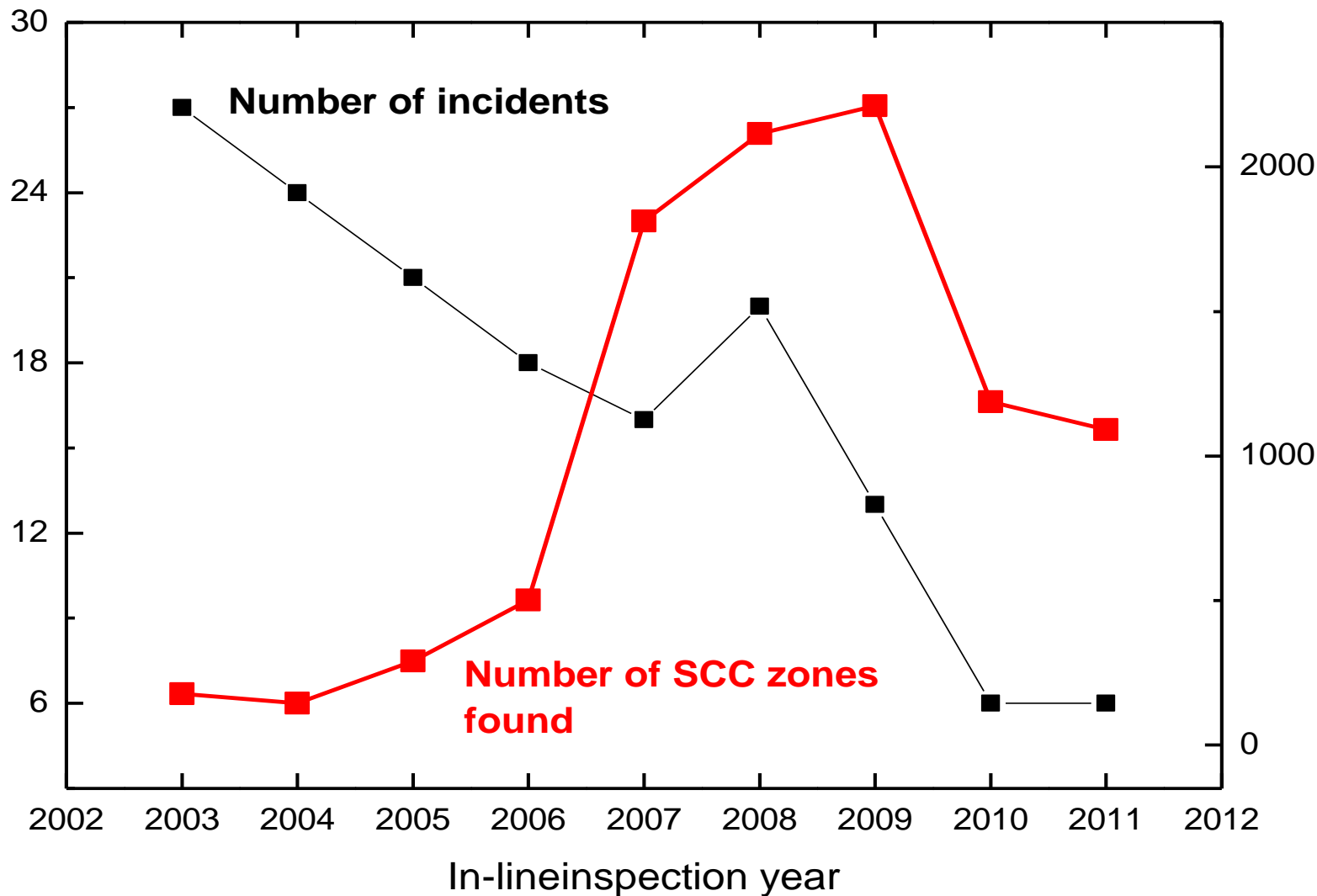
Accuracy



— Number of defects missed

— Number of defects confirmed

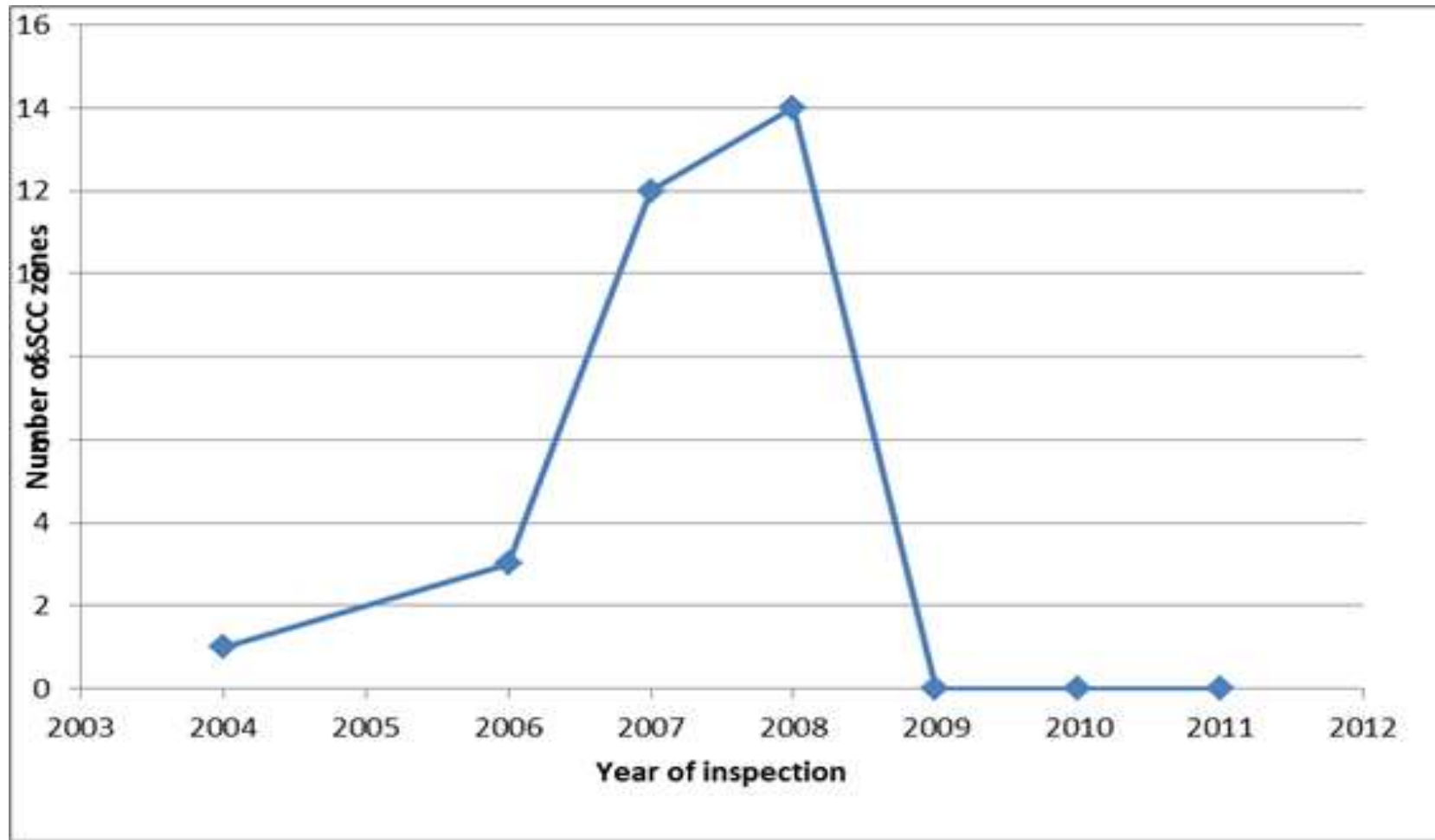
Combined in-line inspection technology results



Purposes of research work

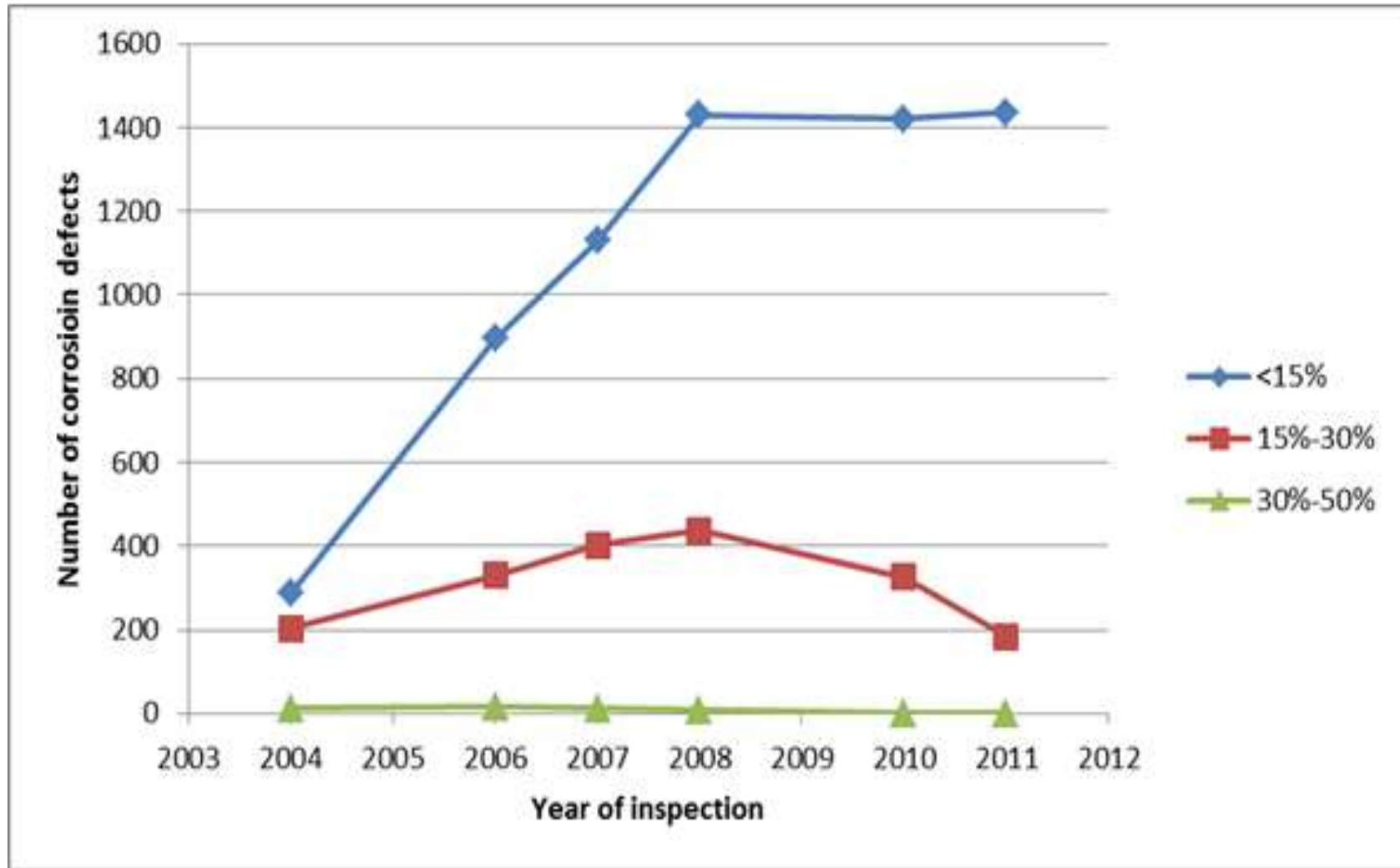
- Using results of in-line inspections of one section of Jamburg-Elets-1 pipeline, which were carried out in 2004, 2006, 2007, 2008, 2010, 2011, i.e. with one year period, following results will be achieved:
- Optimal period for in-line inspection of gas pipeline damaged by SCC
- Variance of estimation of general corrosion depth

Number of SCC zones on 100 km section of Jamburg-Elets-1 pipeline

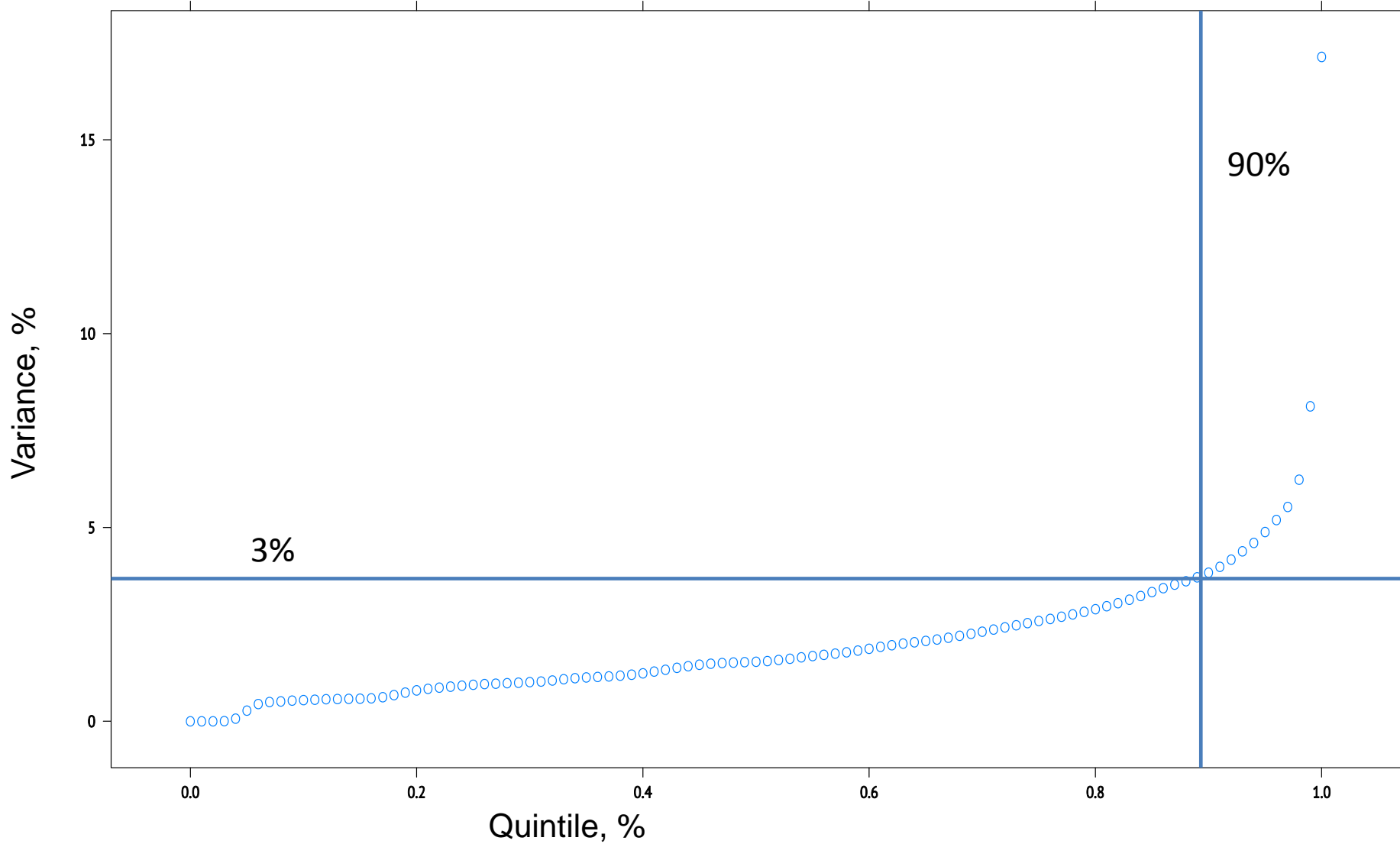


3 year ILI period for pigs with 15% pipe wall depth sensitivity level
1 year ILI period for pigs with 25% pipe wall depth sensitivity level

Number of corrosion zones on 100 km section of Jamburg-Elets-1 pipeline



Variance of corrosion depth estimation



Conclusions

- Multiply approach has to be used for in-line inspection of gas pipeline damaged both by SCC and corrosion
- If the SCC sensitivity level of magnetic in-line inspection is better than 15% three year period is enough for keeping pipeline safe. In other cases 1 year period is recommended.
- If the pipeline has good CP protection there it is not possible to determine corrosion growth rate by means of in-line inspection methods on basis of 5 years.
- The determined variance in integral corrosion depth estimation is less than 3%. Which means a possibility in good calibration of corrosion depth estimations.