

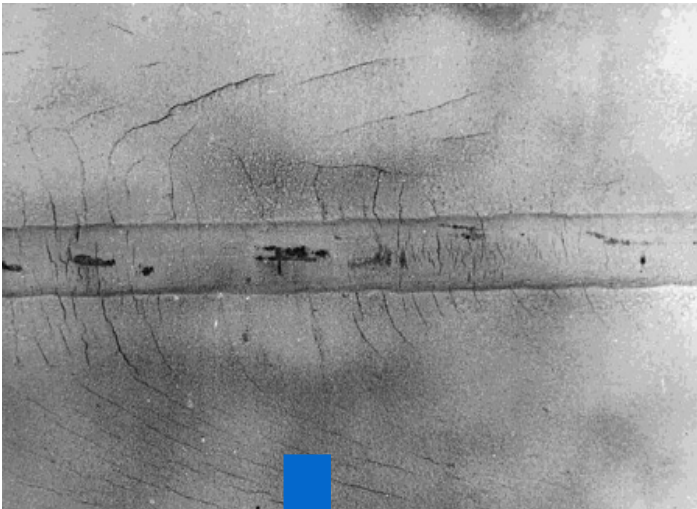
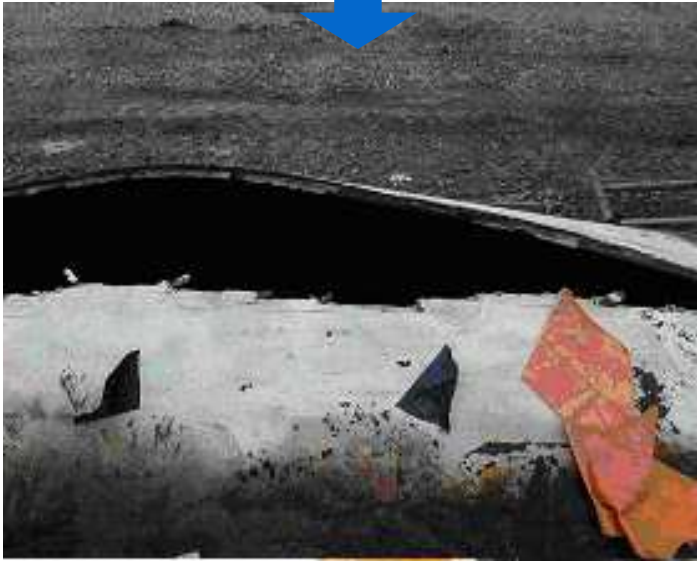
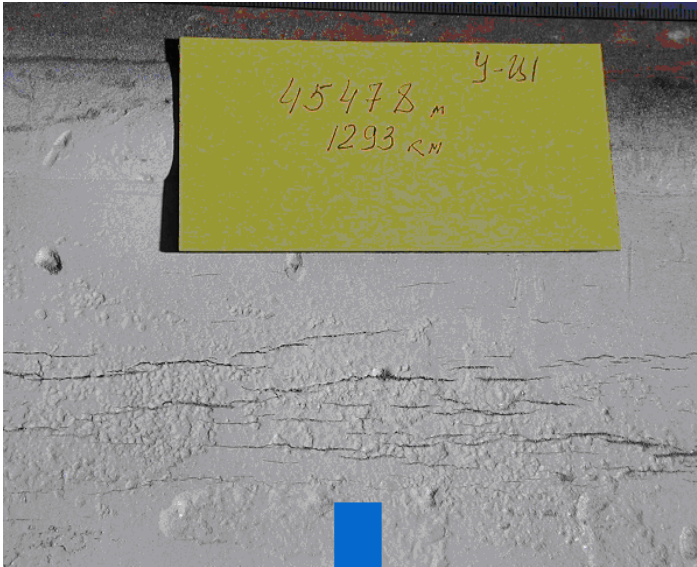


# CONSTRUCTION OF PIPES RESISTANT TO STRESS-CORROSION

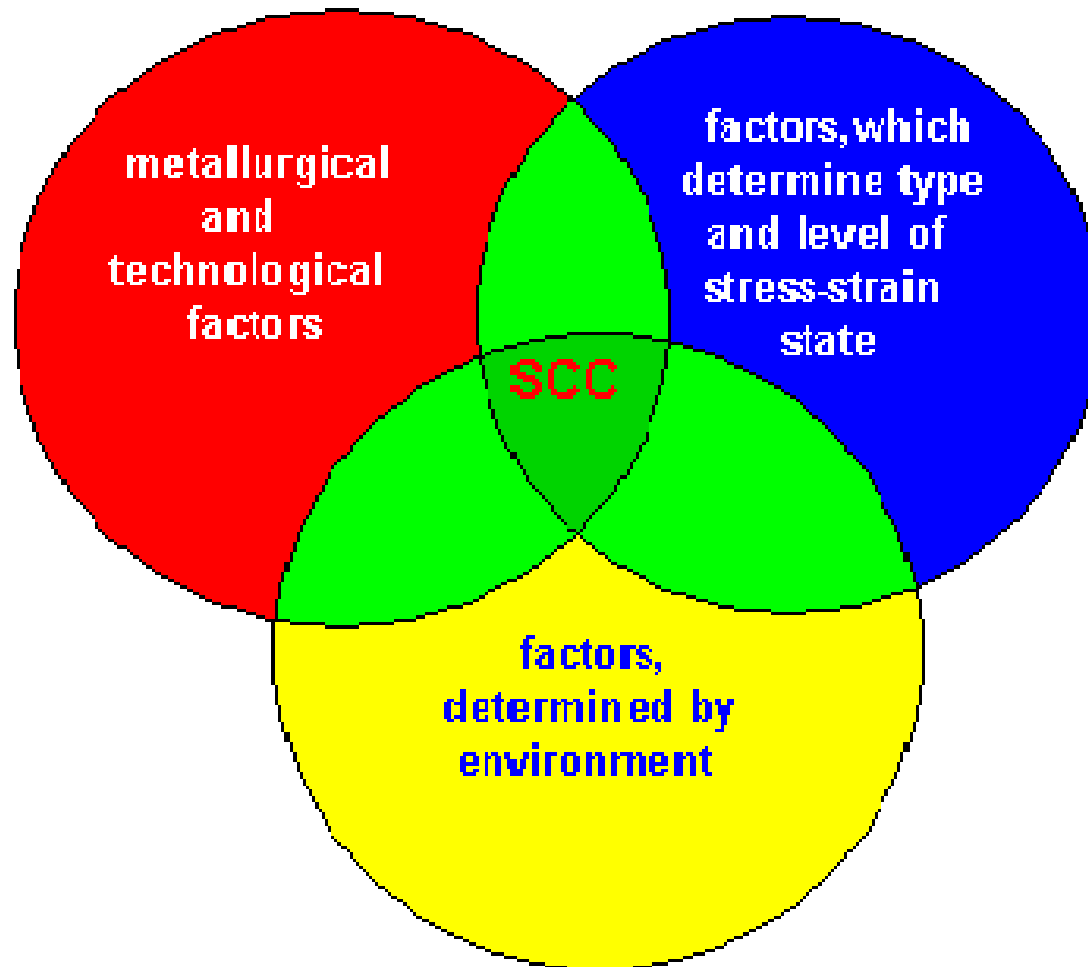
**Kharionovskiy V.V., Arabey A.B.  
VNIIGAZ, Gazprom, Russia**

23<sup>rd</sup> World Gas Conference  
Amsterdam, 5-9 June, 2006

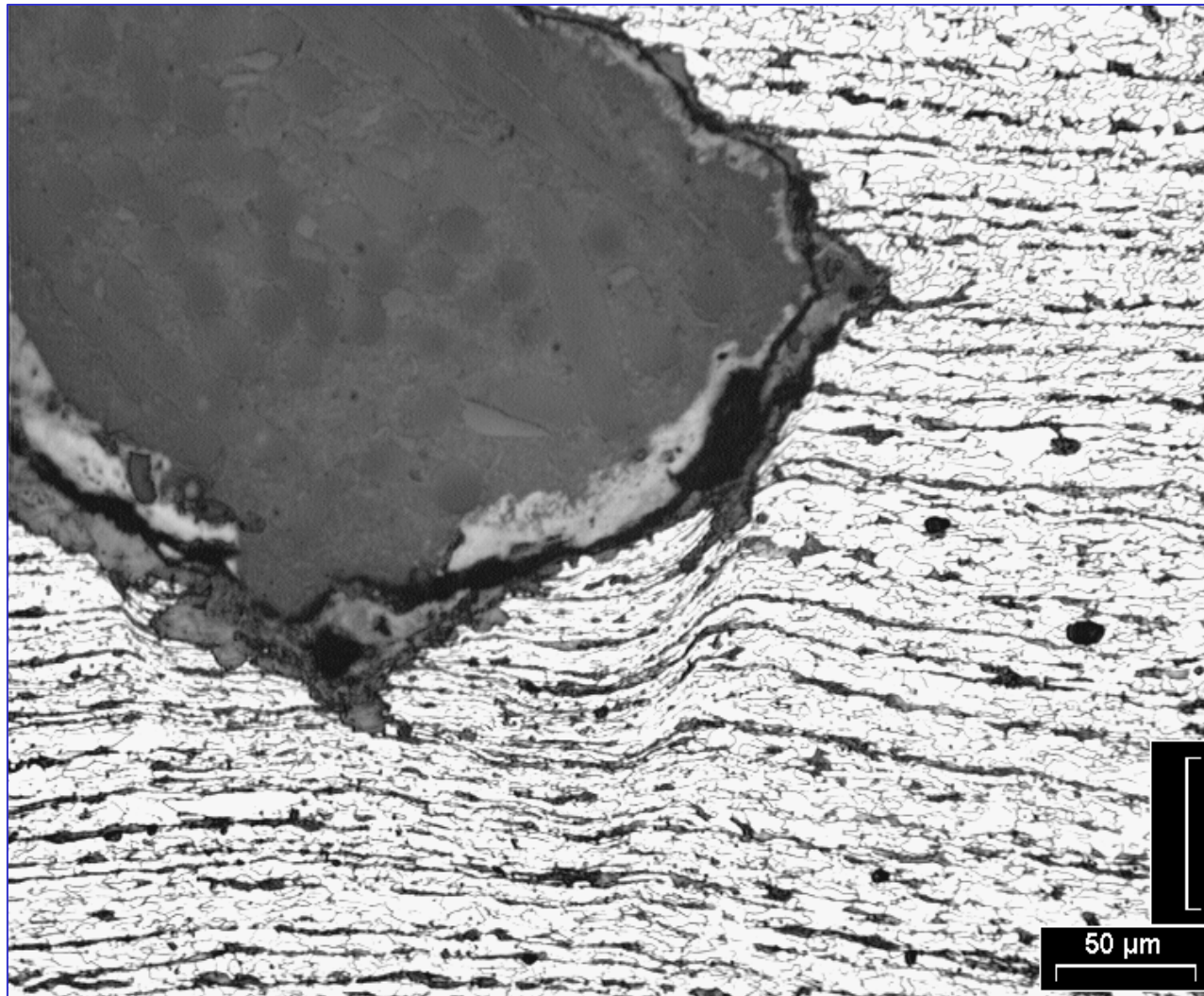
# SCC damage of pipe material



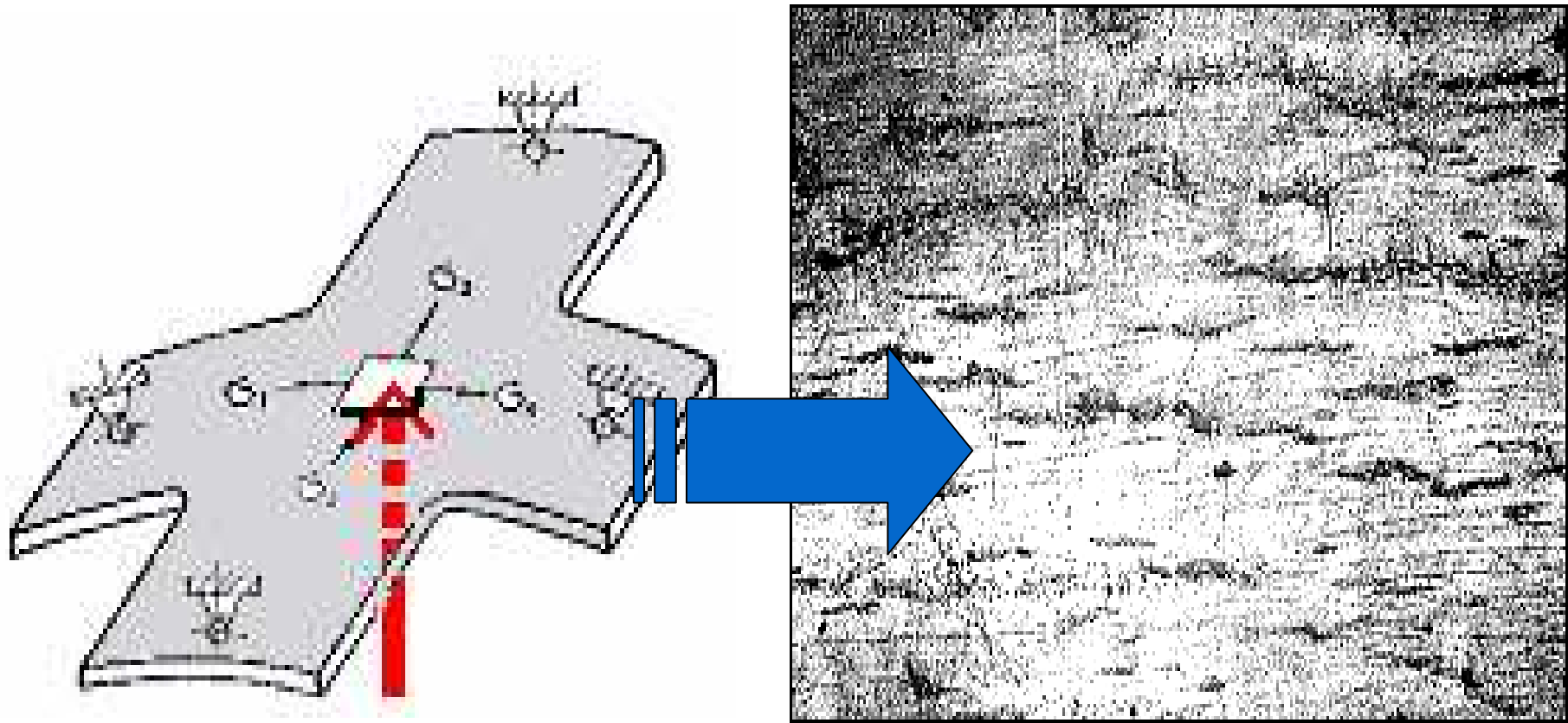
# Groups of reasons for initiation and development of SCC



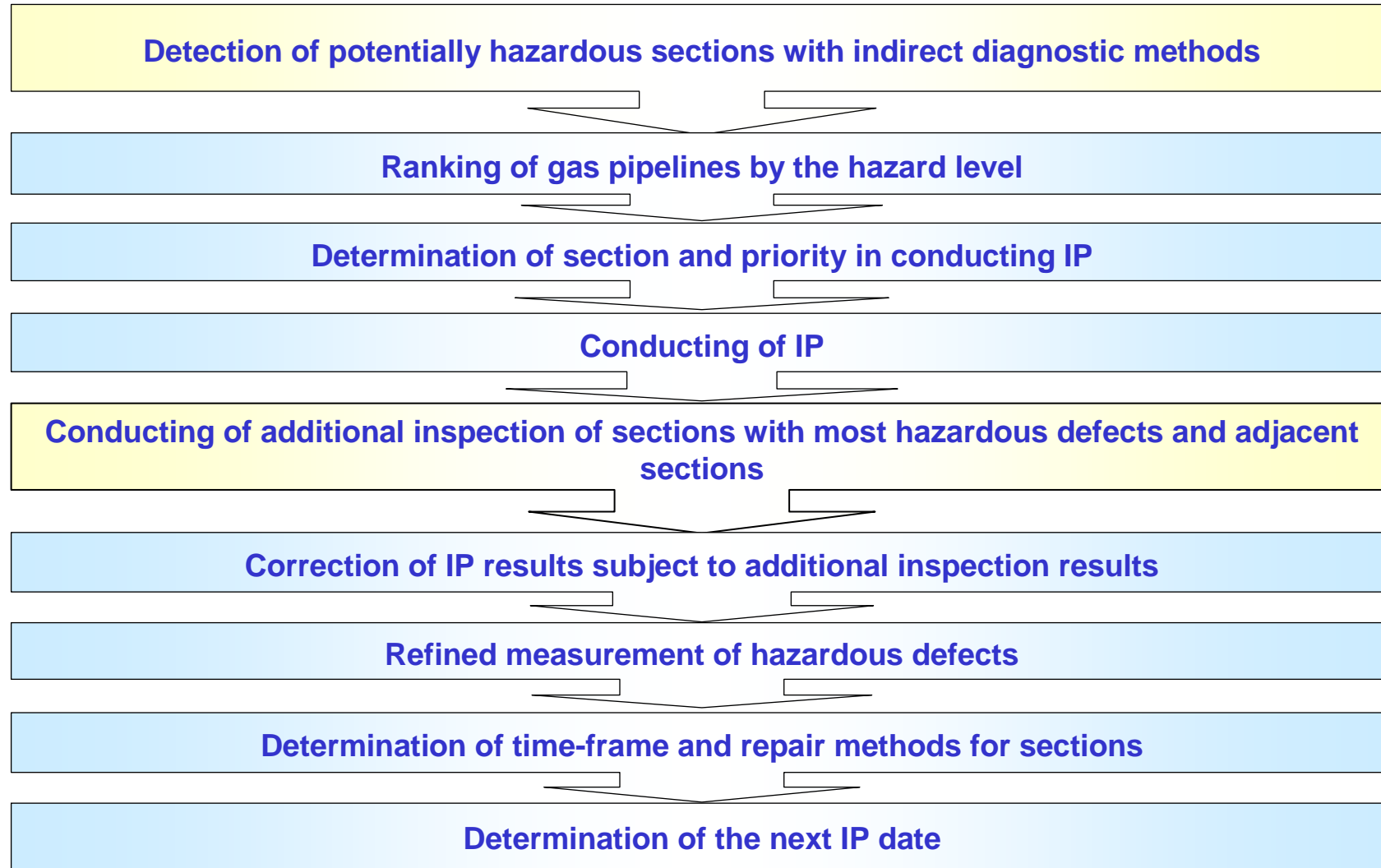
# Plastic deformation on the top of SCC



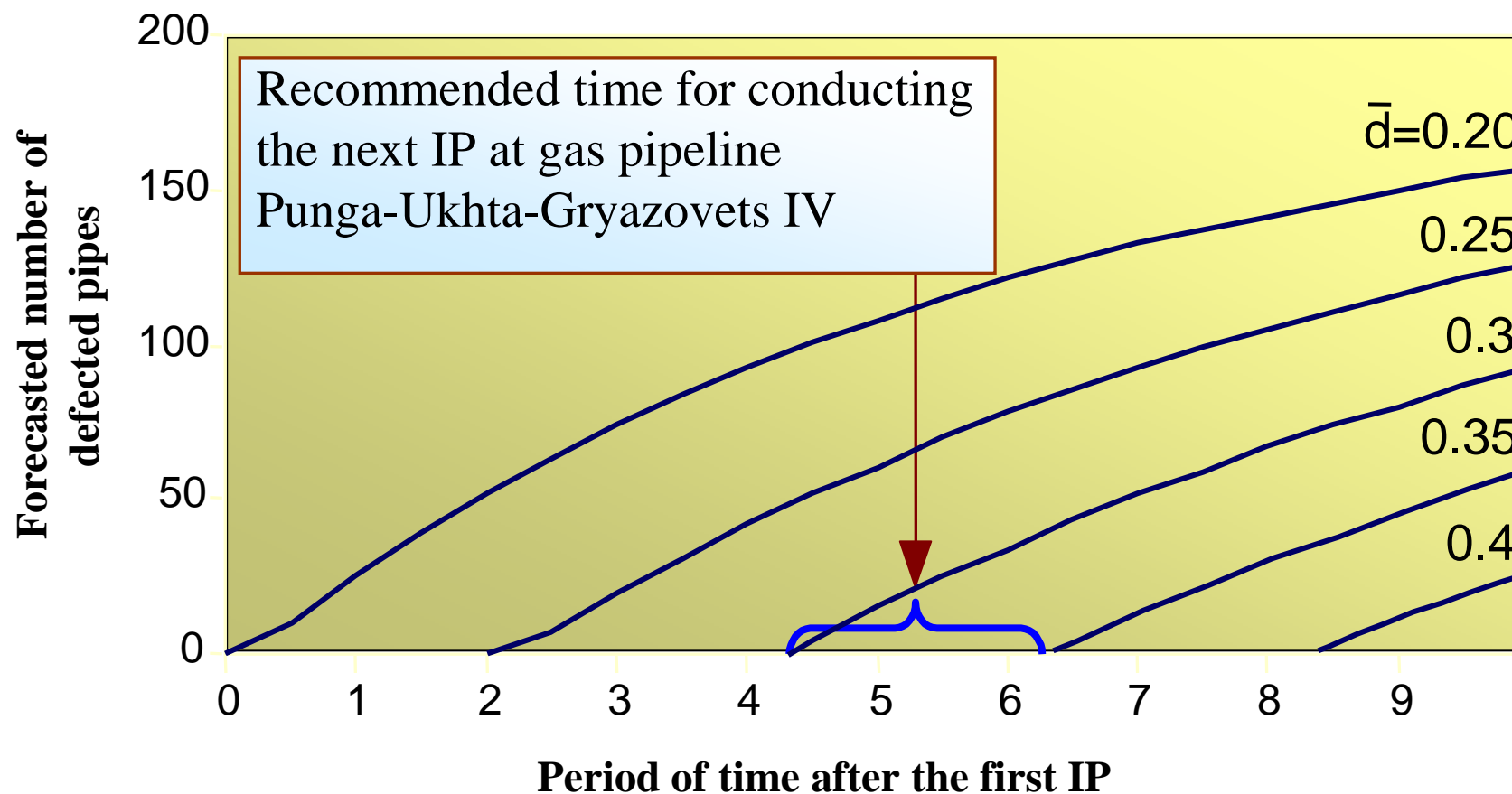
# Strategy of firmness tests against SCC



# Combining of intelligent pigging (IP) and indirect methods for optimization of inspection of GM sections with SCC defects



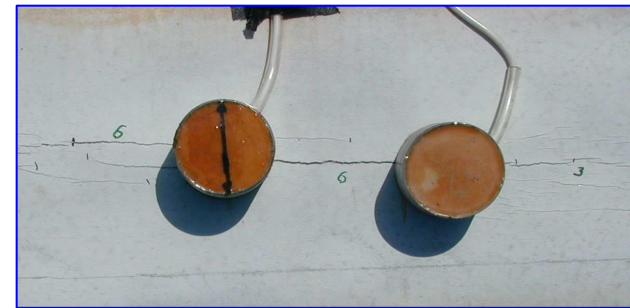
# Forecast of the SCC defects growth and Determination of the next IP date



# Instruments developed within the framework of the SCC investigation program



**MAGNETIC EDDY CURRENT CRACK DETECTOR MVD-3 FOR MONITORING OF SC CRACKS**



**MAGNETIC INDUCTIVE SENSOR MVD-3 FOR MONITORING OF SC CRACKS**



**DEVICE ITI-1 FOR DETECTION OF INSULATING COATING PEALINGS**



**EDDY CURRENT CRACK DETECTOR VK-1 FOR MONITORING OF THE CRACK LOCAL DEPTHS**



# Development of criteria of maintainability, repair technology SCC defects and complex technology of repair of gas pipeline sections subjected to SCC including welding method



❖ Investigations have been carried out on weldability in repair of SCC defects with overlaying welding (impulse welding and conventional technologies)

❖ Technology have been developed for after-welding treatment of overlaying in crack repair

«Technological regulations on weld repair of pipes with SCC defects»

# Testing of welded sleeve fitting with use of composite materials on $\varnothing 1220$ mm pipe with SCC defects

The sleeve fitting is installed on a SCC defect with a depth up to 46% of the pipe wall thickness and a length of 2.5 m.

1. Pipe testing was conducted with cyclic loading:

maximal pressure – 6.05 MPa

minimal pressure – 1.0 MPa

number of loading cycles – 360

2. After completion of the cyclic tests the pipe was loaded till destruction (12 MPa)

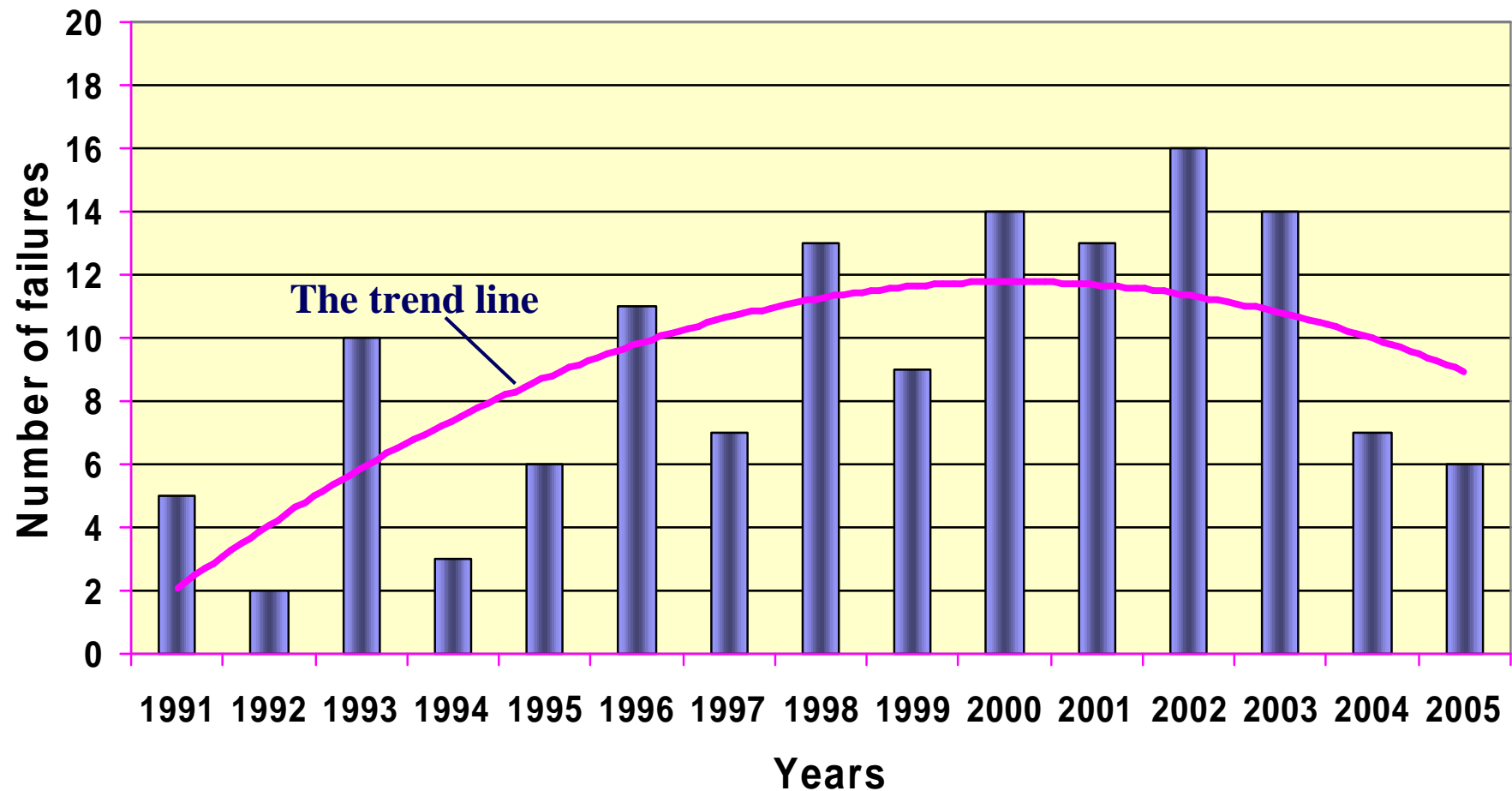


Pipe with installed repair construction is ready for testing



The sleeve fitting stopped longitudinal crack propagation. Further on the crack propagated crosswise along the sleeve fitting edge

# Dynamics of GM failures due to SCC



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