



Strål
säkerhets
myndigheten

Swedish Radiation Safety Authority

Modernisation and Human Factors Issues for Long Term Operations

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Context

- 1980 Nuclear Power phase out by 2010.
- 1995 Economically and environmentally impossible to phase out nuclear power by 2010.
- 1997 Barsebäck phase out agreement (1999, 2005).
- 2010-11 Opening for new built.

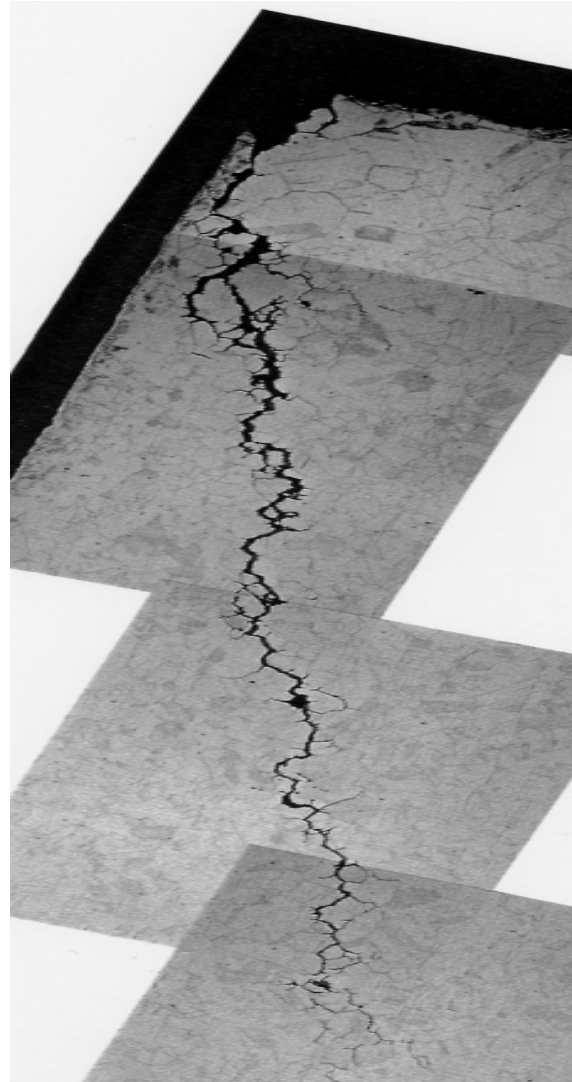


Effects on Maintenance

- 1997-98 The allocated resources for maintenance started to shrink. (Notified afterwards.)
- 2006 Forsmark event.
- 2010 Resources for maintenance doubled since 2006.



One of the IGSCC cracks which initiated FENIX



2011-01-24

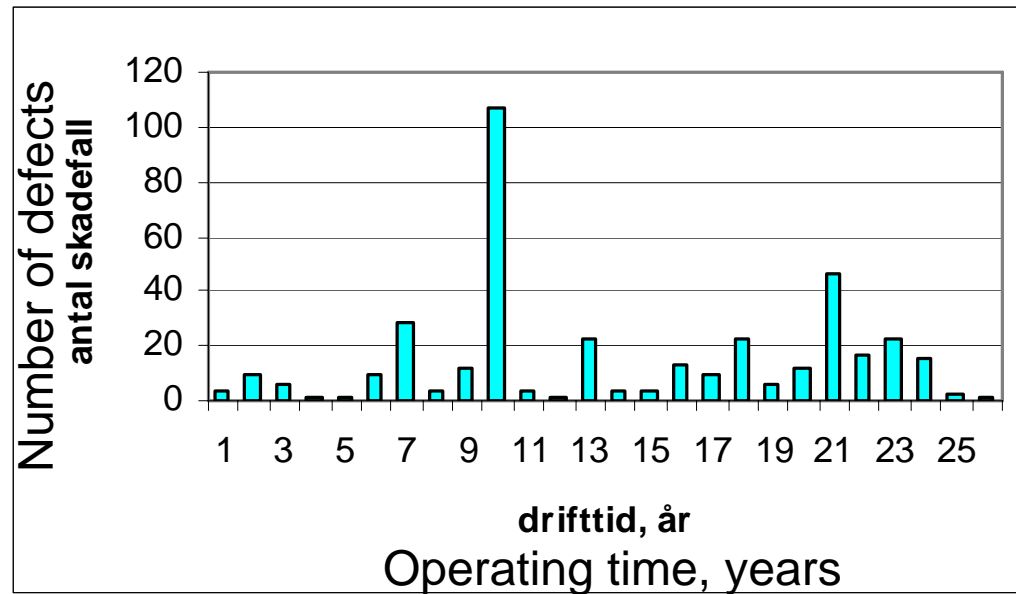


Modernisation

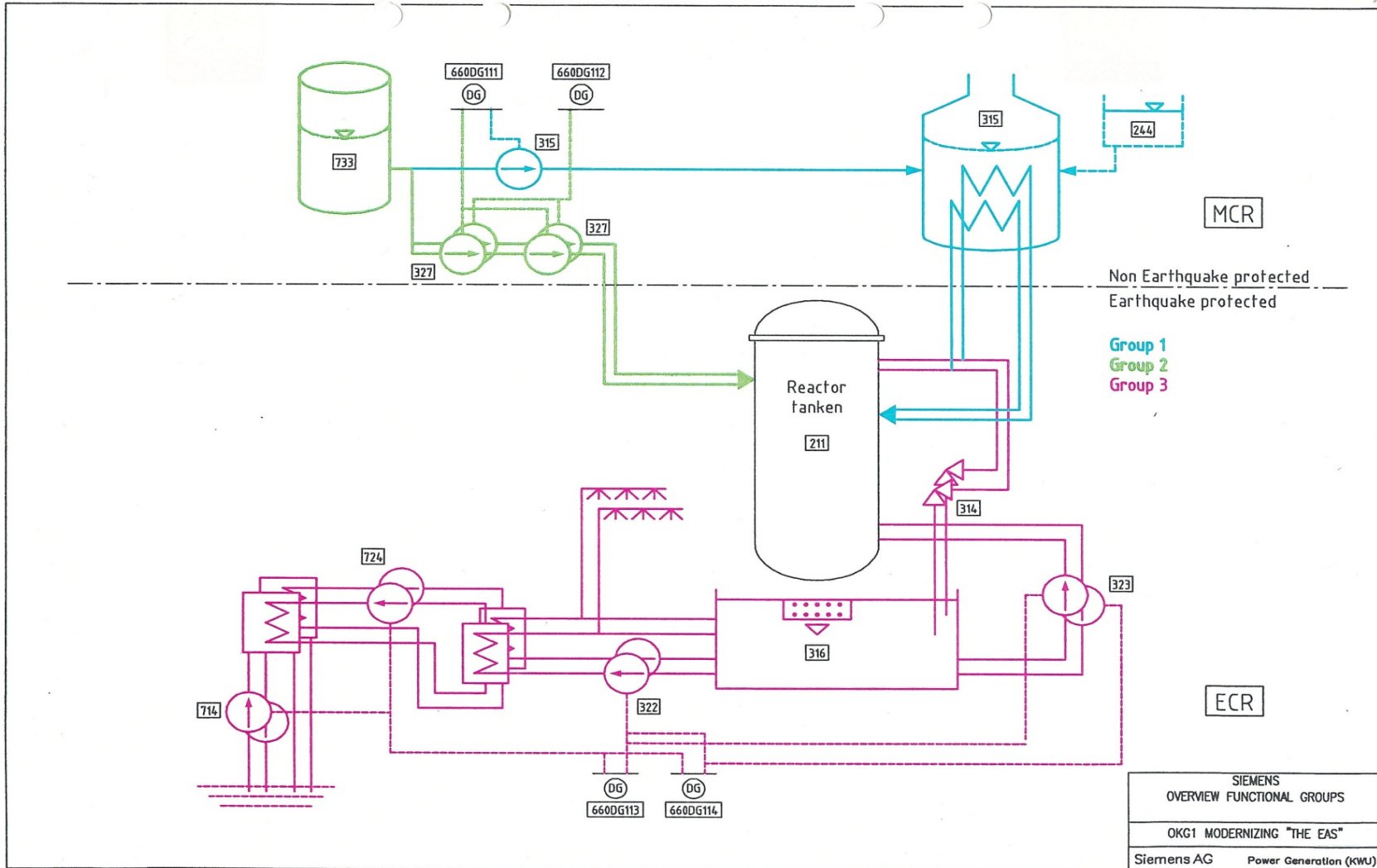
- Components and systems.
- Design.



SCC continuing phenomenon



The new design





Some issues for RB

- Knowledge transfer (40 to 50 to 60?).
- Design authority – vendor role?
- Manageing large projects.
- Dialog with utilities about requirements.

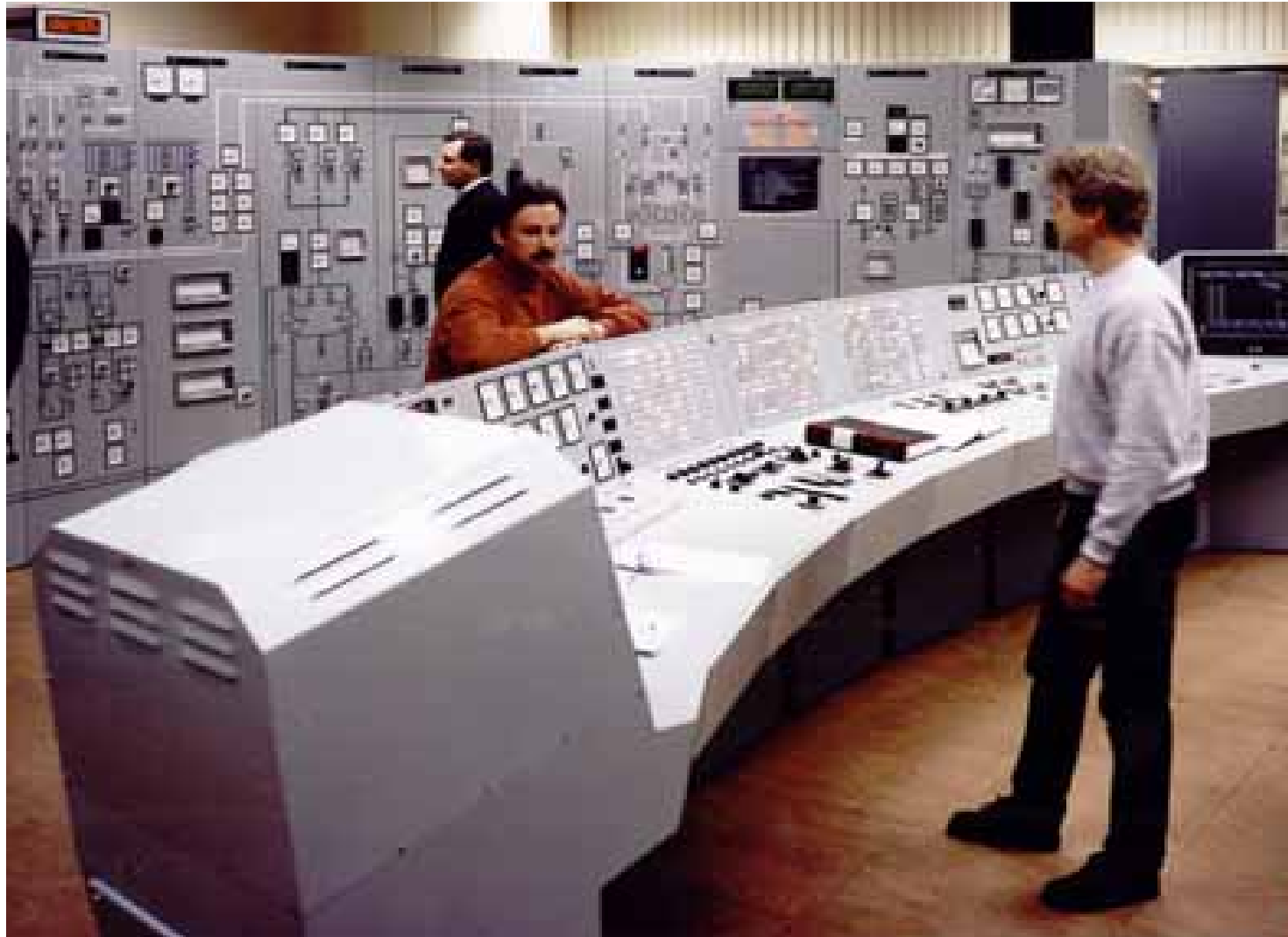


Some HF issues for LTO

- Changes of equipment, design basis, hybrid control rooms.
- Early involvement of HF aspects and availability of right people.
- Maintenance of unique systems.



Old Control room



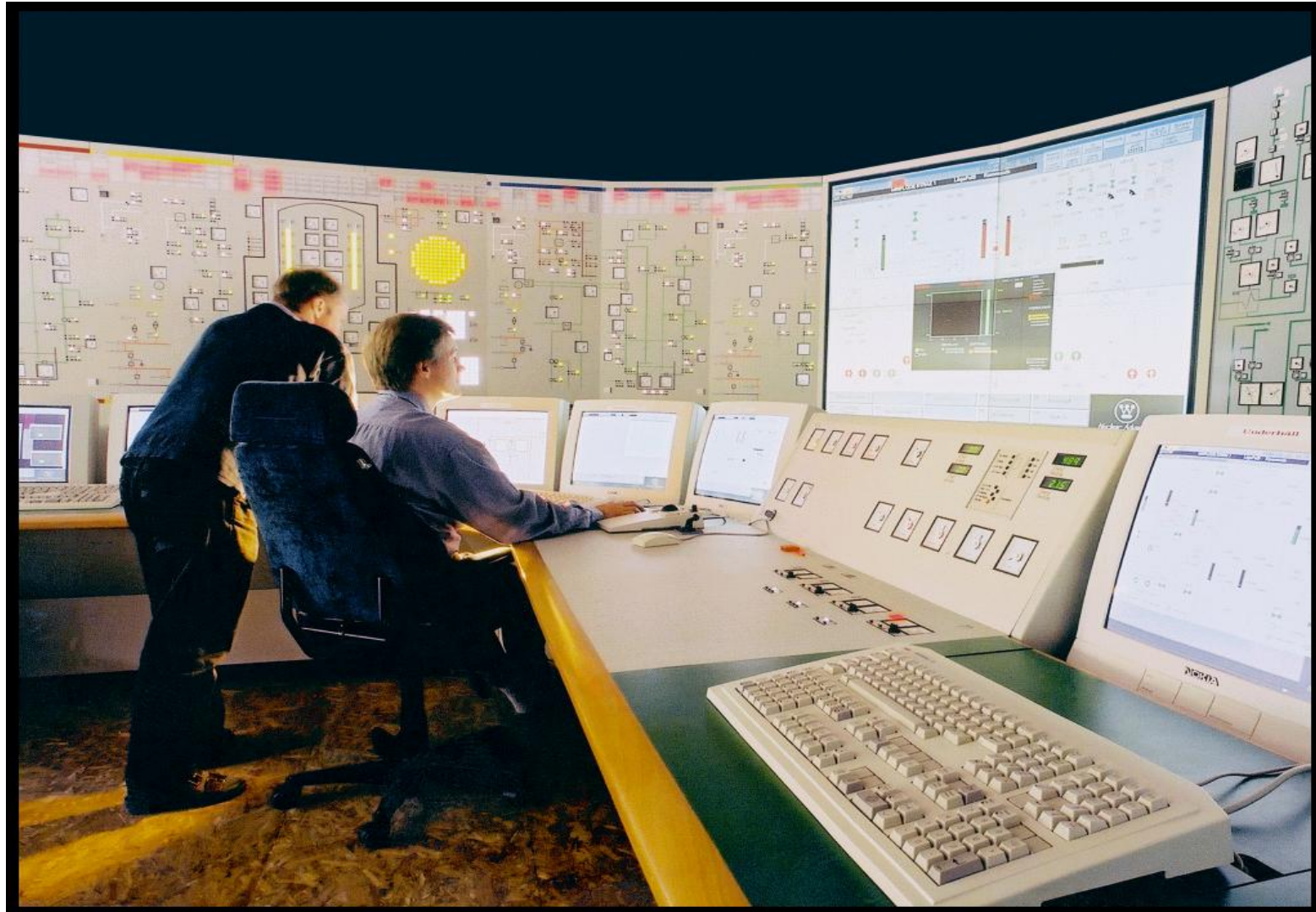
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New Control room (simulator)



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Report to Government in 2012

- Radiation embrittlement of pressure vessel and welds.
- Frequently changes in I&C.
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