Phebus FPT3 test Stand Alone Containment Thermal hydraulics, Aerosol and Iodine Benchmark with MELCOR 1.8.6

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- **5th Meeting of European MELCOR User Group (EMUG)**
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- **A full set of presentation can be requested from HorvathLG@nubiki.hu**
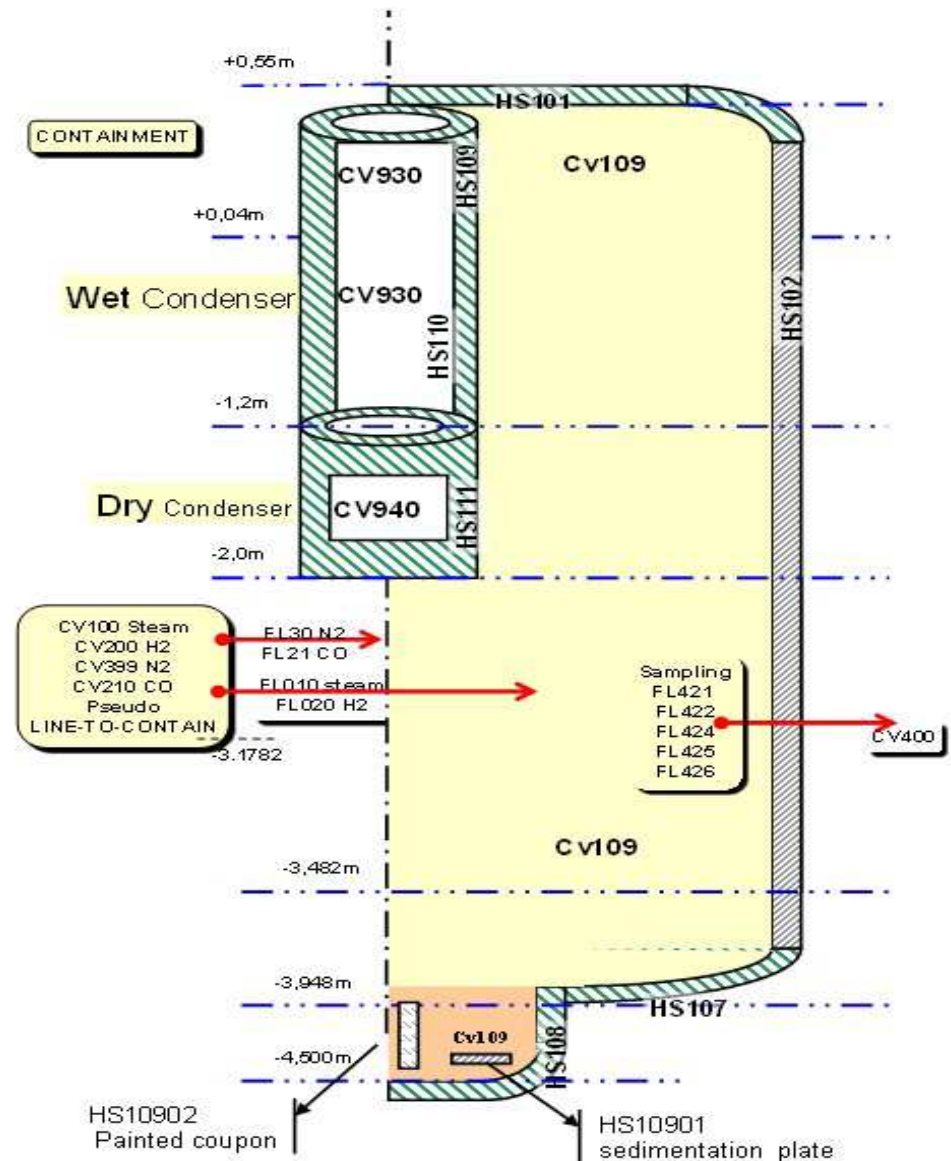
Contents

- T/H Model setup for MELCOR 1.8.6

- Input data reduction

- Calculated T/H results

- Aerosol and Iodine Model setup

- Calculated Aerosol and Iodine Results

- Conclusions

MELCOR 1.67.6 Thermal Hydraulics Model for FPT3 Containment

- Single node with HS

- Previous (FPT1) study reveled that 9 nodes do not give better results for T/H

CONCLUSIONS

MELCOR 1.8.6 results

- T/H reproduced well

- Aerosol deposition agrees with measurement except deposits remaining on Wet Condensers (all deposits washed to sump)

- Wet condensers deposits may have experienced a chemical reaction

- Gaseous iodine long term behaviour agrees with measurement by ± one order of magnitude, despite the mass balance error in MELCOR (applies to IPM – Iodine Pool Model only not to other MELCOR models)

CONCLUSIONS

MELCOR 1.8.6 results interpretaton

- Volatiole Iodine results – Class 4

- Calculated and measured iodine results in atmosphere agree by +- one order of magnitude

- However Total (active+nonactive) iodine is at least one order higher than radioactive iodine

- Despite the fact that ALL iodine (class4) or CsI (class16) has been entered as **radioactive**

- How to interprete TOTAL if all is RADIOACTIVE?